MiTek®

HARDY FRAME™

Shear Wall Systems

PRODUCT CATALOG

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MiTek® Hardy Frame manufactures and markets the revolutionary MiTek® Hardy Frame® shear wall system, and has been the leader in the pre-fabricated shear wall industry for over 15 years. The MiTek® 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 MiTek® Hardy Frame® product line includes Panels, Brace Frames, Special Moment Frames, and various accessory items for complete installation. The new HFX design presented in this catalog 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.

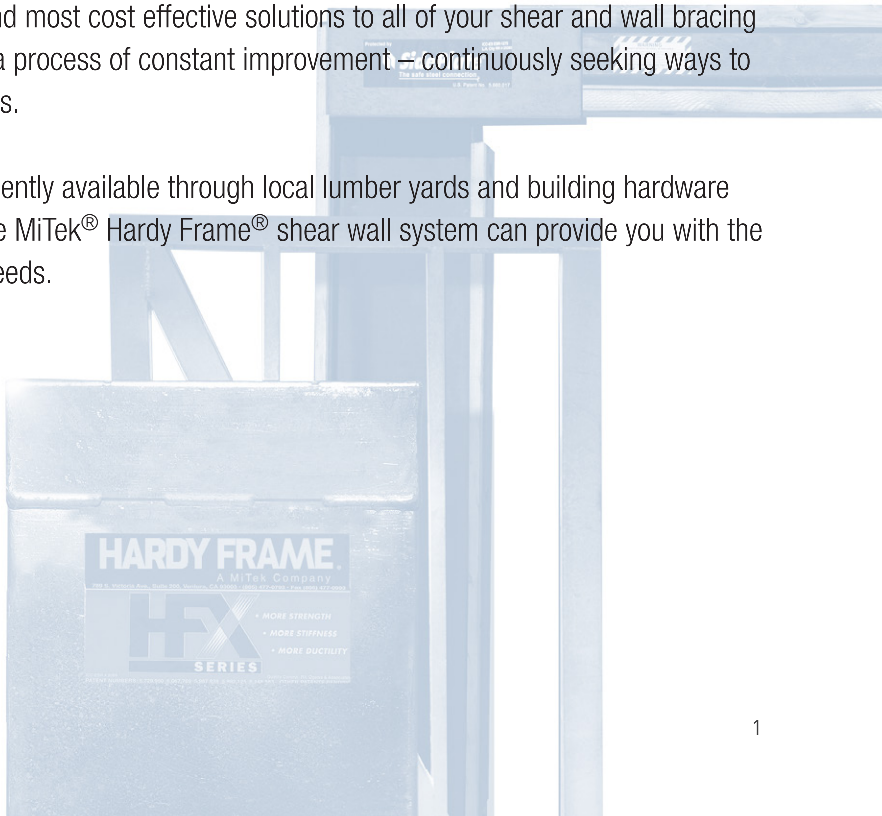
From its inception the MiTek® Hardy Frame® Shear Wall System has proven to be the leading innovator in it's category. In fact, the Hardy Frame® was the first to be recognized by ICBO-ES and LA City, the first to gain approval for multi-story applications, the first Balloon Wall application, and the first to be recognized to comply with the 2003 and 2006 IBC and IRC Building Codes. 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.

MiTek® Hardy Frame is a wholly owned subsidiary of MiTek® USA, 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. The latest result of these efforts is the development of the HFX product line.

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 MiTek® Hardy Frame® products are conveniently available through local lumber yards and building hardware suppliers. Please contact us today to discover how the MiTek® 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



Panel
9 in. through 24 in. widths

Brace Frame
32 & 44 in. widths

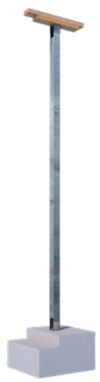
HFX Model Number	W (in)	H (in)	Depth (in)	Wt (lbs)	Minimum Screw Qty @ Top (ea)	Minimum Screw Qty @ Bottom (ea)	Screw Holes Available @ Edges (ea)
HFX-9x79.5	9	79-1/2	3-1/2	77	5	NA	4
HFX-12x78	12	78		90	6	6	
HFX-15x78	15			101	8	8	
HFX-18x78	18			113	10	10	
HFX-21x78	21			133	12	12	
HFX-24x78	24			148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

HFX/S Panel and Brace Frame model numbers are fabricated to standard steel stud heights, see product catalog page 35

Balloon Panel

15 in. through 24 in widths
14 ft. through 20 ft. heights

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)
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		7
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		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		



Post

HFP Model Number	W (in)	H (in)	Depth (in)	Wt (lbs	Rod Dia. @ Top (in)	Rod Dia. @ Bottom (in)	Screw Holes @ Edges (ea)
HFP8-7/8	3-1/2"	92-1/4"	3-1/2”	42	7/8	7/8	NA
HFP8-1 1/8					1-1/8	1-1/8	
HFP9-7/8		104-1/4"		47	7/8	7/8	
HFP9-1 1/8					1-1/8	1-1/8	
HFP10-7/8		116-1/4"		52	7/8	7/8	
HFP10-1 1/8					1-1/8	1-1/8	
HFP11-7/8		128-1/4"		57	7/8	7/8	
HFP11-1 1/8					1-1/8	1-1/8	
HFP12-7/8		140-1/4"		62	7/8	7/8	
HFP12-1 1/8					1-1/8	1-1/8	
HFP13-7/8		152-1/4"		67	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 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 product.
4) Model number HFX-9x79.5, HFX-12x78, HFX-15x78, HFX-18x78, HFX-21x78 and HFX-24x78 Panels come with two straps welded to the solid face.
5) All models can be ordered custom with welded straps on either face.
6) For Post, order with 1-1/8 diameter rods when connecting to Panels, 7/8 diameter for Brace Frames.

Connector Information

1) For connections to wood (specific gravity 0.5 or greater), screws are ¼” diameter MiTek® Screws™ (ESR-2761), or equal, with a minimum design lateral load of 418 lbs. ASD (excluding any duration of load stress increase). For connections to steel (No. 18 gauge minimum), screws are ¼” self-drilling tapping screws (referenced in a current ICC-ES Evaluation Report) with a minimum design lateral load of 302 lbs. ASD (excluding any duration of load stress increase).
2) Screws at top are 3-inches when attaching directly to the collector. When installing a 2x wood filler (specific gravity of 0.5 or greater) at the top connection, the minimum screw length is 4-1/2 inches.
3) Screws at bottom (when applies) are 4-1/2 inches at Panel, Bearing Plate (HFXBP) and Brace Frame connections.
4) 1/4” diameter edge screws to adjacent framing are required when installing fillers above greater than 1-1/2" or when specified by the Building Design Professional.

Anchorage

Template Kits

STD Rods[1]	Wt (lbs)	HS Rods[2]	Wt (lbs)
HFXTK9	20	HFXTK-HS9	26
HFXTK12	20	HFXTK-HS12	26
HFXTK15	21	HFXTK-HS15	26
HFXTK18	21	HFXTK-HS18	27
HFXTK21	21	HFXTK-HS21	27
HFXTK24	22	HFXTK-HS24	28
HFXTK32	16	HFXTK-HS32	18
HFXTK44	17	HFXTK-HS44	19

Anchor Bolt Assemblies

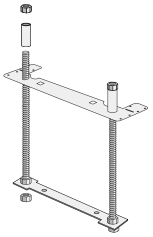
Panels[1,2,3]	Wt (lbs)
HFAB1-1/8x36STD	10.5
HFAB1-1/8x48STD	13.5
HFAB1-1/8x60STD	16.3
HFAB1-1/8x72STD	18.9
HFAB1-1/8x36HS	10.8
HFAB1-1/8x48HS	13.5
HFAB1-1/8x60HS	16.4
HFAB1-1/8x72HS	19.3

Templates

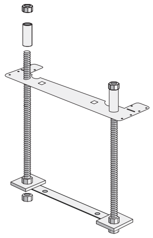
Single	Wt (lbs)	Single For 6" Framing	Wt (lbs)	Back to Back	Wt (lbs)
HFXT9	0.7	HFXT9-6	1.0	HFXDT9	2.0
HFXT12	0.9	HFXT12-6	1.2	HFXDT12	2.2
HFXT15	1.2	HFXT15-6	1.5	HFXDT15	2.5
HFXT18	1.4	HFXT18-6	1.7	HFXDT18	2.8
HFXT21	1.7	HFXT21-6	1.0	HFXDT21	3.3
HFXT24	1.9	HFXT24-6	1.2	HFXDT24	3.8
HFXT32	3.2	HFXT32-6	3.5	HFXDT32	5.1
HFXT44	4.2	HFXT44-6	4.5	HFXDT44	6.4

Bolt Braces

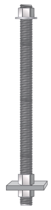
Single	Wt (lbs)	Back to Back	Wt (lbs)
HFXBB9	0.3	HFXDBB9	0.3
HFXBB12	0.4	HFXDBB12	0.4
HFXBB15	0.5	HFXDBB15	0.5
HFXBB18	0.6	HFXDBB18	0.6
HFXBB21	0.7	HFXDBB21	0.7
HFXBB24	0.8	HFXDBB24	0.8



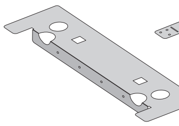
HFXTK



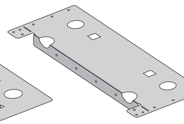
HFXTK-HS



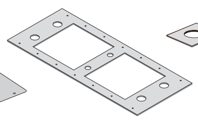
HFAB



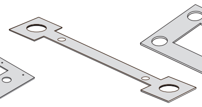
HFXT



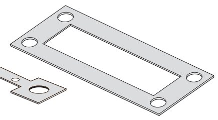
HFXT-6



HFXDT



HFXBB



HFXDBB

Bottom and Top Connectors

Base Extensions

HFBX	Wt (lbs)
HFBX	2
HFBX46-L (Left)	2.5
HFBX46-R (Right)	2.5
HFBX66-L (Left)	3
HFBX66-R (Right)	3
HFDBX	2.5

Bearing Plates & Stacking Washers

Bearing Plates	Wt (lbs)
HFXBP12 (Length = 18")	13
HFXBP15 (Length = 21")	15
HFXBP18 (Length = 24")	17
HFXBP21 (Length = 27")	19
HFXBP24 (Length = 30")	21

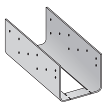
Stacking Washers[4] Plate Washers	Wt (lbs)
HFSW12	1.5
HFSW15-24	2.8
HFPW 7/8	1
HFPW 1-1/8	1

Tension Connector Kits

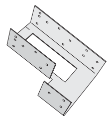
Rods[1,2,4]	Wt (lbs)
HFTC12 STD	15
HFTC15-24 STD	20
HFTC-7/8 STD	9
HFTC12 HS	18
HFTC15-24 HS	21
HFTC-7/8 HS	9

Shear Transfer

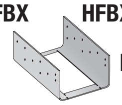
WS Screws	Size	Box Qty
WS3-HF	1/4 x 3	30
WS45-HF	1/4 x 4 1/2	30



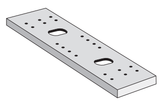
HFBX



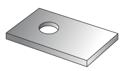
HFBX46L



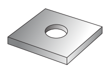
HFDBX



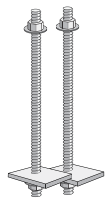
HFXBP



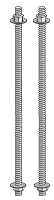
HFSW



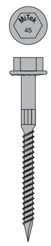
HFPW



HFTC12
HFTC15-24



HFTC-7/8



Tools

T-Rod	Wt (lbs)
HFTR	4

Bolt Lever	Wt (lbs)
HFBL	21

Collector Splice

Saddles	Wt (lbs)
HFS24	3
HFS36	4

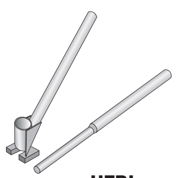
Coupler

CPL	Wt (lbs)
7/8 HS CPL	0.3
1 1/8 HS CPL	0.5

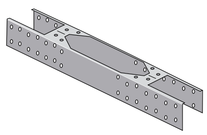
Filler Brace

HFBX	Wt (lbs)
HFFB	5

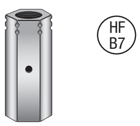
HFTR



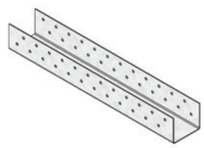
HFBL



HFS



CPL



Notes
1) STD Anchor Bolts are ASTM F1554 Grade 36.
2) HS Anchor Bolts are ASTM A193 Grade B7 stamped on both ends.
3) HFAB anchor bolt assemblies 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.

General Information

The MiTek® Hardy Frame® HFX Panels and Brace Frames combine the most desirable properties for a shear wall: strength, stiffness, and ductility. This revolutionary system has been tested and evaluated under the ICC-Evaluation Service AC322 Acceptance Criteria, and has been proven to provide the highest allowable shear loads in the industry combined with abundant ductility for a seismic "R" value of 6.5. Along with its superior engineering properties, the HFX system is easier than ever to install, is code listed for varied installations including on floor systems and stacking conditions with practical anchorage solutions for standard as well as high strength hold down rods.

Features presented in this catalog include:

- Allowable values for installations on 2500, 3000, and 4000 psi concrete are combined in one table.
- Anchorage details have been revised.
- Includes reinforced anchorage solutions for single and back-to-back Panel installations.
- New accessories including templates for 2x6 wall framing, base extensions for back-to-back installations (HFDBX), Hardy Frame Filler Brace (HFFB) and MiTek® Screws.
- Anchor bolt assemblies for threaded rod lengths of 3, 4, 5, and 6 foot.
- Tables are sequenced by height.
- Examples of plan specifications are shown at the end of each section.

MiTek® Hardy Frame® HFX Panels are available in widths of 9, 12, 15,18, 21 and 24-inches and in heights that correspond to a standard portal (78-inches) and standard wood stud lengths. For slab or curb installations simply secure to the foundation with two 1-1/8-inch diameter hold down anchors and connect the top channel to a collector above with 1/4-inch diameter screws through pre-punched holes. No connections are required to the edges or to either face.

MiTek® Hardy Frame® HFX Brace Frames are 32 or 44-inches wide and as with Panels, are fabricated to standard wood stud lengths. Hold down anchors for Brace Frames are 7/8-inch diameter and may be either standard or high strength for increased allowable loads. Connections to the foundation require two 7/8-inch diameter standard grade hold down anchors. Top connections are accomplished with 1/4-inch diameter screws into the collector above. No other connections are required but field studs are provided for easy attachment of surface finishes with self tapping screws.

Code Evaluations:

For the most current code report listings refer to our website www.hardyframe.com.

Product Use:

The MiTek® Hardy Frame® products are designed and manufactured for the specific purposes described in this catalog. Any changes to the products or in the installation procedures must be approved by the Building Design Professional and are the sole responsibility of the designer.

Quality Statement:

MiTek® Hardy Frames warrants to its customers that its products are free from material defects of manufacture or design, and will perform in substantial accordance with published specifications, if properly used.

Testing:

MiTek® Hardy Frames performs extensive testing on all of the MiTek® Hardy Frame® structurally rated products. All final testing is conducted by a third party testing laboratory.

Material:

MiTek® Hardy Frame® Panels, Brace Frames and Posts are manufactured from prime quality steel which meets the requirements of ASTM A653 SS Grade 50 steel and ASTM A36 hot-rolled steel built in at hold down connections.

Finish:

All galvanized steel has a minimum G60 hot-dipped galvanized zinc coating.

Threaded Rod/Hold Down Bolts

Unless noted otherwise the "STD" hold downs are ASTM F1554 grade 36, and the "HS" (high strength) are ASTM A193 grade B7 or equivalent.

Notes to the Specifier:

- The allowable loads shown in this catalog are based on Allowable Stress Design (ASD) methodology.
- The published allowable design loads for the MiTek® Hardy Frame® Panels and Brace Frames are based on calculations and testing.
- For the MiTek® Hardy Frame® Panels and Brace Frames, the allowable design loads may change depending on the type of support below. Please be sure to refer to the proper table and installation details for accurate load values and proper installation.
- It is important to be clear as to the surface you want the MiTek® Hardy Frame® Panel or Brace Frame to be installed on concrete, sill plate, raised floors and upper floors, etc. See Plan Specification Recommendations on pages 21, 25, 29 and 33 and 38 respectively.
- For a combination of over-turning and gravity loads the specifier must review and check the bearing pressure on the structure below.
- The allowable design values for the MiTek® Hardy Frame® Panels and Brace Frames shown in these tables are for the 2021 IBC code.

Notes to the Framer:

- Install all specified fasteners in accordance with the instructions of this catalog.
- When necessary, all field welding should be done in accordance with A.W.S. standards. WARNING: Welding galvanized steel may produce harmful fumes and should be performed in well-ventilated environments. Follow proper welding procedures and safety precautions.
- Washers are required under the head or nut of all bolted connections.
- Please refer to the proper installation specifications and details as provided in the plans.

General Notes:

- MiTek® reserves the right to change specifications, designs, and models without notice and liability of such changes.
- The information presented in this catalog supercedes all information published in previous documents and publications.
- This catalog is designed as a general reference for the MiTek® Hardy Frame® products. For more specific and most up to date information, visit our website at hardyframe.com or contact us directly at 800-754-3030.
- For installations involving unusual or extreme applications and conditions, contact MiTek® Hardy Frames at 800-754-3030.
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CUSTOMER SERVICE

MiTek® Hardy Frame is the industry leading premanufactured shear wall and customer service is a top priority. Because we are focused on shear walls and have a strong commitment to service, we can provide you with the best support in the industry.

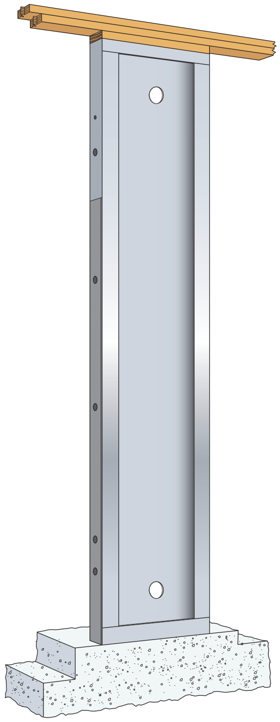
To the Design Professional this means prompt and correct technical answers and full design solutions that are backed by extensive testing and research. From providing allowable design loads to addressing specific repairs you can always count on our answers.

To the Building Official, our Code Reports and Typical Installation Details will make the plan check process and field inspection easier.

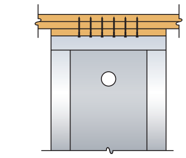
To the Installer, our background and knowledge in framing and construction allows us to communicate with the field and have an understanding of the installation from the point of view of the installer. Quick responses are a must and project delays are avoided at all costs. Help is available by telephone, or by one of our many field representatives with real field experience.

To all parties, in addition to literature, details and telephone support, our company provides jobsite visits, seminars, and personal training sessions. We respond to our customers and you can rest assured that we will be there for you when you need us.

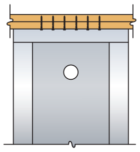
How can we help you today?



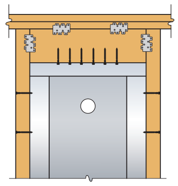
PANEL



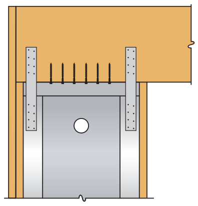
2x Filler
1/4 x 4 1/2" Screws



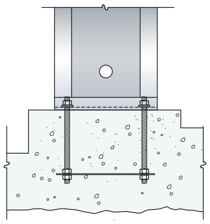
Top Plates
1/4 x 3" Screws



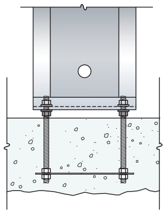
4x Filler
1/4 x 3" Screws



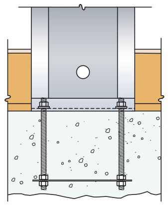
Portal
1/4 x 3" Screws. 78 Inch Panel Heights Include Welded Straps



Concrete Bearing

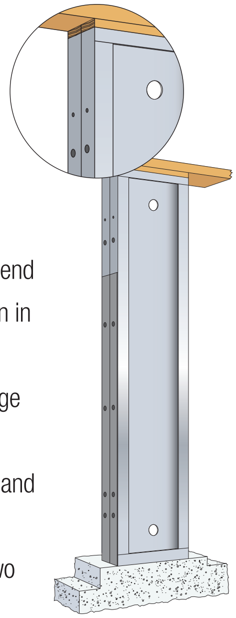


Nuts And Washers
(Requires 5,000 psi Non-Shrink Grout)



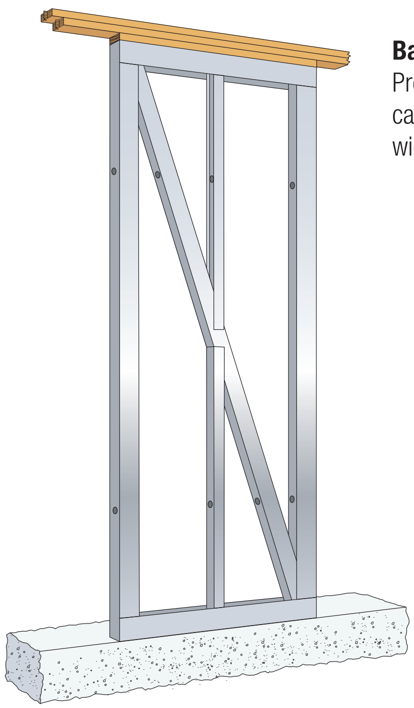
Raised Floor
Head Out

- Installation on nuts and washers provides for leveling at uneven concrete - open end box wrench may be used to secure connection from below - Note: 20% reduction in allowable shear values
- Raised floor head out by passes wood framing to eliminate the effects of shrinkage and crushing, while providing a direct shear transfer to the foundation
- Raised floor head out requires less material by eliminating the rim, bearing plate and bottom screws
- With proper shear transfer and anchorage "Back to Back" installations provide two times the allowable shear value without increasing the wall length

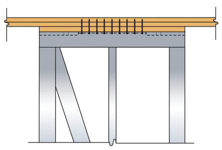


"Back to Back"
installations provide two times the allowable shear value

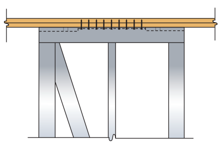
Back to Back RA and allowable load note:
Pre-engineered Reinforced Anchorage design for Back to Back applications develops the full capacity of each Panel, providing two times the allowable shear value without increasing the wall width (detailing provided on sheet HFX-1)



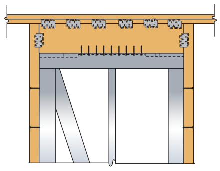
BRACE FRAME



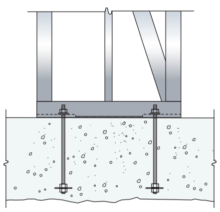
2x Filler
1/4 x 4 1/2" Screws



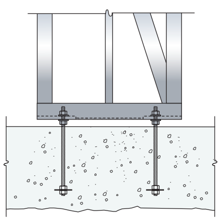
Top Plates
1/4 x 3" Screws



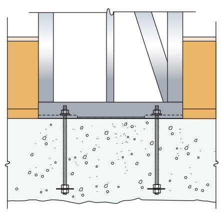
4x Filler
1/4 x 3" Screws



Concrete Bearing



Nuts And Washers
(Requires 5,000 psi Non-Shrink Grout)



Raised Floor
Head Out

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-9x79.5	79 1/2	2,500	1 1/8" STD	2,000	905	0.186	15,510	905	0.186	15,510
		3,000			1,100	0.226	19,220	1,100	0.226	19,220
		4,000			1,350	0.276	21,435	1,350	0.276	21,435
HFX-12x78	78	2,500	1 1/8" STD	1,000	1,750	0.193	19,595	1,750	0.193	19,595
				3,500	1,610	0.178	17,005	1,610	0.178	17,005
				6,500	1,440	0.159	14,325	1,440	0.159	14,325
			1 1/8" HS	1,000	1,750	0.194	19,595	1,750	0.194	19,595
				3,500	1,610	0.179	17,005	1,610	0.179	17,005
				6,500	1,440	0.160	14,325	1,440	0.160	14,325
		3,000	1 1/8" STD	1,000	2,000	0.221	21,575	2,000	0.221	21,575
				3,500	1,970	0.218	21,075	1,970	0.218	21,075
				6,500	1,810	0.200	18,375	1,810	0.200	18,375
			1 1/8" HS	1,000	2,110	0.234	23,750	2,110	0.234	23,750
				3,500	1,970	0.219	21,075	1,970	0.219	21,075
				6,500	1,810	0.201	18,375	1,810	0.201	18,375
		4,000	1 1/8" STD	1,000						
				3,500	2,210	0.245	21,620	2,210	0.244	21,620
				6,500						
			1 1/8" HS	1,000	2,830	0.314	32,065	2,830	0.314	32,065
				3,500	2,695	0.299	29,275	2,695	0.299	29,275
				6,500	2,530	0.281	26,380	2,530	0.281	26,380
HFX-15x78	78	2,500	1 1/8" STD	1,000	2,425	0.252	21,615	2,425	0.251	21,615
				3,500	2,405	0.251	21,380	2,405	0.250	21,380
				6,500	2,350	0.245	20,560	2,350	0.244	20,560
			1 1/8" HS	1,000	2,855	0.298	31,340	2,855	0.298	31,340
				3,500	2,675	0.279	26,150	2,675	0.279	26,150
				6,500	2,425	0.252	21,625	2,425	0.252	21,625
		3,000	1 1/8" STD	1,000						
				3,500	2,590	0.270	21,620	2,590	0.269	21,620
				6,500						
			1 1/8" HS	1,000	3,275	0.341	32,885	3,440	0.358	38,195
				3,500	3,265	0.340	32,600	3,265	0.340	32,600
				6,500	3,020	0.315	27,795	3,020	0.315	27,795
		4,000	1 1/8" STD	1,000	2,800	0.292	21,620	2,800	0.290	21,620
				3,500	2,795	0.291	21,590	2,795	0.290	21,590
				6,500	2,785	0.290	21,445	2,785	0.289	21,445
			1 1/8" HS	1,000						
				3,500	3,275	0.341	26,695	4,160	0.433	39,380
				6,500						
HFX-18x78	78	2,500	1 1/8" STD	1,000						
				3,500	3,050	0.185	19,725	3,195	0.193	21,055
				6,500						
			1 1/8" HS	1,000	4,425	0.269	39,500	4,425	0.269	39,500
				3,500	4,195	0.255	33,700	4,195	0.255	33,700
				6,500	3,885	0.236	28,745	3,885	0.236	28,745
		3,000	1 1/8" STD	1,000						
				3,500	3,050	0.185	18,635	3,305	0.200	20,645
				6,500						
			1 1/8" HS	1,000						
				3,500	4,660	0.283	34,455	4,660	0.283	34,455
				6,500						
		4,000	1 1/8" STD	1,000						
				3,500	3,050	0.185	17,585	3,450	0.209	20,335
				6,500						
			1 1/8" HS	1,000						
				3,500	4,660	0.283	29,645	4,660	0.283	29,645
				6,500						
HFX-21x78	78	2,500	1 1/8" STD	1,000						
				3,500	3,805	0.198	19,685	3,805	0.198	19,685
				6,500						
			1 1/8" HS	1,000	6,005	0.315	40,495	6,230	0.327	44,825
				3,500	6,005	0.315	40,495	6,040	0.317	41,070
				6,500	5,690	0.299	36,045	5,690	0.299	36,045
		3,000	1 1/8" STD	1,000						
				3,500	3,925	0.204	19,585	3,925	0.204	19,585
				6,500						
			1 1/8" HS	1,000				6,875	0.361	43,835
				3,500	6,005	0.315	34,645	6,800	0.357	42,865
				6,500				6,680	0.351	41,480
		4,000	1 1/8" STD	1,000						
				3,500	4,075	0.212	19,460	4,075	0.212	19,460
				6,500						
			1 1/8" HS	1,000						
				3,500	6,005	0.315	30,985	7,295	0.383	40,220
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade[3]	Applied Axial Load[4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V[5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-24x78	78	2,500	1 1/8" STD	1,000	3,830	0.123	15,985	4,345	0.140	18,570
				3,500						
				6,500						
			1 1/8" HS	1,000	6,990	0.227	35,310	7,605	0.246	40,940
				3,500				7,505	0.243	39,925
				6,500				7,360	0.238	38,515
		3,000	1 1/8" STD	1,000	3,830	0.123	15,565	4,465	0.143	18,540
				3,500						
				6,500						
			1 1/8" HS	1,000	6,990	0.227	32,375	8,365	0.271	42,200
				3,500				8,335	0.270	41,940
				6,500				8,245	0.267	41,225
		4,000	1 1/8" STD	1,000	3,830	0.123	15,095	4,620	0.148	18,540
				3,500						
				6,500						
			1 1/8" HS	1,000	6,990	0.227	29,900	8,490	0.275	38,125
				3,500						
				6,500						
HFX-9x8	93 3/4	2,500	1 1/8" STD	2,000	770	0.258	15,510	770	0.258	15,510
		3,000			935	0.314	19,220	935	0.314	19,220
		4,000			1,040	0.349	18,235	1,145	0.384	21,435
HFX-12x8	92 1/4	2,500	1 1/8" STD	1,000	1,480	0.223	19,595	1,480	0.224	19,595
				3,500	1,365	0.206	17,005	1,365	0.206	17,005
				6,500	1,220	0.184	14,325	1,220	0.184	14,325
			1 1/8" HS	1,000	1,480	0.225	19,595	1,480	0.224	19,595
				3,500	1,365	0.207	17,005	1,365	0.207	17,005
				6,500	1,220	0.185	14,325	1,220	0.185	14,325
		3,000	1 1/8" STD	1,000	1,690	0.255	21,575	1,690	0.256	21,575
				3,500	1,665	0.252	21,075	1,665	0.252	21,075
				6,500	1,530	0.231	18,375	1,530	0.231	18,375
			1 1/8" HS	1,000	1,780	0.271	23,750	1,780	0.271	23,750
				3,500	1,665	0.253	21,075	1,665	0.253	21,075
				6,500	1,530	0.232	18,375	1,530	0.232	18,375
		4,000	1 1/8" STD	1,000	1,870	0.282	21,615	1,870	0.283	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,145	0.326	26,505	2,390	0.363	32,065
				3,500				2,275	0.346	29,275
				6,500	2,140	0.325	26,380	2,140	0.325	26,380
HFX-15x8	92 1/4	2,500	1 1/8" STD	1,000	2,050	0.311	21,620	2,050	0.309	21,620
				3,500	2,035	0.309	21,380	2,035	0.307	21,380
				6,500	1,990	0.301	20,560	1,990	0.300	20,560
			1 1/8" HS	1,000	2,415	0.366	31,340	2,415	0.366	31,340
				3,500	2,260	0.343	26,150	2,260	0.343	26,150
				6,500	2,050	0.311	21,625	2,050	0.311	21,625
		3,000	1 1/8" STD	1,000	2,190	0.332	21,620	2,190	0.331	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,660	0.404	30,075	2,910	0.441	38,195
				3,500				2,760	0.419	32,600
				6,500	2,555	0.388	27,795	2,555	0.388	27,795
		4,000	1 1/8" STD	1,000	2,370	0.359	21,620	2,370	0.357	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,660	0.404	25,250	3,380	0.512	36,500
				3,500						
				6,500						
HFX-18x8	92 1/4	2,500	1 1/8" STD	1,000	2,695	0.224	20,985	2,750	0.228	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	3,740	0.312	39,500	3,740	0.313	39,500
				3,500	3,550	0.296	33,700	3,550	0.297	33,700
				6,500	3,285	0.274	28,745	3,285	0.275	28,745
		3,000	1 1/8" STD	1,000	2,695	0.224	19,710	2,890	0.240	21,600
				3,500				2,880	0.239	21,475
				6,500				2,870	0.238	21,370
			1 1/8" HS	1,000	4,250	0.355	40,280	4,420	0.370	44,815
				3,500				4,295	0.360	41,385
				6,500	4,060	0.339	36,500	4,060	0.340	36,500
		4,000	1 1/8" STD	1,000	2,695	0.224	18,510	3,040	0.252	21,345
				3,500				3,025	0.251	21,230
				6,500				3,010	0.250	21,110
			1 1/8" HS	1,000	4,250	0.355	32,890	4,420	0.370	34,790
				3,500						
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d=4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-21x8	92 1/4	2,500	1 1/8" STD	1,000	3,355	0.254	20,795	3,355	0.254	20,795
				3,500						
				6,500						
			1 1/8" HS	1,000	5,080	0.388	40,495	5,270	0.402	44,825
				3,500				5,105	0.390	41,070
				6,500	4,810	0.368	36,045	4,810	0.368	36,045
		3,000	1 1/8" STD	1,000	3,430	0.260	20,395	3,430	0.260	20,395
				3,500						
				6,500						
			1 1/8" HS	1,000	5,080	0.388	34,645	5,955	0.455	46,095
				3,500				5,870	0.448	44,690
				6,500				5,740	0.439	42,755
		4,000	1 1/8" STD	1,000	3,555	0.269	20,175	3,555	0.269	20,175
				3,500						
				6,500						
			1 1/8" HS	1,000	5,080	0.388	30,985	6,170	0.471	40,220
				3,500						
				6,500						
HFX-24x8	92 1/4	2,500	1 1/8" STD	1,000	3,420	0.151	17,045	3,860	0.171	19,700
				3,500						
				6,500						
			1 1/8" HS	1,000	5,910	0.263	35,310	6,690	0.298	44,310
				3,500				6,600	0.294	43,035
				6,500				6,460	0.288	41,305
		3,000	1 1/8" STD	1,000	3,420	0.151	16,555	3,960	0.175	19,610
				3,500						
				6,500						
			1 1/8" HS	1,000	5,910	0.263	32,375	7,175	0.320	43,185
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	3,420	0.151	16,020	4,085	0.181	19,500
				3,500						
				6,500						
			1 1/8" HS	1,000	5,910	0.263	29,900	7,175	0.320	38,100
				3,500						
				6,500						
HFX-32x8	92 1/4	2,500	7/8" STD	1,000	2,375	0.139	8,945	2,825	0.165	10,630
				3,500	2,160	0.126	8,130	2,160	0.126	8,130
				6,500	1,360	0.080	5,130	1,360	0.080	5,130
			7/8" HS	1,000	3,000	0.176	11,295	3,000	0.176	11,295
				3,500	2,335	0.137	8,795	2,335	0.137	8,795
				6,500	1,540	0.090	5,795	1,540	0.090	5,795
		3,000	7/8" STD	1,000	2,375	0.139	8,945	2,895	0.169	10,910
				3,500				2,480	0.145	9,335
				6,500	1,685	0.098	6,335	1,685	0.098	6,335
			7/8" HS	1,000	3,655	0.214	13,755	3,655	0.214	13,755
				3,500	2,990	0.175	11,255	2,990	0.175	11,255
				6,500	2,190	0.128	8,255	2,190	0.128	8,255
		4,000	7/8" STD	1,000	2,375	0.139	8,945	2,895	0.169	10,910
				3,500				2,880	0.168	10,845
				6,500	2,085	0.122	7,845	2,085	0.122	7,845
			7/8" HS	1,000	4,390	0.257	16,530	4,870	0.285	18,330
				3,500	4,205	0.246	15,830	4,205	0.246	15,830
				6,500	3,410	0.199	12,830	3,410	0.199	12,830
HFX-44x8	92 1/4	2,500	7/8" STD	1,000	2,950	0.094	7,610	3,660	0.117	9,440
				3,500				3,240	0.103	8,365
				6,500	2,080	0.066	5,365	2,080	0.066	5,365
			7/8" HS	1,000	4,510	0.144	11,645	4,510	0.144	11,645
				3,500	3,545	0.113	9,145	3,545	0.113	9,145
				6,500	2,380	0.076	6,145	2,380	0.076	6,145
		3,000	7/8" STD	1,000	2,950	0.094	7,610	3,660	0.117	9,440
				3,500				3,635	0.116	9,385
				6,500	2,475	0.079	6,385	2,475	0.079	6,385
			7/8" HS	1,000	5,490	0.175	14,175	5,490	0.175	14,175
				3,500	4,525	0.144	11,675	4,525	0.144	11,675
				6,500	3,360	0.107	8,675	3,360	0.107	8,675
		4,000	7/8" STD	1,000	2,950	0.094	7,610	3,660	0.117	9,440
				3,500						
				6,500				2,965	0.094	7,655
			7/8" HS	1,000	5,655	0.180	14,590	7,375	0.235	19,030
				3,500				6,405	0.204	16,530
				6,500	5,245	0.167	13,530	5,245	0.167	13,530

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-12x9	104 1/4	2,500	1 1/8" STD	1,000	1,310	0.248	19,595	1,310	0.248	19,595
				3,500	1,205	0.229	17,005	1,205	0.229	17,005
				6,500	1,080	0.205	14,325	1,080	0.205	14,325
			1 1/8" HS	1,000	1,310	0.250	19,595	1,310	0.250	19,595
				3,500	1,205	0.230	17,005	1,205	0.230	17,005
				6,500	1,080	0.206	14,325	1,080	0.206	14,325
		3,000	1 1/8" STD	1,000	1,475	0.280	21,065	1,495	0.284	21,575
				3,500				1,475	0.280	21,075
				6,500	1,355	0.257	18,375	1,355	0.257	18,375
			1 1/8" HS	1,000	1,575	0.301	23,750	1,575	0.301	23,750
				3,500	1,475	0.282	21,075	1,475	0.282	21,075
				6,500	1,355	0.259	18,375	1,355	0.258	18,375
		4,000	1 1/8" STD	1,000	1,475	0.280	18,515	1,655	0.314	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	1,680	0.321	22,085	2,115	0.404	32,065
				3,500				2,015	0.385	29,275
				6,500				1,890	0.361	26,380
HFX-15x9	104 1/4	2,500	1 1/8" STD	1,000	1,815	0.361	21,615	1,815	0.360	21,615
				3,500	1,800	0.359	21,380	1,800	0.357	21,380
				6,500	1,760	0.351	20,560	1,760	0.349	20,560
			1 1/8" HS	1,000	2,135	0.426	31,340	2,135	0.426	31,340
				3,500	2,000	0.399	26,150	2,000	0.399	26,150
				6,500	1,815	0.362	21,625	1,815	0.362	21,625
		3,000	1 1/8" STD	1,000	1,940	0.387	21,620	1,940	0.385	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,285	0.456	28,390	2,575	0.513	38,195
				3,500				2,440	0.487	32,600
				6,500	2,260	0.451	27,795	2,260	0.451	27,795
		4,000	1 1/8" STD	1,000	2,095	0.418	21,615	2,095	0.416	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,285	0.456	24,265	2,905	0.579	34,670
				3,500						
				6,500						
HFX-18x9	104 1/4	2,500	1 1/8" STD	1,000	2,435	0.256	21,615	2,435	0.256	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	3,310	0.350	39,500	3,310	0.350	39,500
				3,500	3,140	0.331	33,700	3,140	0.332	33,700
				6,500	2,905	0.307	28,745	2,905	0.307	28,745
		3,000	1 1/8" STD	1,000	2,450	0.258	20,405	2,560	0.269	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,760	0.397	40,260	3,915	0.414	44,955
				3,500				3,805	0.402	41,385
				6,500	3,595	0.379	36,500	3,595	0.380	36,500
		4,000	1 1/8" STD	1,000	2,450	0.258	19,105	2,715	0.286	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,760	0.397	32,880	4,210	0.445	38,865
				3,500						
				6,500						
HFX-21x9	104 1/4	2,500	1 1/8" STD	1,000	3,050	0.304	21,565	3,050	0.304	21,565
				3,500	3,020	0.300	21,255	3,020	0.300	21,255
				6,500	3,010	0.299	21,175	3,010	0.299	21,175
			1 1/8" HS	1,000	4,495	0.451	40,495	4,660	0.468	44,825
				3,500				4,520	0.454	41,070
				6,500	4,260	0.428	36,045	4,260	0.428	36,045
		3,000	1 1/8" STD	1,000	3,155	0.314	21,400	3,155	0.314	21,400
				3,500	3,115	0.310	21,070	3,115	0.310	21,070
				6,500	3,105	0.309	20,965	3,105	0.309	20,965
			1 1/8" HS	1,000	4,495	0.451	34,645	5,270	0.529	46,095
				3,500				5,195	0.522	44,690
				6,500				5,080	0.510	42,755
		4,000	1 1/8" STD	1,000	3,285	0.327	21,220	3,285	0.327	21,220
				3,500	3,240	0.322	20,865	3,240	0.322	20,865
				6,500	3,225	0.321	20,770	3,225	0.321	20,770
			1 1/8" HS	1,000	4,495	0.451	30,985	5,460	0.548	40,220
				3,500						
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-24x9	104 1/4	2,500	1 1/8" STD	1,000	3,140	0.175	17,810	3,525	0.197	20,490
				3,500						
				6,500						
			1 1/8" HS	1,000	5,230	0.294	35,310	6,015	0.338	45,935
				3,500				5,910	0.332	44,165
				6,500				5,755	0.324	41,850
		3,000	1 1/8" STD	1,000	3,140	0.175	17,270	3,620	0.202	20,380
				3,500						
				6,500						
			1 1/8" HS	1,000	5,230	0.294	32,375	6,350	0.357	43,195
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	3,140	0.175	16,680	3,685	0.206	19,925
				3,500						
				6,500						
			1 1/8" HS	1,000	5,230	0.294	29,900	6,350	0.357	38,105
				3,500						
				6,500						
HFX-32x9	104 1/4	2,500	7/8" STD	1,000	2,190	0.181	9,320	2,500	0.207	10,630
				3,500	1,910	0.158	8,130	1,910	0.158	8,130
				6,500	1,205	0.100	5,130	1,205	0.100	5,130
			7/8" HS	1,000	2,655	0.220	11,295	2,655	0.220	11,295
				3,500	2,065	0.171	8,795	2,065	0.171	8,795
				6,500	1,360	0.113	5,795	1,360	0.113	5,795
		3,000	7/8" STD	1,000	2,190	0.181	9,320	2,665	0.221	11,350
				3,500				2,195	0.182	9,335
				6,500	1,490	0.123	6,335	1,490	0.123	6,335
			7/8" HS	1,000	3,230	0.268	13,755	3,230	0.268	13,755
				3,500	2,645	0.219	11,255	2,645	0.219	11,255
				6,500	1,940	0.161	8,255	1,940	0.161	8,255
		4,000	7/8" STD	1,000	2,190	0.181	9,320	2,665	0.221	11,350
				3,500				2,550	0.211	10,845
				6,500	1,845	0.152	7,845	1,845	0.153	7,845
			7/8" HS	1,000	3,885	0.322	16,530	4,310	0.357	18,330
				3,500	3,720	0.308	15,830	3,720	0.308	15,830
				6,500	3,015	0.250	12,830	3,015	0.250	12,830
HFX-44x9	104 1/4	2,500	7/8" STD	1,000	2,745	0.121	8,005	3,405	0.151	9,930
				3,500				2,870	0.127	8,365
				6,500	1,840	0.081	5,365	1,840	0.081	5,365
			7/8"HS	1,000	3,995	0.177	11,645	3,995	0.177	11,645
				3,500	3,135	0.139	9,145	3,135	0.139	9,145
				6,500	2,105	0.093	6,145	2,105	0.093	6,145
		3,000	7/8" STD	1,000	2,745	0.121	8,005	3,405	0.151	9,930
				3,500				3,220	0.142	9,385
				6,500	2,190	0.096	6,385	2,190	0.097	6,385
			7/8" HS	1,000	4,860	0.215	14,175	4,860	0.215	14,175
				3,500	4,005	0.177	11,675	4,005	0.177	11,675
				6,500	2,975	0.132	8,670	2,975	0.132	8,670
		4,000	7/8" STD	1,000	2,745	0.121	8,005	3,405	0.151	9,930
				3,500						
				6,500	2,625	0.116	7,655	2,625	0.116	7,655
			7/8" HS	1,000	5,260	0.233	15,340	6,525	0.289	19,030
				3,500				5,670	0.251	16,530
				6,500	4,640	0.206	13,530	4,640	0.205	13,530
HFX-12x10	116 1/4	2,500	1 1/8" STD	1,000	1,175	0.273	19,595	1,175	0.273	19,595
				3,500	1,080	0.252	17,005	1,080	0.252	17,005
				6,500	965	0.225	14,325	965	0.225	14,325
			1 1/8" HS	1,000	1,175	0.274	19,595	1,175	0.275	19,595
				3,500	1,080	0.253	17,005	1,080	0.253	17,005
				6,500	965	0.226	14,325	965	0.226	14,325
		3,000	1 1/8" STD	1,000	1,185	0.276	17,740	1,340	0.313	21,575
				3,500				1,325	0.308	21,075
				6,500				1,215	0.283	18,375
			1 1/8" HS	1,000	1,350	0.316	21,810	1,415	0.331	23,750
				3,500	1,325	0.310	21,075	1,325	0.310	21,075
				6,500	1,215	0.284	18,375	1,215	0.284	18,375
		4,000	1 1/8" STD	1,000	1,185	0.276	16,095	1,485	0.346	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	1,350	0.316	19,015	1,900	0.444	32,065
				3,500				1,805	0.423	29,275
				6,500				1,695	0.397	26,380

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'$_c$ (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-15x10	116 1/4	2,500	1 1/8" STD	1,000	1,625	0.414	21,620	1,625	0.412	21,620
				3,500	1,615	0.411	21,380	1,615	0.409	21,380
				6,500	1,580	0.402	20,560	1,580	0.400	20,560
			1 1/8" HS	1,000	1,915	0.488	31,340	1,915	0.488	31,340
				3,500	1,795	0.457	26,150	1,795	0.457	26,150
				6,500	1,625	0.414	21,625	1,625	0.414	21,625
		3,000	1 1/8" STD	1,000	1,740	0.442	21,615	1,740	0.440	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,000	0.509	27,060	2,310	0.587	38,195
				3,500				2,190	0.557	32,600
				6,500				2,030	0.516	27,795
		4,000	1 1/8" STD	1,000	1,880	0.478	21,620	1,880	0.476	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,000	0.509	23,435	2,540	0.646	33,185
				3,500						
				6,500						
HFX-18x10	116 1/4	2,500	1 1/8" STD	1,000	2,185	0.282	21,620	2,185	0.282	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,970	0.386	39,500	2,970	0.386	39,500
				3,500	2,815	0.366	33,700	2,815	0.366	33,700
				6,500	2,605	0.339	28,745	2,605	0.339	28,745
		3,000	1 1/8" STD	1,000	2,255	0.291	21,110	2,295	0.296	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,370	0.438	40,205	3,510	0.456	44,955
				3,500				3,410	0.443	41,385
				6,500	3,220	0.419	36,500	3,220	0.419	36,500
		4,000	1 1/8" STD	1,000	2,255	0.291	19,700	2,435	0.314	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,370	0.438	32,855	4,070	0.529	44,000
				3,500						
				6,500						
HFX-21x10	116 1/4	2,500	1 1/8" STD	1,000	2,740	0.348	21,615	2,740	0.348	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	3,970	0.509	39,075	4,180	0.536	44,825
				3,500				4,055	0.519	41,070
				6,500	3,820	0.489	36,045	3,820	0.489	36,045
		3,000	1 1/8" STD	1,000	2,855	0.362	21,620	2,855	0.362	21,620
				3,500	2,845	0.361	21,545	2,845	0.361	21,545
				6,500	2,835	0.360	21,430	2,835	0.360	21,430
			1 1/8" HS	1,000	3,970	0.509	33,835	4,725	0.606	46,095
				3,500				4,660	0.597	44,690
				6,500				4,555	0.584	42,755
		4,000	1 1/8" STD	1,000	2,975	0.378	21,465	2,975	0.378	21,465
				3,500	2,965	0.376	21,365	2,965	0.376	21,365
				6,500	2,950	0.375	21,260	2,950	0.375	21,260
			1 1/8" HS	1,000	3,970	0.509	30,390	4,895	0.627	40,220
				3,500						
				6,500						
HFX-24x10	116 1/4	2,500	1 1/8" STD	1,000	2,900	0.199	18,450	3,245	0.222	21,160
				3,500				3,215	0.220	20,910
				6,500				3,200	0.219	20,820
			1 1/8" HS	1,000	4,690	0.325	35,285	5,395	0.373	45,935
				3,500				5,300	0.367	44,165
				6,500				5,165	0.357	41,850
		3,000	1 1/8" STD	1,000	2,900	0.199	17,865	3,335	0.229	21,040
				3,500				3,295	0.226	20,755
				6,500				3,285	0.225	20,660
			1 1/8" HS	1,000	4,690	0.325	32,355	5,695	0.394	43,200
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	2,900	0.199	17,230	3,445	0.236	20,895
				3,500				3,400	0.233	20,580
				6,500				3,390	0.232	20,490
			1 1/8" HS	1,000	4,690	0.325	29,885	5,695	0.394	38,110
				3,500						
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-32x10	116 1/4	2,500	7/8" STD	1,000	2,030	0.230	9,630	2,240	0.254	10,630
				3,500	1,715	0.194	8,130	1,715	0.194	8,130
				6,500	1,080	0.122	5,130	1,080	0.122	5,130
			7/8" HS	1,000	2,380	0.270	11,295	2,380	0.269	11,295
				3,500	1,855	0.210	8,795	1,855	0.210	8,795
				6,500	1,220	0.138	5,795	1,220	0.138	5,795
		3,000	7/8" STD	1,000	2,030	0.230	9,630	2,470	0.280	11,725
				3,500	1,970	0.223	9,335	1,970	0.223	9,335
				6,500	1,335	0.151	6,335	1,335	0.151	6,335
			7/8" HS	1,000	2,900	0.329	13,755	2,900	0.328	13,755
				3,500	2,370	0.269	11,255	2,370	0.268	11,255
				6,500	1,740	0.197	8,255	1,740	0.197	8,255
		4,000	7/8" STD	1,000	2,030	0.230	9,630	2,470	0.280	11,725
				3,500				2,285	0.259	10,845
				6,500	1,655	0.187	7,845	1,655	0.187	7,845
			7/8" HS	1,000	3,485	0.395	16,535	3,865	0.437	18,330
				3,500	3,335	0.378	15,830	3,335	0.378	15,830
				6,500	2,705	0.306	12,830	2,705	0.306	12,830
HFX-44x10	116 1/4	2,500	7/8" STD	1,000	2,570	0.154	8,355	3,185	0.191	10,355
				3,500				2,575	0.154	8,365
				6,500	1,650	0.099	5,365	1,650	0.099	5,365
			7/8" HS	1,000	3,580	0.214	11,645	3,580	0.214	11,645
				3,500	2,810	0.168	9,145	2,810	0.168	9,145
				6,500	1,890	0.113	6,145	1,890	0.113	6,145
		3,000	7/8" STD	1,000	2,570	0.154	8,355	3,185	0.191	10,355
				3,500				2,885	0.173	9,385
				6,500	1,965	0.118	6,385	1,965	0.117	6,385
			7/8" HS	1,000	4,360	0.261	14,175	4,360	0.261	14,175
				3,500	3,590	0.215	11,675	3,590	0.215	11,675
				6,500	2,665	0.160	8,675	2,665	0.160	8,675
		4,000	7/8" STD	1,000	2,570	0.154	8,355	3,185	0.191	10,355
				3,500						
				6,500	2,355	0.141	7,655	2,355	0.141	7,655
			7/8" HS	1,000	4,915	0.294	15,980	5,855	0.350	19,030
				3,500				5,085	0.304	16,530
				6,500	4,160	0.249	13,530	4,160	0.249	13,530
HFX-15x11	128 1/4	2,500	1 1/8" STD	1,000	1,475	0.466	21,615	1,475	0.465	21,615
				3,500	1,465	0.463	21,380	1,465	0.462	21,380
				6,500	1,430	0.452	20,560	1,430	0.451	20,560
			1 1/8" HS	1,000	1,735	0.549	31,340	1,735	0.549	31,340
				3,500	1,625	0.515	26,150	1,625	0.515	26,150
				6,500	1,475	0.466	21,625	1,475	0.466	21,625
		3,000	1 1/8" STD	1,000	1,575	0.498	21,620	1,575	0.497	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	1,775	0.561	26,090	2,090	0.662	38,195
				3,500				1,985	0.628	32,600
				6,500				1,840	0.581	27,795
		4,000	1 1/8" STD	1,000	1,705	0.539	21,615	1,705	0.538	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	1,775	0.561	22,800	2,255	0.713	32,090
				3,500						
				6,500						
HFX-18x11	128 1/4	2,500	1 1/8" STD	1,000	1,980	0.308	21,615	1,980	0.311	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,690	0.420	39,500	2,690	0.420	39,500
				3,500	2,550	0.399	33,700	2,550	0.399	33,700
				6,500	2,365	0.369	28,745	2,365	0.369	28,745
		3,000	1 1/8" STD	1,000	2,080	0.324	21,600	2,080	0.327	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,830	0.442	34,360	2,830	0.442	34,360
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	2,080	0.324	20,115	2,210	0.347	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,830	0.442	29,585	2,830	0.442	29,585
				3,500						
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-21x11	128 1/4	2,500	1 1/8" STD	1,000	2,485	0.393	21,620	2,485	0.393	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,515	0.561	37,160	3,790	0.605	44,825
				3,500				3,675	0.587	41,070
				6,500	3,460	0.553	36,045	3,460	0.553	36,045
		3,000	1 1/8" STD	1,000	2,585	0.409	21,615	2,585	0.409	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	3,515	0.561	32,660	4,285	0.684	46,095
				3,500				4,220	0.674	44,690
				6,500				4,130	0.659	42,755
		4,000	1 1/8" STD	1,000	2,715	0.429	21,620	2,715	0.429	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,515	0.561	29,505	4,440	0.708	40,220
				3,500						
				6,500						
HFX-24x11	128 1/4	2,500	1 1/8" STD	1,000	2,695	0.223	19,010	2,975	0.245	21,465
				3,500				2,960	0.244	21,355
				6,500				2,950	0.243	21,250
			1 1/8" HS	1,000	3,730	0.308	28,985	4,890	0.405	45,935
				3,500				4,805	0.398	44,165
				6,500				4,680	0.387	41,850
		3,000	1 1/8" STD	1,000	2,695	0.223	18,385	3,090	0.255	21,605
				3,500				3,045	0.251	21,215
				6,500				3,030	0.250	21,110
			1 1/8" HS	1,000	3,730	0.308	27,245	5,160	0.427	43,175
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	2,695	0.223	17,710	3,200	0.264	21,445
				3,500				3,145	0.259	21,055
				6,500				3,135	0.258	20,970
			1 1/8" HS	1,000	3,730	0.308	25,600	5,160	0.427	38,090
				3,500						
				6,500						
HFX-32x11	128 1/4	2,500	7/8" STD	1,000	1,895	0.285	9,920	2,030	0.306	10,630
				3,500	1,555	0.234	8,130	1,555	0.234	8,130
				6,500	980	0.147	5,130	980	0.148	5,130
			7/8" HS	1,000	2,160	0.325	11,295	2,160	0.325	11,295
				3,500	1,680	0.253	8,795	1,680	0.253	8,795
				6,500	1,105	0.167	5,795	1,105	0.167	5,795
		3,000	7/8" STD	1,000	1,895	0.285	9,920	2,260	0.341	11,835
				3,500	1,785	0.268	9,335	1,785	0.269	9,335
				6,500	1,210	0.182	6,335	1,210	0.182	6,335
			7/8" HS	1,000	2,625	0.395	13,755	2,625	0.395	13,755
				3,500	2,150	0.324	11,255	2,150	0.324	11,255
				6,500	1,575	0.237	8,255	1,575	0.237	8,255
		4,000	7/8" STD	1,000	1,895	0.285	9,920	2,300	0.347	12,050
				3,500				2,070	0.312	10,845
				6,500	1,500	0.225	7,845	1,500	0.226	7,845
			7/8" HS	1,000	2,910	0.438	15,235	3,500	0.527	18,330
				3,500				3,025	0.455	15,830
				6,500	2,450	0.369	12,830	2,450	0.369	12,830
HFX-44x11	128 1/4	2,500	7/8" STD	1,000	2,415	0.191	8,665	2,990	0.236	10,730
				3,500	2,330	0.184	8,365	2,330	0.184	8,365
				6,500	1,495	0.118	5,365	1,495	0.118	5,365
			7/8" HS	1,000	3,245	0.255	11,645	3,245	0.256	11,645
				3,500	2,550	0.201	9,145	2,550	0.201	9,145
				6,500	1,715	0.135	6,145	1,715	0.135	6,145
		3,000	7/8" STD	1,000	2,415	0.191	8,665	2,990	0.236	10,730
				3,500				2,615	0.206	9,385
				6,500	1,780	0.141	6,385	1,780	0.140	6,385
			7/8" HS	1,000	3,950	0.311	14,175	3,950	0.311	14,175
				3,500	3,255	0.256	11,670	3,255	0.256	11,670
				6,500	2,415	0.190	8,675	2,415	0.190	8,675
		4,000	7/8" STD	1,000	2,415	0.191	8,665	2,990	0.236	10,730
				3,500				2,970	0.234	10,655
				6,500	2,135	0.169	7,655	2,135	0.168	7,655
			7/8" HS	1,000	4,155	0.327	14,905	4,875	0.384	17,490
				3,500				4,610	0.363	16,530
				6,500	3,770	0.297	13,530	3,770	0.297	13,530

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0 Allowable In-Plane Shear V [5] (lbs)	Seismic Drift at V [5] (in)	Seismic Uplift at V [5, 6] (lbs)	Wind Allowable In-Plane Shear V [5] (lbs)	Wind Drift at V [5] (in)	Wind Uplift at V [5, 6] (lbs)
HFX-15x12	140 1/4	2,500	1 1/8" STD	1,000	1,345	0.521	21,615	1,345	0.520	21,615
				3,500	1,340	0.517	21,380	1,340	0.516	21,380
				6,500	1,310	0.505	20,560	1,310	0.504	20,560
			1 1/8" HS	1,000	1,590	0.614	31,310	1,590	0.614	31,340
				3,500	1,490	0.575	26,150	1,490	0.575	26,150
				6,500	1,350	0.521	21,625	1,350	0.521	21,625
		3,000	1 1/8" STD	1,000	1,440	0.557	21,615	1,440	0.556	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	1,590	0.614	25,160	1,915	0.739	38,195
				3,500				1,815	0.701	32,600
				6,500				1,680	0.650	27,795
		4,000	1 1/8" STD	1,000	1,555	0.602	21,620	1,555	0.601	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	1,590	0.614	22,165	2,015	0.779	31,020
				3,500						
				6,500						
HFX-18x12	140 1/4	2,500	1 1/8" STD	1,000	1,810	0.334	21,620	1,810	0.334	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,460	0.456	39,500	2,460	0.456	39,500
				3,500	2,335	0.432	33,700	2,335	0.432	33,700
				6,500	2,160	0.400	28,745	2,160	0.400	28,745
		3,000	1 1/8" STD	1,000	1,905	0.351	21,615	1,905	0.351	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,585	0.479	34,295	2,585	0.479	34,295
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	1,935	0.357	20,530	2,020	0.373	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,585	0.479	29,545	2,585	0.479	29,545
				3,500						
				6,500						
HFX-21x12	140 1/4	2,500	1 1/8" STD	1,000	2,270	0.470	21,620	2,270	0.470	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,030	0.633	33,190	3,465	0.724	44,825
				3,500				3,360	0.702	41,070
				6,500				3,165	0.661	36,045
		3,000	1 1/8" STD	1,000	2,365	0.490	21,620	2,365	0.490	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,030	0.633	29,955	3,730	0.779	41,750
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	2,480	0.514	21,620	2,480	0.514	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,030	0.633	27,410	3,730	0.779	35,785
				3,500						
				6,500						
HFX-24x12	140 1/4	2,500	1 1/8" STD	1,000	2,515	0.246	19,490	2,735	0.268	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,410	0.334	28,975	4,470	0.439	45,935
				3,500				4,395	0.431	44,165
				6,500				4,280	0.420	41,850
		3,000	1 1/8" STD	1,000	2,515	0.246	18,825	2,830	0.277	21,620
				3,500				2,825	0.277	21,605
				6,500				2,815	0.276	21,490
			1 1/8" HS	1,000	3,410	0.334	27,235	4,720	0.463	43,195
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	2,515	0.246	18,115	2,935	0.288	21,550
				3,500				2,925	0.287	21,460
				6,500				2,915	0.286	21,365
			1 1/8" HS	1,000	3,410	0.334	25,595	4,720	0.463	38,105
				3,500						
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-32x12	140 1/4	2,500	7/8" STD	1,000	1,775	0.347	10,160	1,855	0.364	10,630
				3,500	1,420	0.278	8,130	1,420	0.278	8,130
				6,500	895	0.175	5,130	895	0.175	5,130
			7/8" HS	1,000	1,975	0.386	11,295	1,975	0.386	11,295
				3,500	1,535	0.300	8,795	1,535	0.300	8,795
				6,500	1,010	0.198	5,795	1,010	0.198	5,795
		3,000	7/8" STD	1,000	1,775	0.347	10,160	2,070	0.405	11,835
				3,500	1,630	0.319	9,335	1,630	0.319	9,335
				6,500	1,105	0.216	6,335	1,105	0.217	6,335
			7/8" HS	1,000	2,405	0.470	13,755	2,405	0.470	13,755
				3,500	1,965	0.384	11,255	1,965	0.385	11,255
				6,500	1,440	0.282	8,255	1,440	0.282	8,255
		4,000	7/8" STD	1,000	1,775	0.347	10,160	2,155	0.422	12,335
				3,500				1,895	0.371	10,845
				6,500	1,370	0.268	7,845	1,370	0.268	7,845
			7/8" HS	1,000	2,660	0.520	15,225	2,945	0.576	16,860
				3,500				2,765	0.541	15,830
				6,500	2,240	0.438	12,830	2,240	0.438	12,830
HFX-44x12	140 1/4	2,500	7/8" STD	1,000	2,280	0.231	8,945	2,770	0.281	10,865
				3,500	2,135	0.216	8,365	2,135	0.216	8,365
				6,500	1,370	0.139	5,365	1,370	0.139	5,365
			7/8" HS	1,000	2,970	0.301	11,645	2,970	0.302	11,645
				3,500	2,330	0.237	9,145	2,330	0.237	9,145
				6,500	1,565	0.159	6,145	1,565	0.159	6,145
		3,000	7/8" STD	1,000	2,280	0.231	8,945	2,820	0.286	11,060
				3,500				2,390	0.242	9,385
				6,500	1,625	0.165	6,385	1,625	0.165	6,385
			7/8" HS	1,000	3,615	0.367	14,175	3,615	0.367	14,175
				3,500	2,975	0.302	11,675	2,975	0.302	11,675
				6,500	2,210	0.225	8,675	2,210	0.225	8,675
		4,000	7/8" STD	1,000	2,280	0.231	8,945	2,820	0.286	11,060
				3,500				2,715	0.275	10,655
				6,500	1,950	0.198	7,655	1,950	0.198	7,655
			7/8" HS	1,000	3,800	0.386	14,910	3,955	0.402	15,515
				3,500						
				6,500	3,450	0.350	13,530	3,450	0.351	13,530
HFX-15x13	152 1/4	2,500	1 1/8" STD	1,000	1,240	0.576	21,615	1,240	0.575	21,615
				3,500	1,235	0.573	21,380	1,235	0.572	21,380
				6,500	1,205	0.559	20,560	1,205	0.558	20,560
			1 1/8" HS	1,000	1,435	0.666	29,315	1,465	0.680	31,340
				3,500	1,370	0.637	26,150	1,370	0.637	26,150
				6,500	1,240	0.577	21,625	1,240	0.577	21,625
		3,000	1 1/8" STD	1,000	1,325	0.616	21,620	1,325	0.615	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	1,435	0.666	24,360	1,765	0.819	38,195
				3,500				1,670	0.777	32,600
				6,500				1,550	0.719	27,795
		4,000	1 1/8" STD	1,000	1,435	0.666	21,605	1,435	0.665	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000				1,820	0.846	30,090
				3,500						
				6,500						
HFX-18x13	152 1/4	2,500	1 1/8" STD	1,000	1,665	0.358	21,615	1,665	0.359	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,250	0.487	38,395	2,265	0.490	39,500
				3,500	2,150	0.465	33,700	2,150	0.465	33,700
				6,500	1,990	0.431	28,745	1,990	0.431	28,745
		3,000	1 1/8" STD	1,000	1,755	0.377	21,615	1,755	0.377	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,250	0.487	31,080	2,380	0.515	34,260
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	1,805	0.388	20,840	1,860	0.400	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	2,250	0.487	27,415	2,380	0.515	29,520
				3,500						
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0 Allowable In-Plane Shear V [5] (lbs)	Seismic Drift at V [5] (in)	Seismic Uplift at V [5,6] (lbs)	Wind Allowable In-Plane Shear V [5] (lbs)	Wind Drift at V [5] (in)	Wind Uplift at V [5,6] (lbs)
HFX-21x13	152 1/4	2,500	1 1/8" STD	1,000	2,095	0.518	21,620	2,095	0.518	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,850	0.666	34,445	3,190	0.747	44,825
				3,500				3,095	0.724	41,070
				6,500				2,915	0.682	36,045
		3,000	1 1/8" STD	1,000	2,180	0.539	21,620	2,180	0.539	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,850	0.666	30,845	3,610	0.844	46,095
				3,500				3,555	0.832	44,690
				6,500				3,480	0.814	42,755
		4,000	1 1/8" STD	1,000	2,285	0.566	21,620	2,285	0.566	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	2,850	0.666	28,110	3,615	0.846	38,380
				3,500						
				6,500						
HFX-24x13	152 1/4	2,500	1 1/8" STD	1,000	2,360	0.271	19,935	2,520	0.289	21,615
				3,500						
				6,500						
			1 1/8" HS	1,000	3,140	0.360	28,960	4,120	0.473	45,935
				3,500				4,045	0.464	44,165
				6,500				3,940	0.452	41,850
		3,000	1 1/8" STD	1,000	2,360	0.271	19,235	2,605	0.299	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,140	0.360	27,220	4,350	0.499	43,230
				3,500						
				6,500						
		4,000	1 1/8" STD	1,000	2,360	0.271	18,490	2,715	0.311	21,620
				3,500						
				6,500						
			1 1/8" HS	1,000	3,140	0.360	25,580	4,350	0.499	38,130
				3,500						
				6,500						
HFX-32x13	152 1/4	2,500	7/8" STD	1,000	1,670	0.415	10,380	1,710	0.425	10,630
				3,500	1,310	0.325	8,130	1,310	0.325	8,130
				6,500	825	0.205	5,130	825	0.205	5,130
			7/8" HS	1,000	1,820	0.452	11,295	1,820	0.452	11,295
				3,500	1,415	0.352	8,795	1,415	0.352	8,795
				6,500	935	0.232	5,795	935	0.232	5,795
		3,000	7/8" STD	1,000	1,670	0.415	10,380	1,905	0.473	11,835
				3,500	1,505	0.373	9,335	1,505	0.373	9,335
				6,500	1,020	0.253	6,335	1,020	0.253	6,335
			7/8" HS	1,000	2,215	0.550	13,755	2,215	0.550	13,755
				3,500	1,810	0.450	11,255	1,810	0.450	11,255
				6,500	1,330	0.330	8,255	1,330	0.330	8,255
		4,000	7/8" STD	1,000	1,670	0.415	10,380	2,025	0.503	12,585
				3,500				1,745	0.434	10,845
				6,500	1,265	0.314	7,845	1,265	0.314	7,845
			7/8" HS	1,000	2,305	0.573	14,325	2,305	0.573	14,325
				3,500						
				6,500	2,065	0.513	12,830	2,065	0.513	12,830
HFX-44x13	152 1/4	2,500	7/8" STD	1,000	2,160	0.277	9,200	2,550	0.327	10,865
				3,500	1,965	0.252	8,365	1,965	0.252	8,365
				6,500	1,260	0.162	5,365	1,260	0.162	5,365
			7/8" HS	1,000	2,735	0.351	11,645	2,735	0.351	11,645
				3,500	2,145	0.275	9,145	2,145	0.275	9,145
				6,500	1,445	0.185	6,145	1,445	0.185	6,145
		3,000	7/8" STD	1,000	2,160	0.277	9,200	2,665	0.342	11,355
				3,500				2,205	0.283	9,385
				6,500	1,500	0.192	6,385	1,500	0.192	6,385
			7/8" HS	1,000	3,110	0.399	13,245	3,110	0.399	13,245
				3,500	2,740	0.352	11,675	2,740	0.352	11,675
				6,500	2,035	0.261	8,675	2,035	0.261	8,675
		4,000	7/8" STD	1,000	2,160	0.277	9,200	2,665	0.342	11,355
				3,500				2,500	0.321	10,655
				6,500	1,795	0.230	7,655	1,795	0.231	7,655
			7/8" HS	1,000	3,110	0.399	13,245	3,110	0.399	13,245
				3,500						
				6,500						

Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

Model Number	Net Height H (in)	Concrete Compressive Strength f'_c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
					Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-15x14	164 1/4	2,500	1 1/8" HS	4,000	1,120	0.611	20,680	1,250	0.767	25,325
		3,000					18,925	1,490	0.913	29,870
		4,000					17,460			25,135
HFX-18x14		2,500			1,380	0.642	18,475	1,960	0.912	32,455
		3,000					17,545			28,170
		4,000					16,630			25,320
HFX-21x14		2,500			2,115	0.512	24,300	2,850	0.862	40,385
		3,000					22,895	3,015	0.913	37,905
		4,000					21,555			33,290
HFX-24x14		2,500			2,090	0.527	18,855	3,190	0.805	33,155
		3,000					18,240			30,680
		4,000					17,580			28,505
HFX-15x15	176 1/4	2,500	1 1/8" HS	3,500	1,045	0.655	20,745	1,185	0.833	26,150
		3,000					18,975	1,390	0.979	29,995
		4,000					17,500			25,205
HFX-18x15		2,500			1,310	0.701	18,935	1,830	0.979	32,595
		3,000					17,955			28,250
		4,000					16,990			25,380
HFX-21x15		2,500			1,975	0.591	24,370	2,620	0.979	39,120
		3,000					22,955			33,860
		4,000					21,605			30,405
HFX-24x15		2,500			1,960	0.597	19,000	2,830	0.859	30,790
		3,000					18,375			28,750
		4,000					17,700			26,890
HFX-15x16	188 1/4	2,500	1 1/8" HS	3,000	980	0.700	20,805	1,125	0.901	27,015
		3,000					19,025	1,305	1.046	30,105
		4,000					17,540			25,265
HFX-18x16		2,500			1,250	0.760	19,435	1,715		32,655
		3,000					18,385			28,285
		4,000					17,365		1.046	25,410
HFX-21x16		2,500			1,850	0.675	24,430	2,295		34,255
		3,000					23,005			30,715
		4,000					21,650			28,005
HFX-24x16		2,500			1,825	0.625	18,875	2,670	0.913	31,140
		3,000					18,255			29,040
		4,000					17,595			27,130
HFX-15x17	200 1/4	2,500	1 1/8" HS	2,500	925	0.745	20,860	1,070	0.970	27,940
		3,000					19,065	1,230	1.113	30,200
		4,000					17,570			25,320
HFX-18x17		2,500			1,195	0.824	19,890	1,615	1.113	32,780
		3,000					18,775			28,360
		4,000					17,705			25,465
HFX-21x17		2,500			1,745	0.765	24,485	2,260	1.112	37,390
		3,000					23,050			32,810
		4,000					21,690			29,620
HFX-24x17		2,500			1,695	0.660	18,600	2,485	0.967	30,685
		3,000					18,005			28,665
		4,000					17,360			26,815
HFX-15x18	212 1/4	2,500	1 1/8" HS	2,000	875	0.789	20,905	1,025	1.041	28,940
		3,000					19,100	1,160	1.179	30,285
		4,000					17,600			25,365
HFX-18x18		2,500			1,150	0.887	20,445	1,530		33,090
		3,000					19,250			28,545
		4,000					18,120		1.179	25,600
HFX-21x18		2,500			1,645	0.860	24,530	2,010		33,445
		3,000					23,090			30,135
		4,000					21,725			27,555
HFX-24x18		2,500			1,595	0.697	18,540	2,335	1.020	30,505
		3,000					17,950			28,515
		4,000					17,310			26,685

UNREINFORCED ANCHORAGE NOMENCLATURE

1 1/8-STD-14-20

$C_{a\,1,2}$

I_e

ROD GRADE

ROD DIAMETER

REINFORCED ANCHORAGE NOMENCLATURE

1 1/8-STD-RA

REINFORCED ANCHORAGE

ROD GRADE

ROD DIAMETER

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

1 1/8-STD-BB-RA

REINFORCED ANCHORAGE

BACK TO BACK INSTALLATION

ROD GRADE

ROD DIAMETER

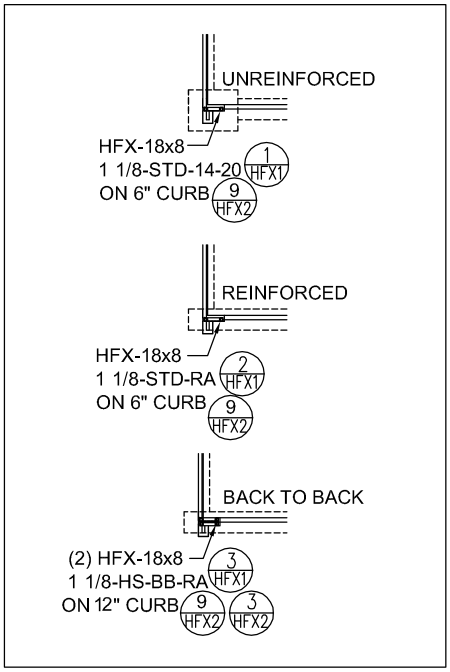
Table 1.1A MiTek® Hardy Frame® Installation - On Concrete[1,2]

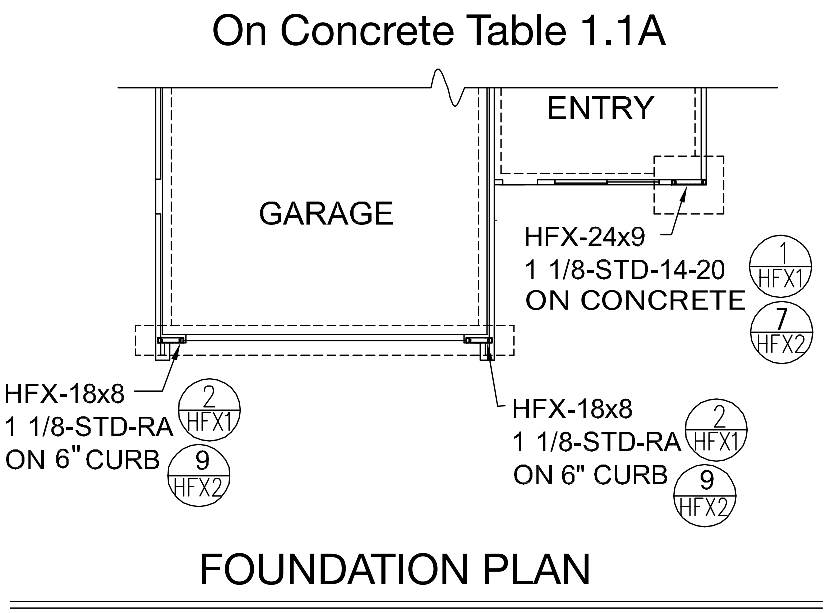
Model Number	Net Height H (in)	Concrete Compressive Strength f'c (psi)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0: Allowable In-Plane Shear V [5] (lbs)	Seismic: Drift at V [5] (in)	Seismic: Uplift at V [5,6] (lbs)	Wind: Allowable In-Plane Shear V [5] (lbs)	Wind: Drift at V [5] (in)	Wind: Uplift at V [5,6] (lbs)
HFX-15x19	224 1/4	2,500	1 1/8" HS	2,000	825	0.834	20,950	970	1.098	28,940
		3,000					19,130	1,100	1.246	30,360
		4,000					17,625			25,410
HFX-18x19		2,500			1,105	0.953	20,885	1,450	1.246	33,190
		3,000					19,625			28,600
		4,000					18,440			25,640
HFX-21x19		2,500			1,560	0.961	24,575	1,800		30,460
		3,000					23,130			27,910
		4,000					21,755			25,770
HFX-24x19		2,500			1,515	0.734	18,620	2,220	1.072	30,700
		3,000					18,020			28,680
		4,000					17,380			26,825
HFX-15x20	236 1/4	2,500	1 1/8" HS	2,000	785	0.879	20,985	920	1.156	28,940
		3,000					19,160	1,045	1.312	30,430
		4,000					17,650			25,445
HFX-18x20		2,500			1,070	1.020	21,490	1,220	1.166	26,315
		3,000					20,135			23,990
		4,000					18,875			22,075
HFX-21x20		2,500			1,485	1.068	24,610	1,620	1.313	28,060
		3,000					23,160			26,020
		4,000					21,785			24,210
HFX-24x20		2,500			1,460	0.770	18,965	2,130	1.124	31,190
		3,000					18,340			29,085
		4,000					17,670			27,170

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb = 4.45 N, 1 psi 6.89 kPa.

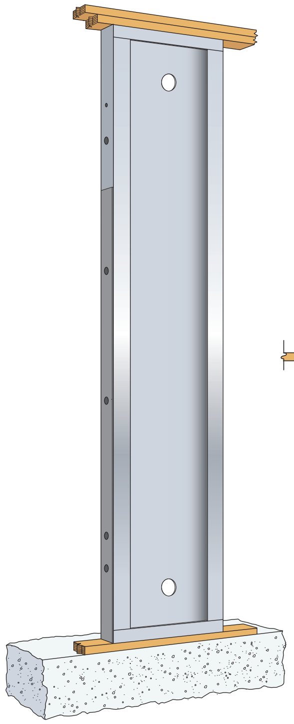
Notes

1) The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on 2500, 3000, and 4000 psi concrete or nut & washer with 5,000 psi minimum non-shrink grout.
2) For installation on a nut & washer (only) table values must be multiplied by 0.80.
3) 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.
4) The applied vertical axial loads are concurrent with the allowable shear load. For Panels the axial load must be applied within the middle 1/3 of the Panel width or be uniformly distributed across the entire Panel width. For Brace Frame the axial load is acting and along the centerline of the post.
5) Allowable Shear, Drift @ V and Uplift @ V values may be linearly interpolated for intermediate height or axial loads.
6) The uplift values listed assume no resisting axial load. When axial loads occur concurrently with lateral loads calculate anchor tension with the “Equation for Tension Uplift with Added Axial Load” presented on page 40 of this catalog. For Brace Frames the anchor tension load is the tabulated uplift minus the applied axial load on the post.

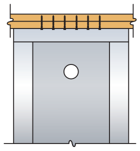




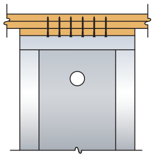
For referenced details see catalog pages 50-53



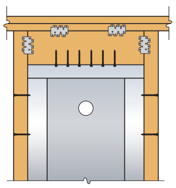
PANEL



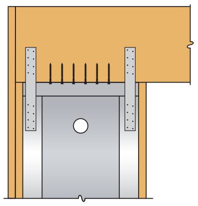
Top Plates
1/4 x 3˝ Screws



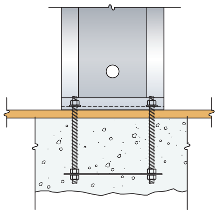
2x Filler
1/4 x 4 1/2˝ Screws



4x Filler
1/4 x 3˝ Screws
*Custom Heights Available



Portal
1/4 x 3˝ Screws. 78 Inch
Panel Heights Include
Welded Straps

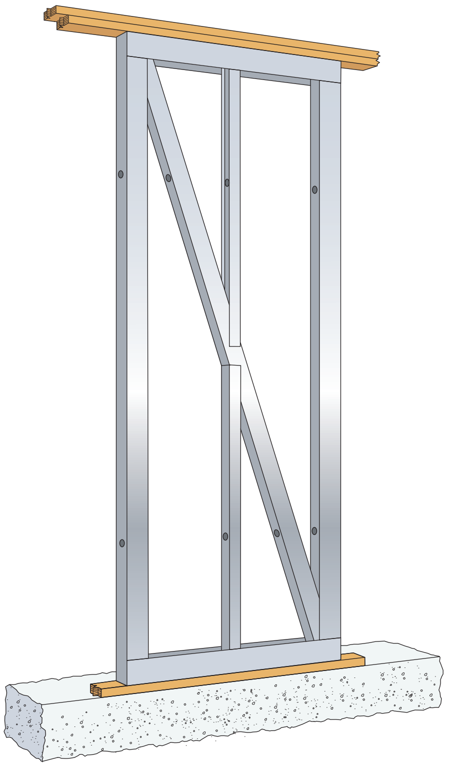


Wood Sill

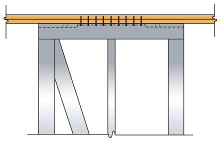
- Panels installed on wood sill plates have more ductility but, for some sizes the allowable shear is less to account for crushing of wood below.
- Allowable values in Table 1.2 have been reduced when necessary to maintain code drift limit.
- Because the Brace Frame base is wider, overturning forces cause less compression on wood sill.

Installation:

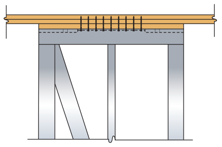
- Set bolts 4 1/4˝ inches above concrete
- Moisture barrier (15# felt, Moist Stop, Etc.) recommended when installing on treated wood.



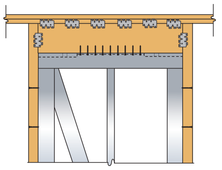
BRACE FRAME



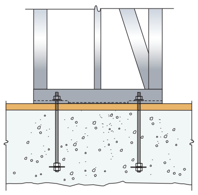
Top Plates
1/4 x 3˝ Screws



2x Filler
1/4 x 4 1/2˝ Screws



4x Filler
1/4 x 3˝ Screws
*Custom Heights Available



Wood Sill

Table 1.2MiTek® Hardy Frame® Installation - On Sill Plate[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-12x78	78	1 1/8" STD	1,000	1,065	0.341	11,500	1,130	0.373	12,220
			3,500	770	0.278	7,220	770	0.278	7,220
			6,500	340	0.167	1,220	340	0.167	1,220
HFX-15x78	78	1 1/8" STD	1,000	1,445	0.341	11,875	1,485	0.353	12,220
			3,500	1,035	0.269	7,220	1,035	0.268	7,220
			6,500	495	0.166	1,220	495	0.166	1,220
HFX-18x78	78	1 1/8" STD	1,000	1,975	0.287	12,220	1,975	0.286	12,220
			3,500	1,380	0.219	7,220	1,380	0.219	7,220
			6,500	670	0.137	1,220	670	0.137	1,220
HFX-21x78	78	1 1/8" STD	1,000	2,460	0.267	12,220	2,460	0.267	12,220
			3,500	1,725	0.203	7,220	1,725	0.203	7,220
			6,500	840	0.126	1,220	840	0.126	1,220
HFX-24x78	78	1 1/8" STD	1,000	2,950	0.220	12,220	2,950	0.220	12,220
			3,500	2,070	0.168	7,220	2,070	0.168	7,220
			6,500	1,010	0.106	1,220	1,010	0.106	1,220
HFX-12x8	92 1/4	1 1/8" STD	1,000	905	0.404	11,565	955	0.438	12,220
			3,500	650	0.327	7,220	650	0.327	7,220
			6,500	285	0.196	1,220	285	0.196	1,220
HFX-15x8	92 1/4	1 1/8" STD	1,000	1,205	0.404	11,725	1,255	0.426	12,220
			3,500	875	0.324	7,220	875	0.323	7,220
			6,500	420	0.199	1,220	420	0.199	1,220
HFX-18x8	92 1/4	1 1/8" STD	1,000	1,670	0.336	12,220	1,670	0.336	12,220
			3,500	1,165	0.257	7,220	1,165	0.257	7,220
			6,500	565	0.161	1,220	565	0.161	1,220
HFX-21x8	92 1/4	1 1/8" STD	1,000	2,080	0.322	12,220	2,080	0.322	12,220
			3,500	1,460	0.244	7,220	1,460	0.244	7,220
			6,500	710	0.151	1,220	710	0.151	1,220
HFX-24x8	92 1/4	1 1/8" STD	1,000	2,495	0.259	12,220	2,495	0.259	12,220
			3,500	1,750	0.198	7,220	1,750	0.198	7,220
			6,500	855	0.125	1,220	855	0.125	1,220
HFX-32x8	92 1/4	7/8" STD	1,000	2,135	0.183	8,040	2,135	0.183	8,040
			3,500	1,470	0.134	5,540	1,470	0.134	5,540
			6,500	675	0.075	2,540	675	0.075	2,540
HFX-44x8	92 1/4	7/8" STD	1,000	2,950	0.159	7,610	3,215	0.156	8295
			3,500	2,245	0.112	5,795	2,245	0.112	5795
			6,500	1,085	0.065	2,795	1,085	0.065	2795
		7/8" HS	1,000	3,215	0.156	8,295	3,215	0.156	8295
			3,500	2,245	0.112	5,795	2,245	0.112	5795
			6,500	1,085	0.065	2,795	1,085	0.065	2795
HFX-12x9	104 1/4	1 1/8" STD	1,000	805	0.456	11,610	845	0.492	12,220
			3,500	575	0.368	7,220	575	0.368	7,220
			6,500	255	0.221	1,220	255	0.221	1,220
HFX-15x9	104 1/4	1 1/8" STD	1,000	1,055	0.456	11,610	1,110	0.488	12,220
			3,500	775	0.370	7,220	775	0.369	7,220
			6,500	370	0.227	1,220	370	0.227	1,220
HFX-18x9	104 1/4	1 1/8" STD	1,000	1,475	0.379	12,220	1,475	0.379	12,220
			3,500	1,035	0.289	7,220	1,035	0.289	7,220
			6,500	500	0.182	1,220	500	0.182	1,220
HFX-21x9	104 1/4	1 1/8" STD	1,000	1,840	0.369	12,220	1,840	0.369	12,220
			3,500	1,290	0.280	7,220	1,290	0.280	7,220
			6,500	630	0.172	1,220	630	0.172	1,220
HFX-24x9	104 1/4	1 1/8" STD	1,000	2,210	0.291	12,220	2,210	0.291	12,220
			3,500	1,550	0.222	7,220	1,550	0.223	7,220
			6,500	755	0.140	1,220	755	0.141	1,220
HFX-32x9	104 1/4	7/8" STD	1,000	1,890	0.222	8,040	1,890	0.222	8,040
			3,500	1,300	0.162	5,540	1,300	0.162	5,540
			6,500	595	0.090	2,540	595	0.090	2,540
HFX-44x9	104 1/4	7/8" STD	1,000	2,745	0.188	8,005	2,845	0.186	8295
			3,500	1,990	0.133	5,795	1,990	0.133	5,795
			6,500	960	0.077	2,795	960	0.077	2,795
		7/8" HS	1,000	2,845	0.186	8,295	2,845	0.186	8,295
			3,500	1,990	0.133	5,795	1,990	0.133	5,795
			6,500	960	0.077	2,795	960	0.077	2,795
HFX-12x10	116 1/4	1 1/8" STD	1,000	725	0.508	11,640	760	0.546	12,220
			3,500	515	0.408	7,220	515	0.408	7,220
			6,500	225	0.246	1,220	225	0.246	1,220
HFX-15x10	116 1/4	1 1/8" STD	1,000	940	0.509	11,510	995	0.551	12,220
			3,500	695	0.417	7,220	695	0.416	7,220
			6,500	335	0.256	1,220	335	0.255	1,220
HFX-18x10	116 1/4	1 1/8" STD	1,000	1,325	0.420	12,220	1,325	0.420	12,220
			3,500	925	0.321	7,220	925	0.321	7,220
			6,500	450	0.202	1,220	450	0.202	1,220
HFX-21x10	116 1/4	1 1/8" STD	1,000	1,650	0.417	12,220	1,650	0.417	12,220
			3,500	1,155	0.315	7,220	1,155	0.315	7,220
			6,500	565	0.194	1,220	565	0.194	1,220

Table 1.2MiTek® Hardy Frame® Installation - On Sill Plate[1,2]

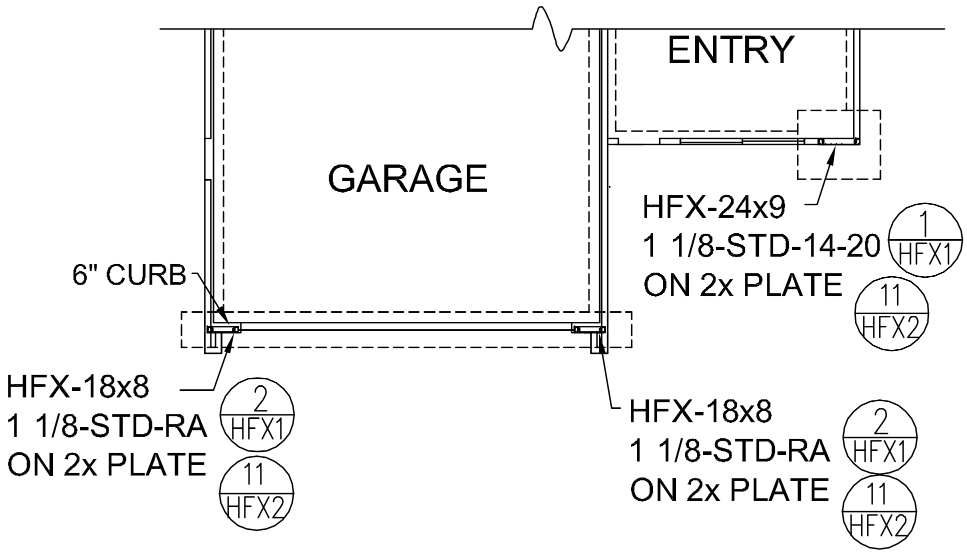
Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade[3]	Applied Axial Load[4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V[5] (lbs)	Drift at V[5] (in)	Uplift at V[5,6] (lbs)	Allowable In-Plane Shear V[5] (lbs)	Drift at V[5] (in)	Uplift at V[5,6] (lbs)
HFX-24x10	116 1/4	1 1/8" STD	1,000	1,980	0.323	12,220	1,980	0.323	12,220
			3,500	1,390	0.247	7,220	1,390	0.247	7,220
			6,500	680	0.156	1,220	680	0.156	1,220
HFX-32x10	116 1/4	7/8" STD	1,000	1,695	0.265	8,040	1,695	0.265	8,040
			3,500	1,170	0.193	5,540	1,170	0.192	5,540
			6,500	535	0.106	2,540	535	0.106	2,540
HFX-44x10	116 1/4	7/8" STD	1,000	2,550	0.220	8,295	2,550	0.220	8,295
			3,500	1,785	0.157	5,795	1,785	0.157	5,795
			6,500	860	0.090	2,795	860	0.090	2,795
HFX-15x11	128 1/4	1 1/8" STD	1,000	845	0.561	11,430	905	0.614	12,220
			3,500	630	0.464	7,220	630	0.464	7,220
			6,500	300	0.284	1,220	300	0.284	1,220
HFX-18x11	128 1/4	1 1/8" STD	1,000	1,200	0.462	12,220	1,200	0.463	12,220
			3,500	840	0.353	7,220	840	0.354	7,220
			6,500	405	0.222	1,220	405	0.223	1,220
HFX-21x11	128 1/4	1 1/8" STD	1,000	1,500	0.465	12,220	1,500	0.465	12,220
			3,500	1,050	0.352	7,220	1,050	0.352	7,220
			6,500	510	0.216	1,220	510	0.216	1,220
HFX-24x11	128 1/4	1 1/8" STD	1,000	1,795	0.355	12,220	1,795	0.354	12,220
			3,500	1,260	0.272	7,220	1,260	0.271	7,220
			6,500	615	0.172	1,220	615	0.172	1,220
HFX-32x11	128 1/4	7/8"STD	1,000	1,535	0.311	8,040	1,535	0.311	8,040
			3,500	1,060	0.226	5,540	1,060	0.226	5,540
			6,500	485	0.123	2,540	485	0.123	2,540
HFX-44x11	128 1/4	7/8" STD	1,000	2,315	0.257	8,295	2,315	0.257	8,295
			3,500	1,615	0.184	5,795	1,615	0.183	5,795
			6,500	780	0.104	2,795	780	0.104	2,795
HFX-15x12	140 1/4	1 1/8" STD	1,000	770	0.613	11,345	825	0.678	12,220
			3,500	575	0.513	7,220	575	0.512	7,220
			6,500	275	0.313	1,220	275	0.313	1,220
HFX-18x12	140 1/4	1 1/8" STD	1,000	1,095	0.503	12,220	1,095	0.503	12,220
			3,500	770	0.385	7,220	770	0.385	7,220
			6,500	370	0.243	1,220	370	0.243	1,220
HFX-21x12	140 1/4	1 1/8" STD	1,000	1,370	0.532	12,220	1,370	0.532	12,220
			3,500	960	0.401	7,220	960	0.401	7,220
			6,500	465	0.244	1,220	465	0.244	1,220
HFX-24x12	140 1/4	1 1/8" STD	1,000	1,640	0.386	12,220	1,640	0.387	12,220
			3,500	1,150	0.296	7,220	1,150	0.296	7,220
			6,500	565	0.187	1,220	565	0.187	1,220
HFX-32x12	140 1/4	7/8" STD	1,000	1,405	0.362	8,040	1,405	0.362	8,040
			3,500	970	0.262	5,540	970	0.262	5,540
			6,500	445	0.141	2,540	445	0.141	2,540
HFX-44x12	140 1/4	7/8" STD	1,000	2,115	0.296	8,295	2,115	0.296	8,295
			3,500	1,480	0.211	5,795	1,480	0.211	5,795
			6,500	715	0.119	2,795	715	0.119	2,795
HFX-15x13	152 1/4	1 1/8" STD	1,000	705	0.666	11,265	760	0.743	12,220
			3,500	530	0.561	7,220	530	0.561	7,220
			6,500	255	0.342	1,220	255	0.342	1,220
HFX-18x13	152 1/4	1 1/8" STD	1,000	1,010	0.543	12,220	1,010	0.544	12,220
			3,500	705	0.416	7,220	705	0.416	7,220
			6,500	345	0.262	1,220	345	0.263	1,220
HFX-21x13	152 1/4	1 1/8" STD	1,000	1,260	0.582	12,220	1,260	0.582	12,220
			3,500	885	0.439	7,220	885	0.439	7,220
			6,500	430	0.266	1,220	430	0.266	1,220
HFX-24x13	152 1/4	1 1/8" STD	1,000	1,510	0.419	12,220	1,510	0.418	12,220
			3,500	1,060	0.321	7,220	1,060	0.320	7,220
			6,500	520	0.203	1,220	520	0.203	1,220
HFX-32x13	152 1/4	7/8" STD	1,000	1,295	0.417	8,040	1,295	0.417	8,040
			3,500	890	0.300	5,540	890	0.300	5,540
			6,500	410	0.161	2,540	410	0.161	2,540
HFX-44x13	152 1/4	7/8" STD	1,000	1,950	0.338	8,295	1,950	0.338	8,295
			3,500	1,360	0.241	5,795	1,360	0.241	5,795
			6,500	655	0.135	2,795	655	0.135	2,795

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

Notes

1) The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on a Wood Sill Plate supported on concrete or masonry foundations.
2) Wood Sill Plate assumes 2x wood sill plate ($Fc_{\perp}$= 625 psi) below the Panel or Brace Frame.
3) 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.
4) The additional vertical axial loads are concurrent with the allowable shear load. For Panels the axial load must be applied within the middle 1/3 of the Panel width or be uniformly distributed across the entire Panel width. For Brace Frames the axial load is acting along the centerline of the post.
5) Allowable Shear, Drift @ V and Uplift @ V values may be linearly interpolated for intermediate height or axial loads.
6) The Uplift values listed assume no resisting axial load. To determine the anchor tension load in Panels at design shear values and including the effect of axial loads, the tension load equals uplift minus P/2, where P is the axial load on the Panel. For Brace Frames the anchor tension load equals uplift minus P, where P is the axial load on the Post.

On 2x Sill Plate Table 1.2



FOUNDATION PLAN

For referenced details see catalog pages 50-53

UNREINFORCED ANCHORAGE NOMENCLATURE

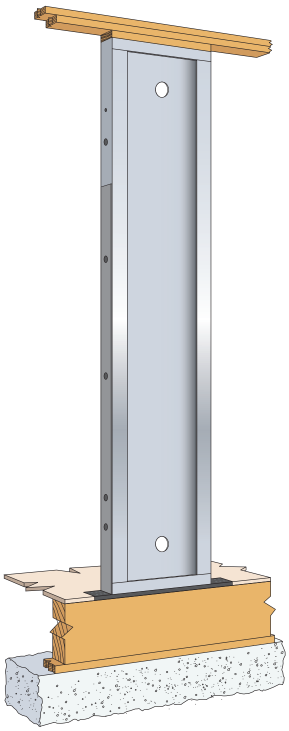
1 1/8-STD-14-20
- **20**: $C_{a\ 1,2}$
- **14**: I_e
- **STD**: ROD GRADE
- **1 1/8**: ROD DIAMETER

REINFORCED ANCHORAGE NOMENCLATURE

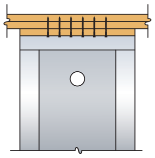
1 1/8-STD-RA
- **RA**: REINFORCED ANCHORAGE
- **STD**: ROD GRADE
- **1 1/8**: ROD DIAMETER

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

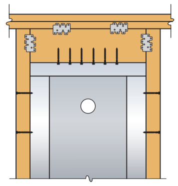
1 1/8-STD-BB-RA
- **RA**: REINFORCED ANCHORAGE
- **BB**: BACK TO BACK INSTALLATION
- **STD**: ROD GRADE
- **1 1/8**: ROD DIAMETER



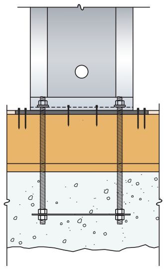
PANEL



2x Filler
1/4 x 4 1/2" Screws

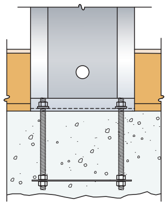


4x Filler
1/4 x 3" Screws
*Custom Heights Available

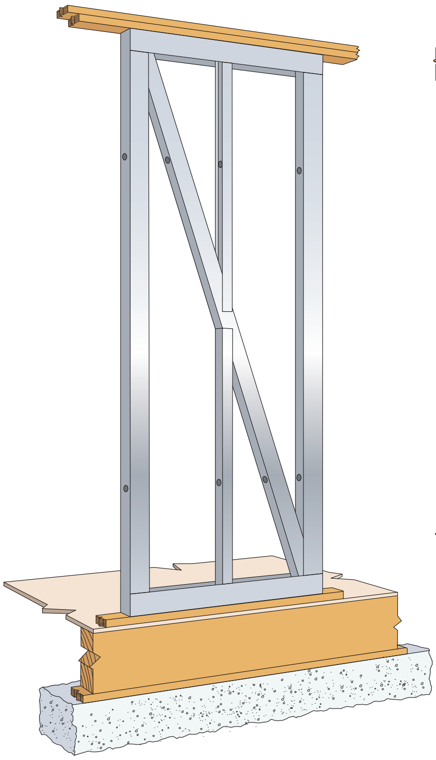


Raised Floor
1/4 x 4 1/2" Screws

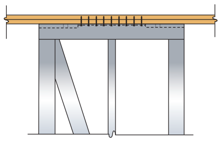
Alternate



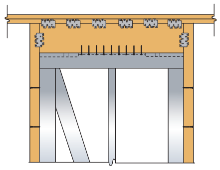
Raised Floor
Head Out



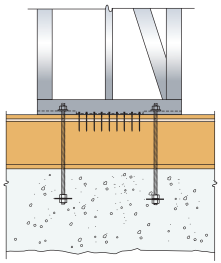
BRACE FRAME



Top Plates
1/4 x 3" Screws

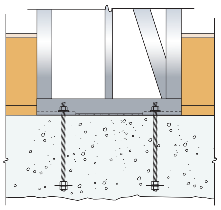


4x Filler
1/4 x 3" Screws
*Custom Heights Available



Raised Floor
1/4 x 4 1/2" Screws

Alternate



Raised Floor
Head Out

- Allowable values in Table 1.2A have been reduced when necessary to maintain code drift limit.
- Table values for Panels installed on a wood floor system assume installation of a MiTek® Hardy Frame® Bearing Plate.
- Installing at raised floor head-out
  - Provides allowable values from Table 1.1A.
  - Provides a direct shear transfer to the foundation.
  - Requires less material by eliminating rim, Bearing Plate and bottom screw
- Because Brace Frames are wider, overturning forces cause less compression on wood below.
- Unlike Panels, Brace Frames install on the bottom plate above floor systems. MiTek® Hardy Frame® Bearing Plates are not necessary.

Table 1.2A MiTek® Hardy Frame® Installation - On Raised Floors[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0: Allowable In-Plane Shear V [5] (lbs)	Seismic: Drift at V [5] (in)	Seismic: Uplift at V [5,6] (lbs)	Wind: Allowable In-Plane Shear V [5] (lbs)	Wind: Drift at V [5] (in)	Wind: Uplift at V [5,6] (lbs)
HFX-12x78	78	1 1/8" STD	1,000	1,380	0.341	12,165	1,755	0.433	15,585
			3,500	1,350		10,625	1,685		13,720
			6,500	1,310		8,775	1,400	0.363	9,610
HFX-15x78	78	1 1/8" STD	1,000	1,780	0.341	12,545	2,245	0.433	15,945
			3,500	1,750		10,965	2,175		14,065
			6,500	1,715		9,070	1,790	0.354	9,610
HFX-18x78	78	1 1/8" STD	1,000	2,875	0.341	15,935	3,430	0.433	19,100
			3,500	2,780		14,055	3,050	0.386	15,610
			6,500	2,285	0.279	9,610	2,285	0.278	9,610
HFX-21x78	78	1 1/8" STD	1,000	3,635	0.341	16,520	4,355	0.433	19,915
			3,500	3,525		14,690	3,720	0.366	15,610
			6,500	2,775	0.265	9,610	2,775	0.265	9,610
HFX-24x78	78	1 1/8" STD	1,000	3,830	0.236	14,700	5,105	0.343	19,770
			3,500		0.243	13,395	4,385	0.292	15,610
			6,500	3,270	0.210	9,610	3,270	0.210	9,610
		1 1/8"HS	1,000	5,070	0.341	19,620	5,315	0.363	20,610
			3,500	4,385	0.293	15,610	4,385	0.293	15,610
			6,500	3,270	0.211	9,610	3,270	0.211	9,610
HFX-12x8	92 1/4	1 1/8" STD	1,000	1,180	0.404	12,305	1,490	0.512	15,690
			3,500	1,155		10,760	1,435		13,820
			6,500	1,120		8,910	1,185	0.426	9,610
HFX-15x8	92 1/4	1 1/8" STD	1,000	1,475	0.404	12,260	1,870	0.512	15,690
			3,500	1,450		10,685	1,810		13,815
			6,500	1,420		8,795	1,510	0.428	9,610
HFX-18x8	92 1/4	1 1/8" STD	1,000	2,450	0.404	16,055	2,920	0.512	19,230
			3,500	2,370		14,170	2,580	0.453	15,610
			6,500	1,930	0.326	9,610	1,930	0.326	9,610
HFX-21x8	92 1/4	1 1/8" STD	1,000	3,025	0.404	16,245	3,625	0.512	19,585
			3,500	2,930		14,425	3,145	0.442	15,610
			6,500	2,350	0.320	9,610	2,350	0.320	9,610
HFX-24x8	92 1/4	1 1/8" STD	1,000	3,420	0.292	15,555	4,495	0.425	20,610
			3,500		0.307	14,250	3,710	0.343	15,610
			6,500	2,765	0.246	9,610	2,765	0.247	9,610
		1 1/8" HS	1,000	4,315	0.404	19,770	4,495	0.426	20,610
			3,500	3,710	0.344	15,610	3,710	0.344	15,610
			6,500	2,765	0.247	9,610	2,765	0.248	9,610
HFX-32x8	92 1/4	7/8" STD	1,000	2,135	0.310	8,040	2,135	0.310	8,040
			3,500	1,470	0.229	5,540	1,470	0.229	5,540
			6,500	675	0.139	2,540	675	0.139	2,540
HFX-44x8	92 1/4	7/8" STD	1,000	2,950	0.269	7,610	3,215	0.264	8,295
			3,500	2,245	0.188	5,795	2,245	0.188	5,795
			6,500	1,085	0.118	2,795	1,085	0.118	2,795
		7/8" HS	1,000	3,215	0.263	8,295	3,215	0.263	8,295
			3,500	2,245	0.188	5,795	2,245	0.188	5,795
			6,500	1,085	0.118	2,795	1,085	0.118	2,795
HFX-12x9	104 1/4	1 1/8" STD	1,000	1,050	0.456	12,395	1,325	0.579	15,770
			3,500	1,030		10,850	1,275		13,900
			6,500	1,000		8,995	1,050	0.478	9,610
HFX-15x9	104 1/4	1 1/8" STD	1,000	1,285	0.456	12,050	1,635	0.579	15,500
			3,500	1,260		10,480	1,585		13,635
			6,500	1,235		8,595	1,340	0.491	9,610
HFX-18x9	104 1/4	1 1/8" STD	1,000	2,175	0.456	16,100	2,590	0.579	19,285
			3,500	2,100		14,215	2,285	0.510	15,610
			6,500	1,710	0.367	9,610	1,710	0.367	9,610
HFX-21x9	104 1/4	1 1/8" STD	1,000	2,640	0.456	16,040	3,170	0.579	19,340
			3,500	2,565		14,230	2,785	0.508	15,610
			6,500	2,080	0.367	9,610	2,080	0.367	9,610
HFX-24x9	104 1/4	1 1/8" STD	1,000	3,140	0.346	16,160	3,980	0.477	20,610
			3,500		0.362	14,850	3,285	0.385	15,610
			6,500	2,450	0.277	9,610	2,450	0.277	9,610
		1 1/8" HS	1,000	3,835	0.456	19,855	3,980	0.478	20,610
			3,500	3,285	0.386	15,610	3,285	0.386	15,610
			6,500	2,450	0.278	9,610	2,450	0.278	9,610
HFX-32x9	104 1/4	7/8" STD	1,000	1,890	0.365	8,040	1,890	0.365	8,040
			3,500	1,300	0.269	5,540	1,300	0.269	5,540
			6,500	595	0.162	2,540	595	0.162	2,540
HFX-44x9	104 1/4	7/8" STD	1,000	2,745	0.312	8,005	2,845	0.308	8,295
			3,500	1,990	0.219	5,795	1,990	0.220	5,795
			6,500	960	0.136	2,795	960	0.136	2,795
		7/8"HS	1,000	2,845	0.308	8,295	2,845	0.308	8,295
			3,500	1,990	0.220	5,795	1,990	0.220	5,795
			6,500	960	0.136	2,795	960	0.136	2,795
HFX-12x10	116 1/4	1 1/8" STD	1,000	950	0.509	12,475	1,195	0.646	15,835
			3,500	925		10,925	1,150		13,965
			6,500	900		9,070	940	0.530	9,610

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-15x10	116 1/4	1 1/8" STD	1,000	1,135	0.509	11,865	1,445	0.646	15,280
			3,500	1,115		10,295	1,405		13,470
			6,500	1,090		8,415	1,200	0.556	9,610
HFX-18x10	116 1/4	1 1/8" STD	1,000	1,960	0.509	16,190	2,335	0.646	19,380
			3,500	1,895		14,300	2,050	0.565	15,610
			6,500	1,530	0.407	9,610	1,530	0.407	9,610
HFX-21x10	116 1/4	1 1/8" STD	1,000	2,345	0.509	15,860	2,810	0.646	19,125
			3,500	2,275		14,050	2,495	0.574	15,610
			6,500	1,865	0.416	9,610	1,865	0.416	9,610
HFX-24x10	116 1/4	1 1/8" STD	1,000	2,900	0.400	16,655	3,565	0.529	20,610
			3,500		0.418	15,350	2,945	0.427	15,610
			6,500	2,195	0.307	9,610	2,195	0.307	9,610
		1 1/8" HS	1,000	3,450	0.509	19,910	3,565	0.531	20,610
			3,500	2,945	0.429	15,610	2,945	0.429	15,610
			6,500	2,195	0.309	9,610	2,195	0.308	9,610
HFX-32x10	116 1/4	7/8" STD	1,000	1,695	0.425	8,040	1,695	0.425	8,040
			3,500	1,170	0.312	5,540	1,170	0.312	5,540
			6,500	535	0.186	2,540	535	0.186	2,540
HFX-44x10	116 1/4	7/8" STD	1,000	2,550	0.356	8,295	2,550	0.356	8,295
			3,500	1,785	0.254	5,795	1,785	0.254	5,795
			6,500	860	0.156	2,795	860	0.156	2,795
HFX-15x11	128 1/4	1 1/8" STD	1,000	1,015	0.561	11,720	1,295	0.712	15,065
			3,500	1,000		10,155	1,260		13,320
			6,500	975		8,275	1,090	0.621	9,610
HFX-18x11	128 1/4	1 1/8" STD	1,000	1,780	0.561	16,240	2,115	0.712	19,375
			3,500	1,720		14,345	1,855	0.623	15,610
			6,500	1,390	0.447	9,610	1,390	0.449	9,610
HFX-21x11	128 1/4	1 1/8" STD	1,000	2,105	0.561	15,695	2,520	0.712	18,925
			3,500	2,040		13,890	2,260	0.642	15,610
			6,500	1,690	0.465	9,610	1,690	0.465	9,610
HFX-24x11	128 1/4	1 1/8" STD	1,000	2,695	0.455	17,090	3,235	0.580	20,610
			3,500	2,670	0.469	15,610	2,670	0.468	15,610
			6,500	1,990	0.337	9,610	1,990	0.337	9,610
		1 1/8" HS	1,000	3,150	0.561	20,070	3,235	0.581	20,610
			3,500	2,670	0.468	15,610	2,670	0.469	15,610
			6,500	1,990	0.337	9,610	1,990	0.337	9,610
HFX-32x11	128 1/4	7/8" STD	1,000	1,535	0.488	8,040	1,535	0.488	8,040
			3,500	1,060	0.358	5,540	1,060	0.358	5,540
			6,500	485	0.211	2,540	485	0.212	2,540
HFX-44x11	128 1/4	7/8" STD	1,000	2,315	0.407	8,295	2,315	0.406	8,295
			3,500	1,615	0.290	5,795	1,615	0.289	5,795
			6,500	780	0.177	2,795	780	0.177	2,795
HFX-15x12	140 1/4	1 1/8" STD	1,000	915	0.614	11,565	1,170	0.779	14,870
			3,500	900		10,005	1,140		13,185
			6,500	880		8,130	995	0.687	9,610
HFX-18x12	140 1/4	1 1/8" STD	1,000	1,635	0.614	16,295	1,945	0.779	19,505
			3,500	1,580		14,400	1,695	0.676	15,610
			6,500	1,270	0.487	9,610	1,270	0.487	9,610
HFX-21x12	140 1/4	1 1/8" STD	1,000	1,830	0.614	14,900	2,215	0.779	18,155
			3,500	1,790		13,270	2,070	0.738	15,610
			6,500	1,545	0.536	9,610	1,545	0.536	9,610
HFX-24x12	140 1/4	1 1/8" STD	1,000	2,515	0.509	17,450	2,955	0.633	20,610
			3,500	2,440	0.510	15,610	2,440	0.511	15,610
			6,500	1,820	0.367	9,610	1,820	0.367	9,610
		1 1/8" HS	1,000	2,890	0.614	20,130	2,955	0.633	20,610
			3,500	2,440	0.510	15,610	2,440	0.511	15,610
			6,500	1,820	0.367	9,610	1,820	0.367	9,610
HFX-32x12	140 1/4	7/8" STD	1,000	1,405	0.556	8,040	1,405	0.556	8,040
			3,500	970	0.406	5,540	970	0.407	5,540
			6,500	445	0.238	2,540	445	0.238	2,540
HFX-44x12	140 1/4	7/8" STD	1,000	2,115	0.459	8,295	2,115	0.459	8,295
			3,500	1,480	0.327	5,795	1,480	0.327	5,795
			6,500	715	0.199	2,795	715	0.199	2,795
HFX-15x13	152 1/4	1 1/8" STD	1,000	835	0.666	11,425	1,065	0.846	14,695
			3,500	820		9,865	1,045		13,060
			6,500	805		7,995	915	0.754	9,610
HFX-18x13	152 1/4	1 1/8" STD	1,000	1,510	0.666	16,360	1,800	0.846	19,580
			3,500	1,460		14,465	1,565	0.730	15,610
			6,500	1,170	0.525	9,610	1,170	0.525	9,610
HFX-21x13	152 1/4	1 1/8" STD	1,000	1,670	0.666	14,765	2,025	0.846	18,030
			3,500	1,640		13,170	1,905	0.808	15,610
			6,500	1,425	0.586	9,610	1,425	0.586	9,610
		1 1/8" HS	1,000	1,730	0.666	15,305	2,080	0.846	18,510
			3,500	1,680		13,555	1,905	0.783	15,610
			6,500	1,425	0.567	9,610	1,425	0.567	9,610

Table 1.2A MiTek® Hardy Frame® Installation - On Raised Floors[1,2]

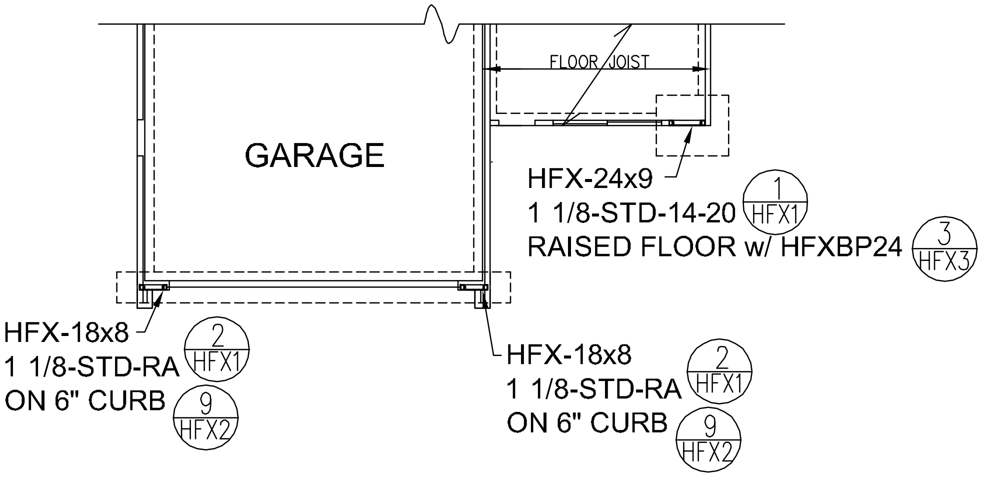
Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-24x13	152 1/4	1 1/8" STD	1,000	2,360	0.566	17,785	2,725	0.684	20,610
			3,500	2,250	0.553	15,610	2,250	0.552	15,610
			6,500	1,675	0.397	9,610	1,675	0.397	9,610
		1 1/8" HS	1,000	2,670	0.666	20,180	2,725	0.684	20,610
			3,500	2,250	0.552	15,610	2,250	0.552	15,610
			6,500	1,675	0.397	9,610	1,675	0.397	9,610
HFX-32x13	152 1/4	7/8" STD	1,000	1,295	0.626	8,040	1,295	0.626	8,040
			3,500	890	0.457	5,540	890	0.457	5,540
			6,500	410	0.266	2,540	410	0.266	2,540
HFX-44x13	152 1/4	7/8" STD	1,000	1,950	0.516	8,295	1,950	0.516	8,295
			3,500	1,360	0.367	5,795	1,360	0.367	5,795
			6,500	655	0.221	2,795	655	0.221	2,795

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

Notes

1) The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on Raised Floor Systems supported on concrete or masonry foundations.
2) Raised Floor System for Panels assumes a 2x wood sill plate, EWP rim board (Fc ⊥= 680 psi, 12 inch depth)with a MiTek® Hardy Frame® Bearing Plate installed beow. For EWP rim boards up to 18 inches deep the allowable shear value must be multiplied by 0.96 for 12 inch Panel widths and by 0.98 for 18 and 24 inch widths. For all Panel widths the corresponding drift does not change. Raised Floor System for Brace Frames assume a 2x wood sill plate, EWP rim board (Fc⊥ = 680 psi,12 inch deep), floor sheathing and a 2x wood bottom plate (Fc⊥ =625 psi) below. For EWP rim boards up to 18 inches deep the allowable shear value does not change and the corresponding drift must be multiplied by 1.03.
3) 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.
4) The applied vertical axial loads are concurrent with the allowable shear load. For Panels the axial load must be applied within the middle 1/3 of the Panel width or be uniformly distributed across the entire Panel width. For Brace Frame the axial load is acting along the centerline of the post.
5) Allowable Shear, Drift @ V and Uplift @ V values may be linearly interpolated for intermediate height or axial loads.
6) The Uplift values listed assume no resisting axial load. To determine the anchor tension load in Panels at design shear values and including the effect of axial loads, the tension load equals uplift minus P/2, where P is the axial load on the Panel. For Brace Frames the anchor tension load equals uplift minus P where P is the axial load on the Post.

On Raised Floors Table 1.2A



FOUNDATION PLAN

For referenced details see catalog pages 50-55

UNREINFORCED ANCHORAGE NOMENCLATURE

1 1/8-STD-14-20

- $C_{a\,1,2}$
- I_e
- ROD GRADE
- ROD DIAMETER

REINFORCED ANCHORAGE NOMENCLATURE

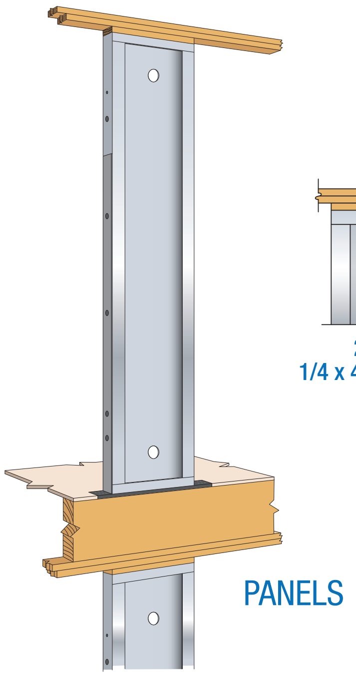
1 1/8-STD-RA

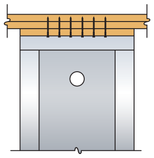
- REINFORCED ANCHORAGE
- ROD GRADE
- ROD DIAMETER

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

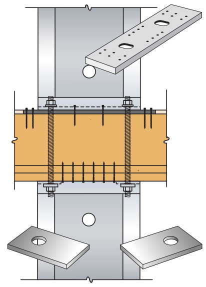
1 1/8-STD-BB-RA

- REINFORCED ANCHORAGE
- BACK TO BACK INSTALLATION
- ROD GRADE
- ROD DIAMETER

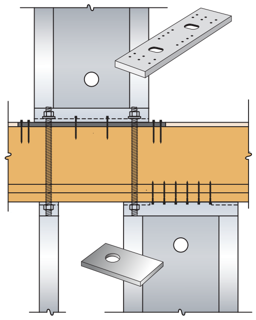




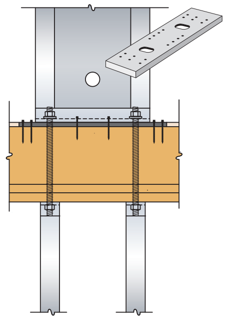
2x Filler
1/4 x 4 1/2" Screws



Straight Stack Installation
With Stacking Panel (STK) Below
(Check Cumulative Forces
See Example 2 page 41)



Stagger-Stack
Installation
With Stacking Panel
(STK) Below



Two Posts Below

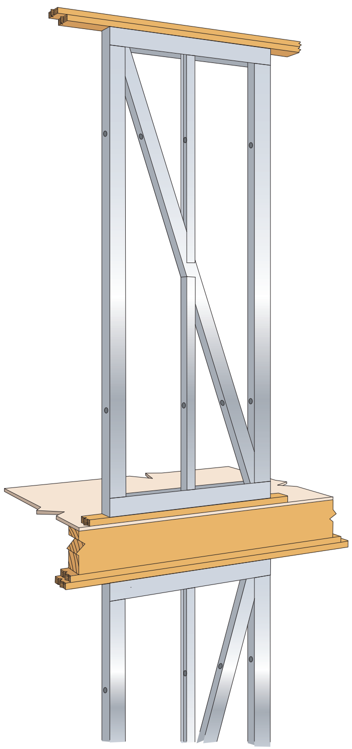
PANELS

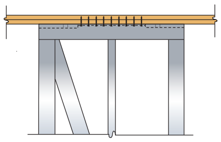
MODEL NUMBER
HFX-18 x 9 - STK

- **STACKING** (STK)
- **NOMINAL HEIGHT** (9)
- **ACTUAL WIDTH** (18)
- **PRODUCT**

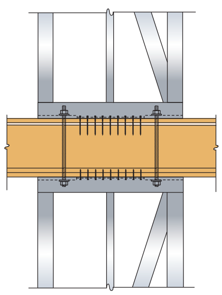
MiTek® Hardy Frame® HFSW Stacking Washers are required in the top of Panels when connecting to a hold down bolt from above. MiTek® Hardy Frame® STK Panels include HFSW Washers pre-welded in the top channel.

- Allowable values in Table 1.3A have been adjusted to maintain code drift limit while including the effects of crushing in wood members below.
- For "straight stack" installations, cumulative forces must be considered by the building design professional.
- For discontinuous systems, amplification factors must be considered by the Building Design Professional.
- Table values for Panels installed on a wood floor system assume installation of a MiTek® Hardy Frame® Bearing Plate.
- For installations on beams, size plate washers on underside of wood beam to prevent crushing and include deflection from the overturning couple in the drift procedure.
- Because Brace Frames are wider, overturning forces cause less compression on wood below and shrinkage has less effect on horizontal drift.
- Unlike Panels, Brace Frames install on the bottom plate above floor systems. MiTek® Hardy Frame® Bearing Plates are not necessary.

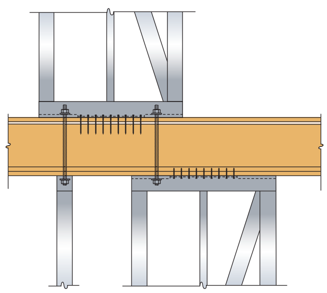




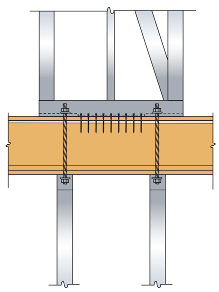
Top Plate



Straight Stack Installation
(Check Cumulative Forces)



Stagger-Stack
Installation



Two Posts Below

BRACE FRAMES

Table 1.3A MiTek® Hardy Frame® Installation - On Upper Floor Systems[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-12x78	78	1 1/8" STD	1,000	1,245	0.341	10,930	1,590	0.433	14,075
			3,500	1,210		9,340	1,550		12,485
			6,500	1,165		7,425	1,400	0.405	9,610
HFX-15x78	78	1 1/8" STD	1,000	1,640	0.341	11,485	2,090	0.433	14,800
			3,500	1,600		9,860	2,040		13,085
			6,500	1,555		7,905	1,790	0.388	9,610
HFX-18x78	78	1 1/8" STD	1,000	2,665	0.341	14,715	3,225	0.433	17,920
			3,500	2,600		13,035	3,050	0.421	15,610
			6,500	2,285	0.307	9,610	2,285	0.306	9,610
HFX-21x78	78	1 1/8" STD	1,000	3,415	0.341	15,500	4,115	0.433	18,770
			3,500	3,305		13,660	3,720	0.396	15,610
			6,500	2,775	0.290	9,610	2,775	0.289	9,610
HFX-24x78	78	1 1/8" STD	1,000	3,830	0.257	14,700	5,105	0.371	19,770
			3,500		0.265	13,395	4,385	0.318	15,610
			6,500	3,270	0.231	9,610	3,270	0.231	9,610
		1 1/8" HS	1,000	4,765	0.341	18,420	5,315	0.392	20,610
			3,500	4,385	0.319	15,610	4,385	0.319	15,610
			6,500	3,270	0.232	9,610	3,270	0.232	9,610
HFX-12x8	92 1/4	1 1/8" STD	1,000	1,065	0.404	11,060	1,355	0.512	14,205
			3,500	1,035		9,460	1,325		12,610
			6,500	995		7,545	1,185	0.475	9,610
HFX-15x8	92 1/4	1 1/8" STD	1,000	1,355	0.404	11,245	1,730	0.512	14,490
			3,500	1,325		9,620	1,700		12,865
			6,500	1,290		7,680	1,510	0.468	9,610
HFX-18x8	92 1/4	1 1/8" STD	1,000	2,275	0.404	14,875	2,740	0.512	18,030
			3,500	2,215		13,145	2,580	0.493	15,610
			6,500	1,930	0.360	9,610	1,930	0.360	9,610
HFX-21x8	92 1/4	1 1/8" STD	1,000	2,845	0.404	15,260	3,425	0.512	18,475
			3,500	2,760		13,480	3,145	0.477	15,610
			6,500	2,350	0.348	9,610	2,350	0.348	9,610
HFX-24x8	92 1/4	1 1/8" STD	1,000	3,420	0.319	15,555	4,495	0.460	20,610
			3,500		0.335	14,250	3,710	0.373	15,610
			6,500	2,765	0.271	9,610	2,765	0.272	9,610
		1 1/8" HS	1,000	4,060	0.404	18,555	4,495	0.461	20,610
			3,500	3,710	0.374	15,610	3,710	0.374	15,610
			6,500	2,765	0.272	9,610	2,765	0.272	9,610
HFX-32x8	92 1/4	7/8" STD	1,000	2,135	0.321	8,040	2,135	0.321	8,040
			3,500	1,470	0.238	5,540	1,470	0.237	5,540
			6,500	675	0.145	2,540	675	0.145	2,540
HFX-44x8	92 1/4	7/8" STD	1,000	2,950	0.277	7,610	3,215	0.272	8,295
			3,500	2,245	0.195	5,795	2,245	0.195	5,795
			6,500	1,085	0.122	2,795	1,085	0.122	2,795
		7/8" HS	1,000	3,215	0.272	8,295	3,215	0.272	8,295
			3,500	2,245	0.195	5,795	2,245	0.195	5,795
			6,500	1,085	0.122	2,795	1,085	0.122	2,795
HFX-12x9	104 1/4	1 1/8" STD	1,000	950	0.456	11,135	1,205	0.579	14,305
			3,500	920		9,535	1,180		12,705
			6,500	885		7,615	1,050	0.533	9,610
HFX-15x9	104 1/4	1 1/8" STD	1,000	1,185	0.456	11,065	1,510	0.579	14,265
			3,500	1,155		9,450	1,480		12,650
			6,500	1,125		7,510	1,340	0.537	9,610
HFX-18x9	104 1/4	1 1/8" STD	1,000	2,020	0.456	14,930	2,430	0.579	18,080
			3,500	1,965		13,185	2,285	0.556	15,610
			6,500	1,710	0.405	9,610	1,710	0.405	9,610
HFX-21x9	104 1/4	1 1/8" STD	1,000	2,480	0.456	15,015	2,995	0.579	18,260
			3,500	2,415		13,305	2,785	0.547	15,610
			6,500	2,080	0.399	9,610	2,080	0.399	9,610
HFX-24x9	104 1/4	1 1/8" STD	1,000	3,140	0.378	16,160	3,980	0.517	20,610
			3,500		0.395	14,850	3,285	0.420	15,610
			6,500	2,450	0.305	9,610	2,450	0.305	9,610
		1 1/8" HS	1,000	3,605	0.456	18,625	3,980	0.518	20,610
			3,500	3,285	0.421	15,610	3,285	0.421	15,610
			6,500	2,450	0.306	9,610	2,450	0.306	9,610
HFX-32x9	104 1/4	7/8" STD	1,000	1,890	0.378	8,040	1,890	0.378	8,040
			3,500	1,300	0.279	5,540	1,300	0.279	5,540
			6,500	595	0.168	2,540	595	0.168	2,540
HFX-44x9	104 1/4	7/8" STD	1,000	2,845	0.321	8,005	2,845	0.318	8,295
			3,500	1,990	0.227	5,795	1,990	0.227	5,795
			6,500	960	0.141	2,795	960	0.141	2,795
HFX-12x10	116 1/4	1 1/8" STD	1,000	855	0.509	11,195	1,090	0.646	14,390
			3,500	830		9,595	1,065		12,790
			6,500	800		7,675	940	0.592	9,610
HFX-15x10	116 1/4	1 1/8" STD	1,000	1,045	0.509	10,910	1,335	0.646	14,065
			3,500	1,025		9,295	1,310		12,450
			6,500	995		7,360	1,200	0.606	9,610

Table 1.3A MiTek® Hardy Frame® Installation - On Upper Floor Systems[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-18x10	116 1/4	1 1/8" STD	1,000	1,825	0.509	15,040	2,190	0.646	18,165
			3,500	1,770		13,255	2,050	0.616	15,610
			6,500	1,530	0.449	9,610	1,530	0.449	9,610
HFX-21x10	116 1/4	1 1/8" STD	1,000	2,190	0.509	14,795	2,660	0.646	18,065
			3,500	2,145		13,145	2,495	0.618	15,610
			6,500	1,865	0.451	9,610	1,865	0.451	9,610
HFX-24x10	116 1/4	1 1/8" STD	1,000	2,900	0.436	16,655	3,565	0.573	20,610
			3,500		0.456	15,350	2,945	0.465	15,610
			6,500	2,195	0.338	9,610	2,195	0.338	9,610
		1 1/8" HS	1,000	3,240	0.509	18,680	3,565	0.575	20,610
			3,500	2,945	0.467	15,610	2,945	0.467	15,610
			6,500	2,195	0.340	9,610	2,195	0.340	9,610
HFX-32x10	116 1/4	7/8" STD	1,000	1,695	0.439	8,040	1,695	0.439	8,040
			3,500	1,170	0.323	5,540	1,170	0.323	5,540
			6,500	535	0.193	2,540	535	0.193	2,540
HFX-44x10	116 1/4	7/8" STD	1,000	2,550	0.367	8,295	2,550	0.366	8,295
			3,500	1,785	0.262	5,795	1,785	0.262	5,795
			6,500	860	0.162	2,795	860	0.162	2,795
HFX-15x11	128 1/4	1 1/8" STD	1,000	940	0.561	10,785	1,195	0.712	13,885
			3,500	915		9,175	1,175		12,270
			6,500	890		7,240	1,090	0.677	9,610
HFX-18x11	128 1/4	1 1/8" STD	1,000	1,660	0.561	15,100	1,985	0.712	18,160
			3,500	1,610		13,300	1,855	0.680	15,610
			6,500	1,390	0.493	9,610	1,390	0.495	9,610
HFX-21x11	128 1/4	1 1/8" STD	1,000	1,960	0.561	14,600	2,385	0.712	17,885
			3,500	1,925		13,005	2,260	0.690	15,610
			6,500	1,690	0.504	9,610	1,690	0.504	9,610
HFX-24x11	128 1/4	1 1/8" STD	1,000	2,695	0.496	17,090	3,235	0.629	20,610
			3,500	2,670	0.511	15,610	2,670	0.510	15,610
			6,500	1,990	0.372	9,610	1,990	0.371	9,610
		1 1/8" HS	1,000	2,960	0.561	18,815	3,235	0.630	20,610
			3,500	2,670	0.511	15,610	2,670	0.511	15,610
			6,500	1,990	0.371	9,610	1,990	0.372	9,610
HFX-32x11	128 1/4	7/8" STD	1,000	1,535	0.503	8,040	1,535	0.504	8,040
			3,500	1,060	0.370	5,540	1,060	0.370	5,540
			6,500	485	0.219	2,540	485	0.219	2,540
HFX-44x11	128 1/4	7/8" STD	1,000	2,315	0.419	8,295	2,315	0.418	8,295
			3,500	1,615	0.299	5,795	1,615	0.298	5,795
			6,500	780	0.183	2,795	780	0.183	2,795
HFX-15x12	140 1/4	1 1/8" STD	1,000	850	0.614	10,655	1,080	0.779	13,720
			3,500	830	0.613	9,045	1,060		12,110
			6,500	805		7,115	995	0.748	9,610
HFX-18x12	140 1/4	1 1/8" STD	1,000	1,525	0.614	15,165	1,825	0.779	18,275
			3,500	1,480		13,350	1,695	0.738	15,610
			6,500	1,270	0.537	9,610	1,270	0.537	9,610
HFX-21x12	140 1/4	1 1/8" STD	1,000	1,705	0.614	13,845	2,100	0.779	17,195
			3,500	1,675		12,290	2,045		15,390
			6,500	1,545	0.579	9,610	1,545	0.579	9,610
HFX-24x12	140 1/4	1 1/8" STD	1,000	2,515	0.554	17,450	2,955	0.686	20,610
			3,500	2,440	0.556	15,610	2,440	0.557	15,610
			6,500	1,820	0.404	9,610	1,820	0.405	9,610
		1 1/8" HS	1,000	2,715	0.614	18,870	2,955	0.686	20,610
			3,500	2,440	0.557	15,610	2,440	0.557	15,610
			6,500	1,820	0.405	9,610	1,820	0.405	9,610
HFX-32x12	140 1/4	7/8" STD	1,000	1,405	0.572	8,040	1,405	0.573	8,040
			3,500	970	0.419	5,540	970	0.420	5,540
			6,500	445	0.247	2,540	445	0.247	2,540
HFX-44x12	140 1/4	7/8" STD	1,000	2,115	0.472	8,295	2,115	0.472	8,295
			3,500	1,480	0.337	5,795	1,480	0.337	5,795
			6,500	715	0.205	2,795	715	0.205	2,795
HFX-15x13	152 1/4	1 1/8" STD	1,000	775	0.666	10,535	985	0.846	13,565
			3,500	755		8,930	965		11,960
			6,500	735		7,000	915	0.821	9,610
HFX-18x13	152 1/4	1 1/8" STD	1,000	1,410	0.666	15,250	1,690	0.846	18,340
			3,500	1,365		13,400	1,565	0.797	15,610
			6,500	1,170	0.580	9,610	1,170	0.580	9,610
HFX-21x13	152 1/4	1 1/8" STD	1,000	1,555	0.666	13,725	1,925	0.846	17,080
			3,500	1,530		12,175	1,870		15,280
			6,500	1,425	0.633	9,610	1,425	0.633	9,610
HFX-24x13	152 1/4	1 1/8" STD	1,000	2,360	0.616	17,785	2,725	0.742	20,610
			3,500	2,250	0.603	15,610	2,250	0.602	15,610
			6,500	1,675	0.438	9,610	1,675	0.438	9,610
		1 1/8" HS	1,000	2,505	0.666	18,915	2,725	0.742	20,610
			3,500	2,250	0.602	15,610	2,250	0.603	15,610
			6,500	1,675	0.438	9,610	1,675	0.438	9,610

Table 1.3A MiTek® Hardy Frame® Installation - On Upper Floor Systems[1,2]

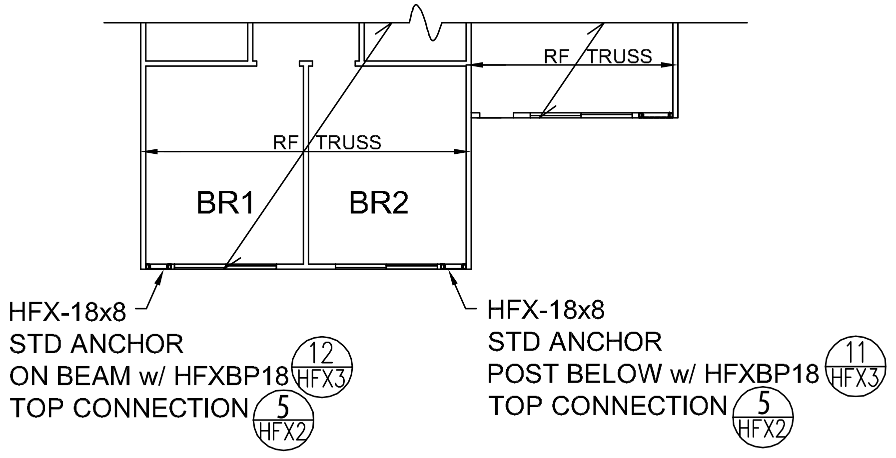
Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX-32x13	152 1/4	7/8" STD	1,000	1,295	0.645	8,040	1,295	0.645	8,040
			3,500	890	0.471	5,540	890	0.471	5,540
			6,500	410	0.275	2,540	410	0.275	2,540
HFX-44x13	152 1/4	7/8" STD	1,000	1,950	0.530	8,295	1,950	0.530	8,295
			3,500	1,360	0.378	5,795	1,360	0.378	5,795
			6,500	655	0.228	2,795	655	0.229	2,795

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

Notes

1) The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on Upper Floor Systems that bear on wood frame walls below.
2) Upper Floor System for Panels assumes double 2x wood sill plates in the wall below, EWP rim board (Fc⊥ = 680 psi, 12 inch depth) with a MiTek® Hardy Frame® Bearing Plate installed below. For EWP rim boards up to 18 inches deep the allowable shear value and the corresponding drift do not change. Upper Floor System for Brace Frames assumes double 2x wood plates in the wall below, EWP rim board (Fc⊥ = 680 psi 12 inch deep), floor sheathing and a 2x wood bottom plate (Fc⊥= 625 psi) below. For EWP rim boards up to 18 inch deep the allowable shear value does not change and the corresponding drift must be multiplied by 1.03.
3) 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.
4) The applied vertical axial loads are concurrent with the allowable shear load. For Panels the axial load must be applied within the middle 1/3 of the Panel width or be uniformly distributed across the entire Panel width. For Brace Frame the axial load is acting along the centerline of the post.
5) Allowable Shear, Drift @ V and Uplift @ V values may be linearly interpolated for intermediate height or axial loads.
6) The Uplift values listed assume no resisting axial load. To determine the anchor tension load in Panels at design shear values and including the effect of axial loads, the tension load equals uplift minus P/2, where P is the axial load on the Panel. For Brace Frames the anchor tension load equals uplift minus P where P is the axial load on the Post.

On Upper Floors Table 1.3A

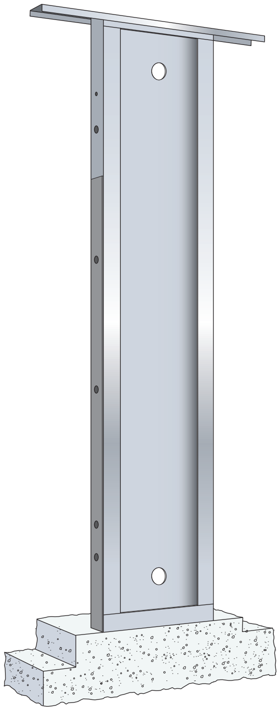


2nd STORY FRAMING PLAN

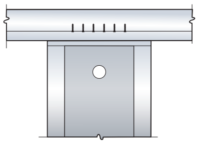
For referenced details see catalog pages 52-55

HFTC15-24 STD
- **ROD GRADE**
- **15 in. THROUGH 24 in. PANEL WIDTHS**
- **MiTek Hardy Frame TENSION CONNECTORS**

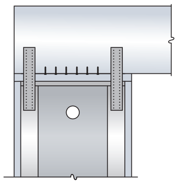
HFTC12 STD
- **ROD GRADE**
- **12 in. PANEL WIDTH**
- **MiTek Hardy Frame TENSION CONNECTORS**



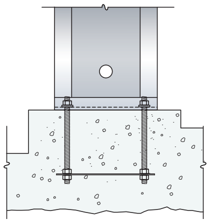
PANEL



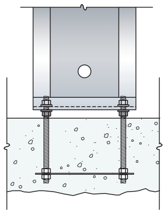
C-FS Channel



C-FS Portal

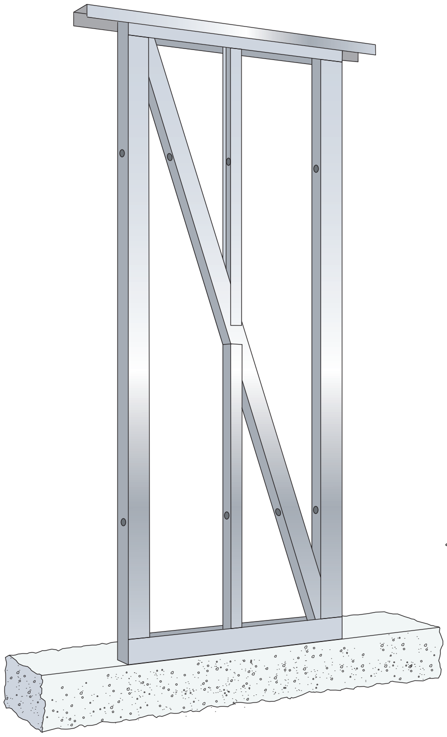


Concrete Bearing

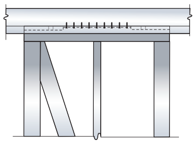


Nuts And Washers (Requires 5,000 psi Non-Shrink Grout)

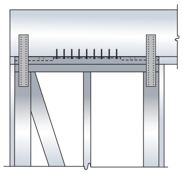
- HFX/S products are manufactured to cold formed steel stud heights. Nominal 8' heights are 96 5/8" net, nominal 9' is 108 5/8", etc.
- Installation can be directly on concrete (moisture barrier recommended), with a C-FS channel below, or a nut and washer for leveling or height adjustment up to ± 1-1/2"
- Top connections are made with 1/4" diameter self tapping screws after installing floor or roof members above.
- Panels and Brace Frames are 3 1/2" net depth.



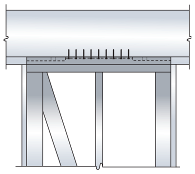
BRACE FRAME



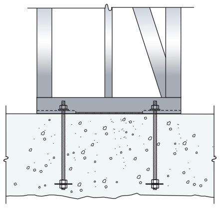
C-FS Channel



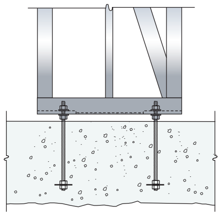
C-FS Portal



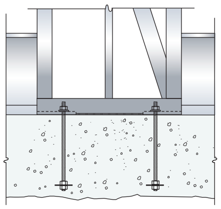
C-FS Portal



Concrete Bearing



Nuts And Washers (Requires 5,000 psi Non-Shrink Grout)



Raised Floor Head Out

Table 2.1A MiTek® Hardy Frame® HFX/S Installation - On 2500 psi Concrete[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade[3]	Applied Axial Load[4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V[5] (lbs)	Drift at V[5] (in)	Uplift at V[5,6] (lbs)	Allowable In-Plane Shear V[5] (lbs)	Drift at V[5] (in)	Uplift at V[5,6] (lbs)
HFX/S-9x8	96 5/8	1 1/8" STD	2,000	770	0.258	15,510	770	0.258	15,510
HFX/S-12x8	96 5/8	1 1/8" STD	1,000	1,410	0.213	19,595	1,410	0.213	19,595
			3,500	1,300	0.197	17,005	1,300	0.197	17,005
			6,500	1,160	0.176	14,320	1,160	0.176	14,320
		1 1/8" HS	1,000	1,410	0.214	19,595	1,410	0.214	19,595
			3,500	1,300	0.198	17,005	1,300	0.198	17,005
			6,500	1,160	0.177	14,320	1,160	0.177	14,320
HFX/S-15x8	96 5/8	1 1/8" STD	1,000	1,955	0.330	21,615	1,955	0.327	21,615
			3,500	1,945	0.327	21,380	1,945	0.325	21,380
			6,500	1,900	0.320	20,560	1,900	0.318	20,560
		1 1/8" HS	1,000	2,305	0.388	31,340	2,305	0.388	31,340
			3,500	2,160	0.364	26,150	2,160	0.364	26,150
			6,500	1,955	0.330	21,625	1,955	0.330	21,625
HFX/S-18x8	96 5/8	1 1/8" STD	1,000	2,625	0.218	21,615	2,625	0.218	21,615
			3,500						
			6,500						
		1 1/8" HS	1,000	3,570	0.298	39,500	3,570	0.299	39,500
			3,500	3,385	0.283	33,700	3,385	0.284	33,700
			6,500	3,135	0.262	28,745	3,135	0.263	28,745
HFX/S-21x8	96 5/8	1 1/8" STD	1,000	3,210	0.272	21,090	3,210	0.272	21,090
			3,500						
			6,500						
		1 1/8" HS	1,000	4,970	0.423	43,265	5,030	0.428	44,825
			3,500	4,875	0.415	41,070	4,875	0.415	41,070
			6,500	4,595	0.391	36,045	4,595	0.391	36,045
HFX/S-24x8	96 5/8	1 1/8" STD	1,000	3,420	0.151	18,010	3,730	0.165	20,005
			3,500						
			6,500						
		1 1/8" HS	1,000	5,910	0.263	38,175	6,450	0.288	45,290
			3,500				6,360	0.284	43,925
			6,500				6,210	0.277	41,850
HFX/S-32x8	96 5/8	7/8" STD	1,000	2,265	0.133	8,540	2,825	0.165	10,630
			3,500	2,160	0.126	8,130	2,160	0.126	8,130
			6,500	1,360	0.080	5,130	1,360	0.080	5,130
		7/8" HS	1,000	3,000	0.176	11,295	3,000	0.176	11,295
			3,500	2,335	0.137	8,795	2,335	0.137	8,795
			6,500	1,540	0.090	5,795	1,540	0.090	5,795
HFX/S-44x8	96 5/8	7/8" STD	1,000	2,815	0.090	7,270	3,660	0.117	9,440
			3,500				3,240	0.103	8,365
			6,500	2,080	0.066	5,365	2,080	0.066	5,365
		7/8" HS	1,000	4,510	0.144	11,645	4,510	0.144	11,645
			3,500	3,545	0.113	9,145	3,545	0.113	9,145
			6,500	2,380	0.076	6,145	2,380	0.076	6,145
HFX/S-12x9	108 5/8	1 1/8" STD	1,000	1,255	0.238	19,595	1,255	0.238	19,595
			3,500	1,155	0.220	17,005	1,155	0.220	17,005
			6,500	1,035	0.196	14,325	1,035	0.196	14,325
		1 1/8" HS	1,000	1,255	0.240	19,595	1,255	0.240	19,595
			3,500	1,155	0.221	17,005	1,155	0.221	17,005
			6,500	1,035	0.198	14,325	1,035	0.197	14,325
HFX/S-15x9	108 5/8	1 1/8" STD	1,000	1,740	0.381	21,615	1,740	0.379	21,615
			3,500	1,730	0.378	21,380	1,730	0.376	21,380
			6,500	1,690	0.370	20,560	1,690	0.367	20,560
		1 1/8" HS	1,000	2,050	0.449	31,340	2,050	0.449	31,340
			3,500	1,920	0.421	26,150	1,920	0.421	26,150
			6,500	1,740	0.381	21,625	1,740	0.381	21,625
HFX/S-18x9	108 5/8	1 1/8" STD	1,000	2,335	0.246	21,615	2,335	0.246	21,615
			3,500						
			6,500						
		1 1/8" HS	1,000	3,175	0.335	39,500	3,175	0.336	39,500
			3,500	3,015	0.318	33,700	3,015	0.318	33,700
			6,500	2,790	0.295	28,745	2,790	0.295	28,745
HFX/S-21x9	108 5/8	1 1/8" STD	1,000	2,925	0.319	21,545	2,925	0.319	21,545
			3,500	2,915	0.318	21,435	2,915	0.318	21,435
			6,500	2,905	0.317	21,345	2,905	0.317	21,345
		1 1/8" HS	1,000	4,305	0.475	40,285	4,475	0.494	44,825
			3,500				4,340	0.479	41,070
			6,500	4,085	0.451	36,045	4,085	0.451	36,045
HFX/S-24x9	108 5/8	1 1/8" STD	1,000	3,140	0.175	18,710	3,385	0.191	20,745
			3,500						
			6,500						
		1 1/8" HS	1,000	5,230	0.294	37,830	5,775	0.325	45,935
			3,500				5,675	0.319	44,165
			6,500				5,525	0.311	41,850

Table 2.1A MiTek® Hardy Frame® HFX/S Installation - On 2500 psi Concrete[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0 Allowable In-Plane Shear V [5] (lbs)	Seismic Drift at V [5] (in)	Seismic Uplift at V [5,6] (lbs)	Wind Allowable In-Plane Shear V [5] (lbs)	Wind Drift at V [5] (in)	Wind Uplift at V [5,6] (lbs)
HFX/S-32x9	108 5/8	7/8" STD	1,000	2,100	0.174	8,945	2,500	0.207	10,630
			3,500	1,910	0.158	8,130	1,910	0.158	8,130
			6,500	1,205	0.100	5,130	1,205	0.100	5,130
		7/8" HS	1,000	2,655	0.220	11,295	2,655	0.220	11,295
			3,500	2,065	0.171	8,795	2,065	0.171	8,795
			6,500	1,360	0.113	5,795	1,360	0.113	5,795
HFX/S-44x9	108 5/8	7/8" STD	1,000	2,635	0.116	7,680	3,405	0.151	9,930
			3,500				2,870	0.127	8,365
			6,500	1,840	0.081	5,365	1,840	0.081	5,365
		7/8" HS	1,000	3,995	0.177	11,645	3,995	0.177	11,645
			3,500	3,135	0.139	9,145	3,135	0.139	9,145
			6,500	2,105	0.093	6,145	2,105	0.093	6,145
HFX/S-12x10	120 5/8	1 1/8" STD	1,000	1,130	0.263	19,595	1,130	0.263	19,595
			3,500	1,040	0.243	17,005	1,040	0.243	17,005
			6,500	930	0.217	14,325	930	0.217	14,325
		1 1/8" HS	1,000	1,130	0.265	19,595	1,130	0.265	19,595
			3,500	1,040	0.244	17,005	1,040	0.244	17,005
			6,500	930	0.218	14,325	930	0.218	14,325
HFX/S-15x10	120 5/8	1 1/8" STD	1,000	1,565	0.434	21,620	1,565	0.431	21,620
			3,500	1,555	0.431	21,380	1,555	0.428	21,380
			6,500	1,520	0.421	20,560	1,520	0.418	20,560
		1 1/8" HS	1,000	1,845	0.511	31,340	1,845	0.511	31,340
			3,500	1,730	0.479	26,150	1,730	0.479	26,150
			6,500	1,565	0.434	21,625	1,565	0.434	21,625
HFX/S-18x10	120 5/8	1 1/8" STD	1,000	2,105	0.272	21,615	2,105	0.272	21,615
			3,500						
			6,500						
		1 1/8" HS	1,000	2,860	0.372	39,500	2,860	0.372	39,500
			3,500	2,715	0.353	33,700	2,715	0.353	33,700
			6,500	2,515	0.327	28,745	2,515	0.327	28,745
HFX/S-21x10	120 5/8	1 1/8" STD	1,000	2,640	0.364	21,620	2,640	0.364	21,620
			3,500						
			6,500						
		1 1/8" HS	1,000	3,780	0.528	38,105	4,030	0.562	44,825
			3,500				3,905	0.545	41,070
			6,500	3,680	0.514	36,045	3,680	0.514	36,045
HFX/S-24x10	120 5/8	1 1/8" STD	1,000	2,900	0.199	19,290	3,150	0.216	21,385
			3,500				3,115	0.214	21,080
			6,500				3,105	0.213	20,985
		1 1/8" HS	1,000	4,690	0.325	37,530	5,200	0.360	45,935
			3,500				5,110	0.353	44,165
			6,500				4,975	0.344	41,850
HFX/S-32x10	120 5/8	7/8" STD	1,000	1,955	0.222	9,285	2,240	0.254	10,630
			3,500	1,715	0.194	8,130	1,715	0.194	8,130
			6,500	1,080	0.122	5,130	1,080	0.122	5,130
		7/8" HS	1,000	2,380	0.270	11,295	2,380	0.269	11,295
			3,500	1,855	0.210	8,795	1,855	0.210	8,795
			6,500	1,220	0.138	5,795	1,220	0.138	5,795
HFX/S-44x10	120 5/8	7/8" STD	1,000	2,475	0.148	8,055	3,185	0.191	10,355
			3,500				2,575	0.154	8,365
			6,500	1,650	0.099	5,365	1,650	0.099	5,365
		7/8" HS	1,000	3,580	0.214	11,645	3,580	0.214	11,645
			3,500	2,810	0.168	9,145	2,810	0.168	9,145
			6,500	1,890	0.113	6,145	1,890	0.113	6,145
HFX/S-15x11	132 5/8	1 1/8" STD	1,000	1,425	0.486	21,615	1,425	0.485	21,615
			3,500	1,415	0.483	21,380	1,415	0.482	21,380
			6,500	1,385	0.471	20,560	1,385	0.471	20,560
		1 1/8" HS	1,000	1,680	0.573	31,340	1,680	0.573	31,340
			3,500	1,575	0.536	26,150	1,575	0.536	26,150
			6,500	1,425	0.486	21,625	1,425	0.486	21,625
HFX/S-18x11	132 5/8	1 1/8" STD	1,000	1,915	0.298	21,615	1,915	0.301	21,615
			3,500						
			6,500						
		1 1/8" HS	1,000	2,600	0.406	39,500	2,600	0.406	39,500
			3,500	2,470	0.385	33,700	2,470	0.385	33,700
			6,500	2,285	0.357	28,745	2,285	0.357	28,745
HFX/S-21x11	132 5/8	1 1/8" STD	1,000	2,405	0.410	21,620	2,405	0.410	21,620
			3,500						
			6,500						
		1 1/8" HS	1,000	3,365	0.580	36,380	3,665	0.632	44,825
			3,500				3,555	0.613	41,070
			6,500	3,345	0.577	36,045	3,345	0.577	36,045

Table 2.1A MiTek® Hardy Frame® HFX/S Installation - On 2500 psi Concrete[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0			Wind		
				Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)	Allowable In-Plane Shear V [5] (lbs)	Drift at V [5] (in)	Uplift at V [5,6] (lbs)
HFX/S-24x11	132 5/8	1 1/8" STD	1,000				2,890	0.238	21,615
			3,500	2,695	0.223	19,805	2,880	0.237	21,500
			6,500				2,870	0.236	21,390
		1 1/8" HS	1,000				4,730	0.391	45,935
			3,500	3,730	0.308	30,420	4,645	0.384	44,165
			6,500				4,525	0.374	41,850
HFX/S-32x11	132 5/8	7/8" STD	1,000	1,830	0.276	9,595	2,030	0.306	10,630
			3,500	1,555	0.234	8,130	1,555	0.234	8,130
			6,500	980	0.147	5,130	980	0.148	5,130
		7/8" HS	1,000	2,160	0.325	11,295	2,160	0.325	11,295
			3,500	1,680	0.253	8,795	1,680	0.253	8,795
			6,500	1,105	0.167	5,795	1,105	0.167	5,795
HFX/S-44x11	132 5/8	7/8" STD	1,000	2,335	0.185	8,380	2,990	0.236	10,730
			3,500	2,330	0.184	8,365	2,330	0.184	8,365
			6,500	1,495	0.118	5,365	1,495	0.118	5,365
		7/8" HS	1,000	3,245	0.255	11,645	3,245	0.256	11,645
			3,500	2,550	0.201	9,145	2,550	0.201	9,145
			6,500	1,715	0.135	6,145	1,715	0.135	6,145
HFX/S-15x12	144 5/8	1 1/8" STD	1,000	1,305	0.541	21,615	1,305	0.540	21,615
			3,500	1,300	0.537	21,380	1,300	0.536	21,380
			6,500	1,270	0.525	20,560	1,270	0.524	20,560
		1 1/8" HS	1,000	1,530	0.633	30,485	1,540	0.638	31,340
			3,500	1,445	0.597	26,150	1,445	0.597	26,150
			6,500	1,305	0.541	21,625	1,305	0.541	21,625
HFX/S-18x12	144 5/8	1 1/8" STD	1,000						
			3,500	1,755	0.324	21,615	1,755	0.324	21,615
			6,500						
		1 1/8" HS	1,000	2,385	0.442	39,500	2,385	0.442	39,500
			3,500	2,265	0.419	33,700	2,265	0.419	33,700
			6,500	2,095	0.388	28,745	2,095	0.388	28,745
HFX/S-21x12	144 5/8	1 1/8" STD	1,000						
			3,500	2,205	0.456	21,615	2,205	0.456	21,615
			6,500						
		1 1/8" HS	1,000				3,360	0.702	44,825
			3,500	3,030	0.633	35,115	3,260	0.681	41,070
			6,500				3,070	0.641	36,045
HFX/S-24x12	144 5/8	1 1/8" STD	1,000						
			3,500	2,515	0.246	20,235	2,650	0.260	21,615
			6,500						
		1 1/8" HS	1,000				4,335	0.425	45,935
			3,500	3,410	0.334	30,285	4,260	0.418	44,165
			6,500				4,150	0.407	41,850
HFX/S-32x12	144 5/8	7/8" STD	1,000	1,720	0.337	9,855	1,855	0.364	10,630
			3,500	1,420	0.278	8,130	1,420	0.278	8,130
			6,500	895	0.175	5,130	895	0.175	5,130
		7/8" HS	1,000	1,975	0.386	11,295	1,975	0.386	11,295
			3,500	1,535	0.300	8,795	1,535	0.300	8,795
			6,500	1,010	0.198	5,795	1,010	0.198	5,795
HFX/S-44x12	144 5/8	7/8" STD	1,000	2,210	0.224	8,675	2,770	0.281	10,865
			3,500	2,135	0.216	8,365	2,135	0.216	8,365
			6,500	1,370	0.139	5,365	1,370	0.139	5,365
		7/8" HS	1,000	2,970	0.301	11,645	2,970	0.302	11,645
			3,500	2,330	0.237	9,145	2,330	0.237	9,145
			6,500	1,565	0.159	6,145	1,565	0.159	6,145
HFX/S-15x13	156 5/8	1 1/8" STD	1,000	1,205	0.597	21,615	1,205	0.597	21,615
			3,500	1,200	0.593	21,380	1,200	0.593	21,380
			6,500	1,170	0.579	20,560	1,170	0.579	20,560
		1 1/8" HS	1,000	1,385	0.685	28,750	1,420	0.704	31,340
			3,500	1,330	0.659	26,150	1,330	0.659	26,150
			6,500	1,205	0.597	21,625	1,205	0.597	21,625
HFX/S-18x13	156 5/8	1 1/8" STD	1,000						
			3,500	1,620	0.348	21,615	1,620	0.348	21,615
			6,500						
		1 1/8" HS	1,000	2,205	0.477	39,500	2,205	0.477	39,500
			3,500	2,090	0.452	33,700	2,090	0.452	33,700
			6,500	1,935	0.419	28,745	1,935	0.419	28,745
HFX/S-21x13	156 5/8	1 1/8" STD	1,000						
			3,500	2,035	0.503	21,615	2,035	0.503	21,615
			6,500						
		1 1/8" HS	1,000				3,105	0.775	44,825
			3,500	2,745	0.685	33,895	3,010	0.751	41,070
			6,500				2,835	0.708	36,045

Table 2.1A MiTek® Hardy Frame® HFX/S Installation - On 2500 psi Concrete[1,2]

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade [3]	Applied Axial Load [4]	Seismic R=6.5, C_d =4.0 Allowable In-Plane Shear V [5] (lbs)	Seismic Drift at V [5] (in)	Seismic Uplift at V [5,6] (lbs)	Wind Allowable In-Plane Shear V [5] (lbs)	Wind Drift at V [5] (in)	Wind Uplift at V [5,6] (lbs)
HFX/S-24x13	156 5/8	1 1/8" STD	1,000	2,360	0.271	20,645	2,450	0.281	21,615
			3,500						
			6,500						
		1 1/8" HS	1,000	3,140	0.360	30,160	4,005	0.459	45,935
			3,500				3,935	0.451	44,165
			6,500				3,830	0.440	41,850
HFX/S-32x13	156 5/8	7/8" STD	1,000	1,625	0.403	10,090	1,710	0.425	10,630
			3,500	1,310	0.325	8,130	1,310	0.325	8,130
			6,500	825	0.205	5,130	825	0.205	5,130
		7/8" HS	1,000	1,820	0.452	11,295	1,820	0.452	11,295
			3,500	1,415	0.352	8,795	1,415	0.352	8,795
			6,500	935	0.232	5,795	935	0.232	5,795
HFX/S-44x13	156 5/8	7/8" STD	1,000	2,100	0.269	8,940	2,550	0.327	10,865
			3,500	1,965	0.252	8,365	1,965	0.252	8,365
			6,500	1,260	0.162	5,365	1,260	0.162	5,365
		7/8" HS	1,000	2,735	0.351	11,645	2,735	0.351	11,645
			3,500	2,145	0.275	9,145	2,145	0.275	9,145
			6,500	1,445	0.185	6,145	1,445	0.185	6,145

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb = 4.45 N, 1 psi 6.89 kPa.

UNREINFORCED ANCHORAGE NOMENCLATURE

1 1/8-STD-14-20

- **$C_{a\,1,2}$**
- **I_e**
- **ROD GRADE**
- **ROD DIAMETER**

REINFORCED ANCHORAGE NOMENCLATURE

1 1/8-STD-RA

- **REINFORCED ANCHORAGE**
- **ROD GRADE**
- **ROD DIAMETER**

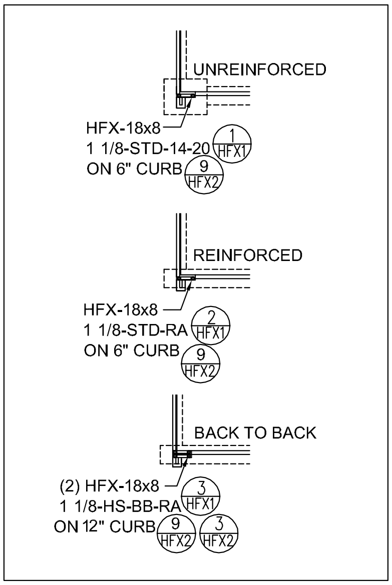
BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

1 1/8-STD-BB-RA

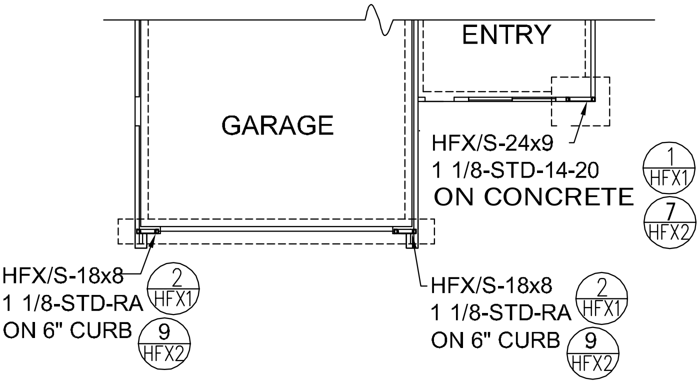
- **REINFORCED ANCHORAGE**
- **BACK TO BACK INSTALLATION**
- **ROD GRADE**
- **ROD DIAMETER**

Notes

1) The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on 2500 psi concrete or nut & washer with 5,000 psi minimum non-shrink grout.
2) For installation on a nut & washer (only) table values must be multiplied by 0.80.
3) 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.
4) The additional vertical axial loads are concurrent with the allowable shear load. For Panels the axial load must be applied within the middle 1/3 of the Panel width or be uniformly distributed across the entire Panel width. For Brace Frame the axial load is acting and along the centerline of the post.
5) Allowable Shear, Drift @ V and Uplift @ V values may be linearly interpolated for intermediate height or axial loads.
6) The uplift values listed assume no resisting axial load. When axial loads occur concurrently with lateral loads calculate anchor tension with the "Equation for Tension Uplift with Added Axial Load" presented on page 40 of this catalog. For Brace Frames the anchor tension load is the tabulated uplift minus the applied axial load on the post.



HFX/S Table 2.1A



FOUNDATION PLAN

For referenced details see catalog pages 50-53

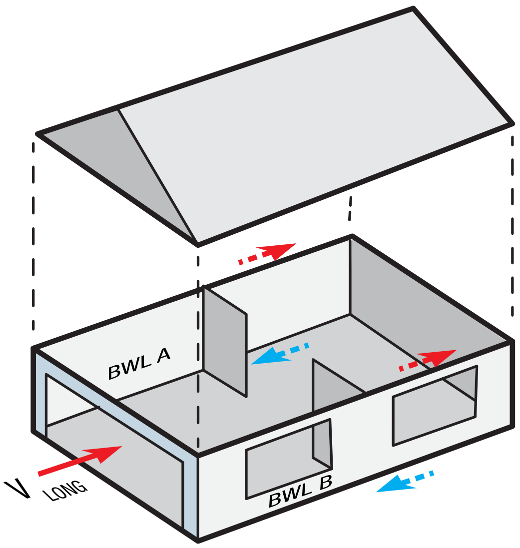
To structurally resist lateral wind and seismic loads in wood or steel framed buildings strategic Braced Wall Lines must be properly established. The Prescriptive Design approach helps identify lateral load resisting Braced Wall Lines (BWLs), establish required minimum Braced Wall Panel (BWP) lengths along each Braced Wall Line, define the proper location of Braced Wall Panels within those lines, and provides detailed construction methods for constructing the BWPs.

The general rule for prescriptive bracing design is that all exterior walls, as well as interior walls spaced no greater than the maximum distance set forth in Section R602.10, must be identified as Braced Wall Lines for resisting lateral load. When BWLs offset no more than 4 feet apart in either direction, the wall lines can be considered as one continuous Braced Wall Line. To be considered an effective Braced Wall Line, the IRC Code requires a minimum percentage of the wall length to be adequately constructed with a prequalified material and fastening schedule. The percentage required depends on the applied seismic or wind load, building stories and other adjusting factors.

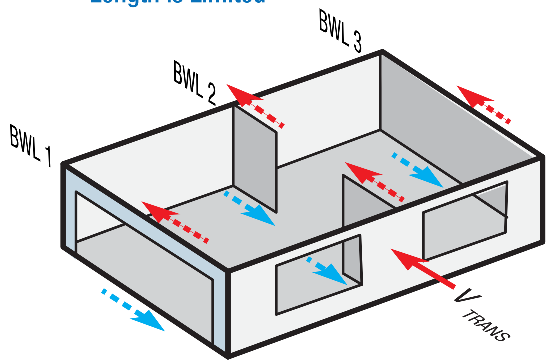
As with engineered designs in the IBC Code, IRC Prescriptive Wall Bracing Design often results in sections of walls that are too narrow for conventional Braced Wall Panel requirements to be met. The most common example is at the garage front with narrow Braced Wall Panel lengths next to the door. Mitek® Hardy Frame® Panels are the best solution for these conditions.

The MiTek® Hardy Frame® 9" wide Panel is the narrowest prefabricated shear wall in the industry and is a very cost effective solution. Anchors for the MiTek® Hardy Frame® Panel in a Prescriptive Wall Bracing Design can be cast in during the concrete pour or post installed with MiTek CIA-Gel 7000-C epoxy. MiTek® Hardy Frame® HFX Panels provide the structural requirements in narrow wall lengths and their "C-Shape" is the most trade-friendly in the industry. The MiTek® Hardy Frame® Prescriptive Braced Wall Solution is the ideal option for you and your contractors. For more information contact us at 800-754-3030 or visit us at hardyframe.com.

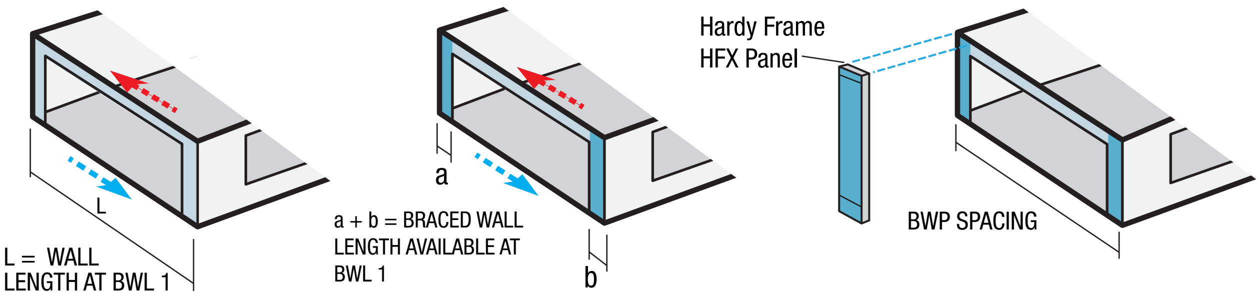
1. **Determine Wind Speed and Seismic Design Category**
2. **Determine Braced Wall Line Locations**
3. **Determine Required Braced Wall Length for Wind and Seismic**
4. **Identify Wall Segments Available For Bracing**
5. **Specify MiTek Hardy Frame Panels When Available Braced Wall Length is Limited**



LONGITUDINAL



TRANSVERSE



Equation for Tension Uplift With Added Axial Load

The expressions listed below may be used to determine uplift tension (T) with the additional axial load P_{add}.

MiTek® Hardy Frame® Panels

HFX 9x: $T=8.6\, f'_c - \sqrt{74.4 f'^{2}_c - 1.19 f'_c\,(5.5P_{add} + 2VH)} - P_{add}$

HFX 12x: $T=12.2\, f'_c - \sqrt{148.8 f'^{2}_c - 1.19 f'_c\,(8.50P_{add} + 2VH)} - P_{add}$

HFX 15x: $T=14.7\, f'_c - \sqrt{216.9 f'^{2}_c - 1.19 f'_c\,(9.75P_{add} + 2VH)} - P_{add}$

HFX 18x: $T=18.3\, f'_c - \sqrt{334.8 f'^{2}_c - 1.19 f'_c\,(12.8P_{add} + 2VH)} - P_{add}$

HFX 21x: $T=21.9\, f'_c - \sqrt{478.1 f'^{2}_c - 1.19 f'_c\,(15.8P_{add} + 2VH)} - P_{add}$

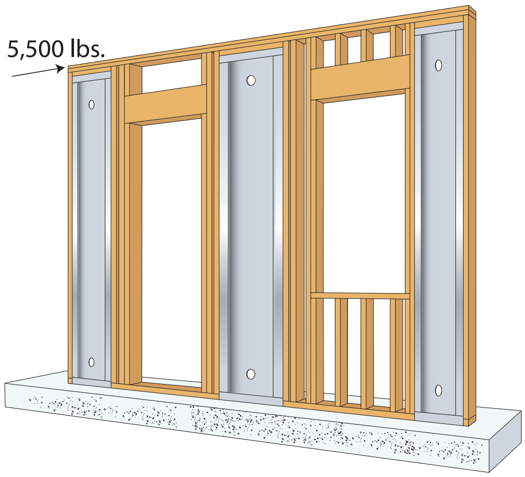
HFX 24x: $T=25.4\, f'_c - \sqrt{647.0 f'^{2}_c - 1.19 f'_c\,(18.8P_{add} + 2VH)} - P_{add}$

Variable	Description/Units
f'_c	Concrete Compression Stress / psi
V	Shear Load / lbs.
H	Panel Height / in.
P_{add}	Vertical Load / lbs.

Example 1: Combine HFX Panels of Different Stiffness in the Same Wall Line by Proportioning Loads.

Given:

2012 IBC, Seismic loading
Concrete f'c = 2,500 psi
Design Shear Load = 5,500 lbs.
Axial Load = 1,000 lbs per Panel
Wall height = 8'1"



Try: (2) HFX-12x8 with (1) HFX-18x8

Step 1: Calculate Stiffness (k)

For HFX12x8: Allowable Shear from Table 1.1A (HS grade HD) = 1,480 lbs
Corresponding Drift = 0.225 in
Stiffness (k_{12}) = 1,480 / 0.225 = 6,578 lbs/in

For HFX18x8: Allowable Shear from Table 1.1A (HS grade HD) = 3,740 lbs
Corresponding Drift = 0.312 in
Stiffness (k_{18}) = 3,740/ 0.312 = 11,987 lbs/in

Total Stiffness (k_{total}) = k_{12} + k_{12} + k_{18} = 6,578 lbs/in + 6,578 lbs/in + 11,987 lbs/in = 25,143 lbs/in

Step 2: Calculate Relative Stiffness

k_{12} / k_{total} = 6,578 / 25,143 = 0.26
k_{18} / k_{total} = 11,987 / 25,143 = 0.48

Step 3: Check Load Distribution

HFX-12x8 = 0.26 x 5,500 lbs = 1,430 lbs < 1,480 lbs **OK**
HFX-18x8 = 0.48 x 5,500 lbs = 2,640 lbs < 3,740 lbs **OK**

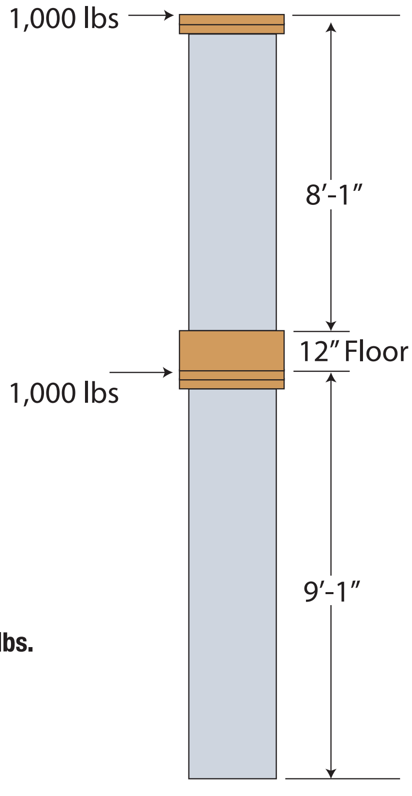
Example 2: Designing for Stacked MiTek® Hardy Frame® Panels or Brace Frames

Given

2012 IBC, Wind Loading, Concrete f'_c= 2,500 psi
1st Floor Wall Height: 9' 1"
Floor System Depth: 1' 0"
2nd Floor Wall Height: 8'1"
Shear Load at 1st Floor (V_1): 1,000 lbs Wind
Shear Load at 2nd Floor (V_2): 1,000 lbs WInd
Shear Load at Foundation (V_{base}): 2,000 lbs Wind (1,000 lbs + 1,000 lbs)
No Additional Vertical Loads

Step 1. Select

HFX-18x8 (STD Rods) at Second Floor: Allowable WInd Shear from Table 1.3A = 2,740 lbs
HFX-18x9 (HS Rods) at First Floor: Allowable Wind Shear from Table 1.1A = 3,310 lbs



Step 2. Check Shear

A) Shear at the Second Floor (V_2)

HFX-18x8 Allowable Shear = 2,740 lbs > 1,000 lbs **OK**

B) Shear at the Foundation (V_{base})

HFX-18x9 Allowable Shear = 3,310 lbs > 2,000 lbs **OK**

Step 3. Check Moment

A) Calculate Cumulative Overturning Moment of the Stacked Panels

Second Floor @ 18' 2" = 218 in x 1,000 lbs = 218,000 in-lbs
First Floor @ 9' 1" = 109 in x 1,000 lbs = 109,000 in-lbs

Total Calculated Overturning Moment = 327,000 in-lbs.

B) Calculate Moment Capacity of the Stacked Panels

Use the First Floor Panel Moment Capacity as the Capacity of the Stacked Panels
Allowable Moment = Allowable Shear x Panel Height = 3,310 lbs x 104.25in = **345,068 in-lbs.**

C) Check Cumulative Overturning Moment

345,068 in-lbs (Capacity) > 327,000 in-lbs (Cumulative moment) **OK**

Step 4. Foundation Anchor Tension

$$\frac{\text{Calculated Overturning Moment}}{\text{Allowable Moment}} \times \text{Uplift at Allowable Moment.} = \frac{327{,}000 \text{ in-lbs}}{345{,}068 \text{ in-lbs}} \times 39{,}477 \text{ lbs} = 37{,}410 \text{ lbs}$$


HARDY FRAMES
HFX


SidePlate
HARDY FRAME MOMENT FRAME

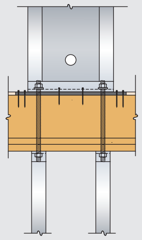
MiTek® Hardy Frame® Post

The MiTek® 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.

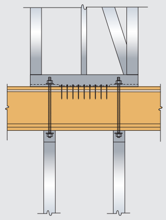
Tables provide tensile values for Standard Grade (STD) and for High Strength (HS) hold down rods. Be sure to include the embed callout on the foundation plan

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

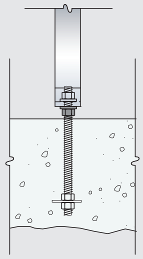
All Posts are 3 1/2" x 3 1/2" square and are fabricated from 12 gauge steel. Custom heights up to the maximum listed in the table are available.



MiTek® Hardy Frame® Panel two MiTek® Hardy Frame® Posts below



MiTek® Hardy Frame® Brace Frame two MiTek® Hardy Frame® Posts below



MiTek® 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.

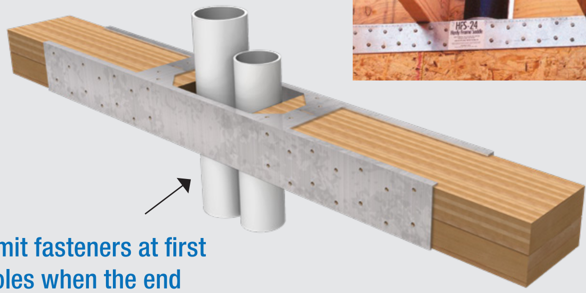
4) For installation on supporting materials other than noted above, the Design Professional must check the Bearing Stress based on the Post bearing area of 12.25 square inches.

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.

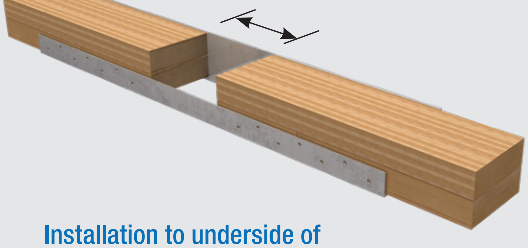
6) STD indicates bolts complying with ASTM F1554 Grade 36. HS rods include, but are not limited to ASTM F1554 Grade 105, ASTM A193 Grade B7 or ASTM A354 Grade BD.

MiTek® Hardy Frame® Saddle

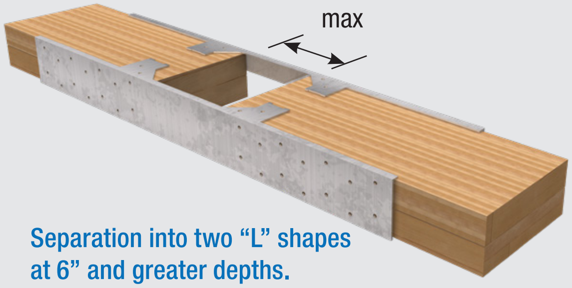
The MiTek® Hardy Frame® Saddle (HFS) is a 14 gauge steel channel intended to be used as a splice at locations where plumbing or other vertical penetrations destroy the structural integrity of a walls top plates. The Saddle can be installed over the top or from the underside of the top plates, and is capable of resisting both tension and compression loads in a clearspan of up to 4-½" inches. For wall depths greater than 3-½", 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.

MiTek® 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.

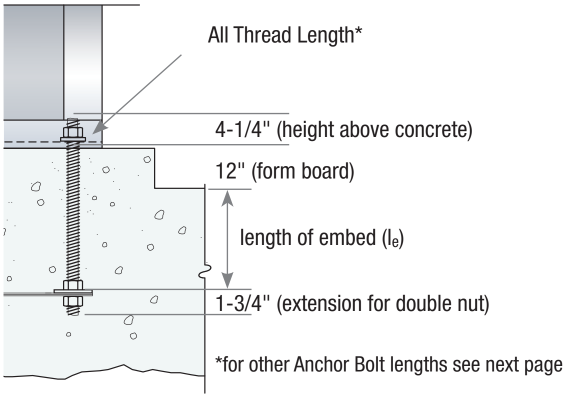
5. The allowable tension capacities are for normal duration. The values may be adjusted for other durations, such as for seismic and wind loading in accordance with the AF&PA NDS.

6. Allowable tension capacities assume the Saddle is attached to lumber members with a specific gravity of 0.49 or higher

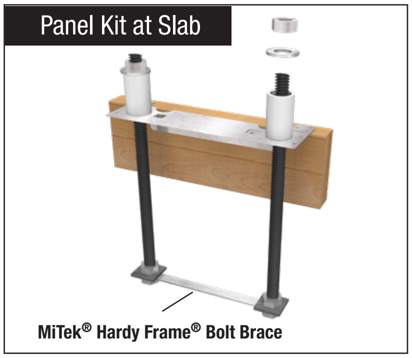
MiTek® Hardy Frame® HFX Template (HFXT)

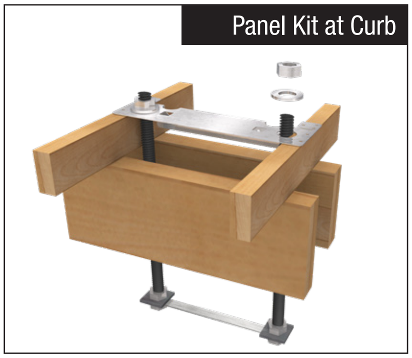
- Assures proper bolt spacing and alignment
- 16 gauge material supports weight of embed bolts
- Variety of applications
- Also available for 2x6 wall framing and for Back to Back applications within 2x8 wall framing

MiTek® Hardy Frame Bolt Brace (HFXBB)



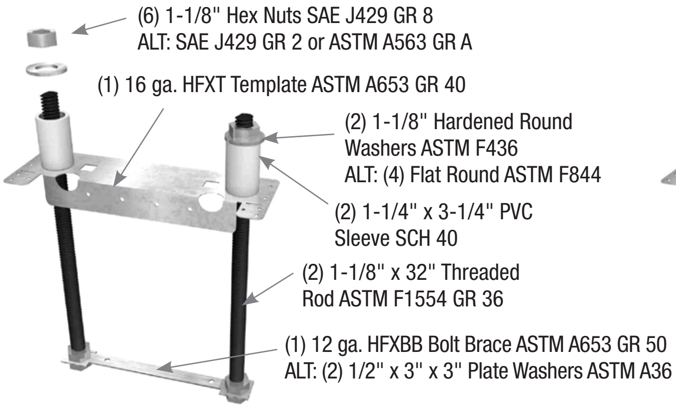
MiTek® Hardy Frame® HFX Template Kit (HFXTK)



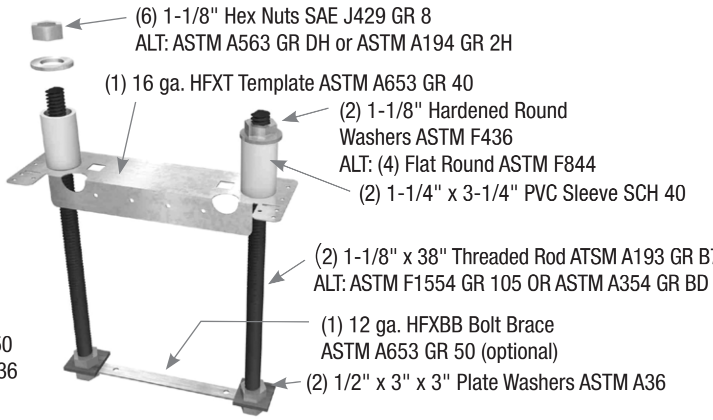


HFX PANELS

HFXTK (Standard Grade Anchors)

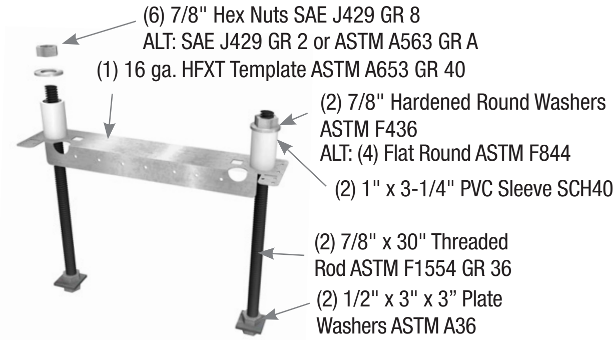


HFXTK-HS (High Strength Anchors)

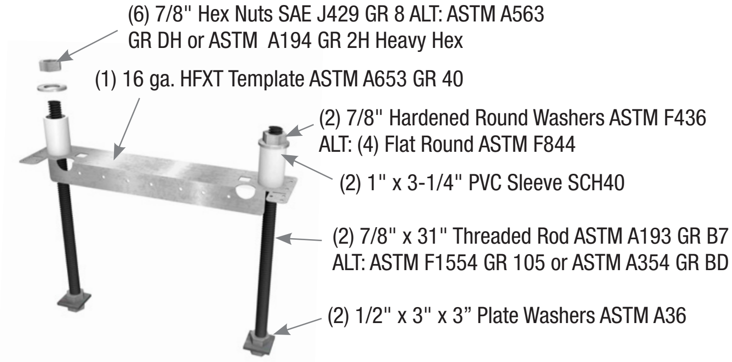


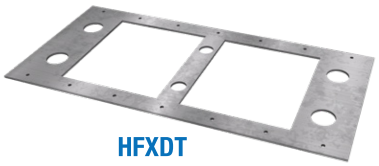
HFX BRACE FRAMES

HFXTK (Standard Grade Anchors)



HFXTK-HS (High Strength Anchors)





HFXDT

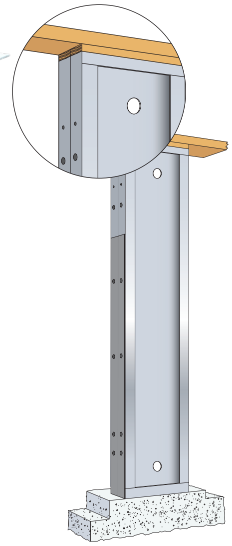
HFXDBB

Back-to-Back MiTek® 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 gauge 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

ANCHOR BOLT ASSEMBLY

MiTek® 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.

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

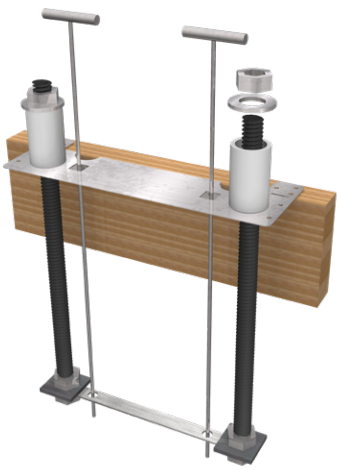
Panels

- 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



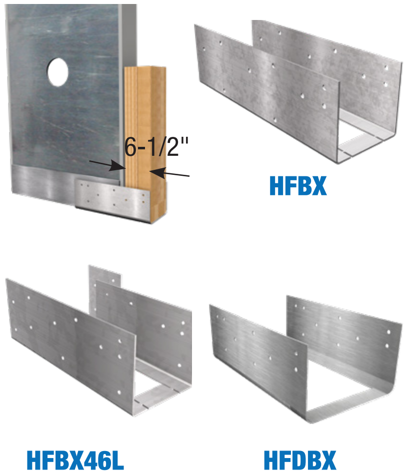
MiTek Hardy Frame® T-Rods (HFTR)

MiTek® Hardy Frame® T-Rods (HFTR) are used in combination with MiTek® 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 MiTek® 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.

MiTek® Hardy Frame® Bolt Lever (HFBL)

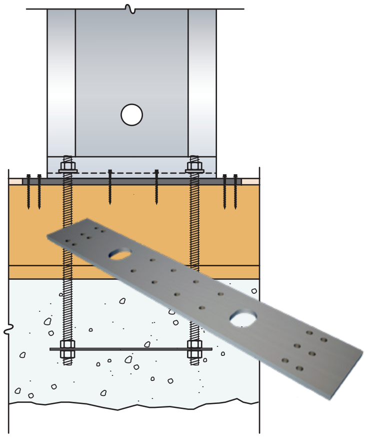
- Straightens embed bolts while preventing concrete spall
- Place nut on bolt and position inside the HFBL cylinder. With handle oriented in direction to be bent, pull handle downwards
- Unique base plate applies compression to concrete to prevent spall
- Extension handle provides leverage

- **Note: Not recommended for use with high strength rods**



MiTek® Hardy Frame® Base Extension (HFBX)

- Connects adjacent wood mudsill and stud (or post) to MiTek® Hardy Frame® Panel/Brace Frame
- Adjustable installation for HFBX extends up to 6-1/2" beyond edge of Panel.
- Break-away tab allows installation after Panel/Frame has been set
- HFDBX for back-to-back Panel installations
- HFBX46L (Left) and HFBX46R (Right) connect to 4x6 members
- HFBX66L (Left) and HFBX66R (Right) connect to 6x6 members
- Left and Right configurations accommodate Panel installation flush to one face of 6" framing

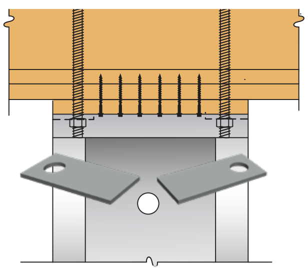


MiTek® Hardy Frame® Bearing Plate (HFXBP)

For Installation with MiTek® Hardy Frame® Panels

- 3/4″ thick x 3 1/2″ wide ASTM A36 steel
- Model number corresponds to Panel width, HFXBP 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 a HFXBP may result in a reduction of allowable loads

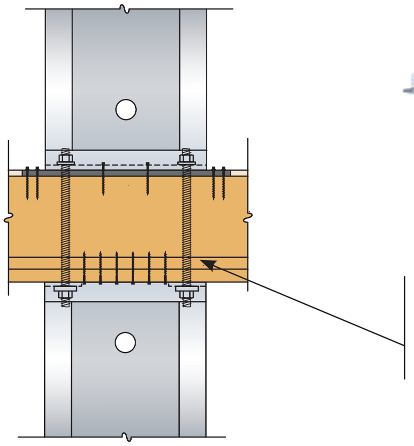
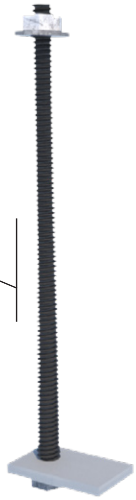


MiTek® Hardy Frame® Stacking Washer (HFSW)

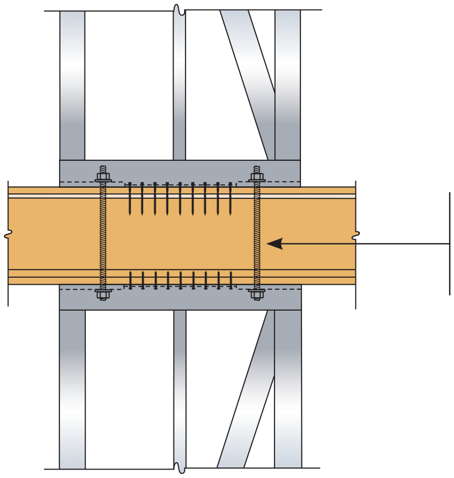
- MiTek® Hardy Frame® Stacking Washers (HFSW) are required in the top of Panels when connecting to a hold down rod from above.
- MiTek® Hardy Frame® STK Panels, include Stacking Washers pre-welded inside the top channel.
- When Stacking Washers have not been pre-welded, they are available individually 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

MiTek® Hardy Frame® Tension Connectors

*For joist depths up to 14˝

Panels floor to floor straight stack




Brace Frames floor to floor straight stack

- MiTek® Hardy Frame® HFSW Stacking Washers 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**
- **MiTek Hardy Frame TENSION CONNECTORS**

HFTC15-24 STD

- **ROD GRADE**
- **15 in. THROUGH 24 in. PANEL WIDTHS**
- **MiTek Hardy Frame TENSION CONNECTORS**

HFTC-7/8 STD

- **ROD GRADE**
- **ROD DIAMETER (FOR BRACE FRAMES)**
- **MiTek Hardy Frame TENSION CONNECTORS**

MiTek® Hardy Frame® Tension Connector Kit Components

Tension Kit Model Number	HFSW Stacking Washer	Panels		Brace Frames	
		Hold Down Anchor Assembly			
		1-1/8 STD	1-1/8 HS	7/8 STD	7/8 HS
HFTC12-STD	2-HFSW12	2			
HFTC12-HS	2-HFSW12		2		
HFTC15-24 STD	2-HFSW15-24	2			
HFTC15-24 HS	2-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

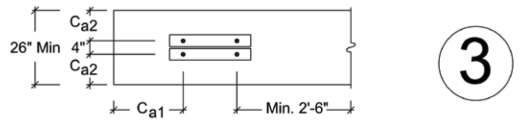
1) MiTek® Hardy Frame® HFSW Stacking Washers are required in the top channel of Panels when connecting to a hold down anchor from above
2) All Thread length fits up to a 14” joist depth + 3/4” subfloor + (4) 2x wood plate
3) Each Hardened Round Washer may be substituted with (2) SAE or (2) Round-Flat Washers
4) HS all thread rods provided by MiTek® Hardy Frame are stamped on both ends HF B7

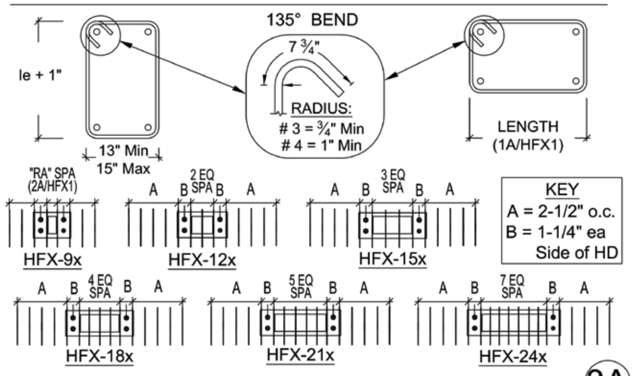
BACK TO BACK REINFORCED ANCHORAGE (BB-RA)

Model	Panel Width (in)	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	BB-RA le[4] (in)	C_{a1}[5] (in)	C_{a2}[6] (in)	Stirrups[9] (in)	Shear Ties[7]
HFX-9x	9	1-1/8-STD-BB-RA	1-1/8	STD	15	19-3/4	11	8 - # 4	# 3 (min) @ 3-3/4" OC
HFX-12x	12	1-1/8-STD-BB-RA		STD	23			13 - # 4	# 3 (min) @ 4" OC
		1-1/8-HS-BB-RA		HS					
HFX-15x	15	1-1/8-STD-BB-RA		STD		20-5/8		14 - # 4	# 4 (min) @ 4" OC
		1-1/8-HS-BB-RA		HS					
HFX-18x	18	1-1/8-STD-BB-RA		STD				15 - # 4	
		1-1/8-HS-BB-RA		HS					
HFX-21x	21	1-1/8-STD-BB-RA		STD				16 - # 4	
		1-1/8-HS-BB-RA		HS					
HFX-24x	24	1-1/8-STD-BB-RA		STD				18 - # 4	
		1-1/8-HS-BB-RA		HS					

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

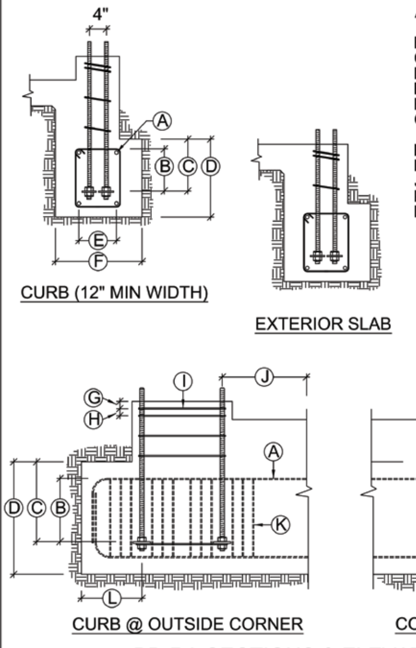
1-1/8 - STD - BB - RA
- REINFORCED ANCHORAGE
- "BACK TO BACK" INSTALLATION
- ROD GRADE
- ROD DIAMETER





BB-RA SHEAR TIES & STIRRUPS

3A



A. #4 (Min) Longitudinal 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

BB-RA SECTIONS & ELEVATIONS

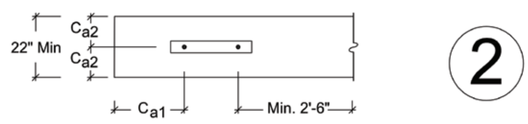
3B

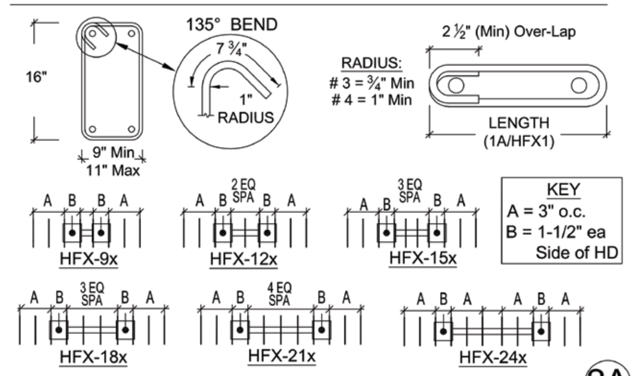
REINFORCED ANCHORAGE (RA)

Model	Panel Width (in)	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	RA le[4] (in)	C_{a1}[5] (in)	C_{a2}[6] (in)	Stirrups[9] (in)	Shear Ties[7]
HFX-9x	9	1-1/8-STD-RA	1-1/8	STD	15	19-3/4	11	8 - # 4	# 3 (min) @ 3-3/4" OC
HFX-12x	12	1-1/8-STD-RA		STD				9 - # 4	# 3 (min) @ 4" OC
		1-1/8-HS-RA		HS					
HFX-15x	15	1-1/8-STD-RA		STD		20-5/8		10 - # 4	
		1-1/8-HS-RA		HS					
HFX-18x	18	1-1/8-STD-RA		STD					
		1-1/8-HS-RA		HS					
HFX-21x	21	1-1/8-STD-RA		STD				11 - # 4	# 4 (min) @ 4" OC
		1-1/8-HS-RA		HS					
HFX-24x	24	1-1/8-STD-RA		STD				12 - # 4	
		1-1/8-HS-RA		HS					

REINFORCED ANCHORAGE NOMENCLATURE

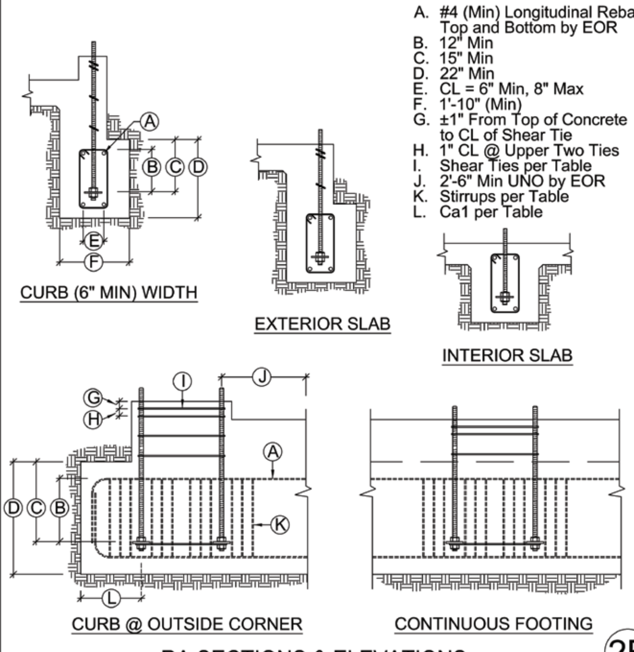
1-1/8 - STD - RA
- REINFORCED ANCHORAGE
- ROD GRADE
- ROD DIAMETER





RA SHEAR TIES & STIRRUPS

2A



A. #4 (Min) Longitudinal 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

RA SECTIONS & ELEVATIONS

2B

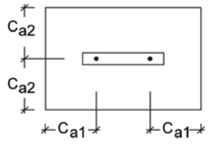
UNREINFORCED ANCHORAGE (UA)

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

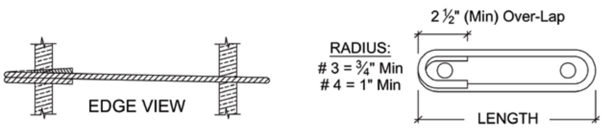
UNREINFORCED ANCHORAGE NOMENCLATURE

1-1/8 - STD - 14 - 20

- END & EDGE DISTANCE (C_{a1} & C_{a2})
- EMBEDMENT DEPTH (l_e)
- ROD GRADE
- ROD DIAMETER



1

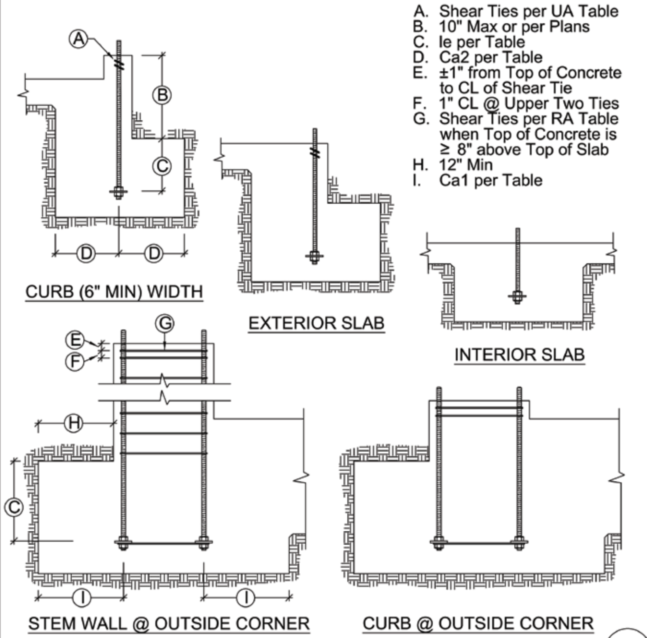


SHEAR TIES		NOT REQUIRED WHEN	
Model	Length	End Distance ≥	Edge Distance ≥
HFX-9x	7-1/2"	2-3/8"	2-3/8"
HFX-12x	10-1/2"	6-1/4"	3-1/2"
HFX-15x	12"	7-3/8"	4-1/4"
HFX-18x	15"	8-3/8"	5"
HFX-21x	18"	9-3/8"	5-1/2"
HFX-24x	21"	10-3/8"	6"

UA SHEAR TIES

1A

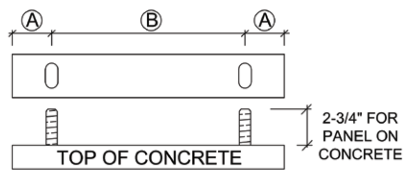
A. Shear Ties per UA Table
B. 10" Max or per Plans
C. le per Table
D. Ca2 per Table
E. ±1" from Top of Concrete to CL of Shear Tie
F. 1" CL @ Upper Two Ties
G. Shear Ties per RA Table when Top of Concrete is ≥ 8" above Top of Slab
H. 12" Min
I. Ca1 per Table



UA SECTIONS & ELEVATIONS

1B

1. DESIGNS ARE TO RESIST LOADING PER ACI 318-19, SEC 17.10.5.3.
2. STD INDICATES ANCHORS COMPLYING WITH ASTM F1554 GRADE 36 WITH A HARDY FRAME BOLT BRACE (HFXBB) INSTALLED WITH STD OR GRADE 8 DOUBLE NUTS ON THE EMBED END.
3. HS INDICATES ANCHORS COMPLYING WITH ASTM A193 GRADE B7 WITH A 1/2"x3"x3"(MIN) HFPW PLATE WASHER INSTALLED WITH DOUBLE NUTS ON THE EMBED END (HFXBB NOT REQUIRED).
4. LE = LENGTH OF EMBEDMENT FROM THE TOP OF FOOTING OR GRADE BEAM TO THE TOP OF THE HFXBB BOLT BRACE (TOP OF THE EMBEDDED HFPW PLATE WASHER @ HS ANCHORS)
5. CA1 = DISTANCE FROM HD CENTERLINE TO THE END OF THE FOOTING OR GRADE BEAM.
6. CA2 = DISTANCE FROM HD CENTERLINE TO BOTH THE FRONT AND THE BACK FACE OF THE FOOTING OR GRADE BEAM.
7. SHEAR TIES ARE GRADE 60 (MIN) REBAR AND REQUIRED FOR NEAR EDGE DISTANCE CONDITIONS PER ACI 318-19, 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.
8. FOR UA APPLICATIONS, ADDITIONAL TIES MAY BE REQUIRED AT STEM WALLS. SHEAR TIES ARE NOT REQUIRED FOR INSTALLATION AWAY FROM EDGE (SEE DETAIL 1A), INSTALLATION ON WOOD FRAMING, OR FOR IRC BRACED WALL PANEL APPLICATIONS.
9. STIRRUPS ARE GRADE 60 (MIN) REBAR. SEE TABLE FOR SIZE AND SPACING. SEE "STIRRUP LAYOUT" DIAGRAMS AND "KEY" FOR LAYOUT PATTERNS.
10. CONCRETE EDGE DISTANCES MUST COMPLY WITH ACI 318-19, SECTION 17.9.2. COATED REINFORCEMENT MAY BE SPECIFIED BY THE EOR TO LIMIT EXPOSURE AND THEREFORE REDUCE MINIMUM CONCRETE COVER. COATED REINFORCEMENT MUST COMPLY WITH ACI 318-19, SECTION 20.5.2.



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

HFX ANCHOR CENTERLINES

A

IMPORTANT!

1. ANCHORAGE IS DESIGNED FOR TENSION AND SHEAR TRANSFER ONLY, FOUNDATION DESIGN PER EOR.
2. REINFORCEMENT SHOWN IS THE MINIMUM REQUIREMENT AND IS NOT INTENDED TO REPLACE REINFORCEMENT DESIGNED BY THE EOR.
3. FOR RA AND BB-RA INSTALLATIONS, THE HFXBB BOLT BRACE MAY BE PLACED ON TOP OF THE STIRRUPS WITH DOUBLE-NUTS INSTALLED AT EMBED END OF STANDARD GRADE ANCHOR RODS. (NOTE: ½" x 3" x 3" MIN. HFPW PLATE WASHERS ARE REQUIRED TO BE DOUBLE-NUTTED AT EMBED END OF HIGH STRENGTH ANCHOR RODS.)
4. HIGH STRENGTH ALL-THREAD RODS PROVIDED BY HARDY FRAMES ARE STAMPED ON BOTH ENDS.

HF B7

IMPORTANT NOTES

B

REVISIONS	DATE

ANCHORAGE DETAILS - HFX PANELS

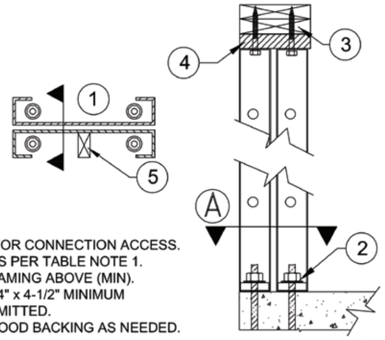
THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH *HARDY FRAME* PRODUCTS

MiTek®

HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

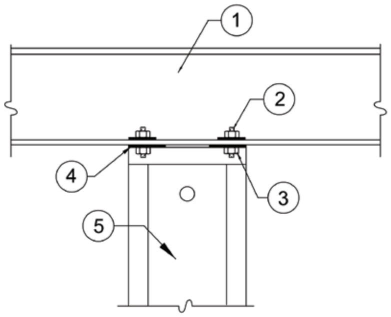
DATE:
1-1-2023

HFX1



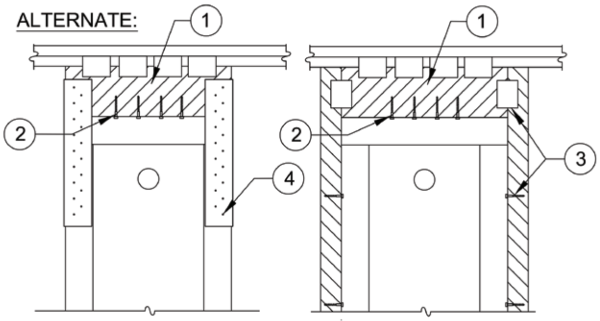
1. CAVITY ORIENTED FOR CONNECTION ACCESS.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. NOMINAL 8 INCH FRAMING ABOVE (MIN).
4. A 2x FILLER WITH 1/4" x 4-1/2" MINIMUM WS SCREWS IS PERMITTED.
5. FIELD INSTALLED WOOD BACKING AS NEEDED.

BACK TO BACK INSTALLATION 3



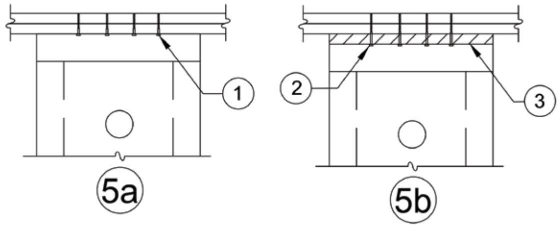
1. STEEL BEAM PER PLANS
2. ALL THREAD RODS THRU-BOLTED TO STEEL BEAM BY BUILDING DESIGN PROFESSIONAL.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. *HARDY FRAME*® STACKING WASHERS (HFSW) REQUIRED TO BE WELDED INSIDE TOP CHANNEL OF LOWER PANEL.
5. *HARDY FRAME*® "STK" PANEL WITH STACKING WASHERS WELDED INSIDE THE TOP CHANNEL BY MANUFACTURER.

STEEL BEAM ABOVE THRU-BOLT 2



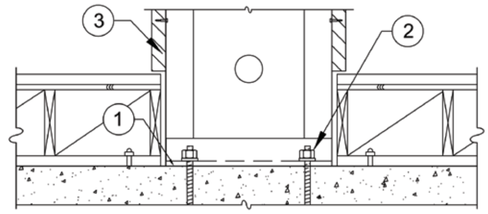
1. WOOD FILLER (13 ½" MAX DEPTH) WITH USP MP4F CONNECTORS BOTH SIDES, QUANTITY BY BUILDING DESIGN PROFESSIONAL.
2. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS INSTALLED THROUGH PRE-PUNCHED HOLES IN PANEL EDGES REQ'D WHEN INSTALLING A FILLER GREATER THAN 1-1/2" ABOVE TO BRACE OUT-OF-PLANE HINGE OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.
4. MiTek HFFB FILLER BRACE WITH 1/4" x 1-1/2" WS SCREWS TO FILLER (FILL ALL HOLES) AND 1/4" SELF-TAPPING SCREWS TO PANEL (5 MIN. EACH FACE) REQ'D WHEN INSTALLING A FILLER GREATER THAN 3-1/4" ABOVE TO BRACE OUT-OF-PLANE HINGE OR WHEN SPECIFIED BY THE BUILDING DESIGN PROFESSIONAL.

FILLER GREATER THAN 1-1/2 IN. 6



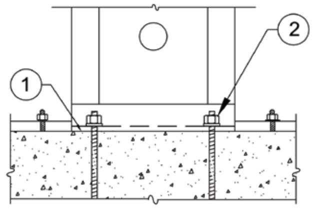
1. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
2. 1/4" x 4-1/2" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. 2x WOOD FILLER.

TOP PLATE CONNECTIONS 5



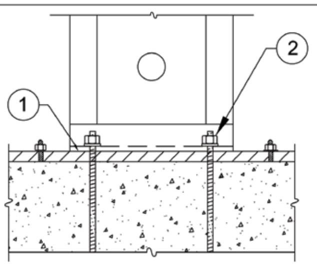
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS INSTALLED AT THE PANEL EDGES WHEN INSTALLING A FILLER GREATER THAN 1-1/2" ABOVE OR WHEN SPECIFIED BY DESIGN PROFESSIONAL.

RAISED FLOOR HEAD-OUT 8



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

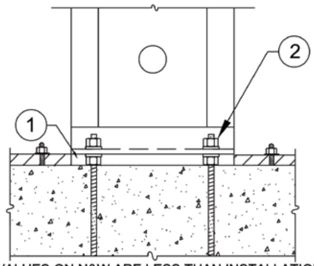
INSTALLATION ON CONCRETE 7



ALLOWABLE VALUES ON 2x PLATE ARE LESS THAN INSTALLATION ON CONCRETE

1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND TREATED PLATE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

INSTALLATION ON 2x PLATE 11

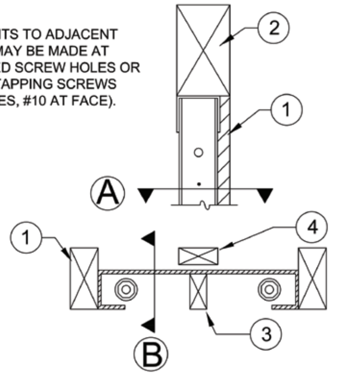


ALLOWABLE VALUES ON N&W ARE LESS THAN INSTALLATION ON CONCRETE

1. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH 5,000 PSI NON-SHRINK GROUT (MINIMUM).
2. NUT AND WASHER GRADES PER TABLE NOTE 1.

INSTALLATION ON NUTS & WASHERS 10

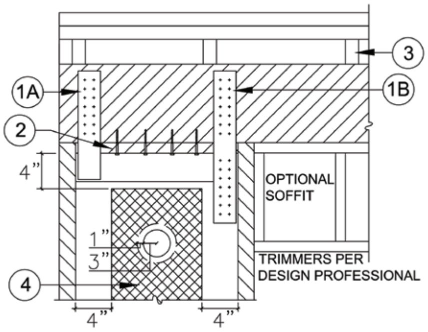
NOTE:
ATTACHMENTS TO ADJACENT TRIMMERS MAY BE MADE AT PREPUNCHED SCREW HOLES OR WITH SELF TAPPING SCREWS (#12 AT EDGES, #10 AT FACE).



1. TRIMMERS PROVIDE FULL BEARING FOR HEADER ABOVE, DESIGN AND CONNECTIONS BY BUILDING DESIGN PROFESSIONAL.
2. 6x HEADER.
3. WOOD MEMBERS FOR BACKING MAY BE INSERTED VERTICALLY OR HORIZONTALLY IN THE PANEL CAVITY AS NEEDED.
4. WOOD MEMBER FLUSH TO FACE OF WALL FOR BACKING AS NEEDED.

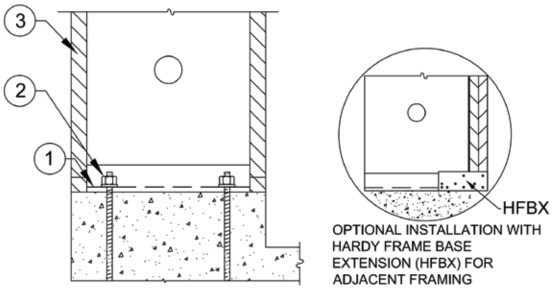
6x HEADER ABOVE-SECTIONS 1

NOTE:
TO PREVENT DRILLING ADDITIONAL HOLES ORIENT THE PANEL CAVITY TOWARD THE FIXTURE BEING INSTALLED.



1. (A) PRE-WELDED STRAPS ARE PROVIDED ON 78" AND 79-1/2" PANEL HEIGHTS. THEY ARE AVAILABLE FOR OTHER HEIGHTS UPON REQUEST. (B) FIELD INSTALLED STRAPS WITH SELF TAPPING SCREWS ARE PERMITTED. THE DESIGN AND CONNECTION IS BY THE DESIGN PROFESSIONAL.
2. A 2x WOOD FILLER WITH 1/4"x4-1/2" (MIN.) WS SCREWS IS PERMITTED.
3. WHEN CRIPPLE STUDS OCCUR, SHEAR TRANSFER DESIGN TO BE PER THE BUILDING DESIGN PROFESSIONAL.
4. 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" MINIMUM FROM ANY EDGE. FOR PANELS MORE THAN 12" WIDE, ADDITIONAL HOLES MUST BE OFFSET 1" MINIMUM FROM THE 3" DIA. PREPUNCHED HOLE. FOR HOLES LARGER THAN 1" DIAMETER OR TO ADD MORE THAN ONE HOLE CONTACT MITEK HARDY FRAME TECHNICAL SUPPORT AT (800) 754-3030.

TOP CONNECTION TO HEADER 4



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. ADJACENT FRAMING OPTIONAL U.N.O. BY BUILDING DESIGN PROFESSIONAL.

INSTALLATION ON CURB 9

HFX PANELS 78 IN. THROUGH NOMINAL 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				
HFX-12,15,18,21 & 24x8	92-1/4			12" Width = 6	
HFX-9x8	93-3/4			15" Width = 8	
HFX-12,15,18,21 & 24x9	104-1/4				
HFX-12,15,18,21 & 24x10	116-1/4			18" Width = 10	5
HFX-15,18,21 & 24x11	128-1/4			21" Width = 12	
HFX-15,18,21 & 24x12	140-1/4			24" Width = 14	6
HFX-15,18,21 & 24x13	152-1/4				

BALLOON PANELS 14 FEET THROUGH 20 FEET

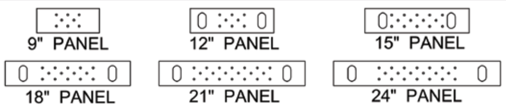
Model Number	Net Height (in)	Depth (in)	Hold Down Diameter[1] (in)	Top Screw Qty[2] (ea)	Screw Qty Available at Edges (ea)[3]
HFX-15,18,21 & 24x14	164-1/4	3-1/2	1-1/8	15" Width = 8	6
HFX-15,18,21 & 24x15	176-1/4				
HFX-15,18,21 & 24x16	188-1/4			18" Width = 10	
HFX-15,18,21 & 24x17	200-1/4			21" Width = 12	7
HFX-15,18,21 & 24x18	212-1/4				
HFX-15,18,21 & 24x19	224-1/4			24" Width = 14	8
HFX-15,18,21 & 24x20	236-1/4				

TABLE NOTES
1. FOR STD OR HS GRADE HOLD DOWN ANCHOR BOLTS CONNECT TO THE PANEL BASE WITH HARDENED ROUND WASHERS BELOW GRADE 8 NUTS. ALTERNATE WASHERS ARE (2 EA) ROUND-FLAT OR (2 EA) SAE WASHERS ON EACH BOLT. ALTERNATE NUTS ARE 2H HEAVY HEX.
2. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 3" (MINIMUM) WHEN ATTACHED DIRECTLY TO THE COLLECTOR AND 4-1/2" (MINIMUM) WHEN INSTALLING A 2x FILLER ABOVE THE PANEL.
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS IS REQUIRED AT THE PANEL EDGES WHEN INSTALLING A FILLER ABOVE THE TOP CHANNEL THAT IS GREATER THAN 1-1/2" OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.

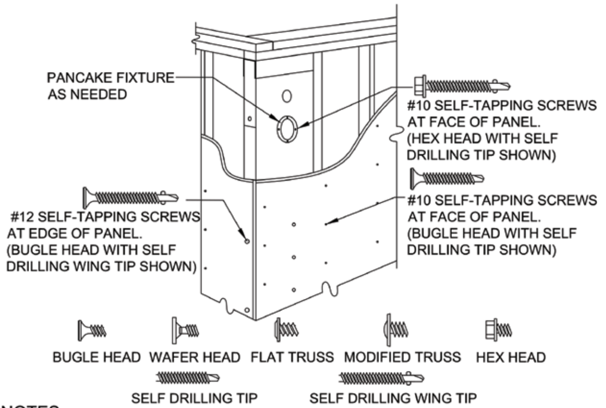
A

INSTALLATION INSTRUCTIONS
1. WHEN INSTALLING ON CONCRETE CONNECT WITH (1 EA) HARDENED ROUND WASHER BELOW (1 EA) GRADE 8 NUT, SECURE WITH A DEEP SOCKET (RECOMMENDED) UNTIL SNUG TIGHT. ALTERNATE WASHERS AND NUTS ARE PROVIDED IN TABLE NOTE 1.
2. INSTALLATION ON CONCRETE PROVIDES THE HIGHEST ALLOWABLE VALUES. CONFIRM WITH THE DESIGN PROFESSIONAL BEFORE INSTALLING ON OTHER SUPPORTING SURFACES.
3. USE 1/4"X4-1/2" MITEK® PRO SERIES℠ WS SCREWS 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.) USE1/4 x 3" (MIN)
4. FOR INSTALLATIONS WITH A FILLER GREATER THAN 1-1/2" ABOVE, OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL, ADJACENT KING POSTS TO BRACE THE OUT-OF-PLANE HINGE CAN BE CONNECTED WITH 1/4" DIA. SCREWS THROUGH PRE-PUNCHED HOLES AT THE PANEL EDGES.

B



C



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

D

REVISIONS	DATE

FRAMING DETAILS - HFX PANELS

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

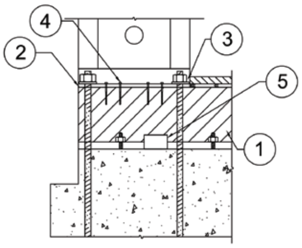
MiTek®

HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

DATE:
1-1-2023

HFX2

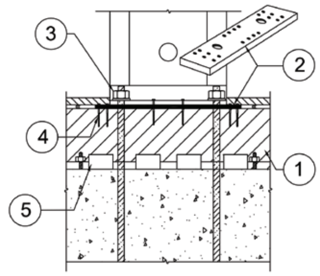
NOTES:
A. INSTALLATION WITHOUT *HARDY FRAME®* BEARING PLATE (HFXBP) MAY INCREASE DEFLECTION AND RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUE, BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS
B. COUPLERS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME®* PANEL DIRECTLY ON RIM.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. 1/4" x 4-1/2" (MINIMUM) WS SCREWS THROUGH BOTTOM OF PANEL MINIMUM QUANTITY PER TABLE.
5. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

RAISED-OS CORNER 4

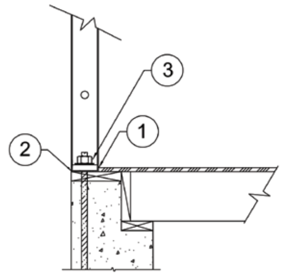
NOTE:
COUPLERS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME®* BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
5. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

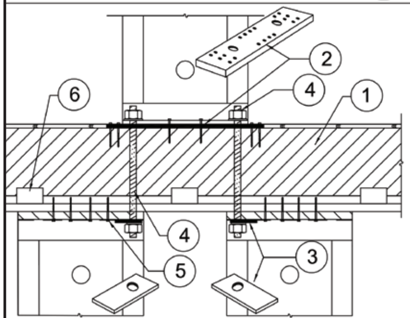
RAISED BEARING PLATE 3

NOTES:
A. CHECK WALL HEIGHT, *HARDY FRAME®* BEARING PLATES BELOW THE PANEL BASE OR CUSTOM HEIGHT PANELS ARE AVAILABLE TO AVOID FILLERS GREATER THAN 1-1/2".
B. FOR MAXIMUM ALLOWABLE VALUES INSTALL PANEL ON CONCRETE



1. FLOOR SHEATHING NOTCHED, INSTALL PANEL ON WOOD PLATE.
2. 15# FELT OR EQUIVALENT RECOMMENDED BETWEEN PANEL BASE AND TREATED MUDSILL.
3. NUTS AND WASHERS PER TABLE NOTE 1.

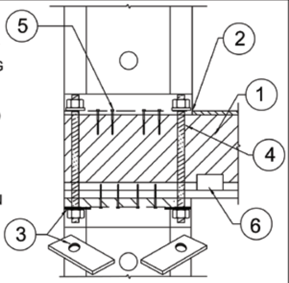
RAISED STEM WALL 2



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME®* BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME®* STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8 IN. DIA HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

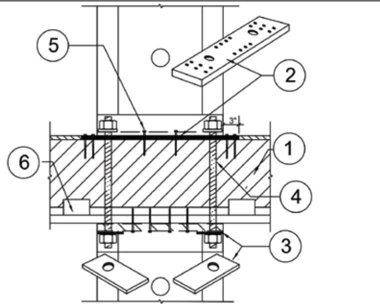
PYRAMID STACK 8

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



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME®* PANEL DIRECTLY ON RIM.
3. *HARDY FRAME®* STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

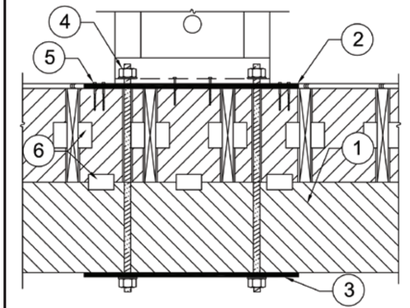
STACK @ OS CORNER 7



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME®* BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME®* STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STRAIGHT STACK 6

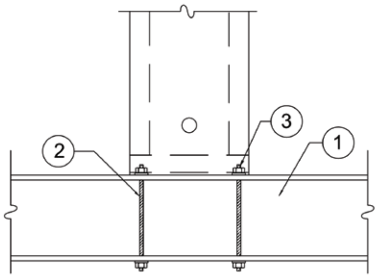
LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. DROP BEAM WITH FLOOR JOIST ABOVE PER PLAN.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME®* BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME®* BEARING PLATE (HFXBP) OR BEARING PLATE WASHER AT UNDERSIDE OF BEAM SIZED PER BUILDING DESIGN PROFESSIONAL TO LIMIT CRUSHING FROM TENSION ANCHOR FORCES.
4. NUTS AND WASHERS PER TABLE NOTE 1.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP CONNECTORS BY DESIGN PROFESSIONAL

DROP BM - FL SYSTEM 14

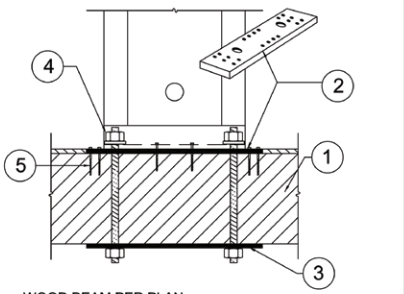
LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. STEEL BEAM PER PLANS
2. HOLD DOWN ALL THREAD RODS THRU-BOLTED TO BOTTOM FLANGE OF STEEL BEAM BY BUILDING DESIGN PROFESSIONAL.
3. NUTS AND WASHERS AT PANEL BASE PER TABLE NOTE 1

STEEL BM THRU-BOLT 13

LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. WOOD BEAM PER PLAN.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME®* BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME®* BEARING PLATE (HFXBP) OR BEARING PLATE WASHER AT UNDERSIDE OF BEAM SIZED PER BUILDING DESIGN PROFESSIONAL TO LIMIT CRUSHING FROM TENSION ANCHOR FORCES.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.

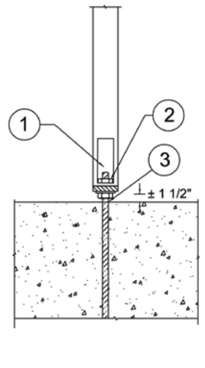
WOOD BM THRU-BOLT 12

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter[1] (in)	Screw Quantity Panel	Top[2] (ea)	Bott[3] (ea)	Screw Qty[4] Available at Edges (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	5
HFX-15,18,21 & 24x11	128-1/4			21" Width	12	12	
HFX-15,18,21 & 24x12	140-1/4			24" Width	14	14	6
HFX-15,18,21 & 24x13	152-1/4						

NOTE: *HARDY FRAME*® STACKING WASHERS (HFSW) ARE REQUIRED IN THE TOP OF PANELS WHEN CONNECTING TO TENSION ANCHORS FROM ABOVE. *HARDY FRAME*® "STK PANELS" INCLUDE HFSW WASHERS PRE-WELDED IN THE TOP CHANNEL.

1. HOLD DOWN TENSION ANCHORS SPECIFIED AS STANDARD GRADE (STD) MUST COMPLY WITH ASTM F1554 GRADE 36 (OR EQUAL). HOLD DOWN TENSION ANCHORS SPECIFIED AS HIGH STRENGTH (HS) MUST COMPLY WITH ASTM A 193 GRADE B7 (OR EQUAL). TENSION ANCHORS (BOTH GRADES) CONNECT TO THE UPPER AND LOWER PANELS WITH HARDENED ROUND WASHERS AND GRADE 8 NUTS. A *HARDY FRAME*® "HFSW" STACKING WASHER IS REQUIRED IN THE TOP CHANNEL OF THE LOWER PANEL (AVAILABLE PRE-WELDED IN A *HARDY FRAME*® "STK" PANEL). ALTERNATE WASHERS ARE (2 EA) ROUND-FLAT OR (2 EA) SAE WASHERS AT EACH ANCHOR CONNECTION. ALTERNATE NUTS ARE 2H HEAVY HEX.
2. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. 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 MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 4-1/2" (MINIMUM) AT CONNECTIONS TO FLOOR SYSTEMS AND BEAMS BELOW.
4. 1/4" DIAMETER SCREWS ARE REQUIRED AT THE EDGES WHEN INSTALLING A FILLER GREATER THAN 1-1/2 INCH ABOVE OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.

A



1. ACCESS HOLE LOCATED AT EDGE OF POST.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH 5,000 PSI STRENGTH NON-SHRINK GROUT (MIN).

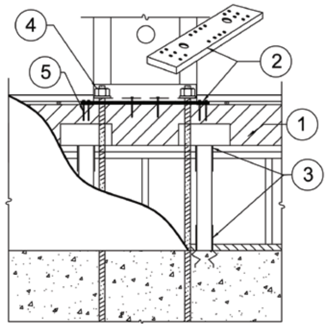
POST ON N&W 1

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

1. WITH HOLES PRE-DRILLED FOR 1-1/8" DIA.TENSION ANCHORS, INSTALL A SOLID 4x (MINIMUM) RIM IN FLOOR SYSTEM AT PANEL LOCATION. ALLOWABLE VALUE TABLES ASSUME THE RIM IS ENGINEERED WOOD PRODUCT (EWP).
2. NOTCH FLOOR SHEATHING THEN INSTALL HFXBP ON RIM WITH 6 EACH 1/4"X4-1/2" (MIN) "WS" SCREWS AT EACH END.
3. PLACE PANEL ON HFXBP.
4. WHEN STACKING PANELS, INSTALL "HFSW" STACKING WASHERS IN THE TOP CHANNEL OF THE LOWER PANEL. CONNECT LOWER TO UPPER PANELS WITH TENSION ANCHORS (GRADE PER PLANS) AND SECURE AT BOTH ENDS WITH HARDENED ROUND WASHERS AND GRADE 8 NUTS TO BE SNUG TIGHT. *HARDY FRAME* "STK" PANELS THAT INCLUDE "HFSW" STACKING WASHERS PRE-WELDED IN THE TOP CHANNEL ARE AVAILABLE,
5. WHEN MORE THAN 12 SCREWS ARE REQUIRED FOR THE BOTTOM CONNECTION OR JOINTS IN FRAMING MEMBERS OCCUR AT SCREW LOCATIONS, INSTALL ADDITIONAL 1/4"x4-1/2" WS SCREWS THROUGH THE BASE OF PANEL WHERE THEY ALIGN WITH HOLES IN THE HFXBP.
6. FOR STANDARD WALL HEIGHTS, INSTALL A 2x FILLER ABOVE PANEL (DTL 5/HFX2). FOR FILLERS GREATER THAN 1-1/2 IN. SEE DETAIL 6/HFX2.

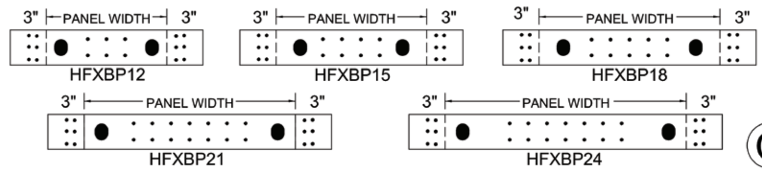
NOTE: INSTALLATIONS MAY VARY WITH JOB SPECIFIC CONDITIONS AND/OR SPECIFICATIONS BY THE BUILDING DESIGN PROFESSIONAL.

B

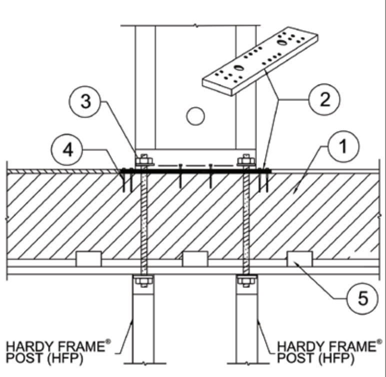


1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. USP POST CAP AND POST BASE BY THE BUILDING DESIGN PROFESSIONAL.
4. NUTS AND WASHERS PER TABLE NOTE 1.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.

CRIPPLE WALL 5

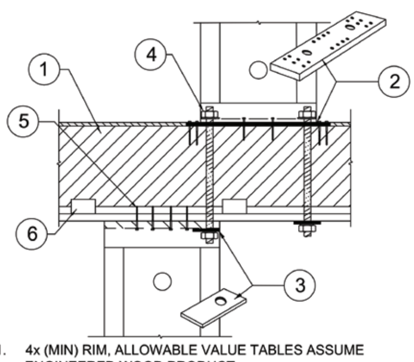


C



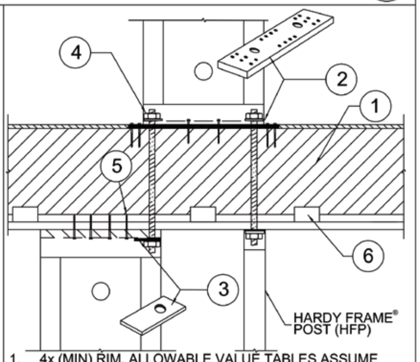
1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
4. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
5. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

HFP POSTS BELOW 11



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STAGGERED THRU-BOLT 10



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STAGGERED-HFP POST 9

REVISIONS	DATE

FLOOR SYSTEM DETAILS - HFX PANELS

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

MiTek®

HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

DATE:
1-1-2023

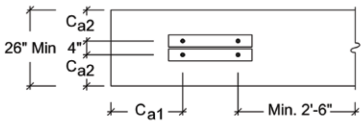
HFX3

BACK TO BACK REINFORCED ANCHORAGE (BB-RA)

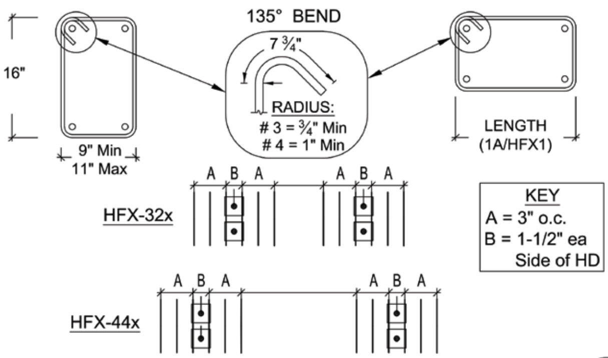
Model	Brace Frame Height	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	BB-RA le[4] (in)	C_{a1}[5] (in)	C_{a2}[6] (in)	Stirrups[9] (in)	Shear[7] Ties
HFX-32x	8' - 13'	7/8-STD-BB-RA	7/8	STD	15	23-3/4	11	12 - # 4	# 3 (min) @ 4" OC
		7/8-HS-BB-RA		HS					
HFX-44x		7/8-STD-BB-RA		STD		24-1/2			
		7/8-HS-BB-RA		HS					

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

7/8 - STD - BB - RA
- REINFORCED ANCHORAGE
- "BACK TO BACK" INSTALLATION
- ROD GRADE
- ROD DIAMETER



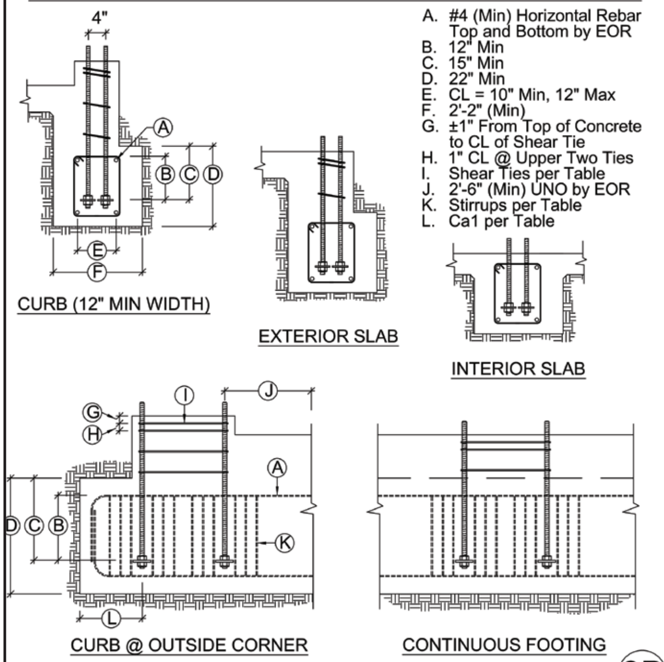
3



BB-RA SHEAR TIES & STIRRUPS

3A

A. #4 (Min) Horizontal Rebar Top and Bottom by EOR
B. 12" Min
C. 15" Min
D. 22" Min
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



BB-RA SECTIONS & ELEVATIONS

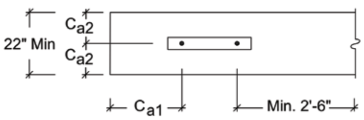
3B

REINFORCED ANCHORAGE (RA)

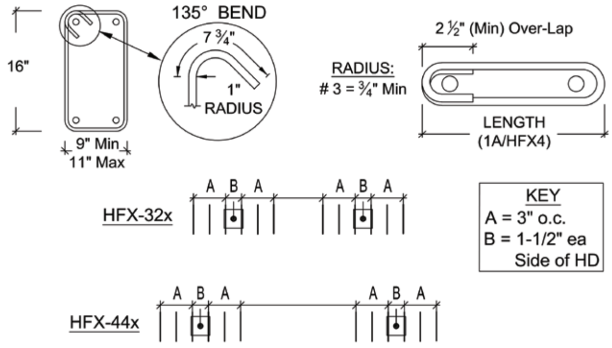
Model	Brace Frame Height	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	RA le[4] (in)	C_{a1}[5] (in)	C_{a2}[6] (in)	Stirrups[9] (in)	Shear[7] Ties
HFX-32x	8' - 13'	7/8-STD-RA	7/8	STD	15	23-3/4	11	12 - # 4	# 3 (min) @ 4" OC
		7/8-HS-RA		HS					
HFX-44x		7/8-STD-RA		STD		24-1/2			
		7/8-HS-RA		HS					

REINFORCED ANCHORAGE NOMENCLATURE

7/8 - STD - RA
- REINFORCED ANCHORAGE
- ROD GRADE
- ROD DIAMETER



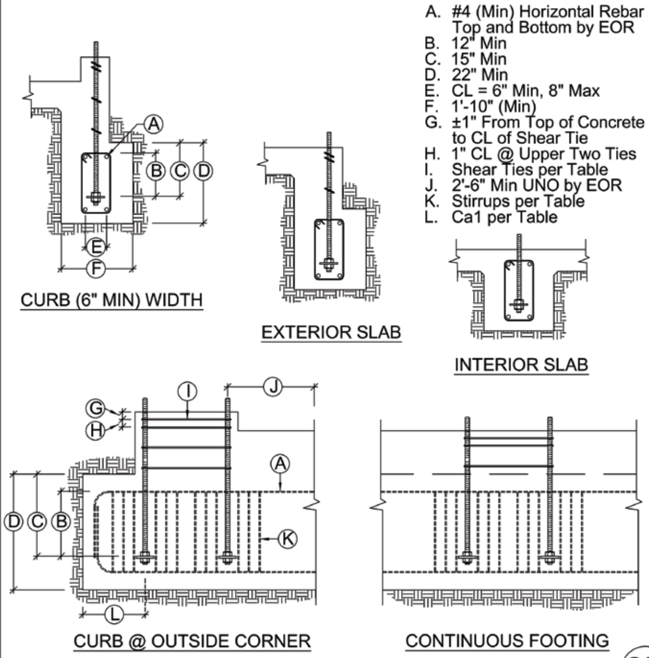
2



RA SHEAR TIES & STIRRUPS

2A

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



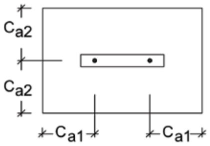
RA SECTIONS & ELEVATIONS

2B

UNREINFORCED ANCHORAGE (UA)

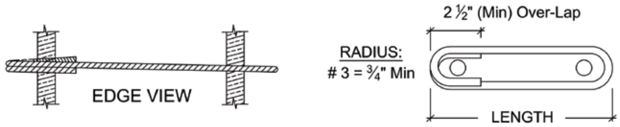
Model	Brace Frame Height	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	UA l_e[4] (in)	UA C_{a1}[5] & C_{a2}[6] (in)	Shear[7,8] Ties
HFX-32x	8' - 13'	7/8-STD-10-14	7/8	STD	10	14	1 - # 3
		7/8-HS-15-22		HS	15	22	
HFX-44x		7/8-STD-10-14		STD	10	14	1 - # 3
		7/8-HS-15-22		HS	15	22	2 - # 3

UNREINFORCED ANCHORAGE NOMENCLATURE
7/8 - STD - 10 - 14
END & EDGE DISTANCE (C_{a1} & C_{a2})
EMBEDMENT DEPTH (l_e)
ROD GRADE
ROD DIAMETER



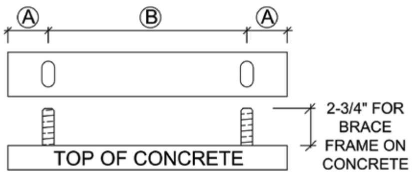
1

1. DESIGNS ARE TO RESIST LOADING PER ACI 318-19, SEC 17.10.5.3.
2. STD INDICATES ANCHORS COMPLYING WITH ASTM F1554 GRADE 36 WITH A HARDY FRAME BOLT BRACE (HFXBB) INSTALLED WITH STD OR GRADE 8 DOUBLE NUTS ON THE EMBED END.
3. HS INDICATES ANCHORS COMPLYING WITH ASTM A193 GRADE B7 WITH A 1/2"x3"x3"(MIN) HFPW PLATE WASHER INSTALLED WITH DOUBLE NUTS ON THE EMBED END (HFXBB NOT REQUIRED).
4. LE = LENGTH OF EMBEDMENT FROM THE TOP OF FOOTING OR GRADE BEAM TO THE TOP OF THE HFXBB BOLT BRACE (TOP OF THE EMBEDDED HFPW PLATE WASHER @ HS ANCHORS)
5. CA1 = DISTANCE FROM HD CENTERLINE TO THE END OF THE FOOTING OR GRADE BEAM.
6. CA2 = DISTANCE FROM HD CENTERLINE TO BOTH THE FRONT AND THE BACK FACE OF THE FOOTING OR GRADE BEAM.
7. SHEAR TIES ARE GRADE 60 (MIN) REBAR AND REQUIRED FOR NEAR EDGE DISTANCE CONDITIONS PER ACI 318-19, 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.
8. FOR UA APPLICATIONS, ADDITIONAL TIES MAY BE REQUIRED AT STEM WALLS. SHEAR TIES ARE NOT REQUIRED FOR INSTALLATION AWAY FROM EDGE (SEE DETAIL 1A), INSTALLATION ON WOOD FRAMING, OR FOR IRC BRACED WALL PANEL APPLICATIONS.
9. STIRRUPS ARE GRADE 60 (MIN) REBAR. SEE TABLE FOR SIZE AND SPACING. SEE "STIRRUP LAYOUT" DIAGRAMS AND "KEY" FOR LAYOUT PATTERNS.
10. CONCRETE EDGE DISTANCES MUST COMPLY WITH ACI 318-19, SECTION 17.9.2. COATED REINFORCEMENT MAY BE SPECIFIED BY THE EOR TO LIMIT EXPOSURE AND THEREFORE REDUCE MINIMUM CONCRETE COVER. COATED REINFORCEMENT MUST COMPLY WITH ACI 318-19, SECTION 20.5.2.



SHEAR TIES		NOT REQUIRED WHEN	
Model	Length	End Distance ≥	Edge Distance ≥
HFX-32x	22-1/2"	10-3/8"	6"
HFX-44x	33"	10-3/8"	6"

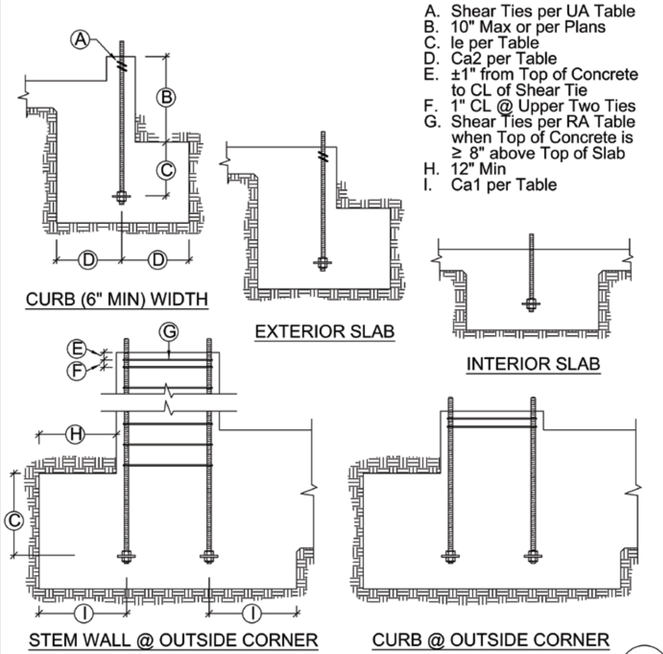
UA SHEAR TIES 1A



Model	Width	A	B
HFX-32x	32"	5-3/4"	20-1/2"
HFX-44x	44"	6-1/2"	31"

HFX ANCHOR CENTERLINES A

A. Shear Ties per UA Table
B. 10" Max or per Plans
C. le per Table
D. Ca2 per Table
E. ±1" from Top of Concrete to CL of Shear Tie
F. 1" CL @ Upper Two Ties
G. Shear Ties per RA Table when Top of Concrete is ≥ 8" above Top of Slab
H. 12" Min
I. Ca1 per Table



UA SECTIONS & ELEVATIONS 1B

IMPORTANT!

1. ANCHORAGE IS DESIGNED FOR TENSION AND SHEAR TRANSFER ONLY, FOUNDATION DESIGN PER EOR.
2. REINFORCEMENT SHOWN IS THE MINIMUM REQUIREMENT AND IS NOT INTENDED TO REPLACE REINFORCEMENT DESIGNED BY THE EOR.
3. HIGH STRENGTH ALL-THREAD RODS PROVIDED BY MITEK HARDY FRAME ARE STAMPED ON BOTH ENDS.

HF B7

IMPORTANT NOTES B

REVISIONS	DATE

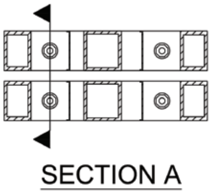
ANCHORAGE DETAILS - HFX BRACE FRAMES

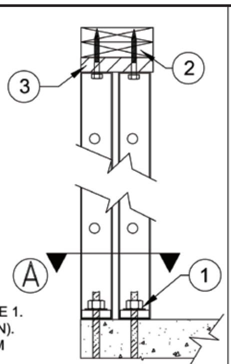
THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH *HARDY FRAME* PRODUCTS

MiTek®
HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

DATE:
1-1-2023

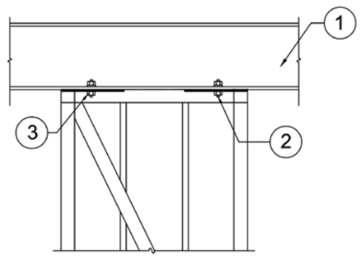
HFX4





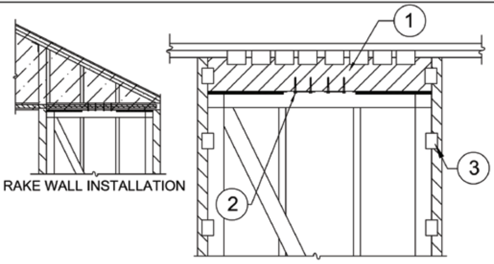
1. NUTS AND WASHERS PER TABLE NOTE 1.
2. NOMINAL 8 INCH FRAMING ABOVE (MIN).
3. A 2x FILLER WITH 1/4" x 4-1/2" MINIMUM WS SCREWS IS PERMITTED.

BACK TO BACK INSTALLATION (3)



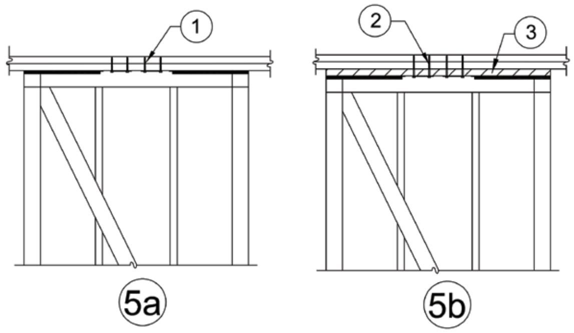
1. STEEL BEAM PER PLANS
2. ALL THREAD RODS THRU-BOLTED TO STEEL BEAM BY BUILDING DESIGN PROFESSIONAL.
3. NUTS AND WASHERS PER TABLE NOTE 1.

STEEL BEAM ABOVE (2)



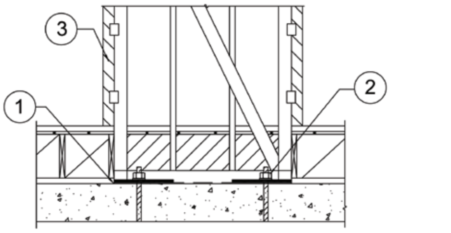
1. WOOD FILLER WITH USP MP4F CONNECTORS BOTH SIDES, QUANTITY BY BUILDING DESIGN PROFESSIONAL.
2. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. ADJACENT FRAMING WITH #10 SELF-TAPPING SCREWS OR USP MP4F CONNECTORS BOTH SIDES OF FRAME AND BOTH SIDES OF FILLER TO KING POST. SEE TABLE NOTE 3, DETAIL A AND INSTALLATION INSTRUCTION NOTE 4, DETAIL B.

FILLER GREATER THAN 1-1/2 IN. (6)



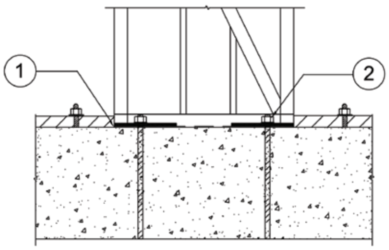
1. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
2. 1/4" x 4-1/2" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. 2x WOOD FILLER.

TOP PLATE CONNECTIONS (5)



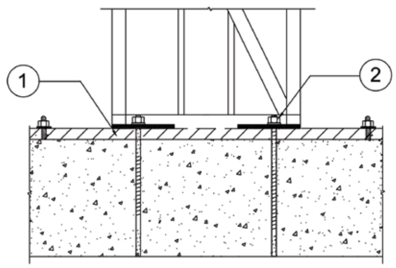
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN BRACE FRAME BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. ADJACENT FRAMING WITH #10 SELF-TAPPING SCREWS OR USP MP4F CONNECTORS BOTH SIDES OF FRAME WHEN INSTALLING A FILLER GREATER THAN 1-1/2" ABOVE OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.

RAISED FLOOR HEAD-OUT (8)



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

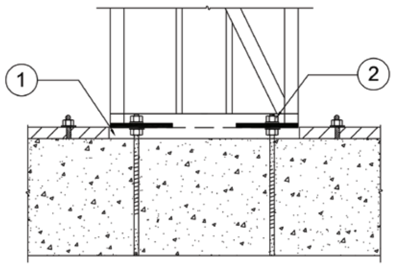
INSTALLATION ON CONCRETE (7)



ALLOWABLE VALUES ON 2x PLATE ARE LESS THAN ON CONCRETE

1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND TREATED PLATE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

INSTALLATION ON 2x PLATE (11)

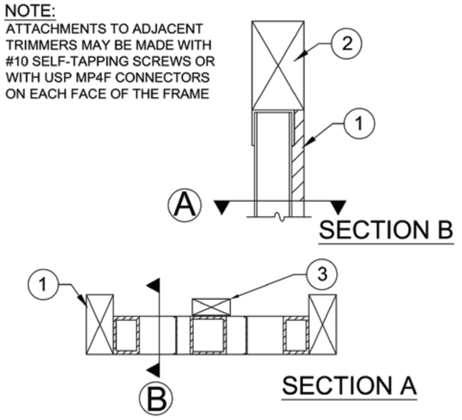


ALLOWABLE VALUES ON N&W ARE LESS THAN INSTALLATION ON CONCRETE

1. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH 5,000 PSI NON-SHRINK GROUT (MINIMUM).
2. NUT AND WASHER GRADES PER TABLE NOTE 1.

INSTALLATION ON NUTS & WASHERS (10)

NOTE:
ATTACHMENTS TO ADJACENT TRIMMERS MAY BE MADE WITH #10 SELF-TAPPING SCREWS OR WITH USP MP4F CONNECTORS ON EACH FACE OF THE FRAME



1. TRIMMERS PROVIDE FULL BEARING FOR HEADER ABOVE, DESIGN AND CONNECTIONS BY BUILDING DESIGN PROFESSIONAL.
2. 6x HEADER.
3. WOOD MEMBER FLUSH TO FACE OF WALL FOR BACKING AS NEEDED.

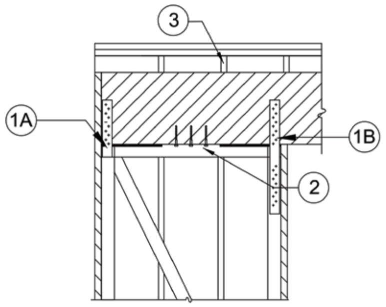
6x HEADER ABOVE-SECTION (1)

HFX BRACE FRAMES NOMINAL 8 THROUGH 13 FEET

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

TABLE NOTES
1. FOR STD OR HS GRADE HOLD DOWN ANCHOR BOLTS CONNECT TO THE BRACE FRAME BASE WITH HARDENED ROUND WASHERS BELOW GRADE 8 NUTS. ALTERNATE WASHERS ARE (2 EA) ROUND-FLAT OR (2 EA) SAE WASHERS ON EACH BOLT. ALTERNATE NUTS ARE 2H HEAVY HEX.
2. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 3" (MINIMUM) WHEN ATTACHED DIRECTLY TO THE COLLECTOR AND 4-1/2" (MINIMUM) WHEN INSTALLING A 2x FILLER ABOVE THE BRACE FRAME.
3. ADJACENT FRAMING CONNECTED TO THE BRACE FRAME EDGES AND THE FILLER IS REQUIRED WHEN INSTALLING A FILLER ABOVE THE TOP CHANNEL THAT IS GREATER THAN 1-1/2" OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.

(A)



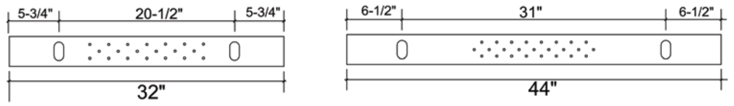
1. (A) PRE-WELDED STRAPS ARE AVAILABLE UPON REQUEST.
   (B) FIELD INSTALLED STRAPS WITH SELF TAPPING SCREWS ARE PERMITTED. THE DESIGN AND CONNECTION IS BY THE DESIGN PROFESSIONAL.
2. A 2x WOOD FILLER WITH 1/4"x4-1/2" (MIN.) WS SCREWS IS PERMITTED.
3. WHEN CRIPPLE STUDS OCCUR, SHEAR TRANSFER DESIGN TO BE PER THE BUILDING DESIGN PROFESSIONAL.

TOP CONNECTION TO HEADER (4)

INSTALLATION INSTRUCTIONS

1. WHEN INSTALLING ON CONCRETE CONNECT WITH (1 EA) HARDENED ROUND WASHER BELOW (1 EA) GRADE 8 NUT, SECURE WITH A SOCKET OR WRENCH UNTIL SNUG TIGHT. ALTERNATE WASHERS AND NUTS ARE PROVIDED IN TABLE NOTE 1.
2. INSTALLATION ON CONCRETE PROVIDES THE HIGHEST ALLOWABLE VALUES. CONFIRM WITH THE DESIGN PROFESSIONAL BEFORE INSTALLING ON OTHER SUPPORTING SURFACES.
3. USE 1/4"X4-1/2" MITEK® PRO SERIES™ WS SCREWS AT TOP CONNECTIONS WITH A 2x FILLER. IF THE TOP OF BRACE FRAME IS IN DIRECT CONTACT WITH THE COLLECTOR ABOVE (TOP PLATES, HEADER, BEAM, ETC.) USE1/4 x 3" (MINIMUM)
4. FOR INSTALLATIONS WITH A FILLER GREATER THAN 1-1/2" ABOVE, OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL, ADJACENT KING POSTS TO BRACE THE OUT-OF-PLANE HINGE CAN BE CONNECTED TO THE BRACE FRAME WITH SELF-TAPPING SCREWS INSTALLED THROUGH HOLES PRE-DRILLED IN THE WOOD MEMBER OR WITH USP MPF4 CONNECTORS ON EACH FACE OF THE FRAME TO THE WOOD MEMBER. FOR BOTH METHODS OF CONNECTING THE FASTENER QUANTITY IS DETERMINED BY THE BUILDING DESIGN PROFESSIONAL.

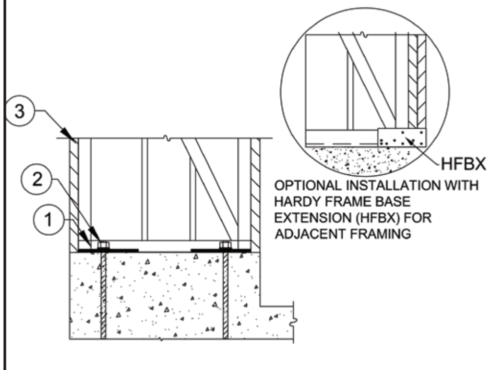
(B)



32" BRACE FRAME

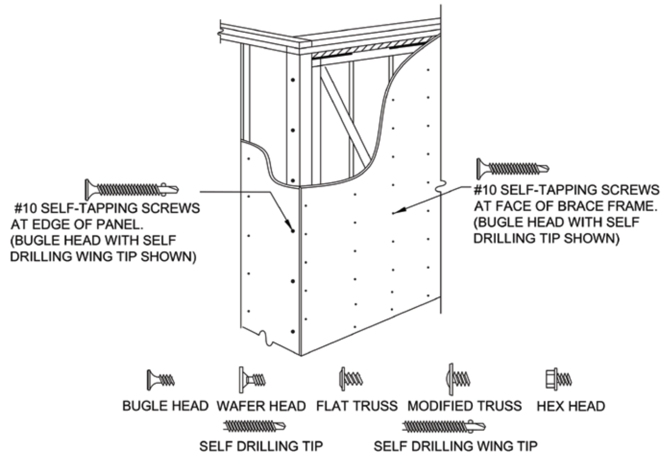
44" BRACE FRAME

HOLE PATTERN TOP & BOTTOM (C)



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN BRACE FRAME BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. ADJACENT FRAMING OPTIONAL OR BY BUILDING DESIGN PROFESSIONAL.

INSTALLATION ON CURB (9)



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

(D)

REVISIONS	DATE

FRAMING DETAILS - HFX BRACE FRAMES

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

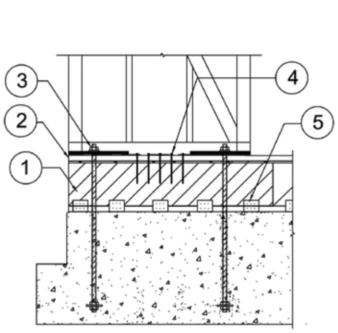
HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

MiTek®

DATE:
1-1-2023

HFX5

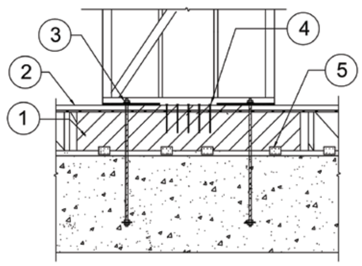
NOTE:
COUPLERS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



1. 4x MINIMUM RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT
2. WOOD PLATE BELOW BRACE FRAME
3. NUTS AND WASHERS PER TABLE NOTE 1
4. 1/4" x 4-1/2" (MIN) WS SCREWS PER TABLE NOTE 3
5. USP MP4F CONNECTORS QUANTITY BY THE DESIGN PROFESSIONAL

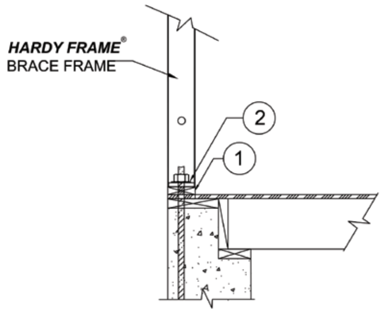
RAISED-OS CORNER (4)

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



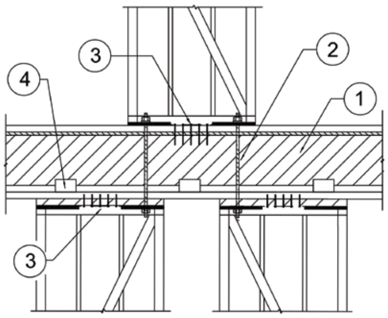
1. 4x MINIMUM RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT
2. WOOD PLATE BELOW BRACE FRAME
3. NUTS AND WASHERS PER TABLE NOTE 1
4. 1/4" x 4-1/2" (MIN) WS SCREWS PER TABLE NOTE 3
5. USP MP4F CONNECTORS QUANTITY BY THE DESIGN PROFESSIONAL

RAISED FLOOR (3)



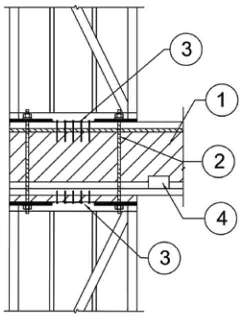
1. INSTALL BRACE FRAME ON 2x PLATE OVER SHEATHING
2. NUTS AND WASHERS PER TABLE NOTES 1 AND 2

RAISED STEM WALL (2)



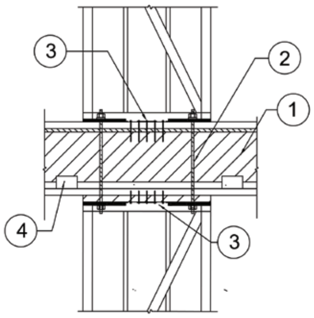
1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

PYRAMID STACK (8)



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

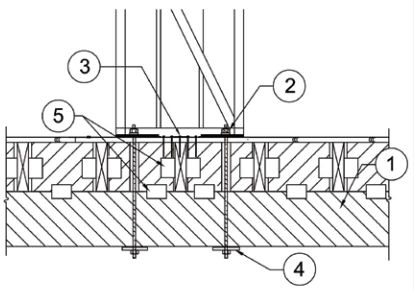
STACK @ OS CORNER (7)



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STRAIGHT STACK (6)

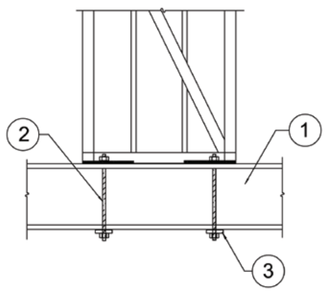
LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. DROP BEAM WITH FLOOR JOIST ABOVE PER PLAN.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. BEARING PLATE WASHER AT UNDERSIDE OF BEAM SIZED PER BUILDING DESIGN PROFESSIONAL TO LIMIT CRUSHING FROM TENSION ANCHOR FORCES.
5. USP CONNECTORS BY DESIGN PROFESSIONAL

DROP BM - FL SYSTEM (14)

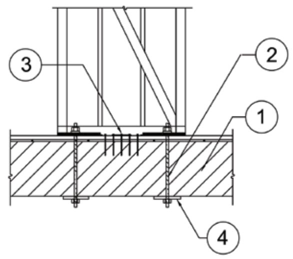
LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. STEEL BEAM PER PLAN
2. 7/8" DIA.HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. PLATE WASHER AT UNDERSIDE OF STEEL BEAM IF SPECIFIED BY THE BUILDING DESIGN PROFESSIONAL.

STEEL BM THRU-BOLT (13)

LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. WOOD BEAM PER PLAN.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. BEARING PLATE WASHER AT UNDERSIDE OF BEAM SIZED PER BUILDING DESIGN PROFESSIONAL TO LIMIT CRUSHING FROM TENSION ANCHOR FORCES.

WOOD BM THRU-BOLT (12)

REVISIONS	DATE

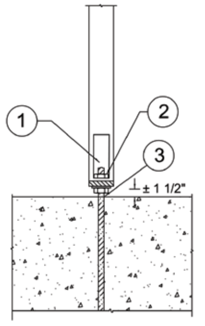
FLOOR SYSTEMS - HFX BRACE FRAMES

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

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

1. TENSION ANCHORS SPECIFIED AS STANDARD GRADE (STD) MUST COMPLY WITH ASTM F1554 GRADE 36 (OR EQUAL) TENSION ANCHORS SPECIFIED AS HIGH STRENGTH (HS) MUST COMPLY WITH ASTM A 193 GRADE B7 (OR EQUAL). TENSION ANCHORS (BOTH GRADES) CONNECT TO THE UPPER AND LOWER BRACE FRAMES WITH HARDENED ROUND WASHERS AND GRADE 8 NUTS. ALTERNATE WASHERS ARE (2 EA) ROUND-FLAT OR (2 EA) SAE WASHERS AT EACH ANCHOR CONNECTION. ALTERNATE NUTS ARE 2H HEAVY HEX.
2. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 3" (MINIMUM) WHEN ATTACHING DIRECTLY TO THE COLLECTOR AND 4-1/2" (MINIMUM) WHEN INSTALLING A 2x FILLER ABOVE THE BRACE FRAME.
3. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 4-1/2" (MINIMUM) AT CONNECTIONS TO FLOOR SYSTEMS AND BEAMS BELOW.

A



1. ACCESS HOLE LOCATED AT EDGE OF POST.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH 5,000 PSI STRENGTH NON-SHRINK GROUT (MIN).

POST ON N&W (1)

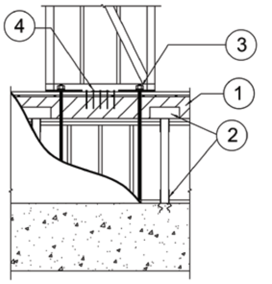
INSTALLATION ON FLOOR SYSTEM INSTRUCTIONS

1. WITH HOLES PRE-DRILLED FOR 7/8" DIA.TENSION ANCHORS, INSTALL A SOLID 4x (MINIMUM) RIM IN FLOOR SYSTEM AT BRACE FRAME LOCATION. ALLOWABLE VALUE TABLES ASSUME THE RIM IS ENGINEERED WOOD PRODUCT (EWP).
2. AFTER FLOOR SHEATHING, CUT AND PLOT THE BOTTOM PLATE OR THE PLATE CAN BE CONTINUOUS.
3. INSTALL THE FRAME ON THE WOOD PLATE AND SECURE ANCHORS WITH HARDENED ROUND WASHERS AND GRADE 8 NUTS TO BE SNUG TIGHT.
4. WHEN STACKING FRAMES, CONNECT THE LOWER FRAME TO THE UPPER FRAME WITH TENSION ANCHORS (GRADE PER PLANS) AND SECURE AT BOTH ENDS WITH HARDENED ROUND WASHERS AND GRADE 8 NUTS TO BE SNUG TIGHT. *HARDY FRAME®* BRACE FRAMES AND POSTS (HFP) INCLUDE PLATE WASHERS PRE-WELDED IN THE TOP AND BOTTOM CHANNELS.
5. INSTALL 1/4"x4-1/2" (MIN) MITEK® PRO SERIES™ SCREWS THROUGH THE BOTTOM CHANNEL. SEE TABLE FOR MINIMUM QUANTITY.
6. WHEN JOINTS IN FRAMING MEMBERS OCCUR AT SCREW LOCATIONS, INSTALL ADDITIONAL SCREWS.
7. FOR STANDARD WALL HEIGHTS, INSTALL 1/4"x3" (MIN) MITEK® PRO SERIES℠ WS SCREWS THROUGH THE TOP CHANNEL INTO THE COLLECTOR. SEE TABLE FOR MINIMUM QUANTITIES.

NOTE: INSTALLATIONS MAY VARY WITH JOB SPECIFIC CONDITIONS AND/OR SPECIFICATIONS BY THE DESIGN PROFESSIONAL.

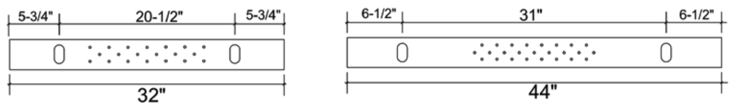
B

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



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. USP POST CAP AND POST BASE BY THE BUILDING DESIGN PROFESSIONAL.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.

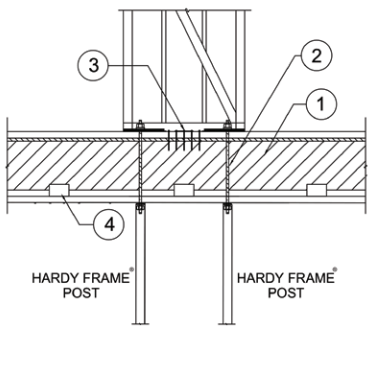
CRIPPLE WALL (5)



32" BRACE FRAME

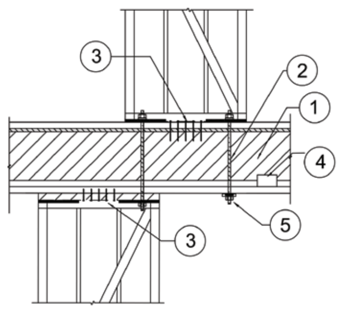
44" BRACE FRAME

HOLE PATTERN TOP & BOTTOM (C)



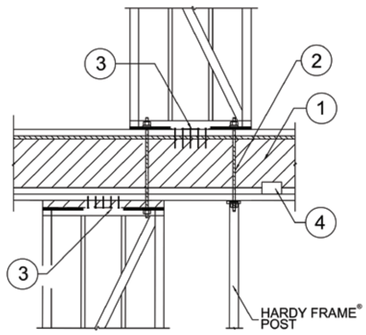
1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

HFP POSTS BELOW (11)



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.
5. BEARING PLATE WASHER AT UNDERSIDE OF BEAM SIZED PER PER BUILDING DESIGN PROFESSIONAL TO LIMIT CRUSHING FROM TENSION ANCHOR FORCES.

STAGGERED THRU-BOLT (10)



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. 7/8" DIA. HOLD DOWN AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME®* HFTC KIT.
3. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
4. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STAGGERED-HFP POST (9)

HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

MiTek®

DATE:
1-1-2023

HFX6

MiTek® Hardy Frames introduced the first standardized, prefabricated Special Moment Frame in 2006. Since then we have delivered thousands of Moment Frames that have been successfully installed. Our Special Moment Frames provide maximum structural capacities and enable large openings in architectural design.

The MiTek® Hardy Frame® Special Moment Frame (HFSMF) connections are approved in the AISC 358 Prequalified Moment Connection Standard. As part of the review, testing was submitted to confirm that **lateral bracing to prevent twist and out-of-plane displacements is not required** at the Hollow Structural Section (HSS) beams used in the HFSMF.

MOMENT FRAME

PICTURE FRAME

CONFIGURATIONS

The **MiTek® Hardy Frame®** Special Moment Frame is available in multi-story, multi-bay, Portal Frame and Picture Frame configurations. Picture Frames consist of four column to beam special moment connections.

HFSMF IN MULTI-FAMILY PROJECTS

- Standard Sizes
- Table values
- Pre-engineered anchorage solutions
- Compatable with wood framing
- Fits in standard wood walls/framing

SPECIAL MOMENT FRAME IN MULTI-FAMILY PROJECTS

HFSMF IN RETROFIT CONDITIONS

- Custom designs to meet job specific conditions
- Delivery options
  - Preassembled
  - Column Splice - Fully Bolted
  - Knock-Down - Limited Field Welded Assembly

TOP CONNECTION OPTIONS

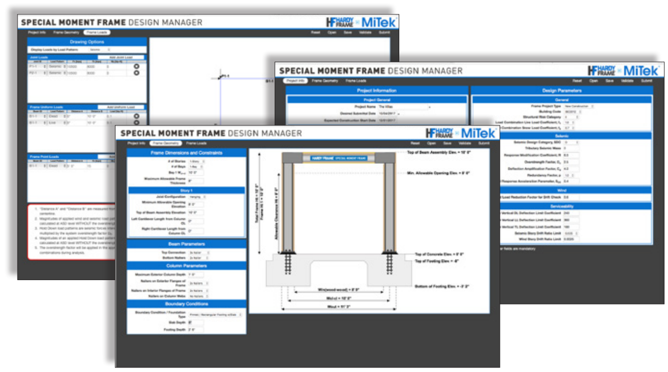
- Angles
- Shear Transfer Plates
- Through-Bolt

SPECIAL MOMENT FRAME IN RETROFIT APPLICATIONS

MiTek® HARDY FRAME® HFSMF DESIGN MANAGER

The interactive, web based HFSMF Design Manager from MiTek® enables you to easily input SMF design parameters then submit to our engineers with the click of a mouse. Custom SMF Designs and job specific installation details have never been so easy.

- As Frame geometry, frame configuration, anchorage connections and wood nailer options are input, image graphics are updated instantly to reflect the selections.
- When live and dead loads are entered; uniform or concentrated, a loading diagram is simultaneously provided reflecting the input.
- The Design Manager can now be used for single or two story Frames, up to 3 bays.



Visit: https://builderproducts.mii.com/specialmomentframe

HFX SHEAR PANEL WALL HEIGHT OPTIONS

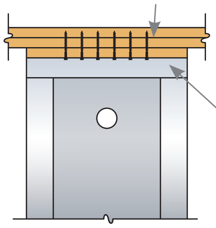
OPTION 1: CUSTOM HEIGHT HFX SHEAR PANELS

ADVANTAGES:

- Custom height to meet the specifics of a project
- Simplest installation method for contractors
- No additional out of plane bracing at HFX panel edges required

Notes:

- Refer to HFX Typical Installation Detail 5b on sheet HFX2



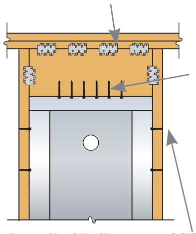
OPTION 2: STANDARD HEIGHT HFX SHEAR PANEL W/ FILLER > 1 ½" AND KING STUDS

ADVANTAGES:

- Use standard height panels for non-standard height wall applications
- Easily accommodate sloping top plate wall conditions
- Leverage adjacent framing members for out of plane bracing
- Applicable for height adjustments that require 13 ½" or less in the field

Notes:

- Refer to HFX Typical Installation Detail 6 on sheet HFX2



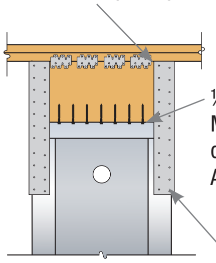
OPTION 3: STANDARD HEIGHT HFX SHEAR PANEL W/ FILLER > 3 ½" AND MITEK FILLER BRACES (HFFB)

ADVANTAGES:

- Use standard height panels for non-standard height wall applications
- Eliminate the need for adjacent framing to minimize the width of the wall pier
- Universal application for any model number and either edge of Panel
- Applicable for height adjustments that require 13 ½" filler or less in the field

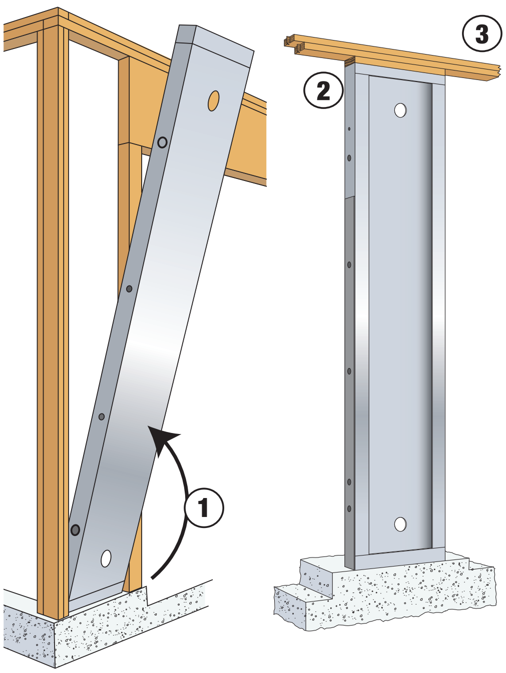
Notes:

- Applicable for single HFX Shear Panel or Brace Frames within a nominal 4" (e.g. 3 ½") wide wall
- Filler Brace develops 85% of the out-of-plane capacity per ESR-2089
- Allowable shear, drift and uplift values must be referenced bottom of HFX panel to top of the filler)
- Refer to HFX Typical Installation Detail 6-ALT on sheet HFX2. Requires review and approval by the engineer of record prior to implementation.



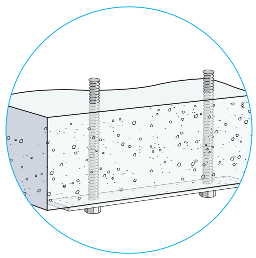
MiTek® HARDY FRAME® PANEL INSTALLATION

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" MiTek WS-Series Screws



THROUGH-BOLT

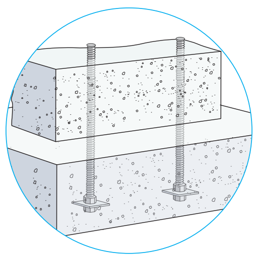
The design, including capacity of existing concrete and size of Bearing Plates below is determined by the Engineer of Record. The adjacent illustration shows installation with a MiTek® Hardy Frame® Bearing Plate (HFXBP) at the underside of concrete.



THROUGH-BOLT

NEW FOOTING BELOW

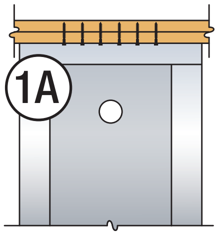
MiTek® Hardy Frame® unreinforced or reinforced anchorage solutions may be used below existing concrete or to replace existing concrete.

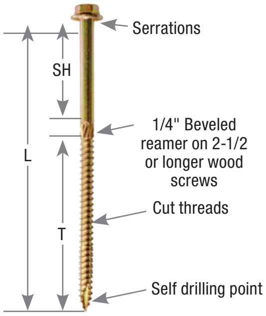


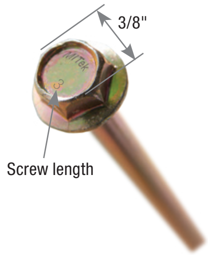
NEW FOOTING BELOW EXISTING

MiTek® Screws for use with MiTek® Hardy Frame® Panels

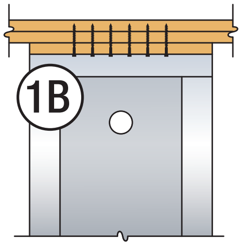
WS-1/4" x 3" Screws
For connection directly to top plates





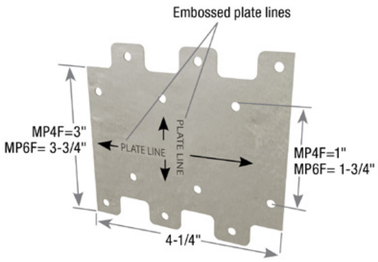


WS-1/4" x 4-1/2" Screws
For 2x filler above

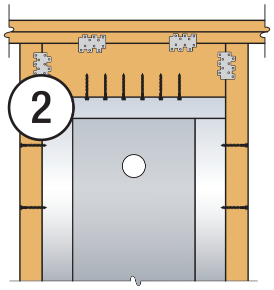


MiTek Stock No.	Description	Dimensions (in)			Finish	Allowable Shear (160%)	
		L	SH	T		12 GA Steel to DF/SP	12 GA Steel to S-P-F
WS3	1/4" x 3"	3	3/4	2	Zinc	668 lbs	475 lbs
WS45	1/4" x 4-1/2"	4-1/2	1-1/4	3	Zinc	825 lbs	673 lbs

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), LABC, and State of Florida (FL17231).



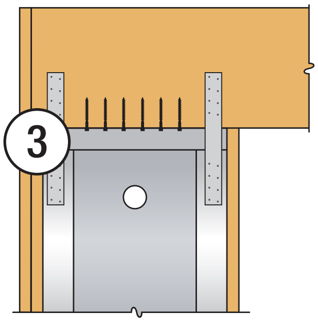
"MP4F" Plate Connector
For 4x filler above



MiTek Stock No.	Steel Gauge	Installation Type[24]	Fastener Schedule				Direction of Load[2]	Allowable Shear (160%)	
			Header or Stud		Joist or Plate				
			Qty	Type	Qty	Type		DF/SP	S-P-F
MP4F	20	Type 1	6	8d x 1-1/2	6	8d x 1-1/2	H	750	645
		Type 2	6	8d x 1-1/2	6	8d x 1-1/2	H	585	500

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.
3. Code Approved by ICC Evaluation Service (ESR-3455), LABC, and State of Florida (FL17244).

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



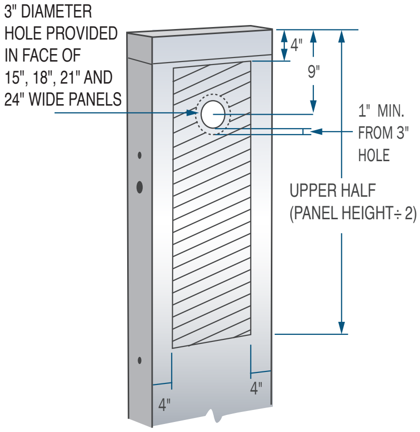
MiTek Stock No.	Steel Gauge	Dimensions (in)		Fastener Schedule		Allowable Tension (160%)
		W	L	#10 Screws	16d Nails	DF/SP
KRPS18	16	1-1/2	18-5/16	6	6	1345 lbs
KRPS22			22-5/16	8	8	1790 lbs
KRPS28			28-5/16			

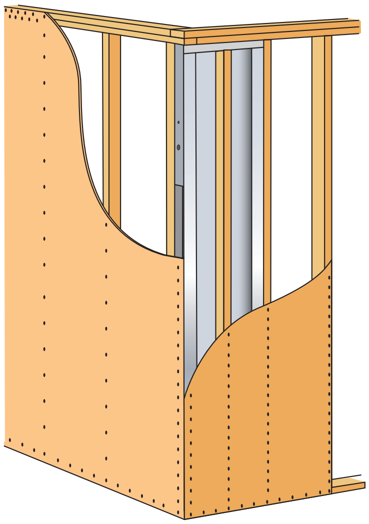
1. Allowable loads have been increased 60% for short term loading; no further increase shall be permitted.
2. 16d nails are .162" dia. x 3-1/2" long, minimum embedment shall be 1-5/8".
3. #10 Hex Head self-tapping screws with a Self Drilling (SD) point are recommended into face of Panel.
4. Code Approved by ICC Evaluation Service (ESR-3455), LABC, and State of Florida (FL17244).

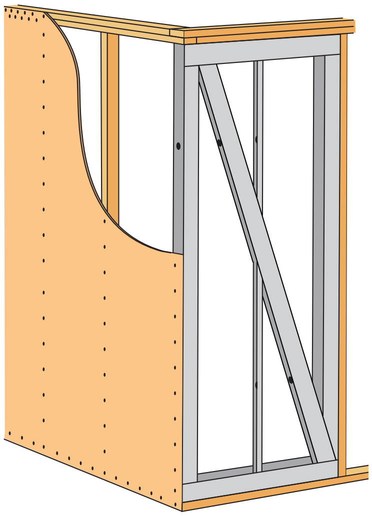
Hole Chart

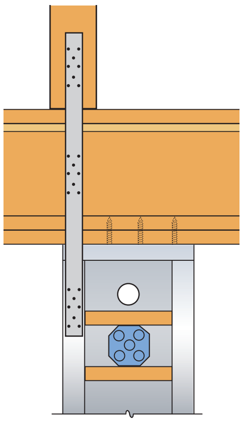
An additional 1" diameter hole may be drilled in the upper half of the Panel when it is located in the hatched area.

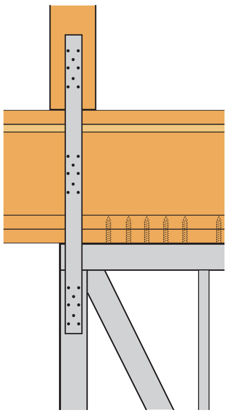
To drill more than one hole, a larger diameter hole or a hole in a location outside of the hatched area, contact MiTek Hardy Frames.







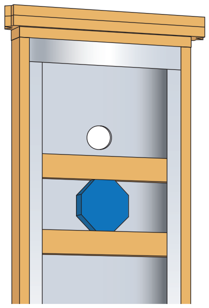




Fixture Installation

2x4 Wall Framing

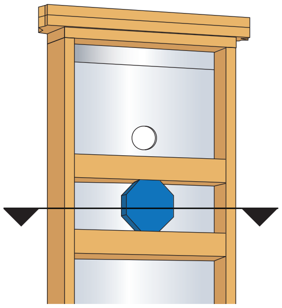
- There is no "inside or outside face" of MiTek® Hardy Frame® Panels.
- Install with the cavity face of Panel oriented in the direction of the fixture to be attached
- Install 2x backing in the cavity and secure with #10 (minimum) self-tapping screws through the wood into the steel or with 1/4"WS-Series 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

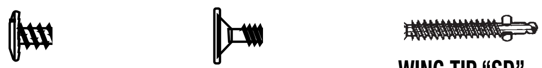
- Installation of Panels are recommended to be at the inside face of a 2x6 wall to increase the concrete edge distance at the hold down anchors and to provide a 2" recess that can be used to:
  - Provide flat stud backing for surface finishes
  - Provide a thermal break in cold weather climates
  - Install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

Access our catalog online for the latest information at **hardyframe.com/resources/catalogs**

(805) 477-0793 | lateralsystems@mii.com

HARDYFRAME.COM

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