



S E R I E S
S H E A R W A L L S Y S T E M

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Hardy Frames Inc. Company Profile

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

The Hardy Frame® product line includes Panels, Brace Frames, Moment Frames, and various accessory items for installation. The new Hardy Frame® HFX-Series 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 and durable pre-fabricated shear wall solution that is cost effective, simple to install, and easy to inspect in order to eliminate the problems and hidden costs associated with site-built plywood shear walls.

From its inception the Hardy Frame® Shear Wall System has been 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. Today, Hardy Frames, Inc. is the first to introduce a 9 inch wide pre-fabricated steel shear Panel.

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

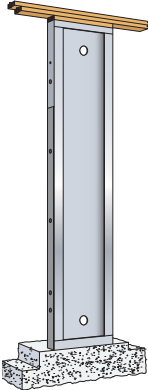
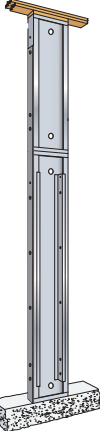
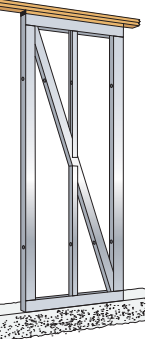
Our mission remains to provide you with the safest and most cost effective solutions to all of your shear and wall bracing challenges. We strive to accomplish this by adopting a process of constant improvement – continuously seeking ways to improve our operations, our products, and our services.

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

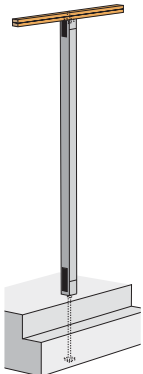
For more information, please call us at 800-754-3030 or visit our website at www.hardyframe.com



Hardy Frame® Product Listing

	HFX-Series	Depth (in)	Width (in)	Height (in)	Weight (lbs)	HFX/S-Series	Height (in)	Weight (lbs)
 <p>Panel</p>	HFX-9x79.5	3-1/2"	9"	79-1/2"	81	NA		
	HFX-9X8			93-3/4"	95	HFX/S-9x8	96 5/8"	98
	HFX-12x78		12"	78"	91	NA		
	HFX-12x8			92-1/4"	106	HFX/S-12x8	96-5/8"	111
	HFX-12x9			104-1/4"	116	HFX/S-12x9	108-5/8"	121
	HFX-12x10		116-1/4"	128	HFX/S-12x10	120-5/8"	133	
	HFX-18x78		18"	78"	113	NA		
	HFX-18x8			92-1/4"	131	HFX/S-18x8	96-5/8"	137
	HFX-18x9			104-1/4"	144	HFX/S-18x9	108-5/8"	150
	HFX-18x10			116-1/4"	158	HFX/S-18x10	120-5/8"	164
	HFX-18x11			128-1/4"	177	HFX/S-18x11	132-5/8"	183
	HFX-18x12			140-1/4"	190	HFX/S-18x12	144-5/8"	196
	HFX-18x13		152-1/4"	203	HFX/S-18x13	156-5/8"	209	
	HFX-24x78		24"	78"	148	NA		
	HFX-24x8			92-1/4"	172	HFX/S-24x8	96-5/8"	180
	HFX-24x9			104-1/4"	190	HFX/S-24x9	108-5/8"	198
	HFX-24x10			116-1/4"	209	HFX/S-24x10	120-5/8"	217
	HFX-24x11			128-1/4"	233	HFX/S-24x11	132-5/8"	241
HFX-24x12	140-1/4"	251		HFX/S-24x12	144-5/8"	259		
HFX-24x13	152-1/4"	269		HFX/S-24x13	156-5/8"	277		
 <p>Balloon Panel</p>	HFX-18x14	3-1/2"	18"	164-1/4"	221	HFX/S-18x14	168 5/8"	227
	HFX-18x15			176-1/4"	237	HFX/S-18x15	180 5/8"	243
	HFX-18x16			188-1/4"	250	HFX/S-18x16	192 5/8"	256
	HFX-18x17			200-1/4"	264	HFX/S-18x17	204 5/8"	270
	HFX-18x18			212-1/4"	283	HFX/S-18x18	216 5/8"	289
	HFX-18x19			224-1/4"	296	HFX/S-18x19	228 5/8"	302
	HFX-18x20		236-1/4"	309	HFX/S-18x20	240 5/8"	315	
	HFX-24x14		24"	164-1/4"	290	HFX/S-24x14	168 5/8"	298
	HFX-24x15			176-1/4"	311	HFX/S-24x15	180 5/8"	319
	HFX-24x16			188-1/4"	329	HFX/S-24x16	192 5/8"	337
	HFX-24x17			200-1/4"	348	HFX/S-24x17	204 5/8"	356
	HFX-24x18			212-1/4"	372	HFX/S-24x18	216 5/8"	380
	HFX-24x19			224-1/4"	390	HFX/S-24x19	228 5/8"	398
	HFX-24x20			236-1/4"	408	HFX/S-24x20	240 5/8"	416
 <p>Brace Frame</p>	HFX-32x8	3-1/2"		32"	92-1/4"	138	HFX/S-32x8	96-5/8"
	HFX-32x9		104-1/4"		163	HFX/S-32x9	108-5/8"	170
	HFX-32x10		116-1/4"		188	HFX/S-32x10	120-5/8"	195
	HFX-32x11		128-1/4"		213	HFX/S-32x11	132-5/8"	220
	HFX-32x12		140-1/4"		238	HFX/S-32x12	144-5/8"	245
	HFX-32x13		152-1/4"		263	HFX/S-32x13	156-5/8"	271
	HFX-44x8		44"	92-1/4"	156	HFX/S-44x8	96-5/8"	163
	HFX-44x9			104-1/4"	181	HFX/S-44x9	108-5/8"	189
	HFX-44x10			116-1/4"	206	HFX/S-44x10	120-5/8"	214
	HFX-44x11			128-1/4"	231	HFX/S-44x11	132-5/8"	239
	HFX-44x12			140-1/4"	256	HFX/S-44x12	144-5/8"	264
	HFX-44x13			152-1/4"	281	HFX/S-44x13	156-5/8"	289

Hardy Frame® Product Listing

	HFP-Series	Depth	Width	Height	Weight (lbs)	HFX/S-Series	Height	Weight (lbs)
 <p>Post</p>	HFP8-7/8	3-1/2"	3-1/2"	92-1/4"	42	HFP/S8-7/8	96-5/8"	44
	HFP8-1 1/8			92-1/4"	42	HFP/S8-1 1/8	96-5/8"	44
	HFP9-7/8			104-1/4"	47	HFP/S9-7/8	108-5/8"	49
	HFP9-1 1/8			104-1/4"	47	HFP/S9-1 1/8	108-5/8"	49
	HFP10-7/8			116-1/4"	52	HFP/S10-7/8	120-5/8"	54
	HFP10-1 1/8			116-1/4"	52	HFP/S10-1 1/8	120-5/8"	54
	HFP11-7/8			128-1/4"	57	HFP/S11-7/8	132-5/8"	59
	HFP11-1 1/8			128-1/4"	57	HFP/S11-1 1/8	132-5/8"	59
	HFP12-7/8			140-1/4"	62	HFP/S12-7/8	144-5/8"	64
	HFP12-1 1/8			140-1/4"	62	HFP/S12-1 1/8	144-5/8"	64
	HFP13-7/8			152-1/4"	67	HFP/S13-7/8	156-5/8"	69
	HFP13-1 1/8			152-1/4"	67	HFP/S13-1 1/8	156-5/8"	69

Hardy Frame® Accessories

Templates	Weight (lbs)	Face to Face Templates	Weight (lbs)	CMU Templates	Weight (lbs)
HFXT9	0.8	HFXT9	2.0	HFXT-CMU9	0.8
HFXT12	0.9	HFXT12	2.2	HFXT-CMU12	1.0
HFXT18	1.1	HFXT18	2.8	HFXT-CMU18	1.4
HFXT24	1.7	HFXT24	3.8	HFXT-CMU24	1.9
HFXT32	3.2	HFXT32	5.1	HFXT-CMU32	2.6
HFXT44	4.2	HFXT44	6.4	HFXT-CMU44	3.3

STD Template Kits	Weight (lbs)	HS Template Kits	Weight (lbs)	Bolt Brace	Weight (lbs)
HFXTK9	19.8	HFXTK-HS12	25.0	HFxBB9	0.3
HFXTK12	20.0	HFXTK-HS18	26.0	HFxBB12	0.4
HFXTK18	20.5	HFXTK-HS24	26.5	HFxBB18	0.6
HFXTK24	21.5	HFXTK-HS32	18.0	HFxBB24	0.8
HFXTK32	16.0	HFXTK-HS44	19.0		
HFXTK44	17.5				

STD Tension Connector Kits	Weight (lbs)	HS Tension Connector Kits	Weight (lbs)	Bearing Plates	Weight (lbs)
HFTC-7/8 STD	14.5	HFTC-7/8 HS	15.5	HFxBP12 (Length = 18")	13
HFTC-12 STD	17.5	HFTC-12 HS	18.5	HFxBP18 (Length = 24")	17
HFTC-18/24 STD	20.0	HFTC-18/24 HS	21.0	HFxBP24 (Length = 30")	21

Base Extension	Weight (lbs)	Reducer	Weight (lbs)	Bolt Lever	Weight (lbs)
HFBX	2	HFR	0.2	HFBL	21

Saddles	Weight (lbs)	Deep Socket	Weight (lbs)	Stacking Washers	Weight (lbs)
HFS24	3	HFDS 7/8	2	HFSW12	1
HFS36	4	HFDS-1 1/8	3	HFSW18/24	2

Notes

- 1) For Panels, adding "STK" after the model number indicates HFX-Series Stacking Panels with built-in Plate Washers at the top channel.
- 2) Custom heights are available for Panels, Brace Frames and Posts not to exceed the maximum height listed for that product.
- 3) Model number HFX-9x79.5, HFX-12x78, HFX-18x78 and HFX-24x78 Panels come with two straps welded to the solid face.
- 4) All models can be ordered custom with welded straps.
- 5) All Panels, Brace Frames and Posts are a 3-1/2" depth. Refer to "Attachment" page for a description of installation in 2x6 and greater wall depths.

Code Evaluations:

ICC-Evaluation Service ESR-2089 Report
LA City Research Report RR-25759

Note: For the latest product and application evaluations refer to the current Report publication.

Product Use:

The 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:

Hardy Frames, Inc. 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:

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

Material:

Hardy Frame® Panels, Brace Frames and Posts are manufactured from prime quality steel which meets the requirements of ASTM A 653 SS Grade 50 steel and ASTM A 36 hot-rolled steel built in at hold down connections.

Finish:

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

Threaded Rod/Hold Down Bolts

Unless noted otherwise the “STD” hold downs are ASTM F 1554 grade 36, and the “HS” (high strength) are ASTM A 193 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 Hardy Frame® Panels and Brace Frames are based on calculations and testing.
- For the 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.
- Please be clear as to the surface you want the Hardy Frame® Panel or Brace Frame to be installed on i.e.: on concrete, mudsill, etc.
- 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 Hardy Frame® Panels and Brace Frames shown in these tables are for the 2006 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:

- Hardy Frames, Inc. 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 Hardy Frame® products. For more specific and most up to date information, please visit our website at www.hardyframe.com or contact us directly at 800-754-3030.
- For installations involving unusual or extreme applications and conditions, please contact Hardy Frames, Inc. at 800-754-3030.
- This catalog may not be reproduced in whole or in part without the written permission of Hardy Frames, Inc.

CUSTOMER SERVICE

At Hardy Frames, Inc. pre-manufactured shear walls are our core business. From the beginning, customer service has been 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?

General Information

The Hardy Frame® HFX-Series 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-Series 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.

New features presented in this catalog include:

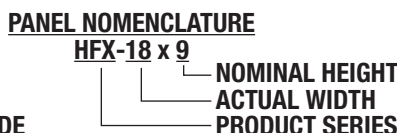
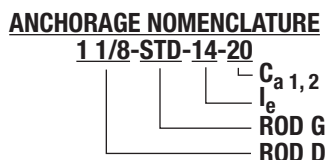
- New tables for Installation on 2500, 3000 and 4000 psi concrete.
- All tables provide allowable values with a 1k, 3.5k and 6.5k axial load applied.
- All tables have been checked for bearing pressure limits on supporting material below.
- Allowable design values for standard and high strength hold down anchors.
- Provisions to calculate reduced uplift when axial loads are applied.
- Anchorage Solutions provided per ACI 318, Appendix D.

Hardy Frame® HFX-Series Panels are available in widths of 9, 12, 18 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.

Hardy Frame® HFX-Series Brace Frames are either 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.

Specifying Tips

Foundation Plan



- Provide Panel or Brace Frame Model Number

- Provide Embed Call-Out from the Hardy Frame Anchorage Details.

- Provide bottom connection detail reference (on concrete, on mudsill, on raised floor, etc.)

NOTE: Embedment information and the base connection / supporting material below effect the allowable loads. To achieve the appropriate allowable values it is necessary to convey the information provided above to the installer.

First Floor Framing Plan

- Provide Panel or Brace Frame Model Number

- For single story installations - Provide top connection detail reference (to the top plates, with a 2x filler, continuous header above, etc.)

- For multi story installations - Provide floor to floor connection detail reference (straight stack, stagger stack, etc.)

Reminder

Hardy Frame® Panels and Brace Frames are built to standard wood stud heights. Top connections are made with 1/4 x 4-1/2 inch long screws when installing a 2x filler above.

Hardy Frame® Bearing Plates are included in the calculations for wood floor system tables. Check that Panels are located at least 3-inches from an outside corner to accommodate the Bearing Plate. Other installations by the Building Design Professional are allowed provided the bearing pressure and code drift limit are considered. Hardy Frame® Brace Frames do not use Bearing Plates.

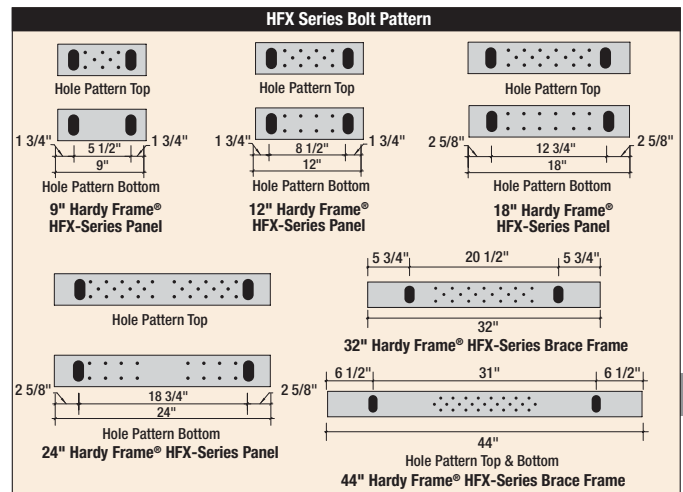
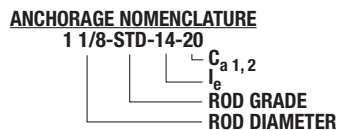
Hardy Frame® HFX-Series Panel - Dimensions & Connectors

Model Number	Net Height (in)	Width (in)	Depth (in)	Anchorage Call-Out for STD Rods 1 Dia-Grade-le-Ca1,2	Anchorage Call-Out for HS Rods 1 Dia-Grade-le-Ca1,2	Top Screw Qty 2,3 (ea)	Bottom Screw Qty 2,4 (ea)	Edge Screw QTY Available5 (ea)		
HFX-9x79.5	79 1/2	9	3-1/2	1 1/8-STD-10-15	NA	5	NA	4		
HFX-9x8	93 3/4									
HFX-12x78	78	12	3-1/2	1 1/8-STD-14-20	1 1/8-HS-14-20	7	6	4		
HFX-12x8	92 1/4									
HFX-12x9	104 1/4									
HFX-12x10	116 1/4									
HFX-18x78	78									
HFX-18x8	92 1/4	18	3-1/2	1 1/8-STD-14-20	1 1/8-HS-20-30	10	10	4		
HFX-18x9	104 1/4									
HFX-18x10	116 1/4									
HFX-18x11	128 1/4									
HFX-18x12	140 1/4									
HFX-18x13	152 1/4									
HFX-18x14	164 1/4									
HFX-18x15	176 1/4									
HFX-18x16	188 1/4									
HFX-18x17	200 1/4									
HFX-18x18	212 1/4									
HFX-18x19	224 1/4									
HFX-18x20	236 1/4									
HFX-24x78	78			24	3-1/2	1 1/8-STD-14-20	1 1/8-HS-20-30	18	16	4
HFX-24x8	92 1/4									
HFX-24x9	104 1/4									
HFX-24x10	116 1/4									
HFX-24x11	128 1/4									
HFX-24x12	140 1/4									
HFX-24x13	152 1/4									
HFX-24x14	164 1/4									
HFX-24x15	176 1/4									
HFX-24x16	188 1/4									
HFX-24x17	200 1/4									
HFX-24x18	212 1/4									
HFX-24x19	224 1/4									
HFX-24x20	236 1/4									
HFX-32x8	92 1/4	32	3 1/2			7/8-STD-11-16	7/8-HS-13-20	14	14	NA
HFX-32x9	104 1/4									
HFX-32x10	116 1/4									
HFX-32x11	128 1/4									
HFX-32x12	140 1/4									
HFX-32x13	152 1/4									
HFX-44x8	92 1/4	44	3-1/2	7/8-STD-11-16	7/8-HS-13-20	17	14	NA		
HFX-44x9	104 1/4									
HFX-44x10	116 1/4									
HFX-44x11	128 1/4									
HFX-44x12	140 1/4									
HFX-44x13	152 1/4									

Notes

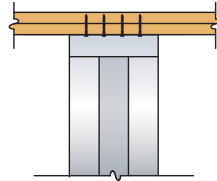
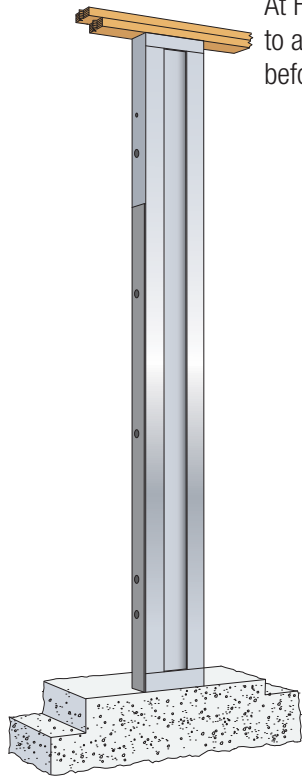
- The Builder Design Professional is allowed to design alternate anchorage to meet specific design conditions including design loads lower than the allowable and reduced tension resulting from vertical axial loads applied.
- STD Hold Down rods must comply with ASTM F 1554 Grade 36. HS Hold Down rods must comply with a high strength steel specification, High Strength rods include but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 and ASTM A 354 Grade BD.
- Screws are 1/4-inch diameter USP-WS Series (ESR-2761) or equal with a minimum allowable design value of 311 lbs. (excluding any duration of load stress increase) based on connecting metal (No. 12 gage) to wood (specific gravity of 0.50 or greater).
- Top screw length is 3-inches when attaching directly to the collector. When installing a 2-by wood filler (specific gravity of 0.5 or greater) at the top connection, the minimum screw length is 4-1/2 inches.
- Bottom screw length is 4-1/2 inches at Panel and Brace Frame connections, 3-inches at Hardy Frame® Bearing Plate.

SEE ANCHORAGE DETAILS FOR MORE SPECIFIC INFORMATION

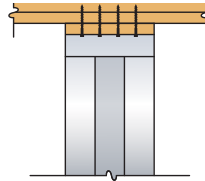


Introducing the first 9" Pre-fabricated Shear Panel in the industry.

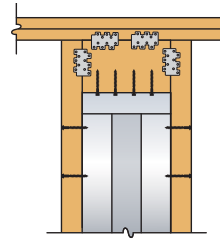
At Hardy Frames, we are continually engineering better products for our customers. Now we are pleased to announce the new 9" Hardy Frame® Panel. An amazing 9" width allows for design options never before possible in space critical applications.



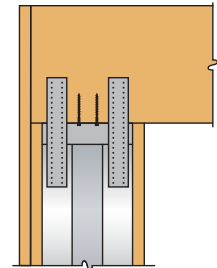
Hardy Frame® Panel at top plates
1/4 x 3" screws
(DTL 1-HFX2)



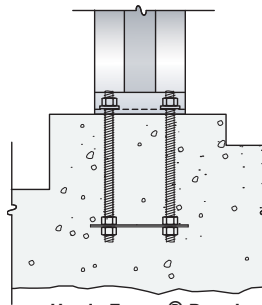
Hardy Frame® Panel with 2x filler
1/4 x 4 1/2" screws
(DTL 2-HFX2)



Hardy Frame® Panel with 4x filler
1/4 x 3" screws
(DTL 3-HFX2)



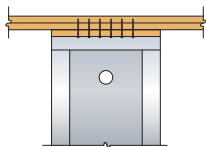
Hardy Frame® Panel at Portal 1/4 x 3" screws.
79 1/2 inch Panel height includes welded straps
(DTL5-HFX2)



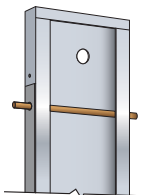
Hardy Frame® Panel on concrete (DTL 1-HFX1)

- Narrowest pre-manufactured shear wall in the industry.
- Connects to foundation with standard grade hold down anchors.
- Standard heights are 1-1/2 inch greater than other Hardy Frame® Panels to facilitate installation on concrete without a filler above.
- Ideal for garage fronts.
- Tested to AC322 criteria.

Panels in Balloon Wall Application



Hardy Frame® Panel with 2x filler
1/4 x 4 1/2" screws



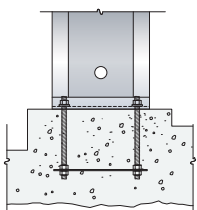
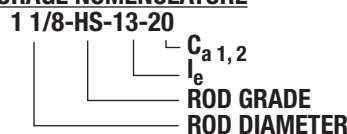
Installer!
7/8 in. diameter holes at Panel edge may be used to insert a rod or dowel "pick" for lifting Panel

- Pre-assembled one piece unit.
- No bolting at Panel joint required
- Tested to meet AC322 criteria
- Available in 18 and 24 inch widths
- Nominal heights from 14' to 20'
- Custom heights up to 20' available
- Cost effective
- Residential applications
- Commercial applications

Embed Call-Out @ 18" Balloon
1-1/8 - HS 13-20

Embed Call-Out @ 24" Balloon
1-1/8 - HS 18-27

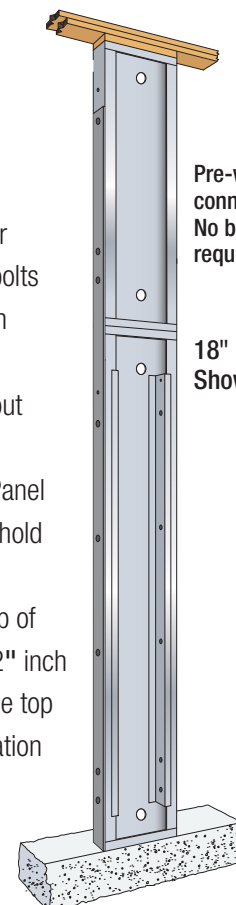
ANCHORAGE NOMENCLATURE



Hardy Frame® Panel on concrete

Recommended Installation

- Install hold down anchors per Embed Call-Out with top of bolts at 2-3/4" inches above finish concrete
- Stand wood frame wall without Panel
- Use "pick" to lift and install Panel directly on concrete. Secure hold down anchors.
- Place a 2x filler above the top of Panel and install 1/4" x 4 1/2" inch screws (per table) through the top channel upward with penetration into the upper top plate



Pre-welded connection. No bolting required!

18" Panel Shown

Hardy Frame® HFX-Series Panels in Prescriptive Braced Walls - 2012 IRC Code Compliance and Manufacturer Recommendations

To resist **wind** and **seismic** loads strategic wall lines must be structurally braced. The International Residential Code (IRC) provides prescriptive guidelines for bracing conventional light frame structures that must consider the following:

- 1) Identify wall lines that require bracing**
- 2) Determine Braced Wall Panel locations and quantities**
- 3) Select construction method, or material for Braced Wall Panels in each wall line and calculate the length of bracing required.**

1) Identify Wall Lines

As a general rule, all exterior walls shall be braced wall lines. Additionally, when parallel braced wall line spacing exceeds the Code limit, intermediate braced wall lines are required. For maximum braced wall line spacing refer to **Table R602.10.1.3** on page 164 of the 2012 IRC Code.

2) Determine Locations and Quantities

- For wind loading and for Seismic Design Categories A through C, Braced Wall Panels (BWPs) must be located 10 feet or less from each end of a braced wall line and the distance between adjacent edges shall not exceed 20 feet. For Seismic Design Category D0, D1 and D2 BWPs must be located at each end although there are exceptions depending on the Method of bracing. BWP at each end of wall line is always recommended.
- Braced wall lines lengths of 16 feet or less may be braced with a single BWP provided it is 48 inches or greater in width. When a 48 inch BWP width is not available a minimum quantity of two BWPs is required.
- For required bracing length refer to **R602.10.3**

3) Determine effective Bracing Methods and Material

Refer to Table R602.10.4

The Hardy Frame® Recommended Bracing Method

Garage Fronts:

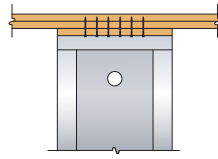
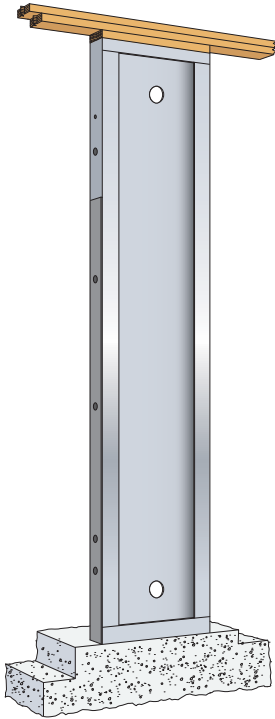
For "Portal" framing (garage header extends over top of Panel) – HFX-9x79.5
 For shear transfer at top plates of a 8 foot nominal wall height – HFX-9x8
 For shear transfer at top plates of a 9 foot nominal wall height – HFX-12x9
 For shear transfer at top plates of a 10 foot nominal wall height – HFX-12x10

Other Areas:

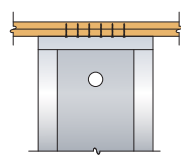
For shear transfer at top plates of a 8 foot nominal wall height – HFX-9x8
 For shear transfer at top plates of a 9 foot nominal wall height – HFX-12x9
 For shear transfer at top plates of a 10 foot nominal wall height – HFX-12x10

For Panel anchorage, bottom connection and top connection details refer to the **Hardy Frame®** Typical Installation Details.
 For stacked conditions consult with the Building Designer or Hardy Frames, Inc.

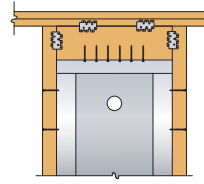
On Foundations



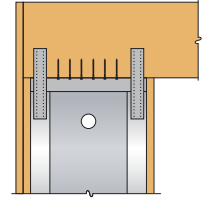
Hardy Frame® Panel with 2x filler
1/4 x 4 1/2" screws



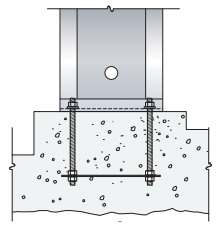
Hardy Frame® Panel at top plates
1/4 x 3" screws



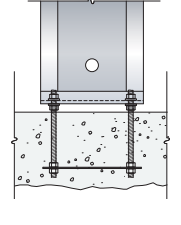
Hardy Frame® Panel with 4x filler
1/4 x 3" screws



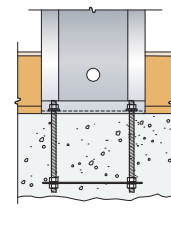
Hardy Frame® Panel at Portal
1/4 x 3" screws. 78 inch Panel heights include welded straps



Hardy Frame® Panel on concrete

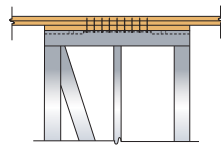
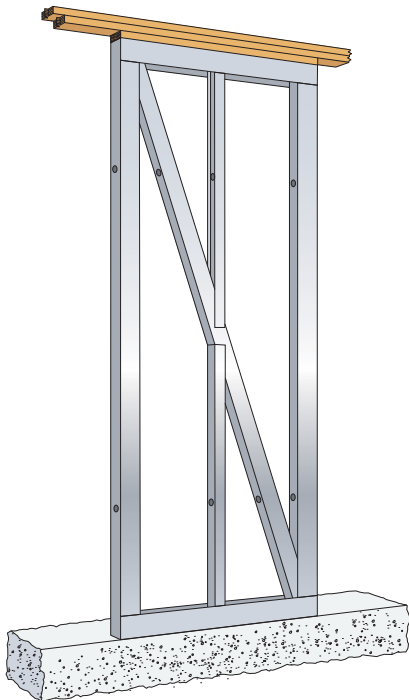


Hardy Frame® Panel on nuts and washers
(Requires 5,000 psi non-shrink grout)

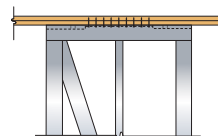


Hardy Frame® Panel at raised floor head out

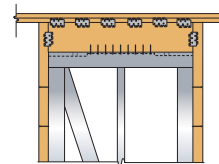
- Installation on nuts and washers provides for leveling at uneven concrete - open end box wrench may be used to secure connection from below
- Raised floor head out by passes wood framing to eliminate the effects of shrinkage and crushing, while providing a direct shear transfer to the foundation
- Raised floor head out requires less material by eliminating the rim, bearing plate and bottom screws
- The new HFX-Series Brace Frame has relocated hold down bolts to be outside of the post. Hold down connections are now accessible even when wood or framing is in contact with the edge of the frame



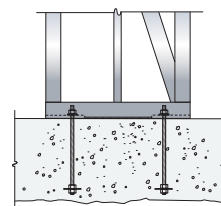
Hardy Frame® Brace Frame with 2x filler
1/4 x 4 1/2" screws



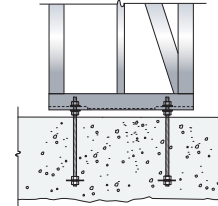
Hardy Frame® Brace Frame at top plates
1/4 x 3" screws



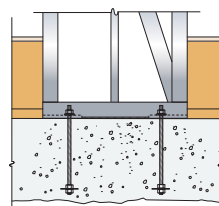
Hardy Frame® Brace Frame with 4x filler
1/4 x 3" screws



Hardy Frame® Brace Frame on concrete



Hardy Frame® Brace Frame on nuts and washers
(Requires 5,000 psi non-shrink grout)



Hardy Frame® Brace Frame at raised floor head out

Table 1.1A Hardy Frame® Installation - on 2500 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
9" Wide Panels									
HFX-9x79.5	79 1/2	1 1/8" STD	2,000	905	0.185	15,460	905	0.185	15,460
HFX-9x8	93 3/4	1 1/8" STD	2,000	765	0.256	15,460	765	0.256	15,460
12" Wide Panels									
HFX-12x78	78	1 1/8" STD	1,000	1,635	0.181	17,425	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
HFX-12x8	92 1/4	1 1/8" STD	1,000	1,385	0.209	17,425	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
HFX-12x9	104 1/4	1 1/8" STD	1,000	1,225	0.232	17,425	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
HFX-12x10	116 1/4	1 1/8" STD	1,000	1,095	0.256	17,425	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
18" Wide Panels									
HFX-18x78	78	1 1/8" STD	1,000	2,580	0.157	15,830	3,250	0.196	21,585
			3,500	3,900	0.237	28,930	4,380	0.266	38,015
			6,500	3,840	0.233	28,140	4,195	0.255	33,700
		1 1/8" HS	1,000	3,740	0.227	26,880	3,885	0.236	28,745
			3,500	2,265	0.188	16,605	2,730	0.227	21,620
			6,500	3,400	0.284	30,725	3,705	0.310	38,015
HFX-18x8	92 1/4	1 1/8" STD	1,000	3,350	0.280	29,790	3,550	0.297	33,700
			3,500	3,255	0.272	28,260	3,285	0.275	28,745
			6,500	2,055	0.216	17,130	2,415	0.254	21,620
		1 1/8" HS	1,000	2,025	0.213	16,845	2,415	0.254	21,620
			3,500	2,020	0.213	16,755	3,275	0.346	38,015
			6,500	3,030	0.320	31,190	3,140	0.332	33,700
HFX-18x9	104 1/4	1 1/8" STD	1,000	2,975	0.314	30,030	2,905	0.307	28,745
			3,500	2,880	0.304	28,260	2,905	0.307	28,745
			6,500	1,855	0.239	17,285	2,170	0.279	21,620
		1 1/8" HS	1,000	1,845	0.238	17,155	2,170	0.279	21,620
			3,500	1,835	0.237	17,055	2,940	0.382	21,620
			6,500	2,720	0.353	31,190	2,815	0.366	33,700
HFX-18x10	116 1/4	1 1/8" STD	1,000	2,670	0.347	30,030	2,605	0.339	28,745
			3,500	2,585	0.336	28,260	2,605	0.339	28,745
			6,500	1,690	0.263	17,430	1,965	0.309	21,620
		1 1/8" HS	1,000	1,685	0.262	17,310	1,965	0.309	21,620
			3,500	2,465	0.385	31,190	2,665	0.416	38,015
			6,500	2,420	0.378	30,030	2,550	0.399	33,700
HFX-18x11	128 1/4	1 1/8" STD	1,000	2,340	0.366	28,260	2,365	0.369	28,745
			3,500	1,545	0.285	17,430	1,780	0.331	21,620
			6,500	2,255	0.418	31,190	2,435	0.451	38,015
		1 1/8" HS	1,000	2,210	0.410	30,030	2,335	0.432	33,700
			3,500	2,140	0.397	28,260	2,160	0.400	28,745
			6,500	1,425	0.306	17,430	1,655	0.356	21,620
HFX-18x12	140 1/4	1 1/8" STD	1,000	2,075	0.449	31,190	2,245	0.485	38,015
			3,500	2,035	0.441	30,030	2,150	0.465	33,700
			6,500	1,970	0.427	28,260	1,990	0.431	28,745
		1 1/8" HS	1,000	1,970	0.427	28,260	1,990	0.431	28,745
			3,500	1,425	0.306	17,430	1,655	0.356	21,620
			6,500	2,075	0.449	31,190	2,245	0.485	38,015
HFX-18x13	152 1/4	1 1/8" STD	1,000	2,035	0.441	30,030	2,150	0.465	33,700
			3,500	1,970	0.427	28,260	1,990	0.431	28,745
			6,500	1,425	0.306	17,430	1,655	0.356	21,620
		1 1/8" HS	1,000	2,075	0.449	31,190	2,245	0.485	38,015
			3,500	2,035	0.441	30,030	2,150	0.465	33,700
			6,500	1,970	0.427	28,260	1,990	0.431	28,745

Table 1.1A Hardy Frame® Installation - on 2500 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)			
18" Wide Panels Balloon Wall												
HFX-18x14	164 1/4	1 1/8" HS	4,000	1,380	0.642	18,473	1,960	0.913	32,447			
HFX-18x15	176 1/4		3,500	1,310	0.701	18,937	1,830	0.979	32,584			
HFX-18x16	188 1/4		3,000	1,250	0.760	19,433	1,715	1.046	32,654			
HFX-18x17	200 1/4		2,500	1,195	0.824	19,888	1,615	1.113	32,781			
HFX-18x18	212 1/4		2,000	1,150	0.887	20,455	1,530	1.179	33,092			
HFX-18x19	224 1/4		2,000	1,105	0.953	20,885	1,450	1.244	33,191			
HFX-18x20	236 1/4		2,000	1,070	1.020	21,489	1,220	1.166	26,317			
24" Wide Panels												
HFX-24x78	78	1 1/8" STD	1,000	3,490	0.112	14,365	4,430	0.142	19,020			
			3,500									
			6,500									
		1 1/8" HS	1,000	5,600	0.182	25,565	6,950	0.225	34,975			
			3,500	5,610	0.182	25,645	6,900	0.224	34,585			
			6,500	5,605	0.182	25,600	6,815	0.221	33,925			
HFX-24x8	92 1/4	1 1/8" STD	1,000	3,080	0.136	15,085	3,935	0.174	20,180			
			3,500									
			6,500									
		1 1/8" HS	1,000	4,950	0.220	27,170	6,125	0.273	37,490			
			3,500							6,080	0.271	37,025
			6,500							6,005	0.268	36,245
HFX-24x9	104 1/4	1 1/8" STD	1,000	2,800	0.156	15,560	3,595	0.201	20,985			
			3,500									
			6,500									
		1 1/8" HS	1,000	4,510	0.254	28,300	5,570	0.313	39,335			
			3,500							5,530	0.311	38,805
			6,500							5,455	0.307	37,925
HFX-24x10	116 1/4	1 1/8" STD	1,000	2,580	0.177	16,055	3,305	0.227	21,620			
			3,500							2,540	0.174	15,765
			6,500							3,275	0.225	21,435
		1 1/8" HS	1,000	4,145	0.287	29,270	3,265	0.224	21,345			
			3,500							5,035	0.348	39,865
			6,500							4,985	0.345	39,180
HFX-24x11	128 1/4	1 1/8" STD	1,000	2,390	0.198	16,480	2,980	0.246	21,620			
			3,500							2,350	0.194	16,140
			6,500							3,010	0.248	21,620
		1 1/8" HS	1,000	3,730	0.308	28,985	4,560	0.377	39,865			
			3,500							4,520	0.374	39,180
			6,500							4,445	0.368	38,055
HFX-24x12	140 1/4	1 1/8" STD	1,000	2,230	0.218	16,855	2,720	0.267	21,620			
			3,500							2,195	0.215	16,555
			6,500							2,185	0.214	16,455
		1 1/8" HS	1,000	3,410	0.334	28,975	4,170	0.409	39,865			
			3,500							4,130	0.405	39,180
			6,500							4,065	0.399	38,055
HFX-24x13	152 1/4	1 1/8" STD	1,000	2,085	0.240	17,180	2,505	0.287	21,620			
			3,500							2,050	0.235	16,820
			6,500							2,040	0.234	16,720
		1 1/8" HS	1,000	3,140	0.360	28,960	3,845	0.441	39,865			
			3,500							3,805	0.437	39,180
			6,500							3,745	0.429	38,055
24" Wide Panels Balloon Wall												
HFX-24x14	164 1/4	1 1/8" HS	4,000	2,090	0.527	18,855	3,190	0.805	33,157			
HFX-24x15	176 1/4		3,500	1,960	0.597	19,000	2,830	0.859	30,788			
HFX-24x16	188 1/4		3,000	1,825	0.625	18,874	2,670	0.913	31,139			
HFX-24x17	200 1/4		2,500	1,695	0.660	18,600	2,485	0.967	30,683			
HFX-24x18	212 1/4		2,000	1,595	0.697	18,541	2,335	1.020	30,503			
HFX-24x19	224 1/4		2,000	1,515	0.734	18,620	2,220	1.072	30,702			
HFX-24x20	236 1/4		2,000	1,460	0.770	18,965	2,130	1.124	31,192			
32" Wide Brace Frames												
HFX-32x8	92 1/4	7/8" STD	1,000	2,225	0.130	8,375	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			

Table 1.1A Hardy Frame® Installation - on 2500 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
32" Wide Brace Frames									
HFX-32x9	104 1/4	7/8" STD	1,000	2,050	0.169	8,715	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-32x10	116 1/4	7/8" STD	1,000	1,900	0.215	9,005	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-32x11	128 1/4	7/8" STD	1,000	1,770	0.266	9,255	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-32x12	140 1/4	7/8" STD	1,000	1,655	0.323	9,470	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-32x13	152 1/4	7/8" STD	1,000	1,555	0.386	9,665	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

44" Wide Brace Frames

HFX-44x8	92 1/4	7/8" STD	1,000	2,810	0.090	7,250	3,745	0.119	9,665
			3,500	2,810	0.090	7,250	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-44x9	104 1/4	7/8" STD	1,000	2,615	0.115	7,625	3,485	0.154	10,165
			3,500	2,615	0.115	7,625	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-44x10	116 1/4	7/8" STD	1,000	2,445	0.147	7,950	3,260	0.195	10,600
			3,500	2,445	0.147	7,950	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-44x11	128 1/4	7/8" STD	1,000	2,295	0.182	8,240	3,030	0.239	10,865
			3,500	2,295	0.182	8,240	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-44x12	140 1/4	7/8" STD	1,000	2,165	0.219	8,490	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-44x13	152 1/4	7/8" STD	1,000	2,045	0.263	8,715	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

Notes

- 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.
- For installation on a nut & washer with grout pad, table values must be multiplied by 0.80.
- STD indicates Rods complying with ASTM F 1554 Grade 36. HS rods include, but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 or ASTM A 354 Grade BD
- 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 center-line of the post.
- Allowable shear, drift and uplift values may be linearly interpolated for intermediate height or axial loads. The Uplift values listed assume no resisting axial load. To determine anchor tension loads in Panels at design shear values and including the effect of axial loads, refer to the Equation for Tension Uplift in the Examples Section of this catalog. For Brace Frames the anchor tension load equals uplift minus P, where P is the axial load in the Post.

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

REMEMBER:
SPECIFY ANCHORAGE ON FOUNDATION PLAN.
SEE ANCHORAGE DETAILS.

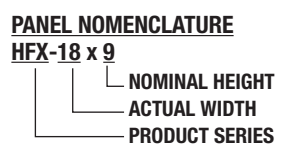
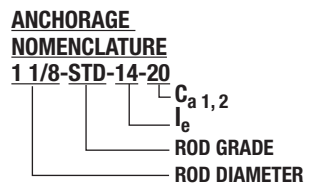


Table 1.1B Hardy Frame® Installation - on 3000 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)			
9" Wide Panels												
HFX-9x79.5	79 1/2	1 1/8" STD	2,000	1,040	0.212	16,889	1,105	0.225	19,304			
HFX-9x8	93 3/4	1 1/8" STD	2,000	880	0.294	16,889	935	0.313	19,304			
12" Wide Panels												
HFX-12x78	78	1 1/8" STD	1,000	1,745	0.193	17,430	1,985	0.220	21,620			
			3,500				1,970		21,075			
			6,500				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			
HFX-12x8	92 1/4	1 1/8" STD	1,000	1,475	0.223	17,430	1,680	0.254	21,620			
			3,500				1,665		0.252	21,075		
			6,500				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			
HFX-12x9	104 1/4	1 1/8" STD	1,000	1,305	0.248	17,430	1,515	0.286	22,050			
			3,500				1,475		0.280	21,075		
			6,500				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			
HFX-12x10	116 1/4	1 1/8" STD	1,000	1,170	0.273	17,425	1,335	0.311	21,620			
			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			
18" Wide Panels												
HFX-18x78	78	1 1/8" STD	1,000	2,665	0.162	15,790	3,395	0.205	21,390			
			3,500				3,370		0.204	21,175		
			6,500				4,660		0.283	34,455		
		1 1/8" HS	1,000	4,190	0.254	28,800	2,880	0.239	21,620			
			3,500	4,175	0.254	28,680						
			6,500	4,140	0.251	28,305						
HFX-18x8	92 1/4	1 1/8" STD	1,000	2,340	0.195	16,545	4,215	0.353	39,515			
			3,500							2,305	0.192	16,225
			6,500							3,660	0.306	30,365
		1 1/8" HS	1,000	3,650	0.305	30,230	4,140	0.346	37,935			
			3,500	3,620	0.302	29,805	4,020	0.337	35,785			
			6,500	2,125	0.224	17,060	2,545	0.268	21,620			
3,500	2,090	0.220	16,720									
6,500	2,080	0.219	16,615									
HFX-18x9	104 1/4	1 1/8" STD	1,000	3,310	0.350	31,465	3,730	0.394	39,515			
			3,500							3,300	0.349	31,320
			6,500							3,270	0.345	30,825
		1 1/8" HS	1,000	1,915	0.247	17,175	3,660	0.387	37,935			
			3,500	1,905	0.246	17,045						
			6,500	1,895	0.244	16,930						
HFX-18x10	116 1/4	1 1/8" STD	1,000	2,975	0.386	31,555	3,555	0.376	35,785			
			3,500							2,975	0.386	31,555
			6,500							2,975	0.386	31,555
		1 1/8" HS	1,000	2,965	0.385	31,380	2,280	0.295	21,620			
			3,500	2,965	0.385	31,380						
			6,500	2,930	0.381	30,825						
HFX-18x11	128 1/4	1 1/8" STD	1,000	1,760	0.274	17,430	3,345	0.435	39,515			
			3,500							1,750	0.272	17,320
			6,500							1,740	0.271	17,190
		1 1/8" HS	1,000	2,695	0.421	31,555	3,285	0.427	37,935			
			3,500	2,685	0.420	31,380						
			6,500	2,660	0.415	30,825						
HFX-18x12	140 1/4	1 1/8" STD	1,000	1,605	0.297	17,430	3,190	0.415	35,785			
			3,500							2,465	0.457	31,555
			6,500							2,455	0.455	31,380
		1 1/8" HS	1,000	2,430	0.450	30,825	2,830	0.442	34,360			
			3,500	2,430	0.450	30,825						
			6,500	2,430	0.450	30,825						
HFX-18x13	152 1/4	1 1/8" STD	1,000	1,480	0.318	17,430	2,585	0.479	34,295			
			3,500							2,465	0.457	31,555
			6,500							2,455	0.455	31,380
		1 1/8" HS	1,000	2,250	0.487	31,080	1,890	0.349	21,620			
			3,500	2,250	0.487	31,080						
			6,500	2,240	0.485	30,825						

Table 1.1B Hardy Frame® Installation - on 3000 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)			
18" Wide Panels Balloon Wall												
HFX-18x14	164 1/4	1 1/8" HS	4,000	1,380	0.642	17,547	1,960	0.913	28,164			
HFX-18x15	176 1/4		3,500	1,310	0.701	17,953	1,830	0.979	28,246			
HFX-18x16	188 1/4		3,000	1,250	0.760	18,383	1,715	1.046	28,287			
HFX-18x17	200 1/4		2,500	1,195	0.824	18,775	1,615	1.113	28,362			
HFX-18x18	212 1/4		2,000	1,150	0.887	19,252	1,530	1.179	28,543			
HFX-18x19	224 1/4		2,000	1,105	0.953	19,625	1,450	1.244	28,600			
HFX-18x20	236 1/4		2,000	1,070	1.020	20,134	1,220	1.166	23,988			
24" Wide Panels												
HFX-24x78	78	1 1/8" STD	1,000	3,565	0.114	14,355	4,570	0.147	19,055			
			3,500	3,560	0.114	14,355						
		6,500	5,830							0.189	25,540	
		1,000		5,825	0.189	25,540						
HFX-24x8	92 1/4	1 1/8" STD	1,000	3,150	0.139	15,095	4,040	0.179	20,085			
			3,500									
		6,500										
		1,000	5,165							0.230	27,095	
3,500												
6,500												
HFX-24x9	104 1/4	1 1/8" STD	1,000	2,870	0.160	15,595	3,695	0.207	20,875			
			3,500									
		6,500										
		1,000	4,710							0.265	28,185	
3,500												
6,500												
HFX-24x10	116 1/4	1 1/8" STD	1,000	2,635	0.181	16,015	3,405	0.233	21,550			
			3,500									
			6,500									
		1,000	4,330							0.300	29,115	
		3,500										
		6,500										
HFX-24x11	128 1/4	1 1/8" STD	1,000	2,445	0.202	16,440	3,080	0.254	21,620			
			3,500									
			6,500									
		1,000	3,730							0.308	27,245	
		3,500										
		6,500										
HFX-24x12	140 1/4	1 1/8" STD	1,000	2,280	0.223	16,805	2,820	0.276	21,620			
			3,500									
			6,500									
		1,000	3,410							0.334	27,235	
		3,500										
		6,500										
HFX-24x13	152 1/4	1 1/8" STD	1,000	2,135	0.245	17,130	2,595	0.298	21,620			
			3,500									
			6,500									
		1,000	3,140							0.360	27,220	
		3,500										
		6,500										
24" Wide Panels Balloon Wall												
HFX-24x14	164 1/4	1 1/8" HS	4,000	2,090	0.527	18,240	3,190	0.805	30,680			
HFX-24x15	176 1/4		3,500	1,960	0.597	18,373	2,830	0.859	28,752			
HFX-24x16	188 1/4		3,000	1,825	0.625	18,257	2,670	0.913	29,041			
HFX-24x17	200 1/4		2,500	1,695	0.660	18,003	2,485	0.967	28,664			
HFX-24x18	212 1/4		2,000	1,595	0.697	17,949	2,335	1.020	28,515			
HFX-24x19	224 1/4		2,000	1,515	0.734	18,022	2,220	1.072	28,680			
HFX-24x20	236 1/4		2,000	1,460	0.770	18,341	2,130	1.124	29,085			
			2,000									
32" Wide Brace Frames												
HFX-32x8	92 1/4	7/8" STD	1,000	2,225	0.130	8,375	2,965	0.173	11,170			
			3,500									
			6,500									
		7/8" HS	1,000							3,655	0.214	13,755
			3,500									
			6,500									
		7/8" HS	2,990							2,990	0.175	11,255
			6,500									

Table 1.1B Hardy Frame® Installation - on 3000 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
32" Wide Brace Frames									
HFX-32x9	104 1/4	7/8" STD	1,000	2,050	0.169	8,715	2,730	0.226	11,620
			3,500						
			6,500						
		7/8" HS	1,000	3,230	0.268	13,755	3,230	0.268	13,755
			3,500						
			6,500						
HFX-32x10	116 1/4	7/8" STD	1,000	1,900	0.215	9,005	2,495	0.283	11,835
			3,500						
			6,500						
		7/8" HS	1,000	2,900	0.329	13,755	2,900	0.328	13,755
			3,500						
			6,500						
HFX-32x11	128 1/4	7/8" STD	1,000	1,770	0.266	9,255	2,260	0.341	11,835
			3,500						
			6,500						
		7/8" HS	1,000	2,625	0.395	13,755	2,625	0.395	13,755
			3,500						
			6,500						
HFX-32x12	140 1/4	7/8" STD	1,000	1,655	0.323	9,470	2,070	0.405	11,835
			3,500						
			6,500						
		7/8" HS	1,000	2,405	0.470	13,755	2,405	0.470	13,755
			3,500						
			6,500						
HFX-32x13	152 1/4	7/8" STD	1,000	1,555	0.386	9,665	1,905	0.473	11,835
			3,500						
			6,500						
		7/8" HS	1,000	2,215	0.550	13,755	2,215	0.550	13,755
			3,500						
			6,500						
44" Wide Brace Frames									
HFX-44x8	92 1/4	7/8" STD	1,000	2,810	0.090	7,250	3,745	0.119	9,665
			3,500						
			6,500						
		7/8" HS	1,000	5,100	0.162	13,165	5,490	0.175	14,175
			3,500						
			6,500						
HFX-44x9	104 1/4	7/8" STD	1,000	2,615	0.115	7,625	3,485	0.154	10,165
			3,500						
			6,500						
		7/8" HS	1,000	4,745	0.210	13,840	4,860	0.215	14,175
			3,500						
			6,500						
HFX-44x10	116 1/4	7/8" STD	1,000	2,445	0.147	7,950	3,260	0.195	10,600
			3,500						
			6,500						
		7/8" HS	1,000	4,360	0.261	14,175	4,360	0.261	14,175
			3,500						
			6,500						
HFX-44x11	128 1/4	7/8" STD	1,000	2,295	0.182	8,240	3,060	0.241	10,985
			3,500						
			6,500						
		7/8" HS	1,000	3,950	0.311	14,175	3,950	0.311	14,175
			3,500						
			6,500						
HFX-44x12	140 1/4	7/8" STD	1,000	2,165	0.219	8,490	2,885	0.292	11,320
			3,500						
			6,500						
		7/8" HS	1,000	3,615	0.367	14,175	3,615	0.367	14,175
			3,500						
			6,500						
HFX-44x13	152 1/4	7/8" STD	1,000	2,045	0.263	8,715	2,730	0.350	11,625
			3,500						
			6,500						
		7/8" HS	1,000	3,110	0.399	13,245	3,110	0.399	13,245
			3,500						
			6,500						

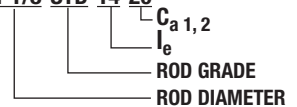
Notes

- The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on 3000 psi concrete or nut & washer with 5,000 psi minimum non-shrink grout.
- For installation on a nut & washer with grout pad, table values must be multiplied by 0.80.
- STD indicates Rods complying with ASTM F 1554 Grade 36. HS rods include, but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 or ASTM A 354 Grade BD
- 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.
- Allowable shear, drift and uplift values may be linearly interpolated for intermediate height or axial loads.
- The Uplift values listed assume no resisting axial load. To determine anchor tension loads in Panels at design shear values and including the effect of axial loads, refer to the Equation for Tension Uplift in the Examples Section of this catalog. For Brace Frames the anchor tension load equals uplift minus P, where P is the axial load in the Post.

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

REMINDER:
SPECIFY ANCHORAGE ON FOUNDATION PLAN. SEE ANCHORAGE DETAILS.

ANCHORAGE NOMENCLATURE
1 1/8-STD-14-20



PANEL NOMENCLATURE
HFX-18 x 9



Table 1.1C Hardy Frame® Installation - on 4000 psi Concrete^{1,2}

Model Number/	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)			
9" Wide Panels												
HFX-9x79.5	79 1/2	1 1/8" STD	2,000	1,190	0.242	17,425	1,360	0.277	21,860			
HFX-9x8	93 3/4	1 1/8" STD	2,000	1,005	0.337	17,425	1,155	0.386	21,860			
12" Wide Panels												
HFX-12x78	78	1 1/8" STD	1,000	1,865	0.207	17,260	2,200	0.243	21,620			
			3,500	1,855	0.205	17,130						
			6,500	1,845	0.204	17,015						
		1 1/8" HS	1,000	2,795	0.310	31,355						
			3,500	2,695	0.299	29,275						
			6,500	2,530	0.281	26,380						
HFX-12x8	92 1/4	1 1/8" STD	1,000	1,590	0.240	17,430	1,855	0.281	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							2,145	0.326	26,505
			3,500									
			6,500									
HFX-12x9	104 1/4	1 1/8" STD	1,000	1,410	0.267	17,430	1,645	0.313	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							1,680	0.321	22,085
			3,500									
			6,500									
HFX-12x10	116 1/4	1 1/8" STD	1,000	1,185	0.276	16,095	1,475	0.344	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							1,350	0.316	19,015
			3,500									
			6,500									
18" Wide Panels												
HFX-18x78	78	1 1/8" STD	1,000	2,775	0.168	15,770	3,570	0.216	21,170			
			3,500					0.215				
			6,500					0.213				
		1 1/8" HS	1,000					4,605		0.280	29,190	
			3,500									
			6,500									
HFX-18x8	92 1/4	1 1/8" STD	1,000	2,435	0.202	16,470	3,065	0.254	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							2,380	0.198	16,035
			3,500									
			6,500									
HFX-18x9	104 1/4	1 1/8" STD	1,000	2,215	0.233	16,970	2,705	0.284	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							3,600	0.380	30,970
			3,500									
			6,500									
HFX-18x10	116 1/4	1 1/8" STD	1,000	2,025	0.262	17,390	2,430	0.314	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							3,270	0.425	31,500
			3,500									
			6,500									
HFX-18x11	128 1/4	1 1/8" STD	1,000	1,830	0.285	17,340	2,200	0.346	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							2,830	0.442	29,585
			3,500									
			6,500									
HFX-18x12	140 1/4	1 1/8" STD	1,000	1,685	0.311	17,430	2,060	0.380	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							2,585	0.479	29,545
			3,500									
			6,500									
HFX-18x13	152 1/4	1 1/8" STD	1,000	1,550	0.333	17,430	1,850	0.400	21,620			
			3,500									
			6,500									
		1 1/8" HS	1,000							2,250	0.487	27,415
			3,500									
			6,500									

Table 1.1C Hardy Frame® Installation - on 4000 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
18" Wide Panels Balloon Wall									
HFX-18x14	164 1/4	1 1/8" HS	4,000	1,380	0.642	16,632	1,960	0.913	25,318
HFX-18x15	176 1/4	1 1/8" HS	3,500	1,310	0.701	16,989	1,830	0.979	25,378
HFX-18x16	188 1/4	1 1/8" HS	3,000	1,250	0.760	17,365	1,715	1.046	25,409
HFX-18x17	200 1/4	1 1/8" HS	2,500	1,195	0.824	17,706	1,615	1.113	25,465
HFX-18x18	212 1/4	1 1/8" HS	2,000	1,150	0.887	18,118	1,530	1.179	25,598
HFX-18x19	224 1/4	1 1/8" HS	2,000	1,105	0.953	18,440	1,450	1.244	25,640
HFX-18x20	236 1/4	1 1/8" HS	2,000	1,070	1.020	18,876	1,220	1.166	22,076
24" Wide Panels									
HFX-24x78	78	1 1/8" STD	1,000	3,645	0.117	14,310	4,725	0.152	19,035
			3,500						
			6,500						
HFX-24x8	92 1/4	1 1/8" HS	1,000	6,160	0.200	25,735	7,915	0.256	34,855
			3,500						
			6,500						
HFX-24x8	92 1/4	1 1/8" STD	1,000	3,235	0.143	15,075	4,180	0.185	20,020
			3,500						
			6,500						
HFX-24x8	92 1/4	1 1/8" HS	1,000	5,475	0.244	27,280	7,020	0.313	37,040
			3,500						
			6,500						
HFX-24x9	104 1/4	1 1/8" STD	1,000	2,950	0.165	15,595	3,820	0.214	20,740
			3,500						
			6,500						
HFX-24x9	104 1/4	1 1/8" HS	1,000	5,000	0.281	28,355	6,350	0.357	38,105
			3,500						
			6,500						
HFX-24x10	116 1/4	1 1/8" STD	1,000	2,715	0.186	16,030	3,520	0.241	21,395
			3,500						
			6,500						
HFX-24x10	116 1/4	1 1/8" HS	1,000	4,610	0.319	29,275	3,460	0.237	20,980
			3,500						
			6,500						
HFX-24x11	128 1/4	1 1/8" STD	1,000	2,515	0.208	16,405	3,215	0.265	21,620
			3,500						
			6,500						
HFX-24x11	128 1/4	1 1/8" HS	1,000	2,460	0.204	16,040	3,200	0.264	21,475
			3,500						
			6,500						
HFX-24x12	140 1/4	1 1/8" STD	1,000	2,340	0.229	16,750	2,940	0.288	21,620
			3,500						
			6,500						
HFX-24x12	140 1/4	1 1/8" HS	1,000	3,410	0.334	25,595	4,720	0.463	38,105
			3,500						
			6,500						
HFX-24x13	152 1/4	1 1/8" STD	1,000	2,195	0.252	17,065	2,705	0.311	21,620
			3,500						
			6,500						
HFX-24x13	152 1/4	1 1/8" HS	1,000	3,140	0.360	25,580	4,350	0.499	38,130
			3,500						
			6,500						
24" Wide Brace Frames Balloon Wall									
HFX-24x14	164 1/4	1 1/8" HS	4,000	2,090	0.527	17,579	3,190	0.805	28,506
HFX-24x15	176 1/4		3,500	1,960	0.597	17,701	2,830	0.859	26,888
HFX-24x16	188 1/4		3,000	1,825	0.625	17,594	2,670	0.913	27,132
HFX-24x17	200 1/4		2,500	1,695	0.660	17,361	2,485	0.967	26,814
HFX-24x18	212 1/4		2,000	1,595	0.697	17,311	2,335	1.020	26,687
HFX-24x19	224 1/4		2,000	1,515	0.734	17,378	2,220	1.072	26,827
HFX-24x20	236 1/4		2,000	1,460	0.770	17,671	2,130	1.124	27,170
32" Wide Brace Frames									
HFX-32x8	92 1/4	7/8" STD	1,000	2,225	0.130	8,375	2,965	0.173	11,170
			3,500						
			6,500						
		7/8" HS	1,000	2,085	0.122	7,845	4,870	0.285	18,330
			3,500						
			6,500						

Table 1.1C Hardy Frame® Installation - on 4000 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
32" Wide Brace Frames									
HFX-32x9	104 1/4	7/8" STD	1,000	2,050	0.169	8,715	2,730	0.226	11,620
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-32x10	116 1/4	7/8" STD	1,000	1,845	0.152	7,845	1,845	0.153	7,845
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-32x11	128 1/4	7/8" STD	1,000	1,770	0.266	9,255	2,530	0.287	12,005
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-32x12	140 1/4	7/8" STD	1,000	1,655	0.323	9,470	2,285	0.259	10,845
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-32x13	152 1/4	7/8" STD	1,000	1,555	0.386	9,665	2,355	0.355	12,340
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
44" Wide Brace Frames									
HFX-44x8	92 1/4	7/8" STD	1,000	2,810	0.090	7,250	3,745	0.119	9,665
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-44x9	104 1/4	7/8" STD	1,000	2,615	0.115	7,625	2,965	0.094	7,655
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-44x10	116 1/4	7/8" STD	1,000	2,445	0.147	7,950	3,485	0.154	10,165
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-44x11	128 1/4	7/8" STD	1,000	2,295	0.182	8,240	2,355	0.141	7,655
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-44x12	140 1/4	7/8" STD	1,000	2,165	0.219	8,490	2,355	0.141	7,655
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						
HFX-44x13	152 1/4	7/8" STD	1,000	2,045	0.263	8,715	2,205	0.432	12,630
			3,500						
			6,500						
		7/8" HS	1,000						
			3,500						
			6,500						

Notes

- The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on 4000 psi concrete or nut & washer with 5,000 psi minimum non-shrink grout.
- For installation on a nut & washer with grout pad, table values must be multiplied by 0.80.
- STD indicates Rods complying with ASTM F 1554 Grade 36. HS rods include, but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 or ASTM A 354 Grade BD
- 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.
- Allowable shear, drift and uplift values may be linearly interpolated for intermediate height or axial loads.
- The Uplift values listed assume no resisting axial load. To determine anchor tension loads in Panels at design shear values and including the effect of axial loads, refer to the Equation for Tension Uplift in the Examples Section of this catalog. For Brace Frames the anchor tension load equals uplift minus P, where P is the axial load in the Post.

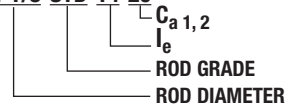
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb = 4.45 N, 1 psi = 6.89 kPa.

**REMINDER:
SPECIFY ANCHORAGE
ON FOUNDATION PLAN.
SEE ANCHORAGE
DETAILS.**

ANCHORAGE

NOMENCLATURE

1 1/8-STD-14-20

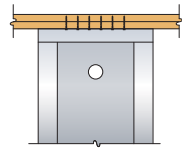
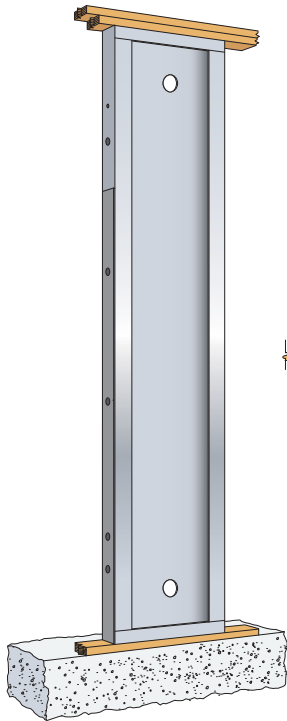


PANEL NOMENCLATURE

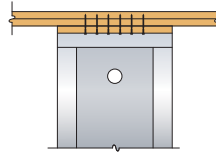
HFX-18 x 9



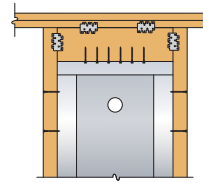
On Wood Sill Plate



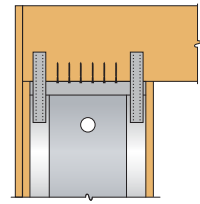
Hardy Frame® Panel at top plates
1/4 x 3' screws



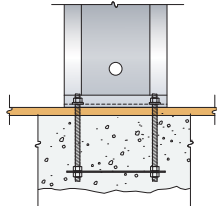
Hardy Frame® Panel with 2x filler
1/4 x 4 1/2' screws



Hardy Frame® Panel with 4x filler
1/4 x 3' screws
*custom heights available



Hardy Frame® Panel at Portal
1/4 x 3' screws. 78 inch Panel heights include welded straps

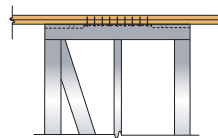
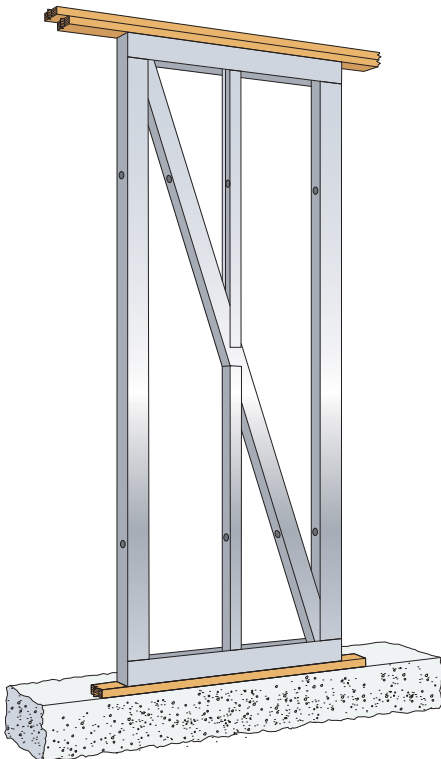


Hardy Frame® Panel on wood sill

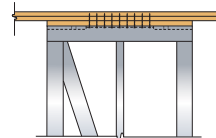
- Panels installed on wood sill plates have more ductility but, for some sizes the allowable shear is less to account for crushing of wood below.
- Allowable values in Table 1.2 have been reduced when necessary to maintain code drift limit.
- Because the Brace Frame base is wider, overturning forces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

Installation:

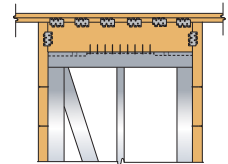
- Set bolts 4 1/4" inches above concrete
- Moisture barrier (15# felt, Moist Stop, Etc.) recommended when installing on treated wood.



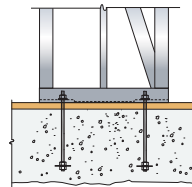
Hardy Frame® Brace Frame at top plates
1/4 x 3' screws



Hardy Frame® Brace Frame with 2x filler
1/4 x 4 1/2' screws



Hardy Frame® Brace Frame with 4x filler
1/4 x 3' screws
*custom heights available



Hardy Frame® Brace Frame on wood sill

Table 1.2 Hardy Frame® Installation - on 2x 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			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)
12" Wide Panels									
HFX-12x78	78	1 1/8" STD	1,000	1,067	0.341	11,499	1,132	0.373	12,219
			3,500	771	0.278	7,219	771	0.278	7,219
			6,500	339	0.167	1,219	339	0.167	1,219
		1 1/8" HS	1,000	1,067	0.341	11,492	1,132	0.373	12,219
			3,500	771	0.279	7,219	771	0.279	7,219
			6,500	339	0.167	1,219	339	0.167	1,219
HFX-12x8	92 1/4	1 1/8" STD	1,000	907	0.404	11,565	957	0.438	12,219
			3,500	652	0.327	7,219	652	0.327	7,219
			6,500	286	0.196	1,219	286	0.196	1,219
		1 1/8" HS	1,000	906	0.404	11,549	957	0.439	12,219
			3,500	652	0.327	7,219	652	0.327	7,219
			6,500	286	0.197	1,219	286	0.197	1,219
HFX-12x9	104 1/4	1 1/8" STD	1,000	806	0.456	11,608	847	0.492	12,219
			3,500	577	0.368	7,219	577	0.368	7,219
			6,500	253	0.221	1,219	253	0.221	1,219
		1 1/8" HS	1,000	805	0.456	11,590	847	0.493	12,219
			3,500	577	0.368	7,219	577	0.368	7,219
			6,500	253	0.221	1,219	253	0.221	1,219
HFX-12x10	116 1/4	1 1/8" STD	1,000	725	0.508	11,641	759	0.546	12,219
			3,500	517	0.408	7,219	517	0.408	7,219
			6,500	227	0.246	1,219	227	0.246	1,219
		1 1/8" HS	1,000	724	0.508	11,628	759	0.547	12,219
			3,500	517	0.409	7,219	517	0.409	7,219
			6,500	227	0.246	1,219	227	0.246	1,219
18" Wide Panels									
HFX-18x78	78	1 1/8" STD	1,000	1,973	0.287	12,219	1,973	0.286	12,219
			3,500	1,380	0.219	7,219	1,380	0.219	7,219
			6,500	669	0.137	1,219	669	0.137	1,219
		1 1/8" HS	1,000	1,973	0.287	12,219	1,973	0.287	12,219
			3,500	1,380	0.219	7,219	1,380	0.219	7,219
			6,500	669	0.137	1,219	669	0.137	1,219
HFX-18x8	92 1/4	1 1/8" STD	1,000	1,668	0.336	12,219	1,668	0.336	12,219
			3,500	1,167	0.257	7,219	1,167	0.257	7,219
			6,500	565	0.161	1,219	565	0.161	1,219
		1 1/8" HS	1,000	1,668	0.337	12,219	1,668	0.337	12,219
			3,500	1,167	0.257	7,219	1,167	0.257	7,219
			6,500	565	0.162	1,219	565	0.162	1,219
HFX-18x9	104 1/4	1 1/8" STD	1,000	1,476	0.379	12,219	1,476	0.379	12,219
			3,500	1,033	0.289	7,219	1,033	0.289	7,219
			6,500	500	0.182	1,219	500	0.182	1,219
		1 1/8" HS	1,000	1,476	0.379	12,219	1,476	0.379	12,219
			3,500	1,033	0.290	7,219	1,033	0.290	7,219
			6,500	500	0.182	1,219	500	0.182	1,219
HFX-18x10	116 1/4	1 1/8" STD	1,000	1,324	0.420	12,219	1,324	0.420	12,219
			3,500	926	0.321	7,219	926	0.321	7,219
			6,500	449	0.202	1,219	449	0.202	1,219
		1 1/8" HS	1,000	1,324	0.421	12,219	1,324	0.421	12,219
			3,500	926	0.322	7,219	926	0.322	7,219
			6,500	449	0.202	1,219	449	0.202	1,219
HFX-18x11	128 1/4	1 1/8" STD	1,000	1,200	0.462	12,219	1,200	0.463	12,219
			3,500	839	0.353	7,219	839	0.354	7,219
			6,500	407	0.222	1,219	407	0.223	1,219
		1 1/8" HS	1,000	1,200	0.462	12,219	1,200	0.462	12,219
			3,500	839	0.353	7,219	839	0.353	7,219
			6,500	407	0.223	1,219	407	0.223	1,219
HFX-18x12	140 1/4	1 1/8" STD	1,000	1,097	0.503	12,219	1,097	0.503	12,219
			3,500	768	0.385	7,219	768	0.385	7,219
			6,500	372	0.243	1,219	372	0.243	1,219
		1 1/8" HS	1,000	1,097	0.504	12,219	1,097	0.504	12,219
			3,500	768	0.385	7,219	768	0.385	7,219
			6,500	372	0.243	1,219	372	0.243	1,219

Table 1.2 Hardy Frame® Installation - on 2x 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			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)
18" Wide Panels									
HFX-18x13	152 1/4	1 1/8" STD	1,000	1,011	0.543	12,219	1,011	0.544	12,219
			3,500	707	0.416	7,219	707	0.416	7,219
			6,500	343	0.262	1,219	343	0.263	1,219
		1 1/8" HS	1,000	1,011	0.545	12,219	1,011	0.545	12,219
			3,500	707	0.417	7,219	707	0.417	7,219
			6,500	343	0.263	1,219	343	0.263	1,219
24" Wide Panels									
HFX-24x78	78	1 1/8" STD	1,000	2,951	0.220	12,219	2,951	0.220	12,219
			3,500	2,070	0.168	7,219	2,070	0.168	7,219
			6,500	1,012	0.106	1,219	1,012	0.106	1,219
		1 1/8" HS	1,000	2,951	0.221	12,219	2,951	0.221	12,219
			3,500	2,070	0.169	7,219	2,070	0.169	7,219
			6,500	1,012	0.106	1,219	1,012	0.106	1,219
HFX-24x8	92 1/4	1 1/8" STD	1,000	2,496	0.259	12,219	2,496	0.259	12,219
			3,500	1,750	0.198	7,219	1,750	0.198	7,219
			6,500	856	0.125	1,219	856	0.125	1,219
		1 1/8" HS	1,000	2,496	0.259	12,219	2,496	0.260	12,219
			3,500	1,750	0.198	7,219	1,750	0.199	7,219
			6,500	856	0.125	1,219	856	0.125	1,219
HFX-24x9	104 1/4	1 1/8" STD	1,000	2,208	0.291	12,219	2,208	0.291	12,219
			3,500	1,549	0.222	7,219	1,549	0.223	7,219
			6,500	757	0.140	1,219	757	0.141	1,219
		1 1/8" HS	1,000	2,208	0.292	12,219	2,208	0.292	12,219
			3,500	1,549	0.223	7,219	1,549	0.223	7,219
			6,500	757	0.141	1,219	757	0.141	1,219
HFX-24x10	116 1/4	1 1/8" STD	1,000	1,980	0.323	12,219	1,980	0.323	12,219
			3,500	1,389	0.247	7,219	1,389	0.247	7,219
			6,500	679	0.156	1,219	679	0.156	1,219
		1 1/8" HS	1,000	1,980	0.324	12,219	1,980	0.324	12,219
			3,500	1,389	0.248	7,219	1,389	0.248	7,219
			6,500	679	0.157	1,219	679	0.157	1,219
HFX-24x11	128 1/4	1 1/8" STD	1,000	1,795	0.355	12,219	1,795	0.354	12,219
			3,500	1,259	0.272	7,219	1,259	0.271	7,219
			6,500	616	0.172	1,219	616	0.172	1,219
		1 1/8" HS	1,000	1,795	0.355	12,219	1,795	0.355	12,219
			3,500	1,259	0.271	7,219	1,259	0.272	7,219
			6,500	616	0.172	1,219	616	0.172	1,219
HFX-24x12	140 1/4	1 1/8" STD	1,000	1,641	0.386	12,219	1,641	0.387	12,219
			3,500	1,151	0.296	7,219	1,151	0.296	7,219
			6,500	563	0.187	1,219	563	0.187	1,219
		1 1/8" HS	1,000	1,641	0.386	12,219	1,641	0.387	12,219
			3,500	1,151	0.296	7,219	1,151	0.296	7,219
			6,500	563	0.187	1,219	563	0.187	1,219
HFX-24x13	152 1/4	1 1/8" STD	1,000	1,512	0.419	12,219	1,512	0.418	12,219
			3,500	1,061	0.321	7,219	1,061	0.320	7,219
			6,500	519	0.203	1,219	519	0.203	1,219
		1 1/8" HS	1,000	1,512	0.418	12,219	1,512	0.418	12,219
			3,500	1,061	0.320	7,219	1,061	0.320	7,219
			6,500	519	0.203	1,219	519	0.203	1,219
32" Wide Brace Frames									
HFX-32x8	92 1/4	7/8" STD	1,000	2,135	0.183	8,041	2,135	0.183	8,041
			3,500	1,470	0.134	5,541	1,470	0.134	5,541
			6,500	675	0.075	2,541	675	0.075	2,541
		7/8" HS	1,000	2,135	0.183	8,041	2,135	0.183	8,041
			3,500	1,470	0.134	5,541	1,470	0.134	5,541
			6,500	675	0.075	2,541	675	0.075	2,541
HFX-32x9	104 1/4	7/8" STD	1,000	1,890	0.222	8,041	1,890	0.222	8,041
			3,500	1,300	0.162	5,541	1,300	0.162	5,541
			6,500	595	0.090	2,541	595	0.090	2,541
		7/8" HS	1,000	1,890	0.222	8,041	1,890	0.222	8,041
			3,500	1,300	0.162	5,541	1,300	0.162	5,541
			6,500	595	0.090	2,541	595	0.090	2,541

Table 1.2 Hardy Frame® Installation - on 2x Sill Plate^{1,2}

Model Number	Net Height H (in)	HD Bolt Dia (in) and Grade ³	Applied Axial Load ⁴	Seismic			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)
32" Wide Brace Frames									
HFX-32x10	116 1/4	7/8" STD	1,000	1,695	0.265	8,041	1,695	0.265	8,041
			3,500	1,170	0.193	5,541	1,170	0.192	5,541
			6,500	535	0.106	2,541	535	0.106	2,541
		7/8" HS	1,000	1,695	0.265	8,041	1,695	0.265	8,041
			3,500	1,170	0.193	5,541	1,170	0.192	5,541
			6,500	535	0.106	2,541	535	0.106	2,541
HFX-32x11	128 1/4	7/8" STD	1,000	1,535	0.311	8,041	1,535	0.311	8,041
			3,500	1,060	0.226	5,541	1,060	0.226	5,541
			6,500	485	0.123	2,541	485	0.123	2,541
		7/8" HS	1,000	1,535	0.311	8,041	1,535	0.311	8,041
			3,500	1,060	0.226	5,541	1,060	0.226	5,541
			6,500	485	0.123	2,541	485	0.123	2,541
HFX-32x12	140 1/4	7/8" STD	1,000	1,405	0.362	8,041	1,405	0.362	8,041
			3,500	970	0.262	5,541	970	0.262	5,541
			6,500	445	0.141	2,541	445	0.141	2,541
		7/8" HS	1,000	1,405	0.362	8,041	1,405	0.362	8,041
			3,500	970	0.262	5,541	970	0.262	5,541
			6,500	445	0.141	2,541	445	0.141	2,541
HFX-32x13	152 1/4	7/8" STD	1,000	1,295	0.417	8,041	1,295	0.417	8,041
			3,500	890	0.300	5,541	890	0.300	5,541
			6,500	410	0.161	2,541	410	0.161	2,541
		7/8" HS	1,000	1,295	0.417	8,041	1,295	0.417	8,041
			3,500	890	0.300	5,541	890	0.300	5,541
			6,500	410	0.161	2,541	410	0.161	2,541
44" Wide Brace Frames									
HFX-44x8	92 1/4	7/8" STD	1,000	2,950	0.159	7,612	3,215	0.156	8,297
			3,500	2,245	0.112	5,797	2,245	0.112	5,797
			6,500	1,085	0.065	2,797	1,085	0.065	2,797
		7/8" HS	1,000	3,215	0.156	8,297	3,215	0.156	8,297
			3,500	2,245	0.112	5,797	2,245	0.112	5,797
			6,500	1,085	0.065	2,797	1,085	0.065	2,797
HFX-44x9	104 1/4	7/8" STD	1,000	2,745	0.188	8,005	2,845	0.186	8,297
			3,500	1,990	0.133	5,797	1,990	0.133	5,797
			6,500	960	0.077	2,797	960	0.077	2,797
		7/8" HS	1,000	2,845	0.186	8,297	2,845	0.186	8,297
			3,500	1,990	0.133	5,797	1,990	0.133	5,797
			6,500	960	0.077	2,797	960	0.077	2,797
HFX-44x10	116 1/4	7/8" STD	1,000	2,550	0.220	8,297	2,550	0.220	8,297
			3,500	1,785	0.157	5,797	1,785	0.157	5,797
			6,500	860	0.090	2,797	860	0.090	2,797
		7/8" HS	1,000	2,550	0.220	8,297	2,550	0.220	8,297
			3,500	1,785	0.157	5,797	1,785	0.157	5,797
			6,500	860	0.090	2,797	860	0.090	2,797
HFX-44x11	128 1/4	7/8" STD	1,000	2,315	0.257	8,297	2,315	0.257	8,297
			3,500	1,615	0.183	5,797	1,615	0.183	5,797
			6,500	780	0.104	2,797	780	0.104	2,797
		7/8" HS	1,000	2,315	0.257	8,297	2,315	0.257	8,297
			3,500	1,615	0.183	5,797	1,615	0.183	5,797
			6,500	780	0.104	2,797	780	0.104	2,797
HFX-44x12	140 1/4	7/8" STD	1,000	2,115	0.296	8,297	2,115	0.296	8,297
			3,500	1,480	0.211	5,797	1,480	0.211	5,797
			6,500	715	0.119	2,797	715	0.119	2,797
		7/8" HS	1,000	2,115	0.296	8,297	2,115	0.296	8,297
			3,500	1,480	0.211	5,797	1,480	0.211	5,797
			6,500	715	0.119	2,797	715	0.119	2,797
HFX-44x13	152 1/4	7/8" STD	1,000	1,950	0.338	8,297	1,950	0.338	8,297
			3,500	1,360	0.241	5,797	1,360	0.241	5,797
			6,500	655	0.135	2,797	655	0.135	2,797
		7/8" HS	1,000	1,950	0.338	8,297	1,950	0.338	8,297
			3,500	1,360	0.241	5,797	1,360	0.241	5,797
			6,500	655	0.135	2,797	655	0.135	2,797

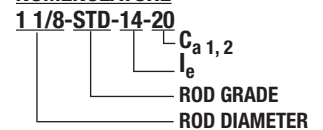
Notes

- 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.
- Wood Sill Plate for Panels assumes 2x wood sill plate (F_{cL} = 625 psi) below the Panel or Brace Frame.
- STD indicates bolts complying with ASTM F 1554 Grade 36. HS rods include, but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 or ASTM A 354 Grade BD
- 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 along the centerline of the post.
- Allowable shear, drift and uplift values may be linearly interpolated for intermediate height or axial loads.
- 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.

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

REMINDER:
SPECIFY ANCHORAGE
ON FOUNDATION PLAN.
SEE ANCHORAGE
DETAILS.

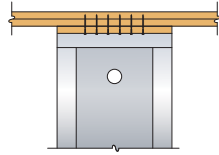
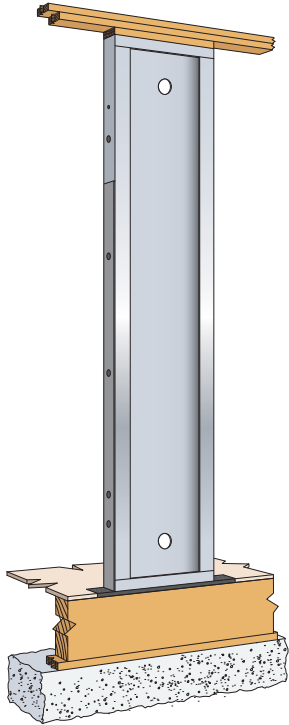
ANCHORAGE NOMENCLATURE



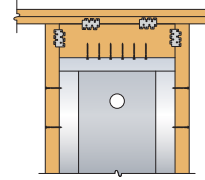
PANEL NOMENCLATURE



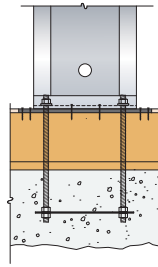
On Raised Floor



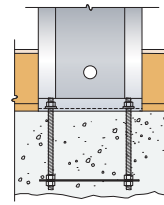
Hardy Frame® Panel
with 2x filler
1/4 x 4 1/2" screws



Hardy Frame® Panel
with 4x filler
1/4 x 3" screws
*custom heights available



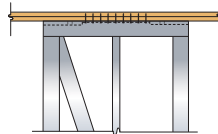
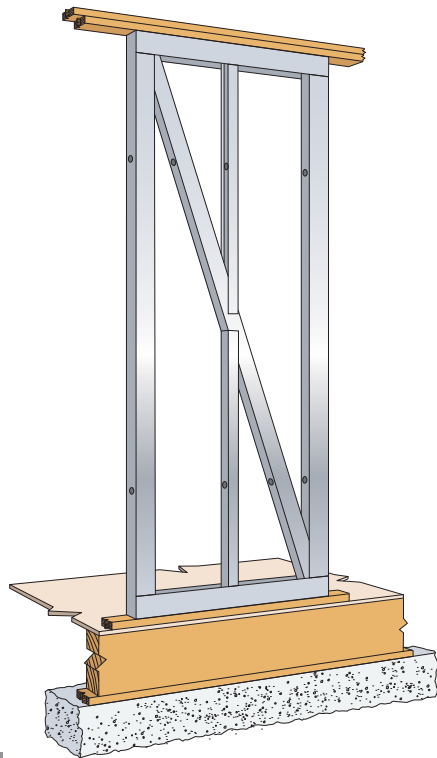
Hardy Frame® Panel
on raised floor
1/4 x 4 1/2" screws



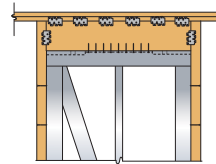
Hardy Frame® Panel
at raised floor
head out

Alternate

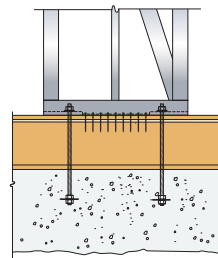
- Allowable values in Table 1.2A have been reduced when necessary to maintain code drift limit
- Table values for Panels installed on a wood floor system assume installation of a Hardy Frame® Bearing Plate.
- Installing at raised floor head-out
 - Provides allowable values from Table 1.1
 - Provides 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. Hardy Frame® Bearing Plates are not necessary.



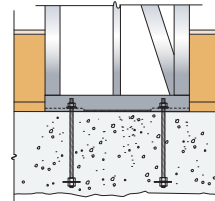
Hardy Frame®
Brace Frame
at top plates
1/4 x 3" screws



Hardy Frame®
Brace Frame
with 4x filler
1/4 x 3" screws
*custom heights available



Hardy Frame®
Brace Frame
on raised floor
1/4 x 4 1/2" screws



Hardy Frame®
Brace Frame
at raised floor
head out

Alternate

Table 1.2A Hardy Frame® Installation - on Raised Floors^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)

12" Wide Panels

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	0.341	10,625	1,685	0.433	13,720
			6,500	1,310	0.341	8,775	1,400	0.363	9,610
		1 1/8" HS	1,000	1,380	0.341	12,150	1,750	0.433	15,565
			3,500	1,345	0.341	10,610	1,685	0.433	13,705
			6,500	1,310	0.341	8,760	1,400	0.364	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	0.404	10,760	1,435	0.512	13,820
			6,500	1,120	0.404	8,910	1,185	0.426	9,610
		1 1/8" HS	1,000	1,175	0.404	12,270	1,490	0.512	15,670
			3,500	1,150	0.404	10,725	1,435	0.512	13,805
			6,500	1,115	0.404	8,875	1,185	0.426	9,610
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	0.456	10,850	1,275	0.579	13,900
			6,500	1,000	0.456	8,995	1,050	0.478	9,610
		1 1/8" HS	1,000	1,050	0.456	12,360	1,325	0.579	15,745
			3,500	1,025	0.456	10,815	1,275	0.579	13,875
			6,500	995	0.456	8,960	1,050	0.479	9,610
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	0.509	10,925	1,150	0.646	13,965
			6,500	900	0.509	9,070	940	0.530	9,610
		1 1/8" HS	1,000	945	0.509	12,445	1,195	0.646	15,810
			3,500	925	0.509	10,900	1,145	0.646	13,940
			6,500	900	0.509	9,040	940	0.531	9,610

18" Wide Panels

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	0.341	14,055	3,050	0.386	15,610
			6,500	2,285	0.279	9,610	2,285	0.278	9,610
		1 1/8" HS	1,000	2,875	0.341	15,925	3,425	0.433	19,070
			3,500	2,780	0.341	14,045	3,050	0.387	15,610
			6,500	2,285	0.279	9,610	2,285	0.279	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	0.404	14,170	2,580	0.453	15,610
			6,500	1,930	0.326	9,610	1,930	0.326	9,610
		1 1/8" HS	1,000	2,445	0.404	16,025	2,910	0.512	19,170
			3,500	2,365	0.404	14,140	2,580	0.455	15,610
			6,500	1,930	0.327	9,610	1,930	0.328	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	0.456	14,215	2,285	0.510	15,610
			6,500	1,710	0.367	9,610	1,710	0.367	9,610
		1 1/8" HS	1,000	2,170	0.456	16,090	2,585	0.579	19,250
			3,500	2,100	0.456	14,200	2,285	0.511	15,610
			6,500	1,710	0.368	9,610	1,710	0.368	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	0.509	14,300	2,050	0.565	15,610
			6,500	1,530	0.407	9,610	1,530	0.407	9,610
		1 1/8" HS	1,000	1,955	0.509	16,145	2,330	0.646	19,330
			3,500	1,890	0.509	14,260	2,050	0.567	15,610
			6,500	1,530	0.408	9,610	1,530	0.408	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	0.561	14,345	1,855	0.623	15,610
			6,500	1,390	0.447	9,610	1,390	0.449	9,610
		1 1/8" HS	1,000	1,780	0.561	16,225	2,120	0.712	19,420
			3,500	1,720	0.561	14,330	1,855	0.622	15,610
			6,500	1,390	0.448	9,610	1,390	0.448	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	0.614	14,400	1,695	0.676	15,610
			6,500	1,270	0.487	9,610	1,270	0.487	9,610
		1 1/8" HS	1,000	1,630	0.614	16,270	1,945	0.779	19,475
			3,500	1,580	0.614	14,375	1,695	0.677	15,610
			6,500	1,270	0.488	9,610	1,270	0.488	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	0.666	14,465	1,565	0.730	15,610
			6,500	1,170	0.525	9,610	1,170	0.525	9,610
		1 1/8" HS	1,000	1,510	0.666	16,320	1,795	0.846	19,540
			3,500	1,460	0.666	14,425	1,565	0.732	15,610
			6,500	1,170	0.527	9,610	1,170	0.527	9,610

Table 1.2A Hardy Frame® Installation - on Raised Floors^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)

24" Wide Panels

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			
			6,500		0.210					9,610			
		1 1/8" HS	1,000		0.341					19,620	5,315	0.363	20,610
			3,500		0.293					15,610	4,385	0.293	15,610
			6,500		0.211					9,610	3,270	0.211	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			
			6,500		0.246					9,610			
		1 1/8" HS	1,000		0.404					19,770	4,495	0.426	20,610
			3,500		0.344					15,610	3,710	0.344	15,610
			6,500		0.247					9,610	2,765	0.248	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			
			6,500		0.277					9,610			
		1 1/8" HS	1,000		0.456					19,855	3,980	0.478	20,610
			3,500		0.386					15,610	3,285	0.386	15,610
			6,500		0.278					9,610	2,450	0.278	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			
			6,500		0.307					9,610			
		1 1/8" HS	1,000		0.509					19,910	2,195	0.307	9,610
			3,500		0.429					15,610	3,450	0.509	19,910
			6,500		0.309					9,610	2,945	0.429	15,610
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		0.469					15,610			
			6,500		0.337					9,610			
		1 1/8" HS	1,000		0.561					20,070	3,235	0.581	20,610
			3,500		0.468					15,610	2,670	0.469	15,610
			6,500		0.337					9,610	1,990	0.337	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		0.510					15,610			
			6,500		0.367					9,610			
		1 1/8" HS	1,000		0.614					20,130	2,440	0.511	15,610
			3,500		0.510					15,610	1,820	0.367	9,610
			6,500		0.367					9,610	2,955	0.633	20,610
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		0.553					15,610			
			6,500		0.397					9,610			
		1 1/8" HS	1,000		0.666					20,180	2,250	0.552	15,610
			3,500		0.552					15,610	1,675	0.397	9,610
			6,500		0.397					9,610	2,250	0.552	15,610

32" Wide Brace Frames

HFX-32x8	92 1/4	7/8" STD	1,000	2,135	0.310	8,040	2,135	0.310	8,040					
			3,500							0.229	5,540			
			6,500							0.139	2,540			
		7/8" HS	1,000							0.310	8,040	2,135	0.310	8,040
			3,500							0.229	5,540	1,470	0.229	5,540
			6,500							0.139	2,540	675	0.139	2,540

Table 1.2A Hardy Frame® Installation - on Raised Floors^{1,2}

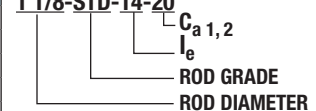
Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			Wind		
				Allowable In-Plane Shear V ⁵ (lbs)	Drift at V ⁵ (in)	Uplift at V ^{5,6} (lbs)	Allowable In-Plane Shear V ⁵ (lbs)	Drift at V ⁵ (in)	Uplift at V ^{5,6} (lbs)
32" Wide Brace Frames									
HFX-32x9	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
		7/8" HS	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-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
		7/8" HS	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-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	0.211	2,540
		7/8" HS	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	0.212	2,540	485	0.212	2,540
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	0.406	5,540
			6,500	445	0.238	2,540	445	0.238	2,540
		7/8" HS	1,000	1,405	0.556	8,040	1,405	0.556	8,040
			3,500	970	0.406	5,540	970	0.406	5,540
			6,500	445	0.238	2,540	445	0.238	2,540
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
		7/8" HS	1,000	1,295	0.627	8,040	1,295	0.627	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
44" Wide Brace Frames									
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-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-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
		7/8" HS	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-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
		7/8" HS	1,000	2,315	0.406	8,295	2,315	0.406	8,295
			3,500	1,615	0.289	5,795	1,615	0.289	5,795
			6,500	780	0.177	2,795	780	0.177	2,795
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
		7/8" HS	1,000	2,115	0.460	8,295	2,115	0.460	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-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
		7/8" HS	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

Notes

- 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.
- Raised Floor System for Panels assume a 2x wood sill plate, EWP rim board (Fc_L = 680 psi, 12 inch depth) with a Hardy Frame® Bearing Plate installed below. 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 Panel 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_L = 680 psi, 12 inch deep), floor sheathing and a 2x wood bottom plate (Fc_L = 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.
- STD indicates Rods complying with ASTM F 1554 Grade 36. HS rods include, but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 or ASTM A 354 Grade BD
- 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 along the centerline of the post.
- Allowable shear, drift and uplift values may be linearly interpolated for intermediate height or axial loads.
- 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.

REMINDER: SPECIFY ANCHORAGE ON FOUNDATION PLAN. SEE ANCHORAGE DETAILS.

ANCHORAGE NOMENCLATURE

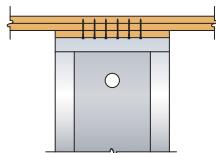
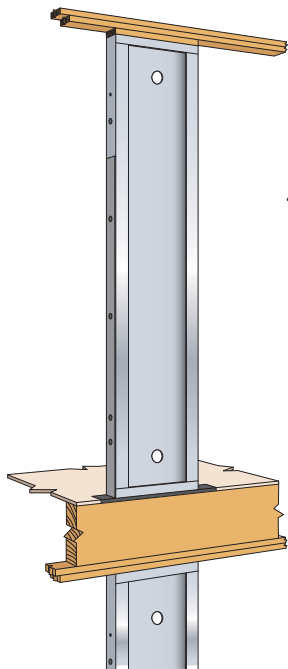


PANEL NOMENCLATURE

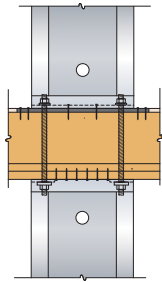


For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N

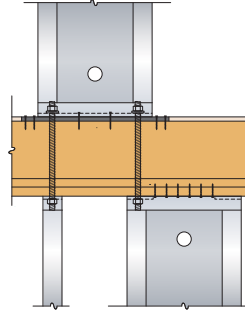
On Upper Floor Systems



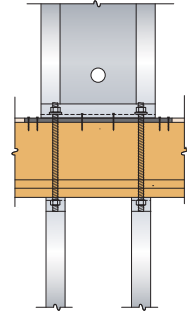
Hardy Frame® Panel with 2x filler
1/4 x 4 1/2" screws



Hardy Frame® Panel straight stack installation with Stacking Panel (STK) below (check cumulative forces-see example 2)



Hardy Frame® Panel stagger-stack installation with Stacking Panel (STK) below



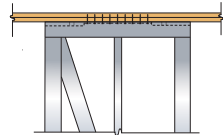
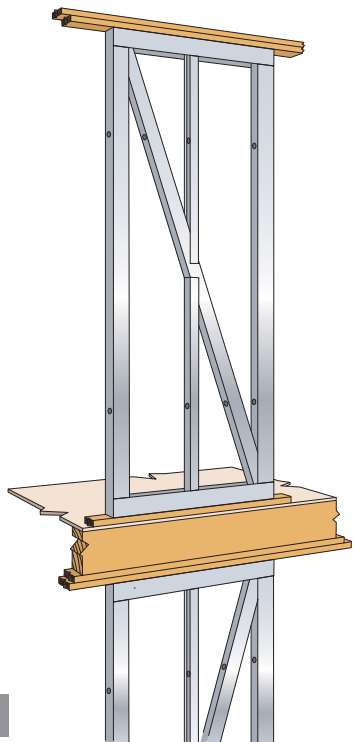
Hardy Frame® Panel to two Hardy Frame® Posts below

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

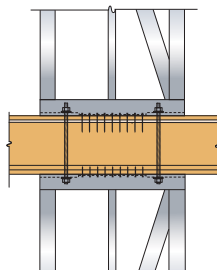
MODEL NUMBER
HFX-18 x 9 - STK

└─ STACKING
└─ NOMINAL HEIGHT
└─ ACTUAL WIDTH
└─ PRODUCT SERIES

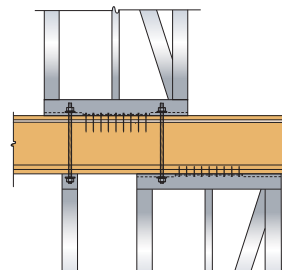
- Allowable values in Table 1.3A have been adjusted to maintain code drift limit while including the effects of crushing in wood members below.
- For "straight stack" installations cumulative forces must be considered by the building design professional.
- For discontinuous systems amplification factors must be considered by the Building Design Professional.
- Table values for Panels installed on a wood floor system assume installation of a 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. Hardy Frame® Bearing Plates are not necessary.



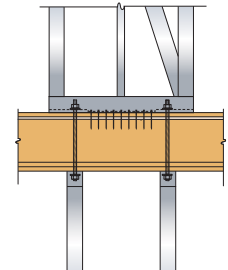
Hardy Frame® Brace Frame at top plates



Hardy Frame® Brace Frame straight stack installation (check cumulative forces)



Hardy Frame® Brace Frame stagger-stack installation



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

Table 1.3A Hardy Frame® Installation - on Upper Floors^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
12" Wide Panels									
HFX-12x78	78	1 1/8" STD	1,000	1,245	0.341	10,940	1,590	0.433	14,075
			3,500	1,210	0.341	9,350	1,550	0.433	12,485
			6,500	1,165	0.341	7,440	1,400	0.405	9,610
		1 1/8" HS	1,000	1,245	0.341	10,930	1,585	0.433	14,055
			3,500	1,210	0.341	9,340	1,550	0.433	12,460
			6,500	1,165	0.341	7,425	1,400	0.406	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	0.404	9,460	1,325	0.512	12,610
			6,500	995	0.404	7,545	1,185	0.475	9,610
		1 1/8" HS	1,000	1,060	0.404	11,030	1,355	0.512	14,180
			3,500	1,030	0.404	9,435	1,320	0.512	12,585
			6,500	990	0.404	7,520	1,185	0.476	9,610
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	0.456	9,535	1,180	0.579	12,705
			6,500	885	0.456	7,615	1,050	0.533	9,610
		1 1/8" HS	1,000	945	0.456	11,105	1,205	0.579	14,275
			3,500	920	0.456	9,505	1,175	0.579	12,675
			6,500	885	0.456	7,590	1,050	0.534	9,610
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	0.508	9,595	1,065	0.646	12,790
			6,500	800	0.509	7,675	940	0.592	9,610
		1 1/8" HS	1,000	855	0.509	11,170	1,085	0.646	14,360
			3,500	830	0.508	9,570	1,060	0.646	12,760
			6,500	795	0.509	7,650	940	0.593	9,610
18" Wide Panels									
HFX-18x78	78	1 1/8" STD	1,000	2,665	0.341	14,725	3,225	0.433	17,920
			3,500	2,605	0.341	13,040	3,050	0.421	15,610
			6,500	2,285	0.307	9,610	2,285	0.306	9,610
		1 1/8" HS	1,000	2,665	0.341	14,715	3,220	0.433	17,890
			3,500	2,600	0.341	13,035	3,050	0.421	15,610
			6,500	2,285	0.307	9,610	2,285	0.307	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	0.404	13,145	2,580	0.493	15,610
			6,500	1,930	0.360	9,610	1,930	0.360	9,610
		1 1/8" HS	1,000	2,270	0.404	14,835	2,735	0.512	17,980
			3,500	2,215	0.404	13,120	2,580	0.495	15,610
			6,500	1,930	0.361	9,610	1,930	0.361	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	0.456	13,185	2,285	0.556	15,610
			6,500	1,710	0.405	9,610	1,710	0.405	9,610
		1 1/8" HS	1,000	2,020	0.456	14,915	2,430	0.579	18,050
			3,500	1,965	0.456	13,170	2,285	0.557	15,610
			6,500	1,710	0.406	9,610	1,710	0.406	9,610
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	0.509	13,255	2,050	0.616	15,610
			6,500	1,530	0.449	9,610	1,530	0.449	9,610
		1 1/8" HS	1,000	1,820	0.509	14,985	2,185	0.646	18,120
			3,500	1,770	0.509	13,220	2,050	0.618	15,610
			6,500	1,530	0.450	9,610	1,530	0.450	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	0.561	13,300	1,855	0.680	15,610
			6,500	1,390	0.493	9,610	1,390	0.495	9,610
		1 1/8" HS	1,000	1,660	0.561	15,080	1,990	0.712	18,200
			3,500	1,610	0.561	13,285	1,855	0.678	15,610
			6,500	1,390	0.494	9,610	1,390	0.494	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	0.614	13,350	1,695	0.738	15,610
			6,500	1,270	0.537	9,610	1,270	0.537	9,610
		1 1/8" HS	1,000	1,520	0.614	15,135	1,825	0.779	18,245
			3,500	1,475	0.614	13,325	1,695	0.739	15,610
			6,500	1,270	0.538	9,610	1,270	0.538	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	0.666	13,400	1,565	0.797	15,610
			6,500	1,170	0.580	9,610	1,170	0.580	9,610
		1 1/8" HS	1,000	1,410	0.666	15,200	1,685	0.846	18,305
			3,500	1,365	0.666	13,370	1,565	0.799	15,610
			6,500	1,170	0.582	9,610	1,170	0.582	9,610

Table 1.3A Hardy Frame® Installation - on Upper Floors^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)	
24" Wide Panels										
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		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-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		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-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		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-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		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-24x11	128 1/4	1 1/8" STD	1,000	2,695	0.496	17,090	3,235	0.629	20,610	
			3,500		0.511	15,610	2,670	0.510	15,610	
			6,500		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-24x12	140 1/4	1 1/8" STD	1,000	2,515	0.554	17,450	2,955	0.686	20,610	
			3,500		0.556	15,610	2,440	0.557	15,610	
			6,500		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-24x13	152 1/4	1 1/8" STD	1,000	2,360	0.616	17,785	2,725	0.742	20,610	
			3,500		0.603	15,610	2,250	0.602	15,610	
			6,500		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
32" Wide Brace Frames										
HFX-32x8	92 1/4	7/8" STD	1,000	2,135	0.321	8,040	2,135	0.321	8,040	
			3,500		0.238	5,540	1,470	0.237	5,540	
			6,500		0.145	2,540	675	0.145	2,540	
		7/8" HS	1,000		2,135	0.321	8,040	2,135	0.321	8,040
			3,500		1,470	0.238	5,540	1,470	0.238	5,540
			6,500		675	0.145	2,540	675	0.145	2,540
HFX-32x9	104 1/4	7/8" STD	1,000	1,890	0.378	8,040	1,890	0.378	8,040	
			3,500		0.279	5,540	1,300	0.279	5,540	
			6,500		0.168	2,540	595	0.168	2,540	
		7/8" HS	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-32x10	116 1/4	7/8" STD	1,000	1,695	0.439	8,040	1,695	0.439	8,040	
			3,500		0.323	5,540	1,170	0.323	5,540	
			6,500		0.193	2,540	535	0.193	2,540	
		7/8" HS	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

Table 1.3A Hardy Frame® Installation - on Upper Floors^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
32" Wide Brace Frames									
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
		7/8" HS	1,000	1,535	0.504	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-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
		7/8" HS	1,000	1,405	0.572	8,040	1,405	0.573	8,040
			3,500	970	0.419	5,540	970	0.419	5,540
			6,500	445	0.247	2,540	445	0.247	2,540
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
		7/8" HS	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
44" Wide Brace Frames									
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-44x9	104 1/4	7/8" STD	1,000	2,745	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
		7/8" HS	1,000	2,845	0.318	8,295	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-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
		7/8" HS	1,000	2,550	0.366	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-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
		7/8" HS	1,000	2,315	0.418	8,295	2,315	0.418	8,295
			3,500	1,615	0.298	5,795	1,615	0.298	5,795
			6,500	780	0.183	2,795	780	0.183	2,795
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
		7/8" HS	1,000	2,115	0.473	8,295	2,115	0.473	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-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
		7/8" HS	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	0.229	2,795	655	0.229	2,795

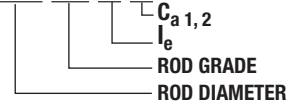
Notes

- The values in this table are Allowable Stress Design (ASD) excluding a 1.33 stress increase and pertain to installation on Upper Floor Systems supported on wood frame walls below.
- Upper Floor System for Panels assumes double 2x wood plates in the wall below, EWP rim board (Fc.L = 680 psi, 12 inch depth) with a 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.L = 680 psi 12 inch deep), floor sheathing and a 2x wood bottom plate (Fc.L = 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.
- STD indicates Rods complying with ASTM F 1554 Grade 36. HS rods include, but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 or ASTM A 354 Grade BD
- 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 along the centerline of the post.
- Allowable shear, drift and uplift values may be linearly interpolated for intermediate height or axial loads.
- 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.

**REMINDER: SPECIFY ANCHOR-
AGE ON FOUNDATION PLAN.
SEE ANCHORAGE DETAILS.**

**ANCHORAGE
NOMENCLATURE**

1 1/8-STD-14-20



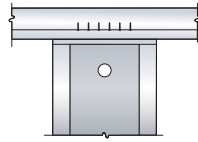
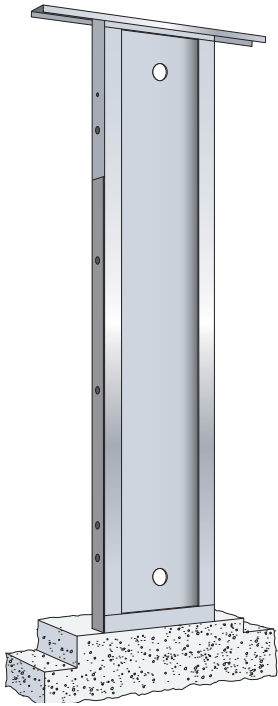
PANEL NOMENCLATURE

HFX-18 x 9

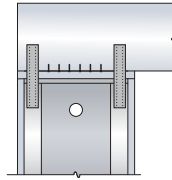


For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N

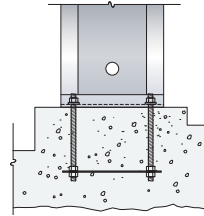
HFX/S Series for cold formed steel (c-fs) framing



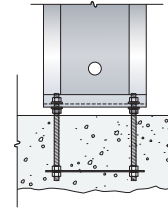
Hardy Frame® Panel with c-fs Channel



Hardy Frame® Panel at c-fs Portal



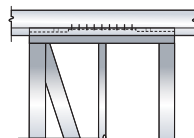
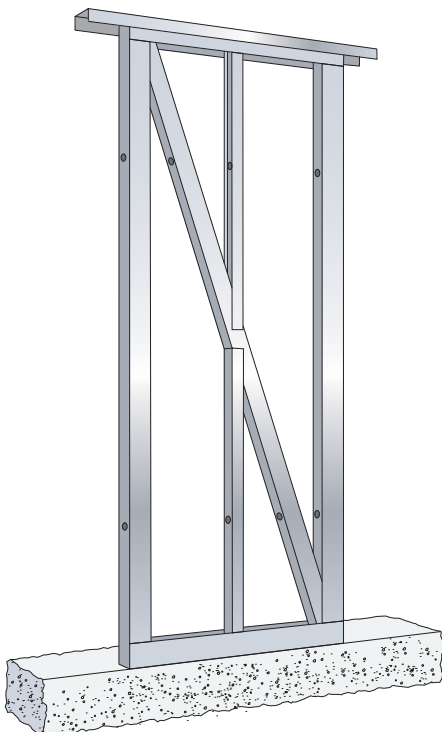
Hardy Frame® Panel on concrete



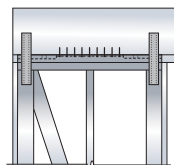
Hardy Frame® Panel on nuts and washers (Requires 5,000 psi grout)

- HFX/S Series 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 $\pm 1/2"$
- 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.

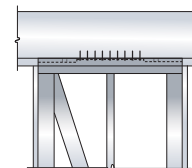
The new HFX-Series Brace Frame has relocated hold down bolts to be outside of the post. Hold down connections are now accessible even when wood or framing is in contact with the edge of the frame.



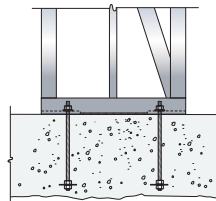
Hardy Frame® Brace Frame with c-fs Channel



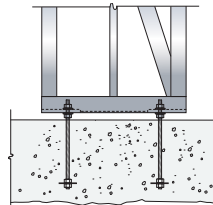
Hardy Frame® Brace Frame at c-fs Portal



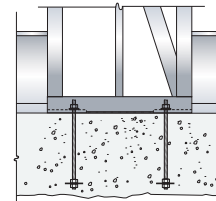
Hardy Frame® Brace Frame at c-fs Portal



Hardy Frame® Brace Frame on concrete



Hardy Frame® Brace Frame on nuts and washers



Hardy Frame® Brace Frame at raised floor head out

Table 2.1A Hardy Frame® HFX/S Installation - on 2500 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
9" Wide Panels									
HFX/S-9x8	96 5/8	1 1/8" STD	2,000	745	0.272	15,460	745	0.272	15,460
12" Wide Panels									
HFX/S-12x8	96 5/8	1 1/8" STD	1,000	1,320	0.199	17,425	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-12x9	108 5/8	1 1/8" STD	1,000	1,175	0.223	17,425	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-12x10	120 5/8	1 1/8" STD	1,000	1,060	0.246	17,425	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
18" Wide Panels									
HFX/S-18x8	96 5/8	1 1/8" STD	1,000	2,185	0.181	16,805	2,610	0.217	21,620
			3,500	2,180	0.181	16,530			
			6,500	2,155	0.179	31,190			
		1 1/8" HS	1,000	3,270	0.273	30,030	3,535	0.296	38,015
			3,500	3,210	0.268	28,260	3,385	0.284	33,700
			6,500	3,110	0.260	17,305	3,135	0.263	28,745
HFX/S-18x9	108 5/8	1 1/8" STD	1,000	1,985	0.209	16,965	2,320	0.244	21,620
			3,500	1,955	0.206	16,870			
			6,500	1,950	0.205	31,190			
		1 1/8" HS	1,000	2,910	0.307	30,030	3,145	0.332	38,015
			3,500	2,855	0.301	28,260	3,015	0.318	33,700
			6,500	2,765	0.292	17,385	2,790	0.295	28,745
HFX/S-18x10	120 5/8	1 1/8" STD	1,000	1,795	0.232	17,250	2,090	0.270	21,620
			3,500	1,785	0.230	17,150			
			6,500	1,775	0.229	31,190			
		1 1/8" HS	1,000	2,620	0.341	30,030	2,830	0.368	38,015
			3,500	2,570	0.334	28,260	2,715	0.353	33,700
			6,500	2,490	0.324	17,430	2,515	0.327	28,745
HFX/S-18x11	132 5/8	1 1/8" STD	1,000	1,635	0.255	17,430	1,900	0.300	21,620
			3,500			31,190			
			6,500			31,190			
		1 1/8" HS	1,000	2,385	0.372	30,030	2,575	0.402	38,015
			3,500	2,340	0.365	28,260	2,470	0.385	33,700
			6,500	2,265	0.354	17,430	2,285	0.357	28,745
HFX/S-18x12	144 5/8	1 1/8" STD	1,000	1,500	0.277	17,430	1,745	0.321	21,620
			3,500			31,190			
			6,500			31,190			
		1 1/8" HS	1,000	2,185	0.405	30,030	2,360	0.438	38,015
			3,500	2,145	0.397	28,260	2,265	0.419	33,700
			6,500	2,075	0.385	17,430	2,095	0.388	28,745
HFX/S-18x13	156 5/8	1 1/8" STD	1,000	1,385	0.298	17,430	1,605	0.346	21,620
			3,500			31,190			
			6,500			31,190			
		1 1/8" HS	1,000	2,020	0.437	30,030	2,180	0.472	38,015
			3,500	1,980	0.429	28,260	2,090	0.452	33,700
			6,500	1,915	0.415	28,260	1,935	0.419	28,745
24" Wide Panels									
HFX/S-24x8	96 5/8	1 1/8" STD	1,000	2,960	0.131	15,200	3,800	0.168	20,490
			3,500						
			6,500						
		1 1/8" HS	1,000	4,780	0.213	27,600	5,910	0.264	38,185
			3,500				5,865	0.262	37,700
			6,500				5,795	0.258	36,880

Table 2.1A Hardy Frame® HFX/S Installation - on 2500 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)						
24" Wide Panels															
HFX/S-24x9	108 5/8	1 1/8" STD	1,000	2,715	0.151	15,745	3,485	0.195	21,250						
			3,500				3,480								
			6,500				3,450								
		1 1/8" HS	1,000				5,385			0.303	39,865				
			3,500				5,335			0.300	39,180				
			6,500				5,250			0.295	38,055				
HFX/S-24x10	120 5/8	1 1/8" STD	1,000	2,505	0.172	16,215	3,180	0.218	21,620						
			3,500				21,610								
			6,500				2,470		0.170	15,940					
		1 1/8" HS	1,000				4,025		0.279	29,595	3,165	0.217	21,515		
			3,500								4,850	0.336	39,865		
			6,500								4,850	0.332	39,180		
HFX/S-24x11	132 5/8	1 1/8" STD	1,000	2,330	0.193	16,620		2,880			0.237	21,620			
			3,500												
			6,500										2,290	0.189	16,280
		1 1/8" HS	1,000				3,730		0.308	30,420			4,410	0.365	39,865
			3,500										4,370	0.362	39,180
			6,500										4,300	0.356	38,055
HFX/S-24x12	144 5/8	1 1/8" STD	1,000	2,175	0.213	16,975		2,640			0.259	21,620			
			3,500										2,140	0.209	16,655
			6,500										2,130	0.208	16,560
		1 1/8" HS	1,000				3,410		0.334	30,285			2,640	0.259	21,620
			3,500										4,045	0.397	39,865
			6,500										4,005	0.393	39,180
HFX/S-24x13	156 5/8	1 1/8" STD	1,000	2,040	0.234	17,290		2,440			0.279	21,620			
			3,500										2,000	0.230	16,905
			6,500										1,990	0.229	16,805
		1 1/8" HS	1,000				3,140		0.360	30,160			2,440	0.279	21,620
			3,500										3,735	0.428	39,865
			6,500										3,700	0.424	39,180
					3,640	0.417		38,055							
32" Wide Brace Frames															
HFX/S-32x8	96 5/8	7/8" STD	1,000	2,155	0.126	8,505		2,695			0.158	10,630			
			3,500				2,060		0.121	8,130					
			6,500				1,300		0.076	5,130					
		7/8" HS	1,000				2,865		0.168	11,295			2,865	0.168	11,295
			3,500										2,230	0.131	8,795
			6,500										1,470	0.086	5,795
HFX/S-32x9	108 5/8	7/8" STD	1,000	1,990	0.165	8,825		2,400			0.199	10,630			
			3,500										1,835	0.152	8,130
			6,500										1,155	0.096	5,130
		7/8" HS	1,000				2,550		0.211	11,295			2,550	0.211	11,295
			3,500										1,985	0.164	8,795
			6,500										1,305	0.108	5,795
HFX/S-32x10	120 5/8	7/8" STD	1,000	1,850	0.209	9,100		2,160			0.245	10,630			
			3,500										1,650	0.187	8,130
			6,500										1,040	0.118	5,130
		7/8" HS	1,000				2,295		0.260	11,295			2,295	0.260	11,295
			3,500										1,785	0.202	8,795
			6,500										1,175	0.133	5,795
HFX/S-32x11	132 5/8	7/8" STD	1,000	1,725	0.259	9,335		1,965			0.296	10,630			
			3,500										1,500	0.226	8,130
			6,500										950	0.143	5,130
		7/8" HS	1,000				2,085		0.314	11,295			2,085	0.314	11,295
			3,500										1,625	0.245	8,795
			6,500										1,070	0.161	5,795
HFX/S-32x12	144 5/8	7/8" STD	1,000	1,615	0.316	9,545		1,800			0.353	10,630			
			3,500										1,375	0.269	8,130
			6,500										870	0.170	5,130
		7/8" HS	1,000				1,915		0.374	11,295			1,915	0.374	11,295
			3,500										1,490	0.291	8,795
			6,500										980	0.192	5,795

Table 2.1A Hardy Frame® HFX/S Installation - on 2500 psi Concrete^{1,2}

Model Number	Net Height H (in)	HD Rod Dia (in) and Grade ³	Allowable Axial Load ⁴	Seismic R=6.5			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)
32" Wide Brace Frames									
HFX/S-32x13	156 5/8	7/8" STD	1,000	1,520	0.378	9,730	1,665	0.413	10,630
			3,500	1,270	0.316	8,130	1,270	0.316	8,130
			6,500	800	0.199	5,130	800	0.199	5,130
		7/8" HS	1,000	1,765	0.439	11,295	1,765	0.439	11,295
			3,500	1,375	0.342	8,795	1,375	0.342	8,795
			6,500	905	0.225	5,795	905	0.225	5,795
44" Wide Brace Frames									
HFX/S-44x8	96 5/8	7/8" STD	1,000	2,735	0.087	7,395	3,645	0.116	9,860
			3,500	1,985	0.063	5,365	3,095	0.099	8,365
			6,500	1,985	0.063	5,365	1,985	0.063	5,365
		7/8" HS	1,000	4,310	0.137	11,645	4,310	0.137	11,645
			3,500	3,385	0.108	9,145	3,385	0.108	9,145
			6,500	2,275	0.072	6,145	2,275	0.072	6,145
HFX/S-44x9	108 5/8	7/8" STD	1,000	2,550	0.112	7,750	3,400	0.151	10,330
			3,500	1,765	0.078	5,365	2,755	0.122	8,365
			6,500	1,765	0.078	5,365	1,765	0.078	5,365
		7/8" HS	1,000	3,830	0.170	11,645	3,830	0.170	11,645
			3,500	3,010	0.133	9,145	3,010	0.133	9,145
			6,500	2,020	0.090	6,145	2,020	0.090	6,145
HFX/S-44x10	120 5/8	7/8" STD	1,000	2,390	0.143	8,060	3,185	0.191	10,745
			3,500	1,590	0.095	5,365	2,480	0.148	8,365
			6,500	1,590	0.095	5,365	1,590	0.095	5,365
		7/8" HS	1,000	3,450	0.206	11,645	3,450	0.207	11,645
			3,500	2,710	0.162	9,145	2,710	0.162	9,145
			6,500	1,820	0.109	6,145	1,820	0.109	6,145
HFX/S-44x11	132 5/8	7/8" STD	1,000	2,245	0.178	8,335	2,930	0.231	10,865
			3,500	1,445	0.114	5,365	2,255	0.178	8,365
			6,500	1,445	0.114	5,365	1,445	0.114	5,365
		7/8" HS	1,000	3,140	0.247	11,645	3,140	0.247	11,645
			3,500	2,465	0.194	9,145	2,465	0.194	9,145
			6,500	1,655	0.130	6,145	1,655	0.130	6,145
HFX/S-44x12	144 5/8	7/8" STD	1,000	2,120	0.215	8,575	2,685	0.272	10,865
			3,500	2,070	0.210	8,365	2,070	0.210	8,365
			6,500	1,325	0.134	5,365	1,325	0.134	5,365
		7/8" HS	1,000	2,880	0.292	11,645	2,880	0.293	11,645
			3,500	2,260	0.230	9,145	2,260	0.230	9,145
			6,500	1,520	0.154	6,145	1,520	0.154	6,145
HFX/S-44x13	156 5/8	7/8" STD	1,000	2,005	0.257	8,795	2,480	0.318	10,865
			3,500	1,910	0.245	8,365	1,910	0.245	8,365
			6,500	1,225	0.157	5,365	1,225	0.157	5,365
		7/8" HS	1,000	2,660	0.341	11,645	2,660	0.341	11,645
			3,500	2,085	0.268	9,145	2,085	0.268	9,145
			6,500	1,400	0.180	6,145	1,400	0.180	6,145

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

Notes

- 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.
- For installation on a nut & washer with grout pad, table values must be multiplied by 0.80.
- STD indicates rods complying with ASTM F 1554 Grade 36. HS rods include, but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 or ASTM A 354 Grade B9.
- 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.
- Allowable shear, drift and uplift values may be linearly interpolated for intermediate height or axial loads.
- The Uplift values listed assume no resisting axial load. To determine anchor tension loads in Panels at design shear values and including the effect of axial loads, refer to the Equation for Tension Uplift in the Examples Section of this catalog. For Brace Frames the anchor tension load equals uplift minus P, where P is the axial load in the Post.

REMINDER: SPECIFY ANCHORAGE ON FOUNDATION PLAN. SEE ANCHORAGE DETAILS.

ANCHORAGE NOMENCLATURE

1 1/8-STD-14-20



PANEL NOMENCLATURE

HFX/S -18 x 9



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} .

Hardy Frame® Panels

$$\text{HFX 12x: } T = 12.2 f'_c - \sqrt{48.8 f'_c{}^2 - 1.19 f'_c (8.50 P_{add} + 2VH)} - P_{add}$$

$$\text{HFX 18x: } T = 18.3 f'_c - \sqrt{34.8 f'_c{}^2 - 1.19 f'_c (12.8 P_{add} + 2VH)} - P_{add}$$

$$\text{HFX 24x: } T = 25.4 f'_c - \sqrt{17.0 f'_c{}^2 - 1.19 f'_c (18.8 P_{add} + 2VH)} - P_{add}$$

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

Example 1: Combine HFX-Series Panels of different stiffness in the same wall line by proportioning loads.

Given:

- 2006 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 (1-1/8" HS) = 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 (1-1/8" HS) = 3,400 lbs
 Corresponding Drift = 0.284 in
 Stiffness (k_{18}) = 3,400 / 0.284 = 11,972 lbs/in

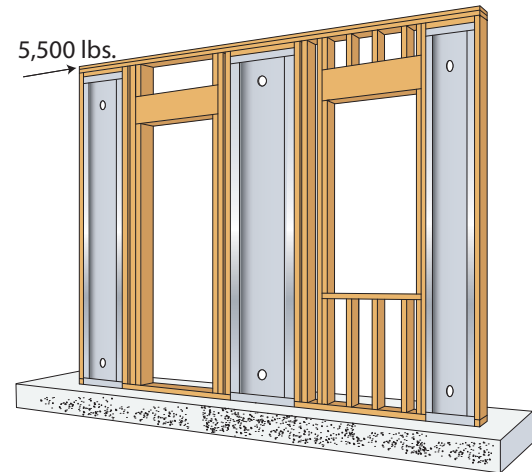
Total Stiffness (k_{total}) = $k_{12} + k_{12} + k_{18} = 6,578 \text{ lbs/in} + 6,578 \text{ lbs/in} + 11,972 \text{ lbs/in} = 25,128 \text{ lbs/in}$

Step 2: Calculate Relative Stiffness

$k_{12} / k_{total} = 6,578 / 25,128 = 0.26$
 $k_{18} / k_{total} = 11,972 / 25,128 = 0.48$

Step 3: Check Load Distribution

HFX-12x8 = $0.26 \times 5,500 \text{ lbs} = 1,430 \text{ lbs} < 1,480 \text{ lbs}$ **OK**
 HFX-18x8 = $0.48 \times 5,500 \text{ lbs} = 2,640 \text{ lbs} < 3,400 \text{ lbs}$ **OK**



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

When designing for Panels to be stacked vertically in direct alignment as shown, the cumulative shear, moment and overturning forces of the system must be checked. The following example illustrates our recommended analysis for checking allowable loads.

Given

2006 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 (1-1/8" STD Rods) at Second Floor : Allowable Wind Shear from Table 1.3A = 2,740 lbs
 HFX-18x9 (1-1/8" HS Rods) at First Floor : Allowable Wind Shear from Table 1.1A = 3,275 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 = 3,275 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

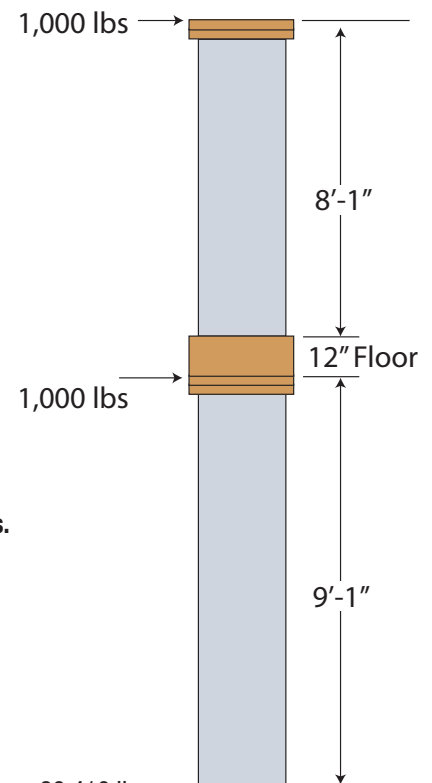
Allowable Moment = Allowable Shear x Panel Height = 3,275 lbs x 104.25in = 341,419 in-lbs.

C) Check Cumulative Overturning Moment

341,419 in-lbs (Capacity) > 327,000 in-lbs (Cumulative moment) **OK**

Step 4. Foundation Anchor Tension

$\frac{\text{Calculated Overturning Moment}}{\text{Allowable Moment}} \times \text{Uplift at Allowable Moment} = \frac{327,000 \text{ in-lbs}}{341,419 \text{ in-lbs}} \times 38,015 \text{ lbs} = 36,410 \text{ lbs}$







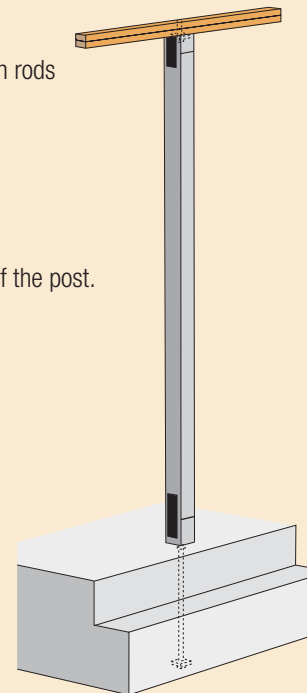
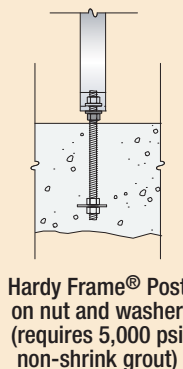
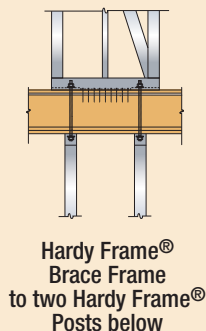
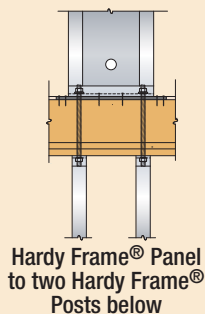
Hardy Frame® Post

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

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

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

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



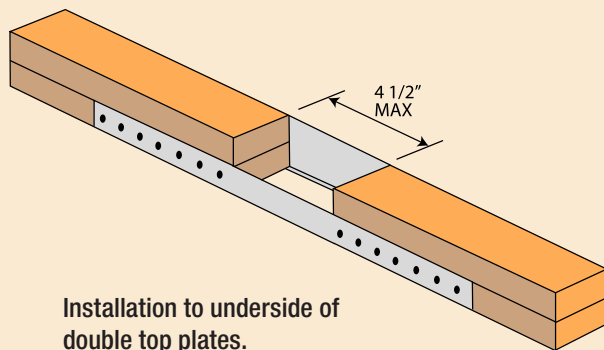
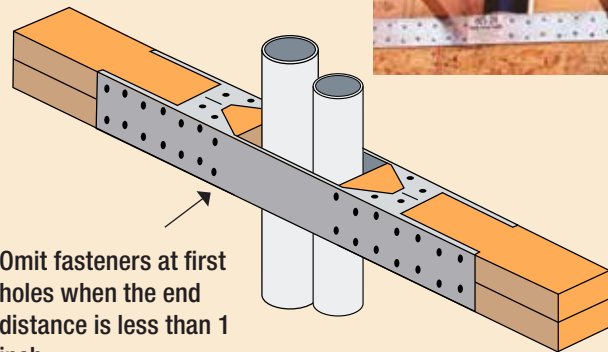
Model Number	Net Height (in)	Hold Down Diameter (in)	Allowable Compression ^{2,3} (lbs)	Allowable Tension by Hold Down Grade	
				STD ⁴ (lbs)	HS ⁵ (lbs)
HFP-Series					
HFP8-7/8	92 1/4	7/8	26,645	13,500	27,100
HFP8-1 1/8	92 1/4	1 1/8		22,400	36,100
HFP9-7/8	104 1/4	7/8	24,170	13,500	27,100
HFP9-1 1/8	104 1/4	1 1/8		22,400	36,100
HFP10-7/8	116 1/4	7/8	21,255	13,500	27,100
HFP10-1 1/8	116 1/4	1 1/8		22,400	36,100
HFP11-7/8	128 1/4	7/8	18,765	13,500	27,100
HFP11-1 1/8	128 1/4	1 1/8		22,400	36,100
HFP12-7/8	140 1/4	7/8	16,645	13,500	27,100
HFP12-1 1/8	140 1/4	1 1/8		22,400	36,100
HFP13-7/8	152 1/4	7/8	14,090	13,500	27,100
HFP13-1 1/8	152 1/4	1 1/8		22,400	36,100
HFP/S-Series					
HFP/S8-7/8	96 5/8	7/8	25,745	13,500	27,100
HFP/S8-1 1/8	96 5/8	1 1/8		22,400	36,100
HFP/S9-7/8	108 5/8	7/8	23,105	13,500	27,100
HFP/S9-1 1/8	108 5/8	1 1/8		22,400	36,100
HFP/S10-7/8	120 5/8	7/8	20,350	13,500	27,100
HFP/S10-1 1/8	120 5/8	1 1/8		22,400	36,100
HFP/S11-7/8	132 5/8	7/8	17,990	13,500	27,100
HFP/S11-1 1/8	132 5/8	1 1/8		22,400	36,100
HFP/S12-7/8	144 5/8	7/8	15,715	13,500	27,100
HFP/S12-1 1/8	144 5/8	1 1/8		22,400	36,100
HFP/S13-7/8	156 5/8	7/8	13,160	13,500	27,100
HFP/S13-1 1/8	156 5/8	1 1/8		22,400	36,100

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

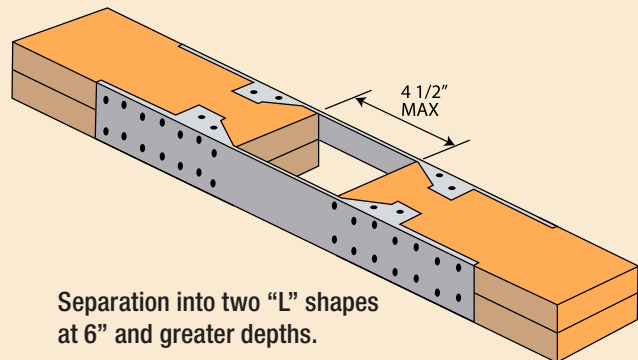
- The values in this table are Allowable Stress Design (ASD), exclude a 1.33 stress increase and assume installations on a rigid base, or a nut and washer with 5,000 psi minimum compressive strength non-shrink grout
- The maximum allowable design compression is governed by the allowable compression of the supporting material below and based on the Post's bearing area of 12.25 square inches. Common supports include:
 - 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.
- The Building Design Professional is permitted to design bearing plates to reduce bearing stress.
- STD Hold Down rods must comply with ASTM F 1554 Grade 36. HS Hold Down rods must comply with a high strength steel specification and have an adequate ASD capacity to resist the tabulated uplift values. High Strength rods include but are not limited to ASTM F 1554 Grade 105, ASTM A 193 Grade B7 and ASTM A 354 Grade BD.

Hardy Frame® Saddle

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



Installation to underside of double top plates.



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

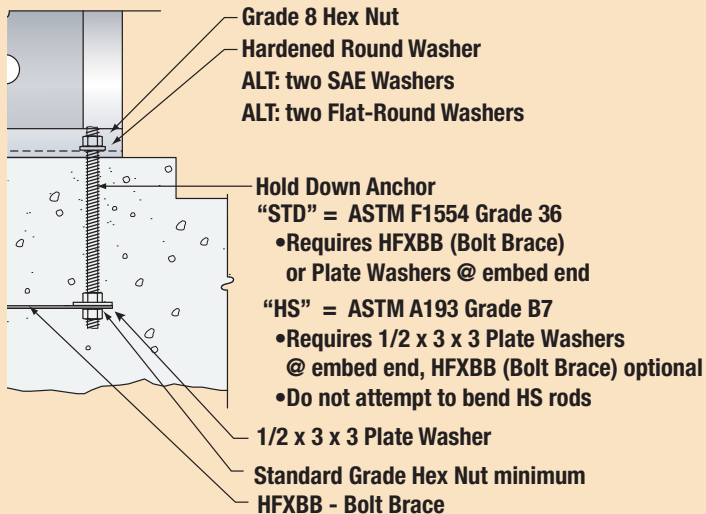
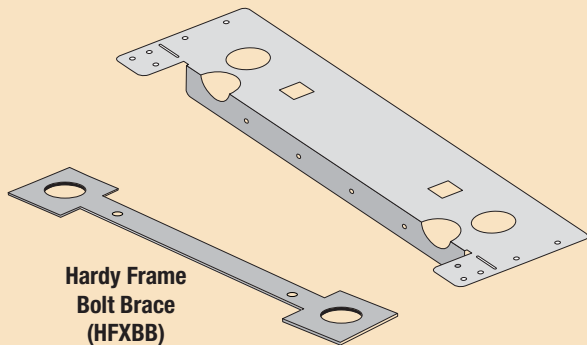
Hardy Frame® Saddle 1, 3, 4, 7			
Model Number	Fastener Quantity ²	Allowable Tension ^{5, 6} (lbs)	Allowable Compression (lbs)
HFS24	24-16d common	2950	2500
HFS36	32-16d common	4280	2500

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

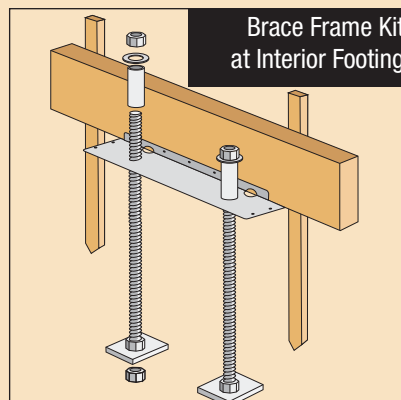
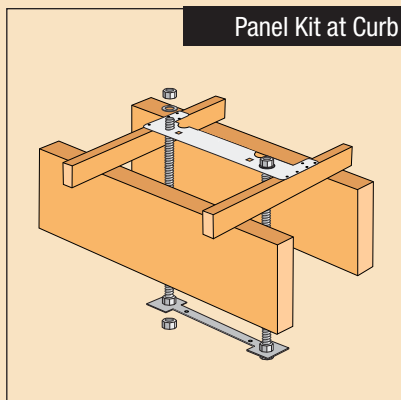
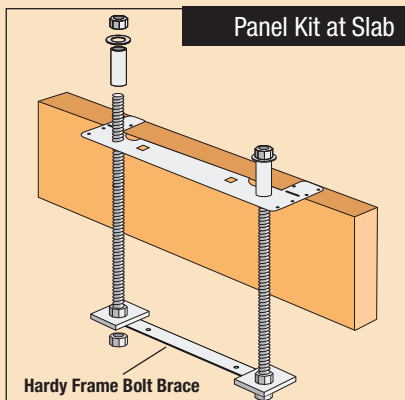
1. The maximum notched section in the wood member is 4-1/2 inches.
2. Fastener quantity is the number of 16d Common nails to be installed into each of the members to be joined. Table 6.2 of this Report provides reductions of tabulated loads where other nail styles are used.
3. When the end distance from 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.
4. For the condition described above there is no reduction in values provided the HFS24 is installed with minimum 22-16d Common nails in each member being joined (44 total) and the HFS36 is installed with 31-16d Common nails in each member (62 total).
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
7. Loads shown are Allowable Stress Design (ASD) and exclude a 1.33 stress increase.

Hardy Frame® HFX-Series Template (HFXT)

- Assures proper bolt spacing and alignment
- 16 gage material supports weight of embed bolts
- Variety of applications



Hardy Frame® HFX-Series Template Kit (HFXTK)



Hardy Frame® HFX-Series Template Kit Components

Kit Model Number	Template (1 ea)	Bolt Brace (1 ea)	Panels		Brace Frames	
			Hold Down Anchor Assembly			
			1-1/8 STD	1-1/8 HS	7/8 STD	7/8 HS
HFXTK9	HFXT9	HFXBB9	2			
HFXTK12	HFXT12	HFXBB12	2			
HFXTK-HS12	HFXT12	HFXBB12		2		
HFXTK18	HFXT18	HFXBB18	2			
HFXTK-HS18	HFXT18	HFXBB18		2		
HFXTK24	HFXT24	HFXBB24	2			
HFXTK-HS24	HFXT24	HFXBB24		2		
HFXTK32	HFXT32	NA			2	
HFXTK-HS32	HFXT32	NA				2
HFXTK44	HFXT44	NA			2	
HFXTK-HS44	HFXT44	NA				2

Hold Down Anchor Assemblies:

1-1/8 STD = 1-1/8 x 32" ASTM F1554 Grade-36 all thread with (1)-Hardened Round Washer & (3) Grade 8 Hex Nuts.

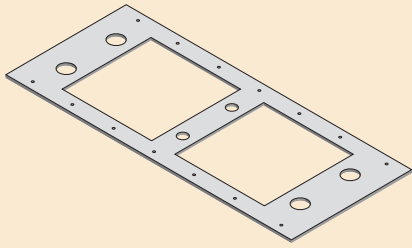
1-1/8 HS = 1-1/8 x 38" ASTM A193 Grade-B7 all thread with (1) Hardened Round Washer, (1) 1/2x3x3 ASTM A36 Plate Washer & (3) Grade-8 Hex Nuts

7/8 STD = 7/8 x 30" ASTM F1554 Grade-36 all thread with (1) Hardened Round Washer (1) 1/2x3x3 ASTM A36 Plate Washer & (3) Grade 8 Hex Nuts.

7/8 HS = 7/8 x 31" ASTM A193 Grade-B7 all thread with (1) Hardened Round Washer, (1) 1/2x3x3 ASTM A36 Plate Washer & (3) Grade-8 Hex Nuts

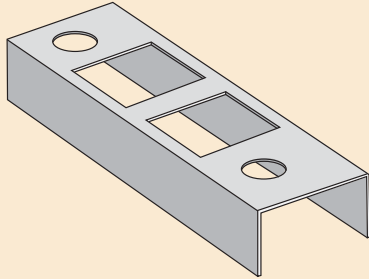
For other rod lengths contact Hardy Frames Inc.

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



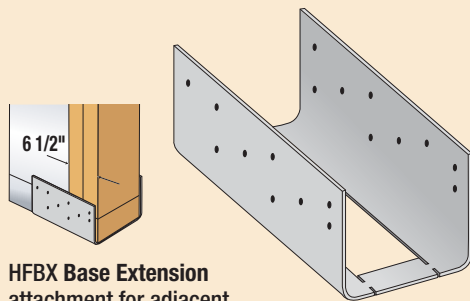
Face-to-Face Template Hardy Frame® HFX-Series Double Template

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



Stem Wall Template (HFXT-CMU)

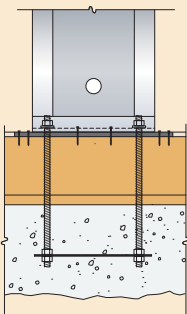
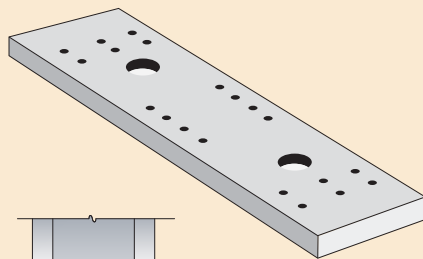
- Fits over top of 8” CMU
- Sets bolts for installation to inside face of 2x6 wall framing
- Adaptable for wider stem walls above
- Large cutouts allow concrete and mortar placement



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

Hardy Frame® Base Extension (HFBX)

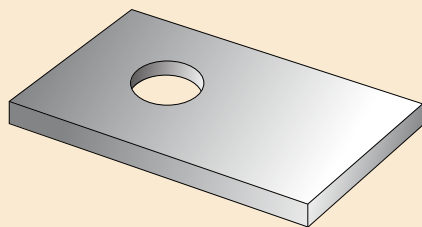
- Connects adjacent wood mudsill and stud (or Post) to Hardy Frame Panel/Brace Frame
- Adjustable installation. Extends up to 6 1/2” beyond Panel
- “Break-away” tab allows installation after Panel/Frame has been set
- Pre-punched holes for wood nailing
- Can be screwed to Panel/Brace Frame for additional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



Hardy Frame® Bearing Plate (HFXBP) For Installation with Hardy Frame® Panels

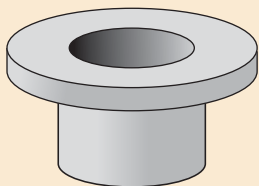
- 3/4” thick x 3 1/2” wide ASTM A36 steel
- Length extends 3” beyond Panel edges
Check for outside corner conditions!
- Reduces wood deformation from overturning forces
- Reduces effects of shrinkage by eliminating bottom plate

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



Hardy Frame® Stacking Washer (STK)

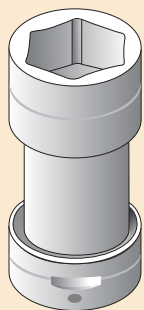
- Hardy Frame® Stacking (“STK”) washers are required in the top of Panels when connecting to a hold down rod from above.
- Hardy Frame® “STK” Panels, include Stacking Washers pre-welded inside the top channel.
- When Stacking Washers have not been pre-welded, they are available individually or in Tension Connector Kits (HFTC)
- HFSW12 measures 2-3/4” x 3” for installation in HFX-12x Panels
- HFSW18/24 measures 2-3/4” x 5” for installation in HFX-18x or HFX-24x Panels



Hardy Frame® Reducer (HFR)

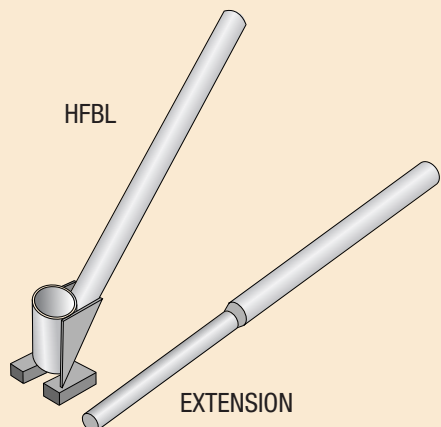
- One-piece structural washer and tube
- Adapts base of Panel with 1-1/8” HD openings to 7/8” diameter rod.

Note: HF Panels with 1-1/8” dia. HD opening has a reduced allowable shear when connected to 7/8” dia rods.



Hardy Frame® Deep Socket (HFDS)

ITEM	ROD DIA	NUT SIZE	OS DIA.	HEIGHT
HFDS 7/8"	7/8"	1-5/16"	2-3/8"	5-5/16"
HFDS 1-1/8"	1-1/8"	1-11/16"	2-3/8"	5-5/16"

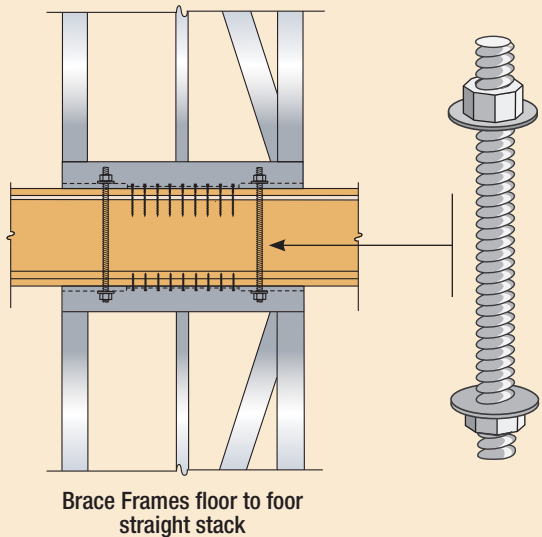
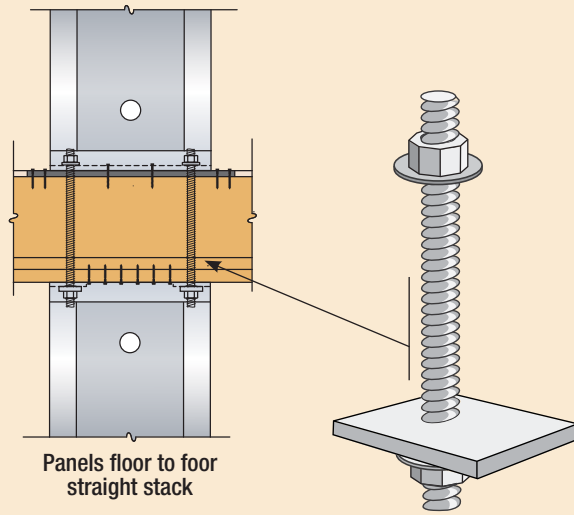


Hardy Frame® Bolt Lever (HFBL)

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

Hardy Frame® Tension Connectors

*For joist depths up to 14"



- Hardy Frame "STK" 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



"HS" Rod marking when supplied by Hardy Frames, Inc.

Hardy Frame® Tension Connector Kit Components

Tension Kit Model Number	"STK" 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		
HFTC18/24 STD	2-HFSW18/24	2			
HFTC18/24 HS	2-HFSW18/24		2		
HFTC-7/8 STD	NA			2	
HFTC-7/8 HS	NA				2

Hold Down Anchor Assemblies:

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

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

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

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

- 1) Hardy Frame® "STK" washers are required in the top channel of Panels when connecting to a hold down rod from above
- 2) All Thread length fits up to a 14" joist depth + 3/4" subfloor + (4) 2x wood plates
- 3) Each Hardened Round Washer may be substituted with (2) SAE or (2) Round-Flat Washers
- 4) HS all thread rods provided by Hardy Frames, Inc. are stamped on both ends



The Hardy Frame® Moment Frame (SMRF)

Hardy Frames introduced the first standardized, pre-manufactured Moment Frame in 2006. Since then we have produced thousands of Moment Frames that have been successfully installed. These Moment Frames have maximum structural capacities combined with the open architectural aesthetics that designers and architects need today.

Hardy Frame® Moment Frames are **Special Moment Resisting Frames (SMRF)** that use the pre-qualified SidePlate® moment connection. Typically, our Moment Frames are delivered to the jobsite in one-piece, completely fabricated and ready to be installed with no assembly, no field welding and no special inspection required.

On production framing jobs the Hardy Frame® Moment Frame can't be beat. We have delivered truckload quantities of up to 30 Moment Frames that were installed in a single day. That is an accomplishment that can not be matched by conventional moment frames.



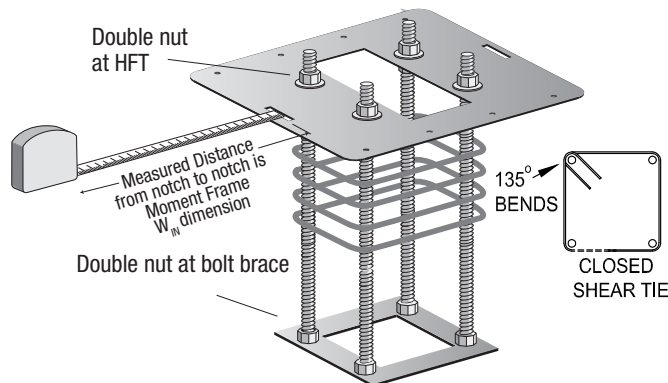
Custom Sizes and Custom Calculations

We offer over 300 standard dimension Moment Frames, but we don't stop there. Also, we offer calculations and solutions for sizes that are beyond the scope of our standard listing. We commonly provide solutions for two-story and multi-story frames as well as for fixed based connections. Please note that standard dimensions can be adjusted without being treated as a "Custom Order". Our typical lead time of 3-4 weeks does not increase and neither does your cost.



Moment Frame Template Kits

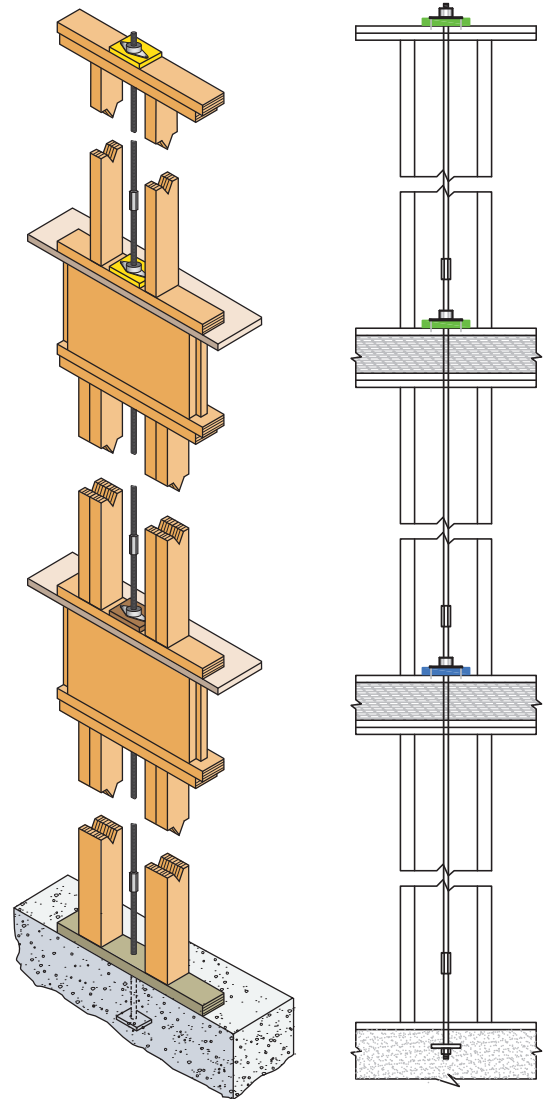
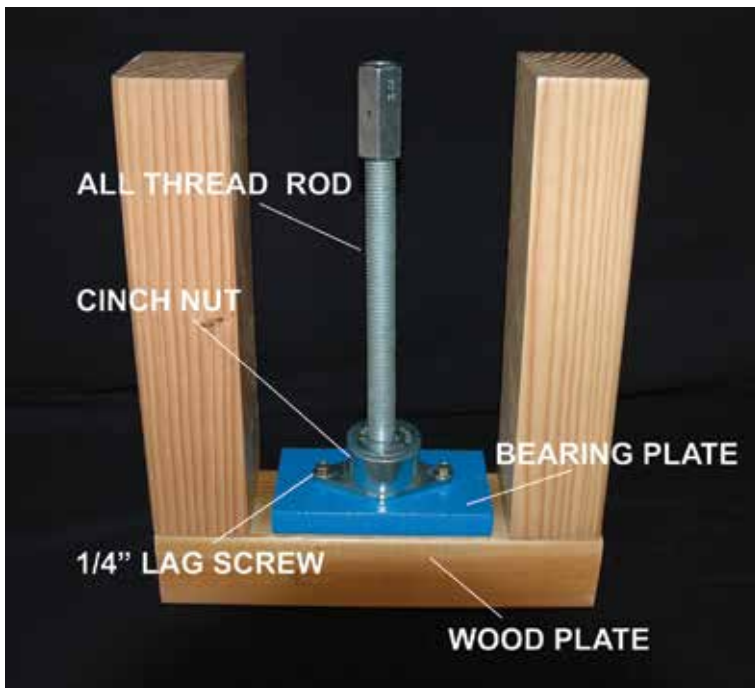
Template Kits are included with the purchase of the Hardy Frame® Moment Frame and are a stock item that can be shipped within one business day. The Kit includes all embed anchors, nuts, washers and Templates so the concrete pour can proceed prior to the Moment Frame delivery. Correctly locating the anchors is easy with a slot provided in the Template to measure the "W_{in}", (inside steel-to-steel) dimension.





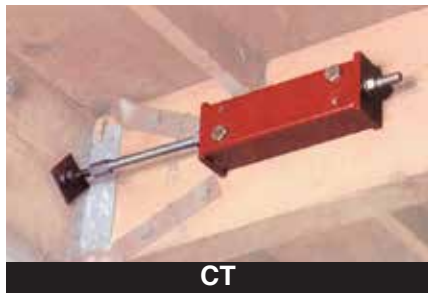
The Quick-Connect Continuous Tie-Down System

- The most economical and comprehensive continuous tie-down solution
- Easiest, most accurate, and quickest system to install
- Utilizes the least number of components
- Color coded and stamped components for easy identification
- The only system using a perpetual wood shrinkage compensation device
- No special tools or activation devices required
- Full engineering support from design to submittal package
- ICC-ES and LA City recognized



The CT (Compression/Tension) Tie:

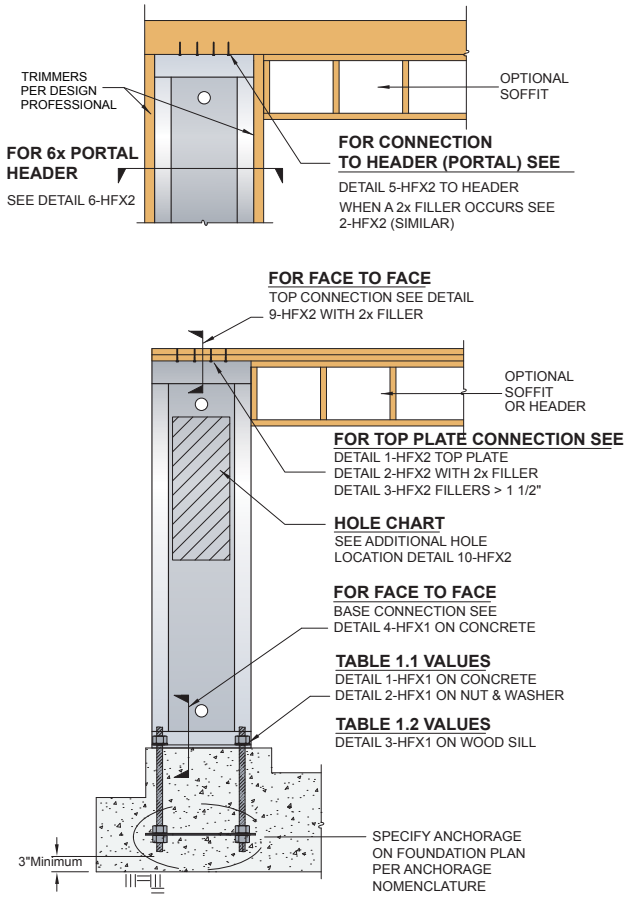
- Designed and tested to resist compression and tension loads
- Highest allowable load in the industry of over 60 kips
- Allows for accurate and reliable installation
- Ideal for tilt-up building designs
- Applicable for retro-fit or new construction
- ICC-ES and City of LA Recognized



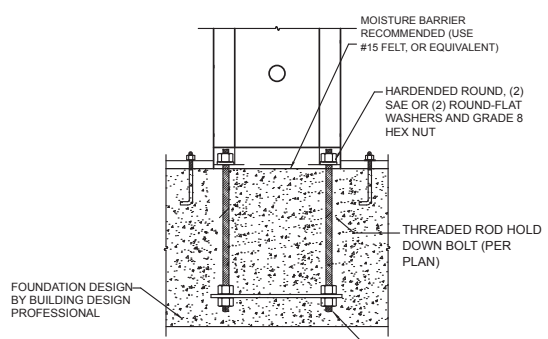
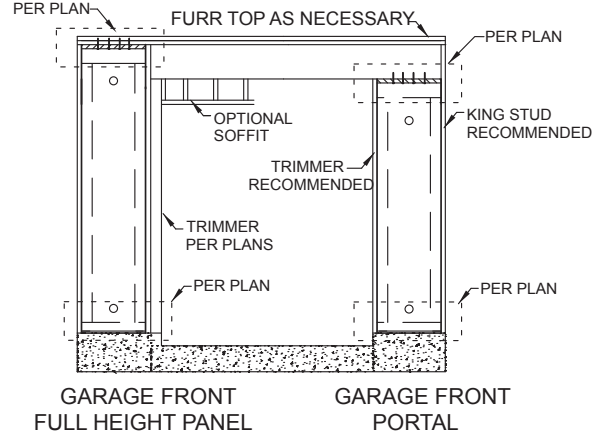
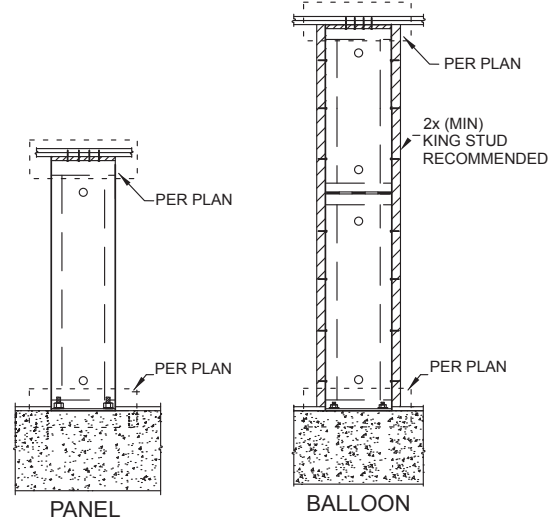
The T2 Concentric Hold-down:

- The strongest code listed concentric hold-down
- Can be used in a "sandwich" for a concentric connection
- Allows for higher load capacity with less hardware
- Highest allowable load in the industry of over 60 kips
- Allows for accurate and reliable installation Ideal for retro-fit or new construction
- ICC-ES and LA City Recognized



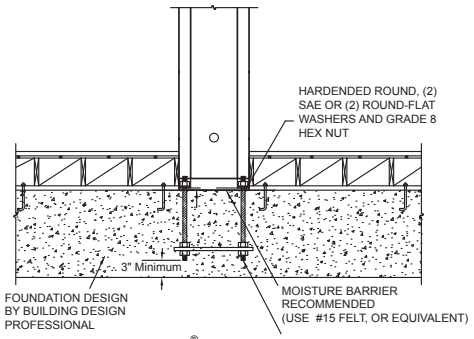


Detail Specification Guide



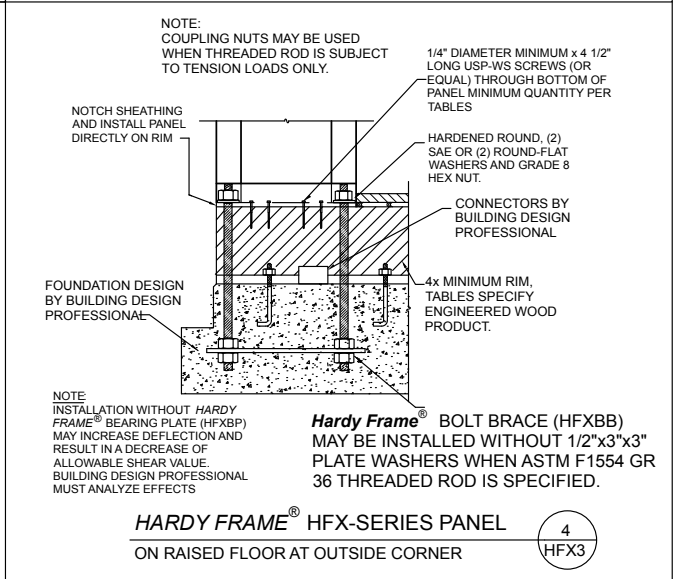
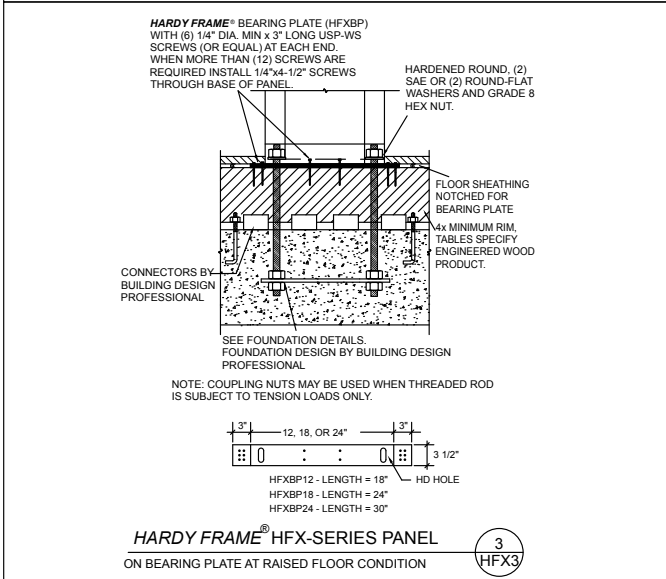
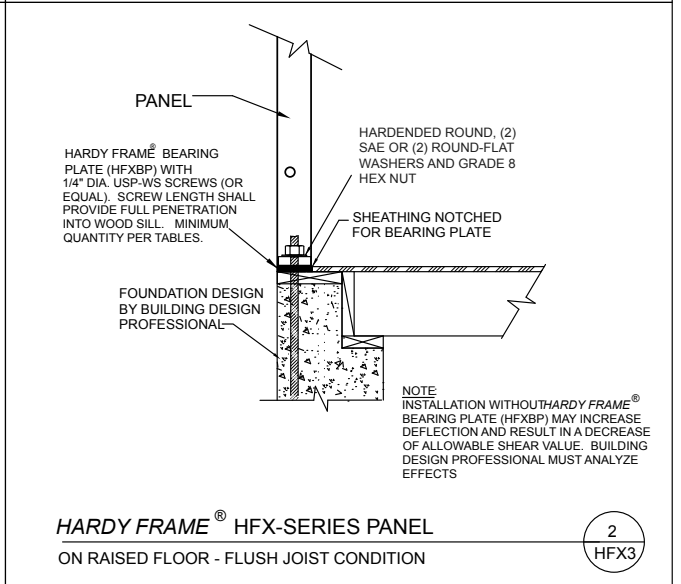
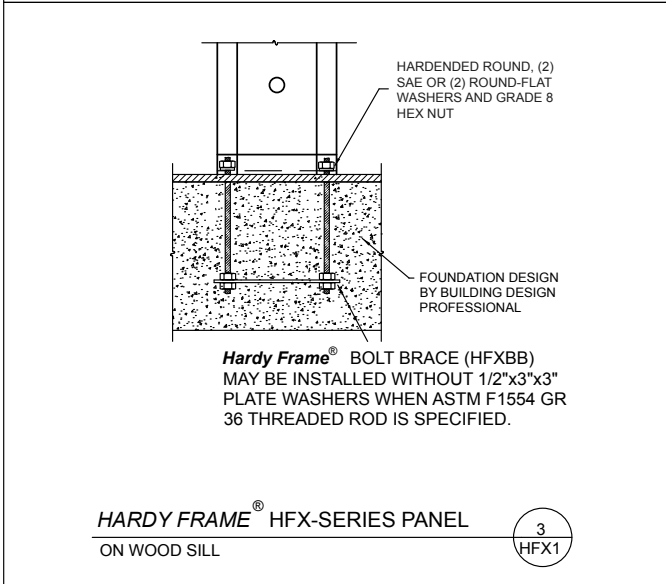
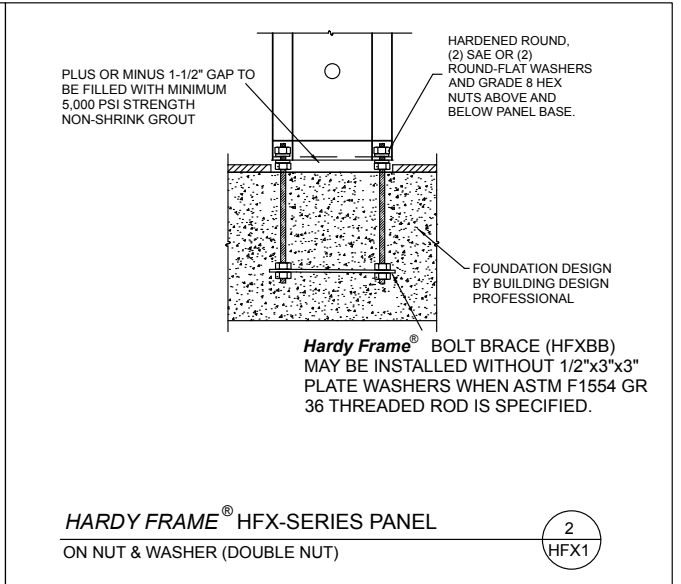
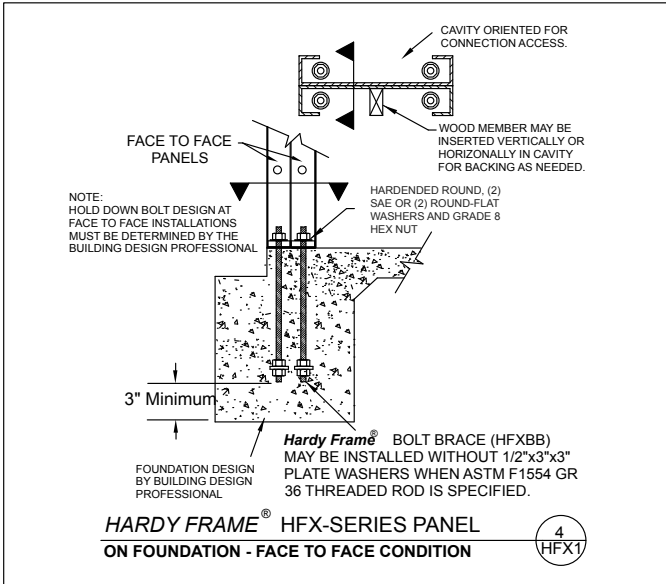
Hardy Frame® BOLT BRACE (HFBB)
MAY BE INSTALLED WITHOUT 1/2"x3"x3" PLATE WASHERS WHEN ASTM F1554 GR 36 THREADED ROD IS SPECIFIED.

HARDY FRAME® HFX-SERIES PANEL
ON FOUNDATION 1 HFX1

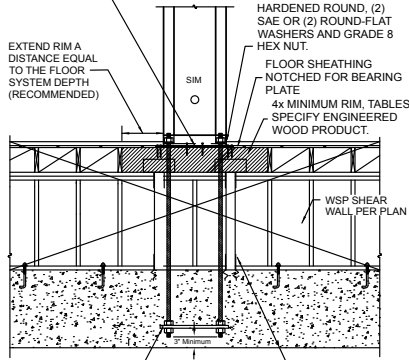


Hardy Frame® BOLT BRACE (HFBB)
MAY BE INSTALLED WITHOUT 1/2"x3"x3" PLATE WASHERS WHEN ASTM F1554 GR 36 THREADED ROD IS SPECIFIED.

HARDY FRAME® HFX-SERIES PANEL
ON FOUNDATION AT RAISED FLOOR HEAD-OUT 1 HFX3



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



SEE FOUNDATION DETAILS. FOUNDATION DESIGN BY BUILDING DESIGN PROFESSIONAL. POST AND CONNECTIONS BY BUILDING DESIGN PROFESSIONAL.

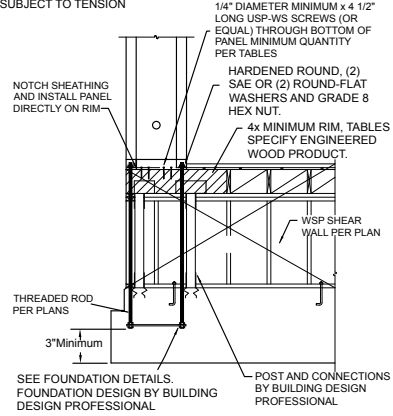
NOTE: COUPLING NUTS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.

HARDY FRAME[®] HFX-SERIES PANEL

ON BEARING PLATE-RAISED FLOOR WITH CRIPPLE STUDS



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



SEE FOUNDATION DETAILS. FOUNDATION DESIGN BY BUILDING DESIGN PROFESSIONAL. POST AND CONNECTIONS BY BUILDING DESIGN PROFESSIONAL.

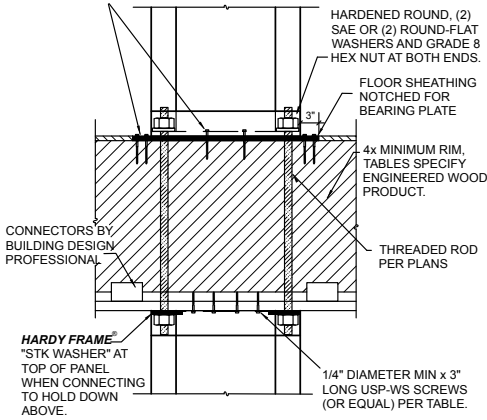
NOTE: INSTALLATION WITHOUT **HARDY FRAME[®]** BEARING PLATE (HFXPB) MAY INCREASE DEFLECTION AND RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUE. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS

HARDY FRAME[®] HFX-SERIES PANEL

ON RAISED FLOOR WITH CRIPPLE STUDS AT OUTSIDE CORNER



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

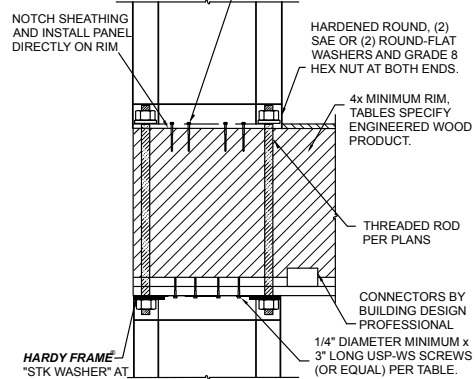


HARDY FRAME[®] HFX-SERIES PANEL

FLOOR TO FLOOR STRAIGHT STACK



1/4" DIAMETER MINIMUM x 4 1/2" LONG USP-WS SCREWS (OR EQUAL) THROUGH BOTTOM OF PANEL MINIMUM QUANTITY PER TABLE

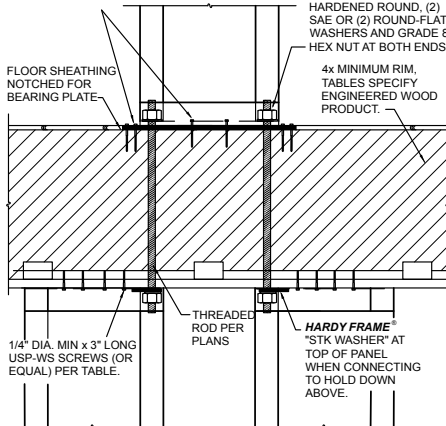


HARDY FRAME[®] HFX-SERIES PANEL

FLOOR TO FLOOR STRAIGHT STACK AT OUTSIDE CORNER



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

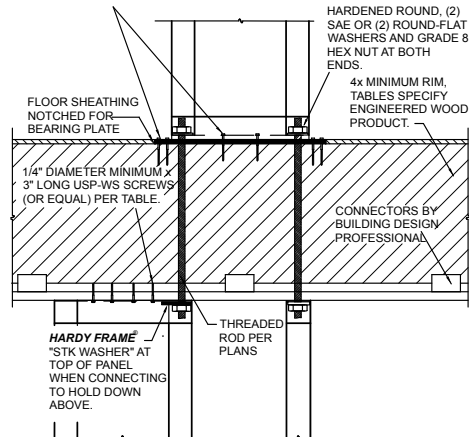


HARDY FRAME[®] HFX-SERIES PANEL

FLOOR TO FLOOR PYRAMID STACK



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

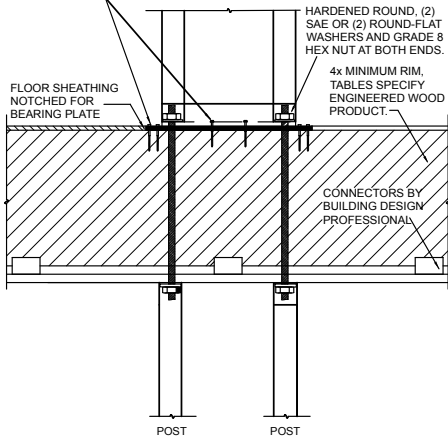


HARDY FRAME[®] HFX-SERIES PANEL

FLOOR TO FLOOR STAGGERED WITH POST



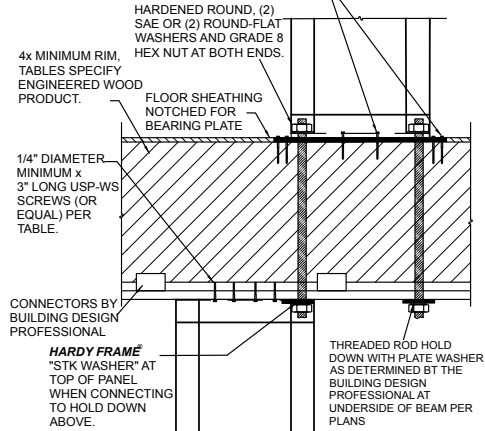
HARDY FRAME BEARING PLATE (HFXPB) WITH (6) 1/4" DIA. MIN x 3" LONG USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN (12) SCREWS ARE REQUIRED INSTALL 1/4"x4-1/2" SCREWS THROUGH BASE OF PANEL.



HARDY FRAME HFX-SERIES PANEL
ON UPPER FLOOR TO POSTS BELOW

10
HFX3

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

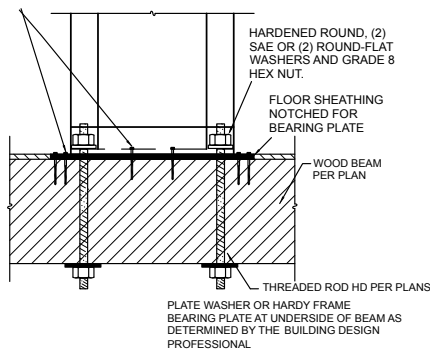


HARDY FRAME HFX-SERIES PANEL

FLOOR TO FLOOR STAGGERED WITH PLATE WASHER

11
HFX3

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



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

HARDY FRAME HFX-SERIES PANEL

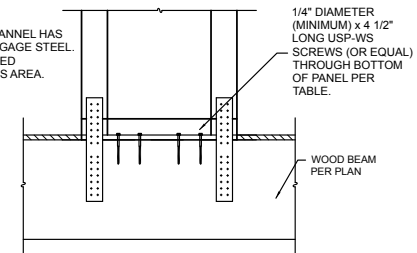
ON BEAM WITH PLATE WASHERS BELOW

12
HFX3

WHEN INSTALLING A **HARDY FRAME** BEARING PLATE (HFXPB) AT STRAP CONNECTION THE SHEAR TRANSFER THROUGH THE PANEL BASE MUST BE WITHIN THE FOLLOWING CAPACITIES:

- (4) 1/4" DIA. SCREWS FOR 12" WIDE PANELS
- (6) 1/4" DIA. SCREWS FOR 18" WIDE PANELS
- (12) 1/4" DIA. SCREWS FOR 24" WIDE PANELS

NOTE
AREA AT BOTTOM CHANNEL HAS 2-LAYERS OF NO. 12 GAGE STEEL. AVOID USING SCREWED CONNECTIONS IN THIS AREA.



BUILDING DESIGN PROFESSIONAL TO DESIGN

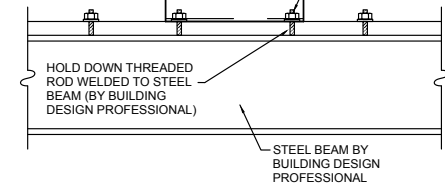
1. LOAD PATH FROM BEAM TO FOUNDATION.
2. INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) INCREASES PANEL DEFLECTION AND MAY RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUES. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.
3. BEAM DEFLECTION MAY INCREASE TOTAL DRIFT OF PANEL. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.
4. STRAP DESIGN, QUANTITY AND CONNECTIONS (WELDED OR SELF TAPPING SCREWS)

HARDY FRAME HFX-SERIES PANEL

ON BEAM WITH HOLD DOWN STRAPS

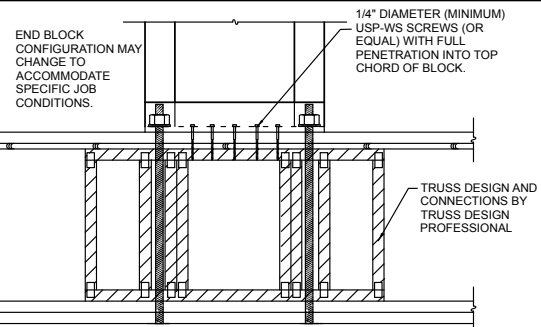
5B
P

1/4" DIAMETER (MINIMUM) USP-WS SCREWS (OR EQUAL) MAY BE INSTALLED FOR ADDITIONAL SHEAR TRANSFER



HARDY FRAME HFX-SERIES PANEL
ON STEEL BEAM WITH WELDED HOLD DOWNS

13
HFX3

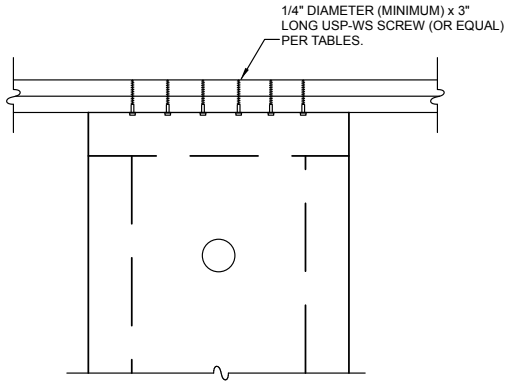


NOTE
1. INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) INCREASES DEFLECTION AND MAY RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUES BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.

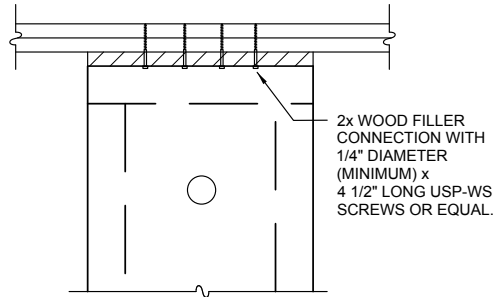
2. TRUSS DESIGN PROFESSION TO CHECK LATERAL SHEAR AND OVERTURNING MOMENT OF TRUSS SYSTEM.

HARDY FRAME HFX-SERIES PANEL
ON OPEN WEB TRUSS

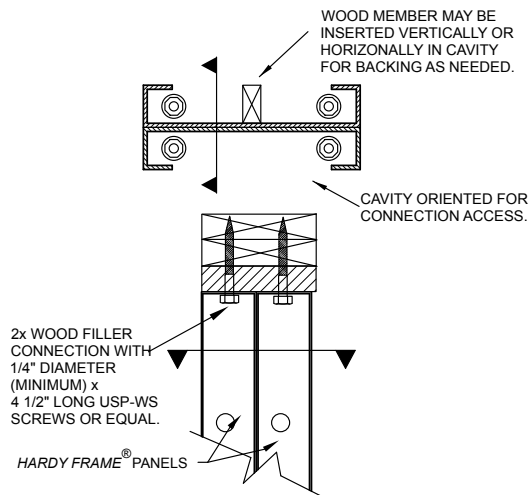
14
HFX3



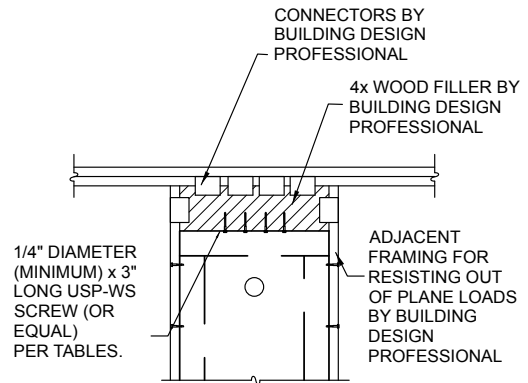
HARDY FRAME® HFX-SERIES PANEL 1
TOP TO DOUBLE PLATES (HFX2)



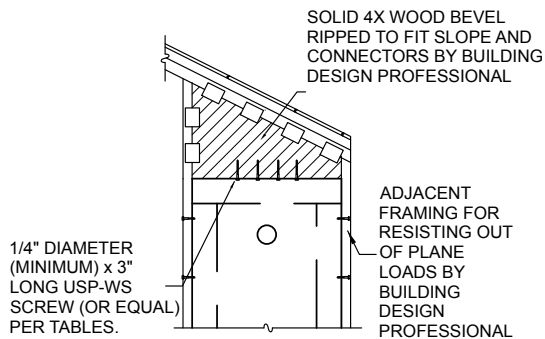
HARDY FRAME® HFX-SERIES PANEL 2
TOP TO DOUBLE PLATES WITH 2x FILLER (HFX2)



HARDY FRAME® HFX-SERIES PANEL 9
TOP TO DOUBLE PLATES WITH 2x FILLER - FACE TO FACE CONDITION (HFX2)

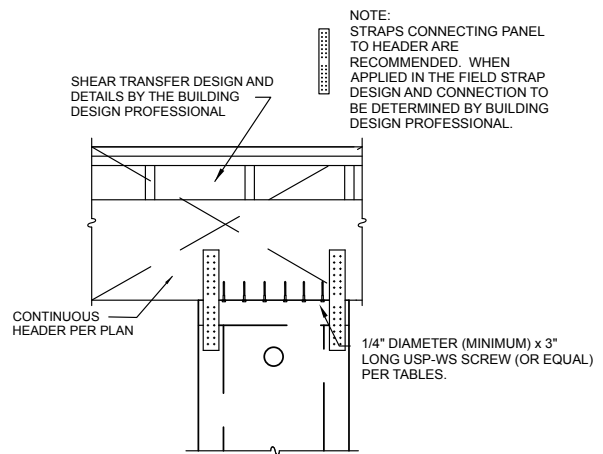


HARDY FRAME® HFX-SERIES PANEL 3
TOP TO DOUBLE PLATES WITH FILLER HEIGHT GREATER THAN 1-1/2 INCHES (HFX2)

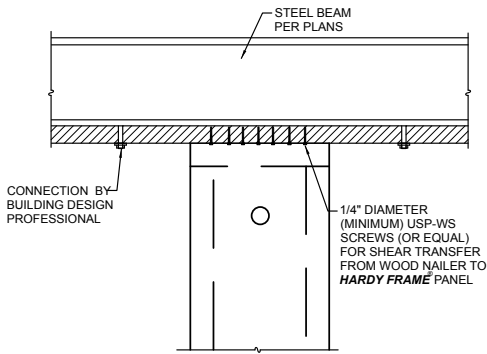


BUILDING DESIGN PROFESSIONAL MUST DESIGN:
 1. STUDS OR STRAPS TO TRANSFER UPLIFT OF FILLER MATERIAL
 2. ADDITIONAL DRIFT DUE TO THE ADDITIONAL FILLER HEIGHT
 3. STUDS/POST AT EACH END OF PANEL FOR OUT OF PLANE LOAD

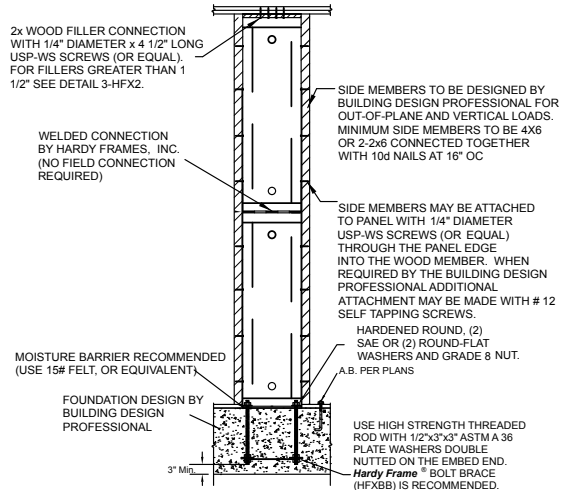
HARDY FRAME® HFX-SERIES PANEL 4
TOP TO SLOPING DOUBLE PLATE WITH BEVEL FILLER (HFX2)



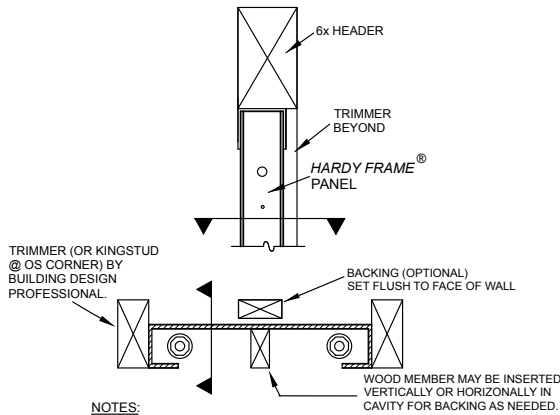
HARDY FRAME® HFX-SERIES PANEL 5
TOP TO HEADER WITH CRIPPLE STUDS ABOVE (HFX2)



HARDY FRAME® HFX-SERIES PANEL
TOP TO STEEL BEAM WITH WOOD NAILER BELOW 7 HFX2

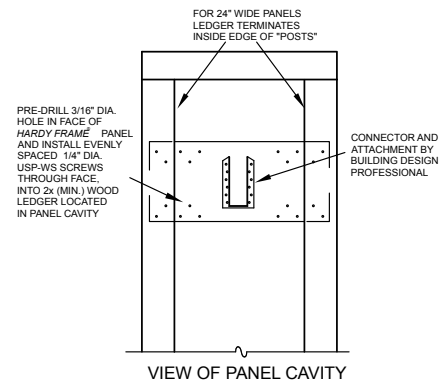


HARDY FRAME® HFX-SERIES PANEL
BALLOON WALL INSTALLATION 14 HFX2



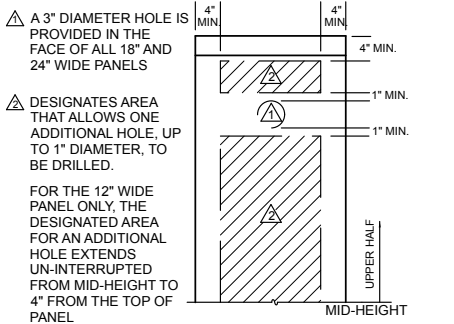
- NOTES:**
1. TRIMMERS PROVIDE FULL BEARING FOR HEADER ABOVE. DESIGN AND CONNECTIONS BY OTHERS.
 2. TRIMMER ATTACHMENT TO PANEL NOT REQUIRED.
 3. ATTACHMENTS MAY BE MADE AT SCREW HOLES PROVIDED OR WITH SELF TAPPING SCREWS (#12 AT EDGES, #10 AT FACE).

HARDY FRAME® HFX-SERIES PANEL
6x HEADER ABOVE - SECTION VIEW 6 HFX2



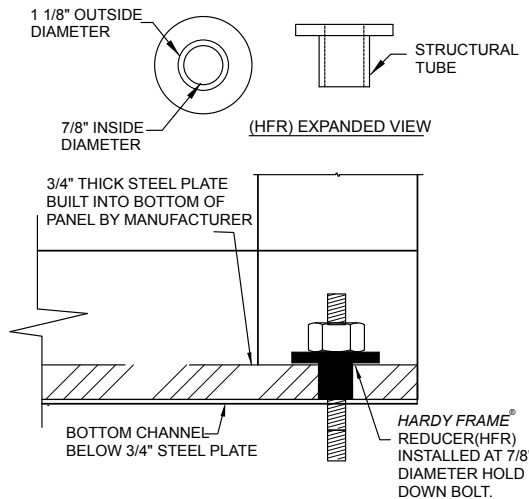
NOTE: ADDITIONAL LOADS APPLIED ON PANEL ARE TO BE EVENLY DISTRIBUTED AND MAY NOT EXCEED THE ALLOWABLE "P" LOAD AS PROVIDED IN TABLE 1.1.

HARDY FRAME® HFX-SERIES PANEL
CONCEALED LEDGER 11 HFX2



- NOTES:**
1. THE SOLID FACE OF THE PANEL MAY BE ORIENTED TOWARDS THE INSIDE OR OUTSIDE FACE OF WALL. CHANGING THE ORIENTATION OF THE SOLID FACE WILL USUALLY PREVENT THE NEED FOR ADDITIONAL HOLES.
 2. TO DRILL HOLES LARGER THAN 1" DIAMETER, MORE THAN ONE HOLE OR HOLES LOCATED OUTSIDE THE DESIGNATED AREA, CONTACT HARDY FRAMES, INC.

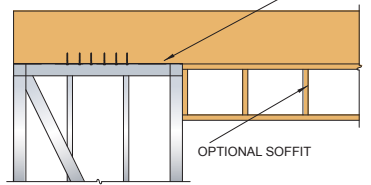
HARDY FRAME® HFX-SERIES PANEL
ADDITIONAL HOLE LOCATION CHART 10 HFX2



HARDY FRAME® REDUCER (HFR) HFR

FOR CONNECTION TO HEADER (PORTAL)

DETAIL 5-HFX5 TO HEADER
WHEN A 2x FILLER OCCURS SEE 6-HFX5

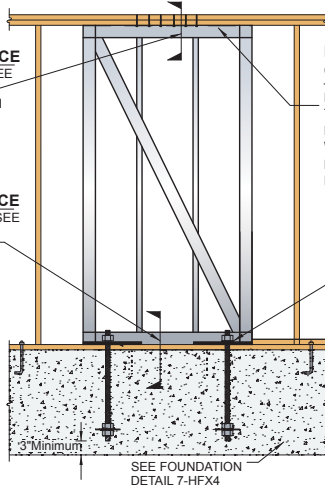


FOR FACE TO FACE

TOP CONNECTION SEE
DETAIL 11-HFX5
DETAIL 12-HFX5 WITH
2x FILLER.

FOR FACE TO FACE

BASE CONNECTION SEE
DETAIL 4-HFX4
ON CONCRETE



**FOR TOP PLATE
CONNECTION SEE**

DETAIL 1-HFX5
TOP PLATE
DETAIL 2-HFX5
WITH 2x FILLER
DETAIL 3-HFX5
FILLERS > 1 1/2"

TABLE 1.1A VALUES

DETAIL 1-HFX4
ON CONCRETE
DETAIL 2-HFX4
ON NUT & WASHER

TABLE 1.2 VALUES

DETAIL 3-HFX4
ON WOOD SILL

TABLE 1.2A VALUES

SEE SHEET HFX6

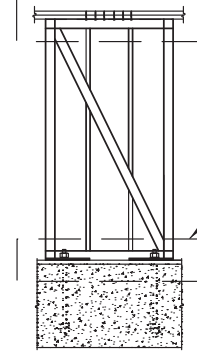
TABLE 1.3A VALUES

SEE SHEET HFX6

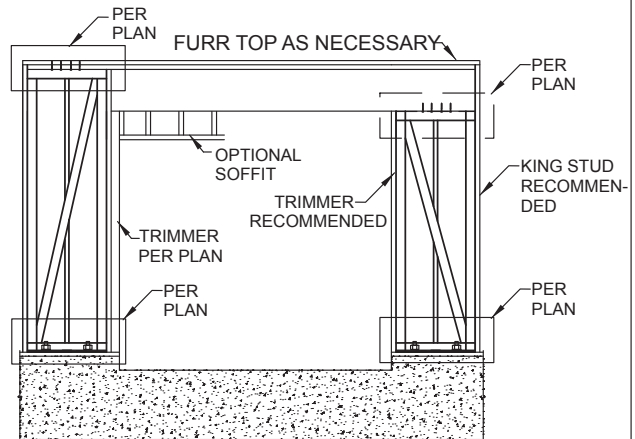
SPECIFY ANCHORAGE ON
FOUNDATION PLAN PER
ANCHORAGE NOMENCLATURE

Detail Specification Guide

PER PLAN



BRACE FRAME

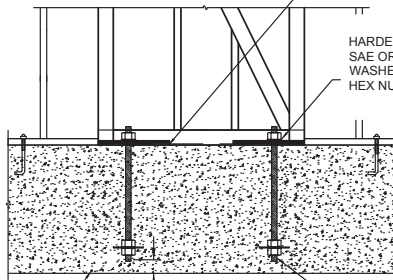


**GARAGE FRONT
FULL HEIGHT
BRACE FRAME**

**GARAGE FRONT
PORTAL**

MOISTURE BARRIER
RECOMMENDED (USE
15# FELT, OR
EQUIVALENT)

HARDENED ROUND, (2)
SAE OR (2) ROUND-FLAT
WASHERS AND GRADE 8
HEX NUT.



FOUNDATION DESIGN
BY BUILDING DESIGN
PROFESSIONAL

3" Minimum

7/8" DIAMETER HOLD DOWN
BOLT WITH 1/2" THICK x 3"x 3"
PLATE WASHER & 2-NUTS AT
EMBED END PER PLAN.

HARDY FRAME® HFX-SERIES BRACE FRAME

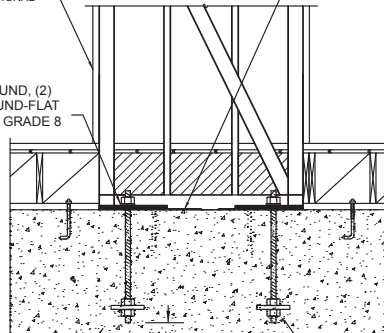
ON FOUNDATION

1
HFX4

ADJACENT FRAMING FOR
RESISTING OUT OF PLANE
LOADS BY BUILDING
DESIGN PROFESSIONAL

MOISTURE BARRIER
RECOMMENDED (USE
15# FELT, OR
EQUIVALENT)

HARDENED ROUND, (2)
SAE OR (2) ROUND-FLAT
WASHERS AND GRADE 8
HEX NUT.



FOUNDATION DESIGN
BY BUILDING DESIGN
PROFESSIONAL

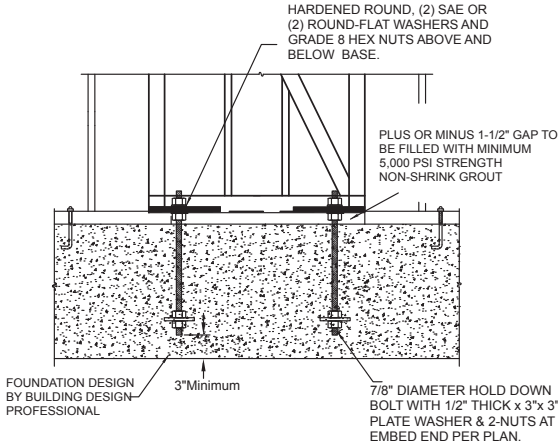
3" Minimum

7/8" DIAMETER HOLD DOWN
BOLT WITH 1/2" THICK x 3"x 3"
PLATE WASHER & 2-NUTS AT
EMBED END PER PLAN.

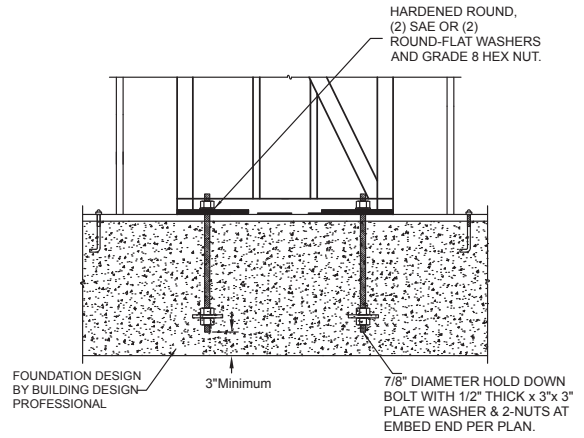
HARDY FRAME® HFX-SERIES BRACE FRAME

ON FOUNDATION AT RAISED FLOOR HEAD-OUT

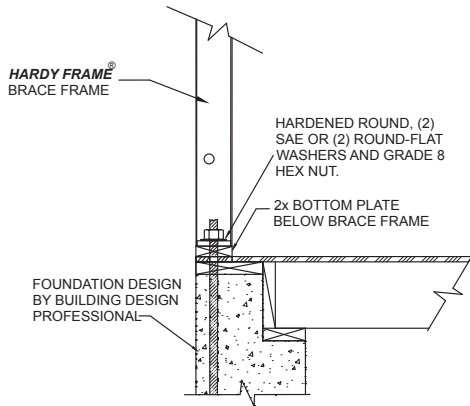
1
HFX6



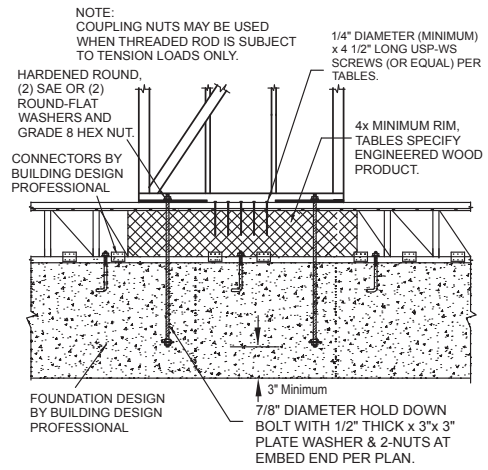
HARDY FRAME® HFX-SERIES BRACE FRAME **2**
ON NUT & WASHER (DOUBLE NUT) **HFX4**



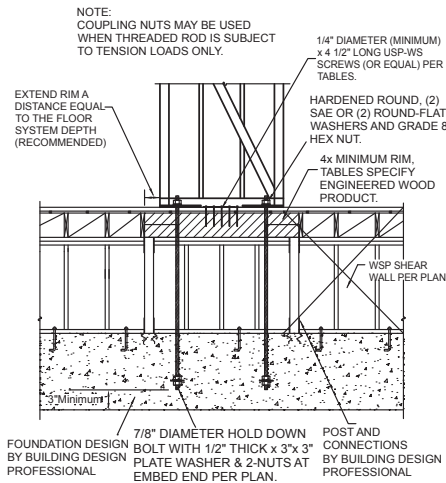
HARDY FRAME® HFX-SERIES BRACE FRAME **3**
ON WOOD SILL **HFX4**



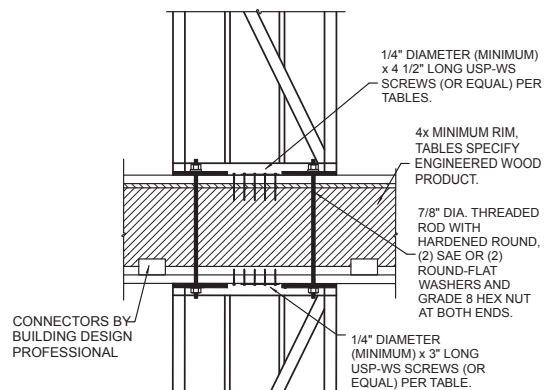
HARDY FRAME® HFX-SERIES BRACE FRAME **2**
ON RAISED FLOOR - FLUSH JOIST CONDITION **HFX6**



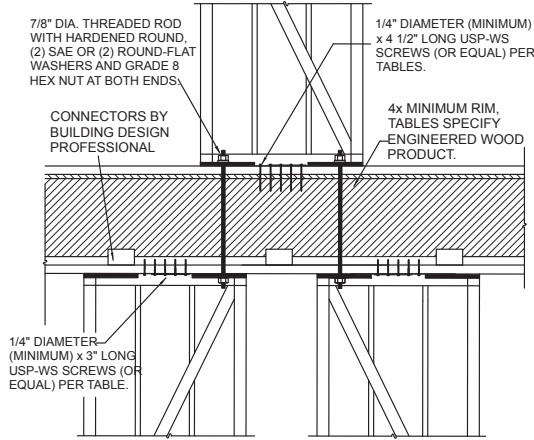
HARDY FRAME® HFX-SERIES BRACE FRAME **3**
ON RAISED FLOOR **HFX6**



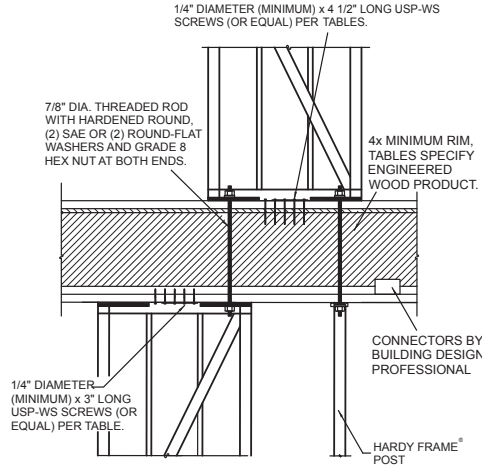
HARDY FRAME® HFX-SERIES BRACE FRAME **5**
ON RAISED FLOOR WITH CRIPPLE STUDS **HFX6**



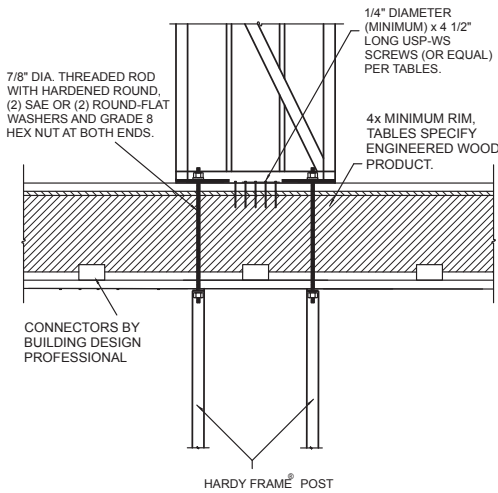
HARDY FRAME® HFX-SERIES BRACE FRAME **6**
FLOOR TO FLOOR STRAIGHT STACK **HFX6**



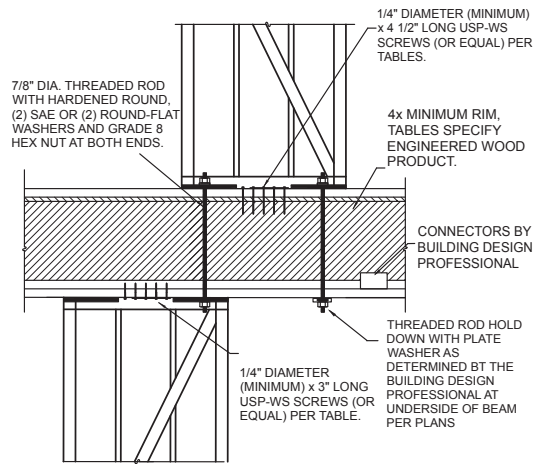
HARDY FRAME® HFX-SERIES BRACE FRAME **8**
FLOOR TO FLOOR PYRAMID STACK **HFX6**



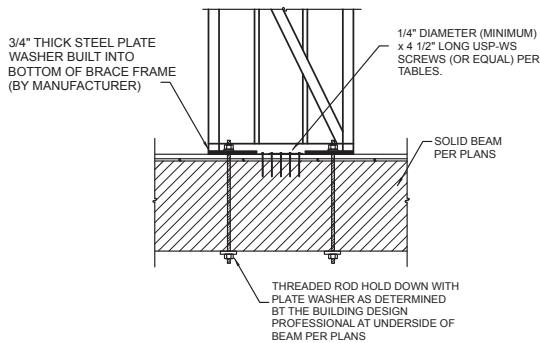
HARDY FRAME® HFX-SERIES BRACE FRAME **9**
FLOOR TO FLOOR STAGGERED WITH POST **HFX6**



HARDY FRAME® HFX-SERIES BRACE FRAME **10**
ON UPPER FLOOR TO POSTS BELOW **HFX6**



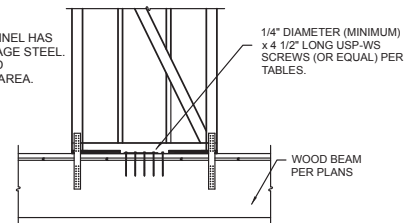
HARDY FRAME® HFX-SERIES BRACE FRAME **11**
FLOOR TO FLOOR STAGGERED WITH PLATE WASHER **HFX6**



BUILDING DESIGN PROFESSIONAL TO DESIGN
1. LOAD PATH FROM BEAM TO FOUNDATION.
2. BEAM DEFLECTION MAY INCREASE TOTAL DRIFT OF BRACE FRAME. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.

HARDY FRAME® HFX-SERIES BRACE FRAME **12**
ON BEAM WITH PLATE WASHERS BELOW **HFX6**

NOTE
AREA AT BOTTOM CHANNEL HAS 2-LAYERS OF NO. 12 GAGE STEEL. AVOID USING SCREWED CONNECTIONS IN THIS AREA.



BUILDING DESIGN PROFESSIONAL TO DESIGN
1. LOAD PATH FROM BEAM TO FOUNDATION.
2. BEAM DEFLECTION MAY INCREASE TOTAL DRIFT OF BRACE FRAME. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.
3. STRAP DESIGN, QUANTITY AND CONNECTIONS (WELDED OR SELF TAPING SCREWS)

HARDY FRAME® HFX-SERIES BRACE FRAME **5B**
ON BEAM WITH HOLD DOWN STRAPS **BF**

1/4" DIAMETER (MINIMUM) USP-WS SCREWS (OR EQUAL) MAY BE INSTALLED FOR ADDITIONAL SHEAR TRANSFER

HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT.

WOOD NAILER

7/8" HOLD DOWN BOLT WELDED TO STEEL BEAM (BY BUILDING DESIGN PROFESSIONAL)

STEEL BEAM BY BUILDING DESIGN PROFESSIONAL

HARDY FRAME® HFX-SERIES BRACE FRAME 13
ON STEEL BEAM WITH WELDED HOLD DOWNS **HFX6**

1/4" DIAMETER (MINIMUM) USP-WS SCREWS (OR EQUAL) WITH FULL PENETRATION INTO TOP CHORD OF BLOCK.

END BLOCK CONFIGURATION MAY CHANGE TO ACCOMMODATE SPECIFIC JOB CONDITIONS.

TRUSS DESIGN AND CONNECTIONS BY TRUSS DESIGN PROFESSIONAL

THREADED ROD HOLD DOWN WITH PLATE WASHER AS DETERMINED BY THE BUILDING DESIGN PROFESSIONAL AT UNDERSIDE OF BEAM PER PLANS

HARDY FRAME® HFX-SERIES BRACE FRAME 14
ON OPEN WEB TRUSS **HFX6**

NOTE
1. INSTALLATION WITHOUT A SOLID 4X RIM SHALL CONSIDER COMPRESSION FROM OVERTURNING, AND SHEAR TRANSFER FROM THE BASE OF BRACE FRAME TO THE TOP PLATES OF THE WALL BELOW.
2. TRUSS DESIGN PROFESSIONAL TO CHECK LATERAL SHEAR AND OVERTURNING MOMENT OF TRUSS SYSTEM.

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

HARDY FRAME® HFX-SERIES BRACE FRAME 1
TOP TO DOUBLE PLATES **HFX5**

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

HARDY FRAME® HFX-SERIES BRACE FRAME 2
TOP TO DOUBLE PLATES WITH 2x FILLER **HFX5**

CONNECTORS BY BUILDING DESIGN PROFESSIONAL

4x WOOD FILLER BY BUILDING DESIGN PROFESSIONAL

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

ADJACENT FRAMING FOR RESISTING OUT OF PLANE LOADS BY BUILDING DESIGN PROFESSIONAL

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

HARDY FRAME® HFX-SERIES BRACE FRAME 3
TOP TO DOUBLE PLATES WITH FILLER HEIGHT GREATER THAN 1 1/2 INCHES **HFX5**

WSP TO BE DESIGNED BY BUILDING DESIGN PROFESSIONAL

CONNECTORS BY BUILDING DESIGN PROFESSIONAL

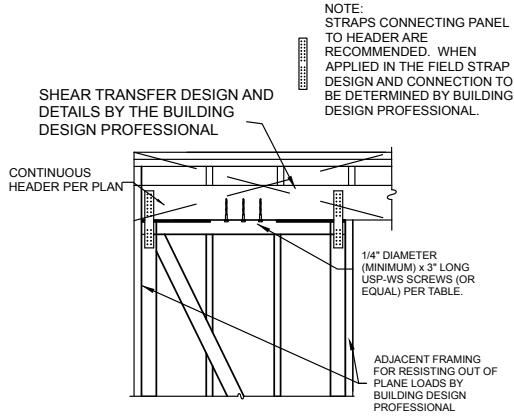
STRAP BY BUILDING DESIGN PROFESSIONAL

ADJACENT FRAMING AND CONNECTIONS BY BUILDING DESIGN PROFESSIONAL

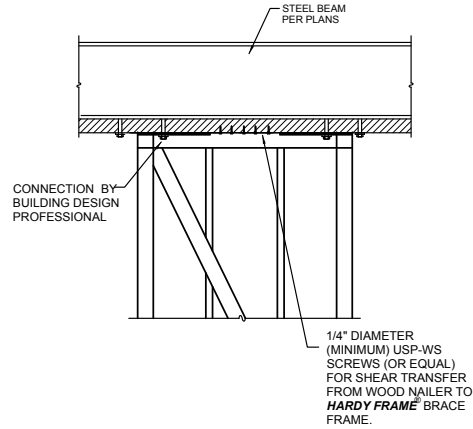
1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREW (OR EQUAL) PER TABLES.

BUILDING DESIGN PROFESSIONAL MUST DESIGN:
1. STUDS OR STRAPS TO TRANSFER UPLIFT OF FILLER MATERIAL
2. ADDITIONAL DRIFT DUE TO THE ADDITIONAL FILLER HEIGHT
3. STUDS/POST AT EACH END OF BRACE FRAME FOR OUT OF PLANE LOAD

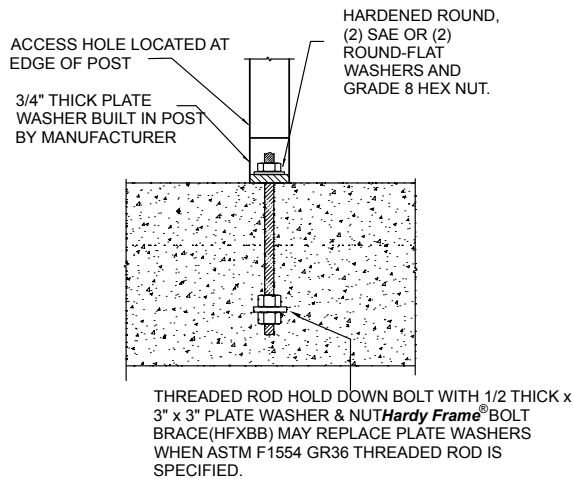
HARDY FRAME® HFX-SERIES BRACE FRAME 4
TOP TO SLOPING DOUBLE PLATE WITH BEVEL FILLER **HFX5**



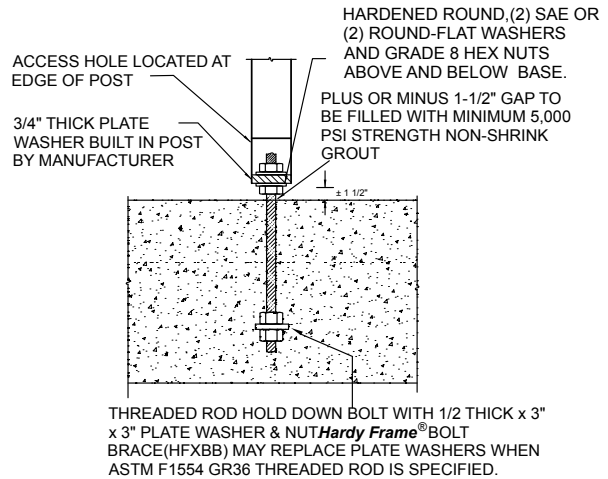
HARDY FRAME® HFX-SERIES BRACE FRAME **5**
TOP TO HEADER WITH CRIPPLE STUDS **HFX5**



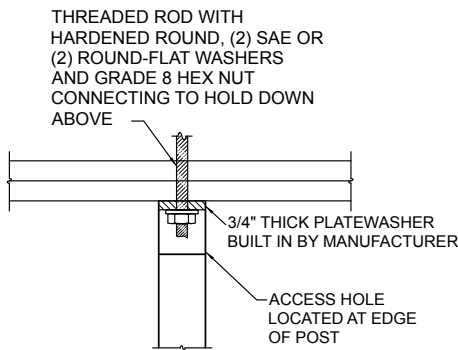
HARDY FRAME® HFX-SERIES BRACE FRAME **10**
TOP TO STEEL BEAM WITH WOOD NAILER BELOW **HFX5**



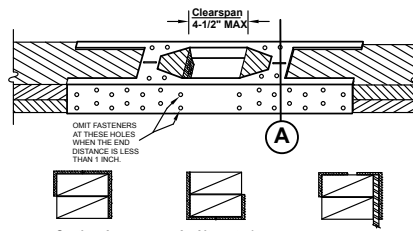
HARDY FRAME® HFX-SERIES POST **5**
ON FOUNDATION **HFX4**



HARDY FRAME® HFX-SERIES POST **6**
ON NUT & WASHER (DOUBLE NUT) **HFX4**



HARDY FRAME® HFX-SERIES POST **8**
TOP TO DOUBLE PLATES **HFX2**



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

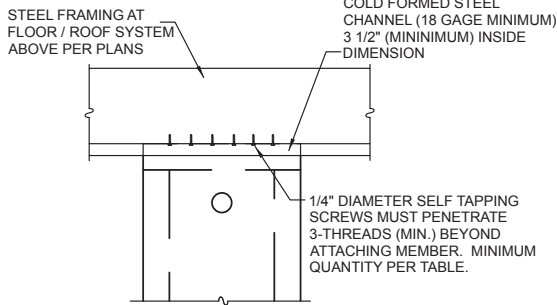
Table 8.1 : Hardy Frame® Saddle

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

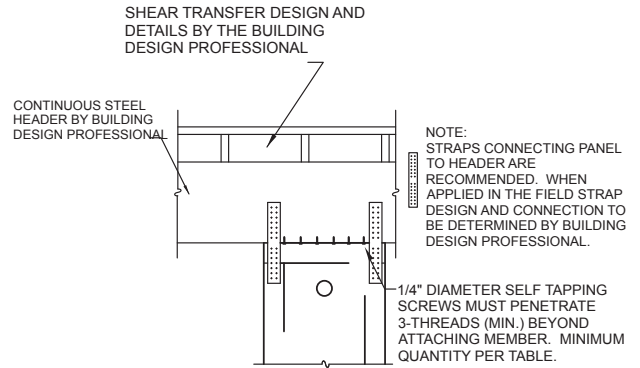
- Notes:**
- 1) Maximum Clearspan splice is 4-1/2"
 - 2) Fastener quantity is the number of 16d common nails to be installed at each end of the splice.
 - 3) When the distance from the splice to the first nail hole is less than 1 inch, omit the (2) nails in the 3 inch sideplate and the (1) nail in the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

HARDY FRAME® HFX-SERIES SADDLE **12**
HFX2

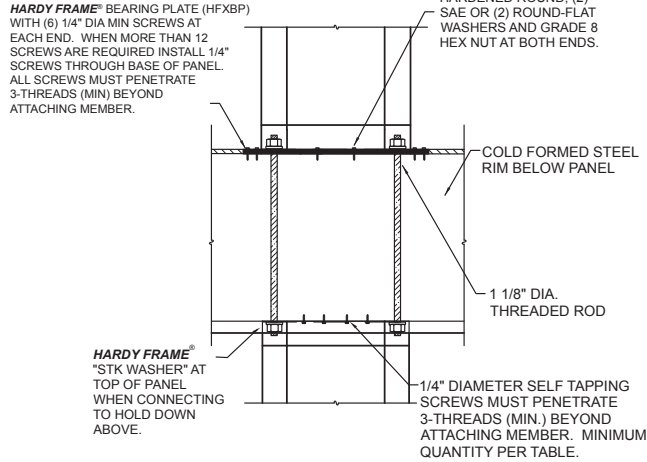
COLD FORMED STEEL FRAMING



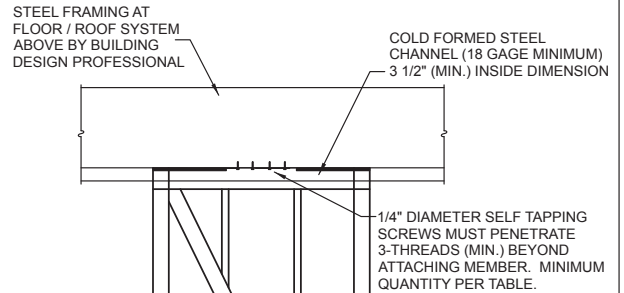
HARDY FRAME[®] HFXIS-SERIES PANEL (1A) SP
TOP TO COLD FORMED STEEL CHANNEL



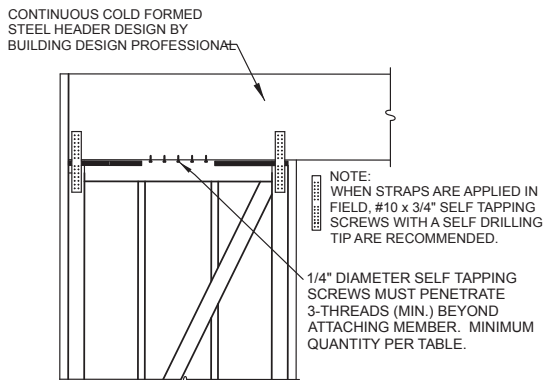
HARDY FRAME[®] HFXIS-SERIES PANEL (1B) SP
TOP TO STEEL HEADER WITH CRIPPLE STUDS ABOVE



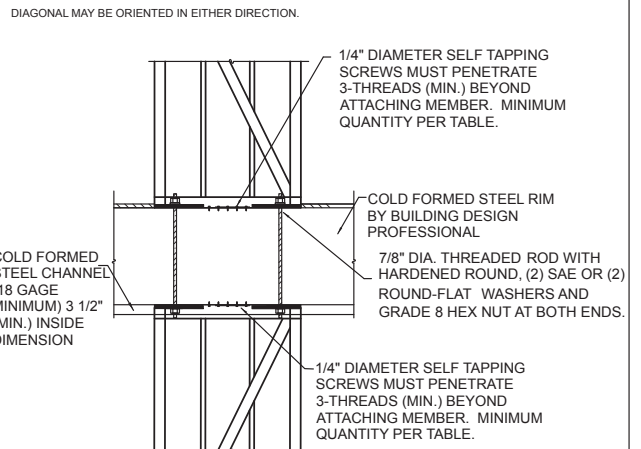
HARDY FRAME[®] HFXIS-SERIES PANEL (2A) SP
FLOOR TO FLOOR STRAIGHT STACK



HARDY FRAME[®] HFXIS-SERIES BRACE FRAME (1A) SBF
TOP TO COLD FORMED STEEL CHANNEL

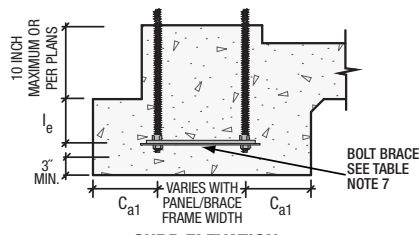


HARDY FRAME[®] HFXIS-SERIES BRACE FRAME (1B) SBF
PORTAL

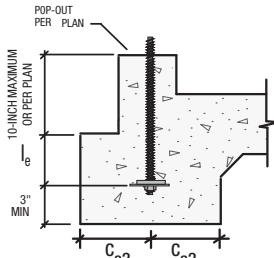


HARDY FRAME[®] HFXIS-SERIES BRACE FRAME (2A) SBF
FLOOR TO FLOOR STRAIGHT STACK

NOTE: HFX HOLD DOWN CENTER LINES ARE NOT THE SAME AS "ORIGINAL SERIES" PRODUCTS

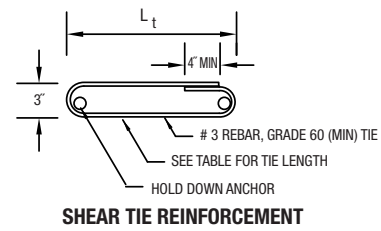


CURB ELEVATION

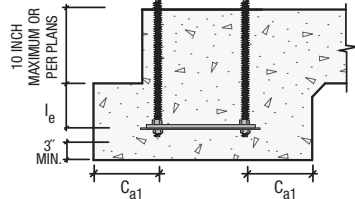


CURB SECTION

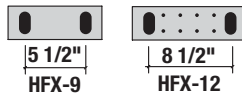
OTHER SECTION VIEWS SIMILAR



SHEAR TIE REINFORCEMENT

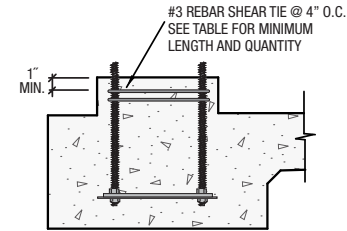


EXTERIOR SLAB ELEVATION

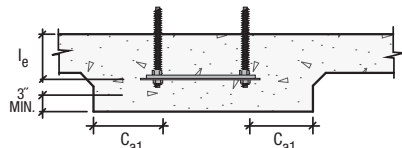


HFX-9

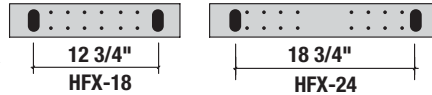
HFX-12



SHEAR TIE @ CURB

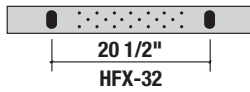


INTERIOR SLAB ELEVATION

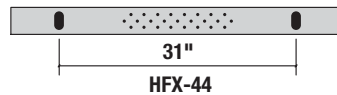


HFX-18

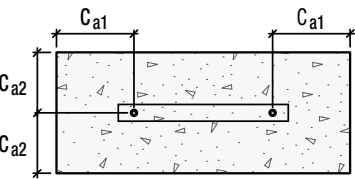
HFX-24



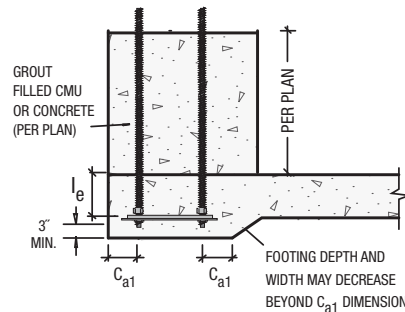
HFX-32



HFX-44

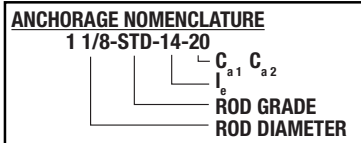


ANCHORAGE - PLAN VIEW

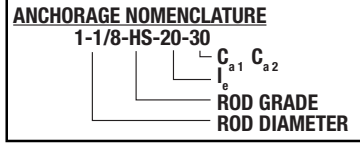


STEM WALL ELEVATION

NOTE: GRADE 8 COUPLING NUTS MAY BE USED TO EXTEND ALL THREAD ROD LENGTH THROUGH GROUT FILLED CMU OR CONCRETE



l_e = Length of Embed into Footing
 C_{a1} C_{a2} = Edge, End Distance



l_e = Length of Embed into Footing
 C_{a1} C_{a2} = Edge, End Distance

Unreinforced Anchorage

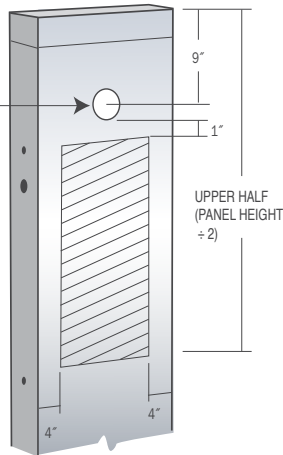
Product Width (in)	Max Height (ft)	Anchorage ¹ (See Nomenclature for Description)		Shear Tie ^{4, 5, 6}		
		STD ROD ²	HS ROD ³	Quantity		Tie Length (in)
				STD ROD	HS ROD	
9	8	1 1/8-STD-10-15	NA	1	NA	7 1/2
12	10	1 1/8-STD-14-20	1 1/8-HS-14-20		1	1
18	13		NA	1 1/8-HS-20-30		
	20	1 1/8-HS-13-20				
24	13	1 1/8-STD-14-20	1 1/8-HS-20-30	1	1	21
	20	NA	1 1/8-HS-18-27			
32	13	7/8-STD-11-16	7/8-HS-13-20	1	1	22 1/2
44	13				2	33

For reinforced anchorage solutions contact Hardy Frames, Inc.

- 1) Applies to 2500 psi compressive strength concrete, both seismic and wind loading
- 2) STD indicates rods complying with ASTM F1554 Grade 36 with a Hardy Frame® Bolt Brace (HFXBB) double nutted on the embed end.
- 3) HS indicates rods complying with ASTM A 193 Grade B7 (or equal) with a 1/2x3x3 plate washer double nutted on the embed end. HFXBB is optional.
- 4) Concrete edge distance must comply with ACI318-05 D8.2.
- 5) Installations on curbs or stemwalls must be 6 inch width minimum, and may require supplemental shear reinforcement per ACI-318-05, $f_c = 2500$ psi
- 6) Shear Ties are not required for installations away from the Foundation Edge, for installations on wood framing or for Braced Wall Panel applications.
- 7) Bolt Brace is used for bolt alignment. When used with STD grade rods plate washers are not required. When used with HS grade rods plate washers are still required.
- 8) Foundation Design is by others
- 9) The Building Design Professional is permitted to modify these details to accommodate a specific condition.

Hole chart and Attachments

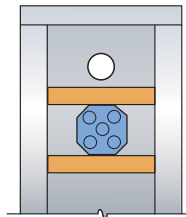
3" DIAMETER HOLE PROVIDED IN FACE OF 18" AND 24" WIDE PANELS



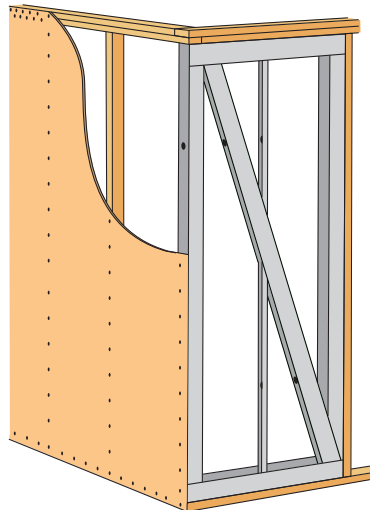
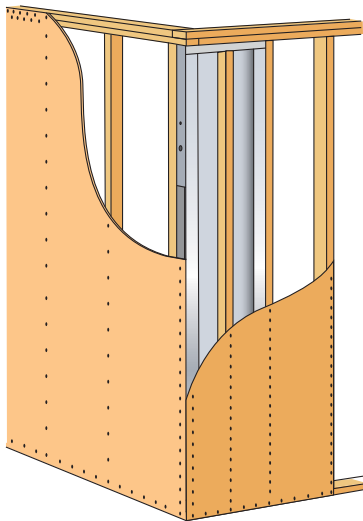
Hole Chart

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

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



There is not an "inside" or "outside" face for the Panel. To avoid the need for additional holes, orient the open face toward the fixture to be installed.



Wood

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



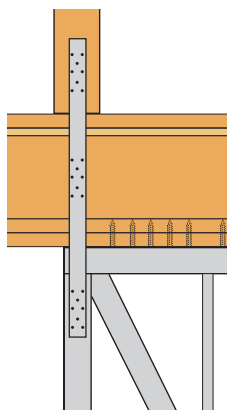
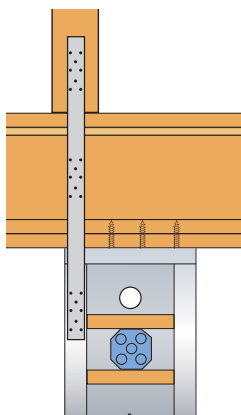
FLAT TRUSS



WAFER HEAD



WING TIP "SD" SELF TAPPING



Steel

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



HEX HEAD



FLAT TRUSS



SELF DRILLING "SD" POINT SELF TAPPING



Additional Tools and Publications From Hardy Frames, Inc.



Typical Installation Detail Pages

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

Installation Guide

The Hardy Frame Installation Guide was written specifically for Suppliers and Installers. This publication provides all HFX-Series model numbers, dimensions, bolt and screw patterns, connectors, installation illustrations, attachments with self-tapping screws and information regarding Template Kit (HFXTK) and Floor to Floor Connector Kit (HFTC) components.



Moment Frame Catalog

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

Braced Wall Guidelines

Provides a summary of Prescriptive Braced Wall Design and recommends the most economical solution with HFX-Series Panels. Includes recommended model numbers, their Accessory items and installation illustrations. Also see page 9 of Product Catalog.



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

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