

HYDRODEFENSE™

Flood Wall



Installation Instructions/Operation and Maintenance Manual

Models:

- FP-530
- FP-530 FM

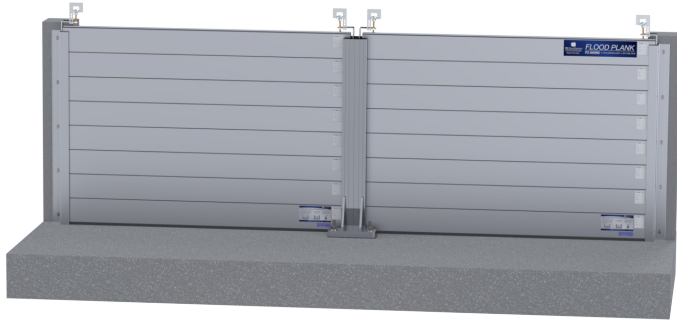


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Contact Information

Mail PS Flood Barriers 1150 South 48th Street Grand Forks, ND 58201	Local Phone 701.746.4519	Website psfloodbarriers.com	Hours of Operation 8 A.M. to 5 P.M. CT Monday – Friday
	Toll Free Phone 877.446.1519	Email 4psinfo@psindustries.com	

IMPORTANT! Read entire Instruction and Operations Manual to become familiar with the product.

NOTICE This product is a flood protection product. The effectiveness of the product is directly related to the proper installation and operation of this product. Failure to properly maintain this product **will** affect performance.

Publication Notice

This manual has been compiled and published covering the latest product descriptions and specifications.

The contents of this manual and the specifications of this product are subject to change without notice.

PS Flood Barriers reserves the right to make changes without notice in the specifications and materials contained herein and shall not be responsible for any damages (including consequential) caused by reliance on the materials presented, including but not limited to typographical and other errors relating to the publication.

PS Flood Barriers and/or its respective suppliers may make improvements and/or changes in the product(s)/ service(s) offered and/or the program(s) at any time without notice.

Retain this manual for future reference.

If you would like to download a copy of this manual, please go to psfloodbarriers.com



Safety Precautions

The following icons are used throughout this Manual.

- ▲ DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
- ▲ WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- ▲ CAUTION** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderated injury.
- NOTICE** Indicates manufacturer's statement of additional information.
- IMPORTANT!** Indicates a required action.
- CRITICAL** Indicates a vital component to product performance.

Flood Wall Product Information

NOTICE Unauthorized modification of or to the Product voids this Limited Warranty. Authorized modifications, received in writing from PS INDUSTRIES INCORPORATED, as long as the modification is accomplished in strict accordance with PS INDUSTRIES INCORPORATED's instructions, does not void warranty. To request product modifications contact PS INDUSTRIES INCORPORATED, 1150 S. 48th Street, Grand Forks, ND 58201, phone 877-446-1519, email: 4psinfo@psindustries.com

I. General Information

This manual contains information regarding operation and maintenance of custom water-resistant Flood Wall assemblies.

II. Operation Guidelines

The following procedures and information are supplied for the operation of the PS Flood Barriers' FP-530 Flood Wall assemblies. Operation in a manner other than intended could result in damage or less than acceptable performance at time of need, for which the manufacturer will not be held responsible.

▲ CAUTION Always plan for potential leakage and condensation that can occur during flooding conditions.

▲ WARNING The Flood Wall components MAY BE heavy, consult Approved for Construction drawings and included documents for weights and use appropriate lifting procedures and equipment.

III. Safety Precautions

- A. Do not force planks or components if they do not operate freely.
- B. When removing Flood Plank Barrier components, protect all gaskets and hardware. Always consult original Approved for Construction drawings for all installation dimensions, details, hardware and specifications.

IV. Pre-flooding or Potential Flooding Conditions

- A. Conduct Inspection and Maintenance activities as described in this Operation and Maintenance Manual, at a minimum, annually and seasonally if seasonal flood conditions exist, prior to the flood season. This may require the replacement of gaskets, sealants, anchors, and accounting for all of the latching devices.
- B. Ensure FP-530, Flood Plank Barrier system is located near the required area for placement when needed, and is deployed prior to flooding conditions.

V. Flooding Conditions

- A. Ensure FP-530, Flood Wall is fully deployed and latched when flooding conditions are present.
- B. If feasible, inspect FP-530, Flood Wall for leakage or condensation accumulation during flooding.

▲ WARNING THIS IS A FLOOD PROTECTION BARRIER; NEVER UNLATCH OR DISASSEMBLE DURING ANY FLOOD CONDITIONS AS WATER LEAKAGE WILL OCCUR AND YOU MAY NOT BE ABLE TO RESEAL THE BARRIER.

Flood Wall Product Information

The PS Flood Barriers' FP-530 is a specially designed Flood Wall capable of providing flood protection. The Model FP-530 Flood Wall is specifically manufactured to meet the opening dimensions and Water Protective Height (WPH) of each customers' specific site requirements. **DUE TO THE CUSTOM NATURE OF EACH FP-530 THEY DO NOT ALL LOOK THE SAME NOR LATCH OR OPERATE EXACTLY THE SAME. REFER TO THIS DOCUMENT AND APPROVED FOR CONSTRUCTION DRAWINGS FOR YOUR SPECIFIC INSTALLATION AND OPERATION.**

Please keep these instructions and Approved for Construction Drawings for later reference and read them before attempting any maintenance or deployment of the product.

NOTICE Additional Information

1. Except as otherwise indicated, requirement for flood barriers, terminology, tolerances, standards or performance and workmanship are those specified as Type 2 Closures in Chapter 7, Section 701.2 of the US Army Corps of Engineers, EP 1165-2-314, 15 December 1995.
2. These Type 2 Flood Closures/Barriers shall form essentially dry barriers or seals, allowing only slight seepage during the hydrostatic pressure conditions of flooding to the Regulatory Flood Datum (RFD) or the Design Flood Elevation (DFE.) Seepage amounts will vary with conditions encountered. This issue should be addressed by the design professional and usage of sump or bilge type pumps should be used to off set potential water build up.
3. Refer to Approved for Construction drawings for all included loading.
4. All water pressure, impact, and operating loads are transferred to the building structure. Building structure design and capacity to accept loads from flood barriers, as well as, evaluation of loads to structure is by others, not PS Flood Barriers.
5. If the water height exceeds the level of the designed Water Protective Height (WPH), excessive leakage will occur.
6. This product is equipped with compressible seals, which are not dependent on inflation devices.
7. PS Flood Barriers recommends a flood preparedness plan be developed and implemented. An annual training drill for activation prior to potential flooding conditions is recommended.

Mullion Installation

A-Frame Embedded Mullion Receiver

VI. A-Frame Embedded Mullion Receiver Installation

NOTICE Only use Approved for Construction Drawings.

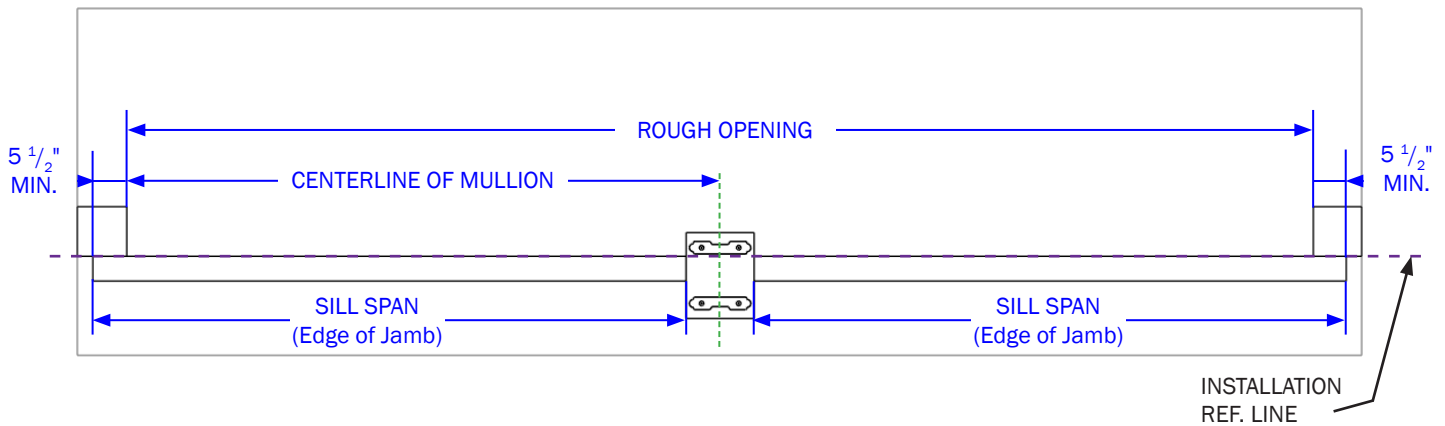
STEP 1. Review all Approved for Construction drawings sent with the crated Flood Wall.
The Approved for Construction Drawings are located inside a plastic bag inside the crate. Review all installation labels prior to installation.

STEP 2. Determine sill/embed types and exact placements as called out on Approved for Construction Drawings.
All sealing surfaces must be sound, flat/level, and without blemish for best performance.
Permissible tolerance is +/- 1/16" per 10 foot length.

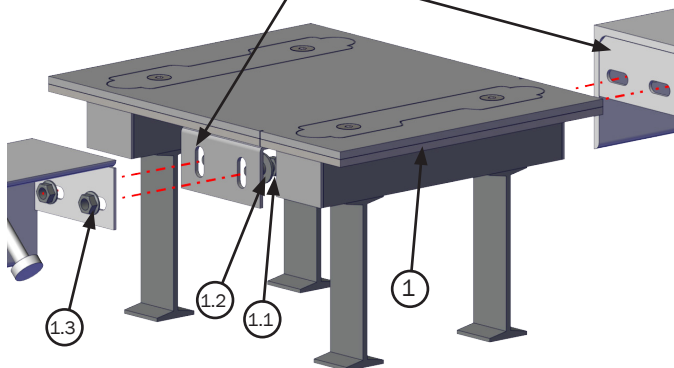
- STEP 3.**
- a. Locate Installation Reference Line and mark embed locations on concrete surface, as detailed on **Embedded Mullion Receiver Install Reference.**
 - b. Connect embedded mullion receiver to sills with included hardware.
Embedded mullion receiver includes notch for alignment with embedded sill edge.

Flood Wall Install Reference

Refer to Approved for Construction Drawings for exact dimensions.



Bolt together system with slotted brackets provide adjustment for flush connection



A-FRAME EMBEDDED MULLION RECEIVER PARTS			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	510605	FP;CENTER MULLION POST EMBED	1
1.1	500400	BOLT;HEX3/8"16X1GRZN	4
1.2	501947	WASHER;FLAT 3/8"ZN	4
1.3	501085	NUT;FLANGE 3/8"16ZN-CASE HARD	4
NOT SHOWN	514261	L-KEY;HEX 7/32"	1

Mullion Installation

A-Frame Embedded Mullion Receiver

STEP 4.

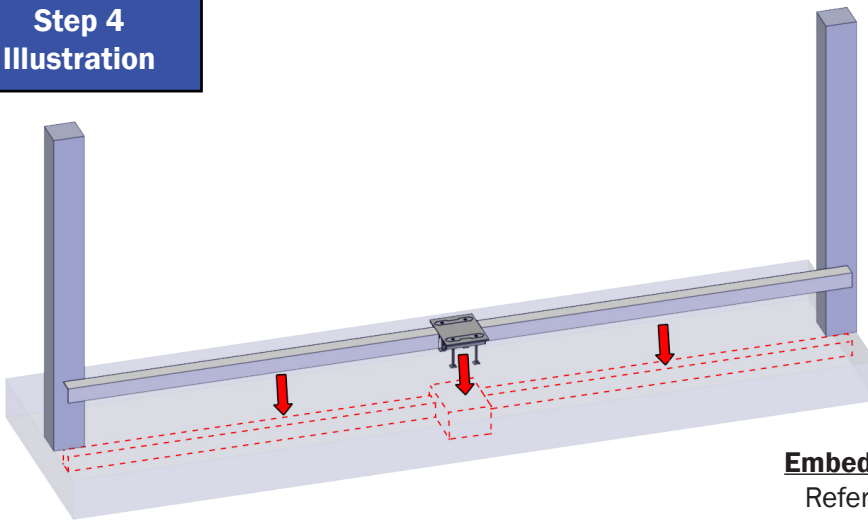
- Place embedded mullion receiver and sills according to Approved for Construction Drawings.
- Fill concrete, in accordance with minimum requirements called out for embedded mullion receiver, level into concrete, keeping flush with concrete surface.

Required embedded mullion receiver edge distances specified in Approved for Construction Drawings.

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

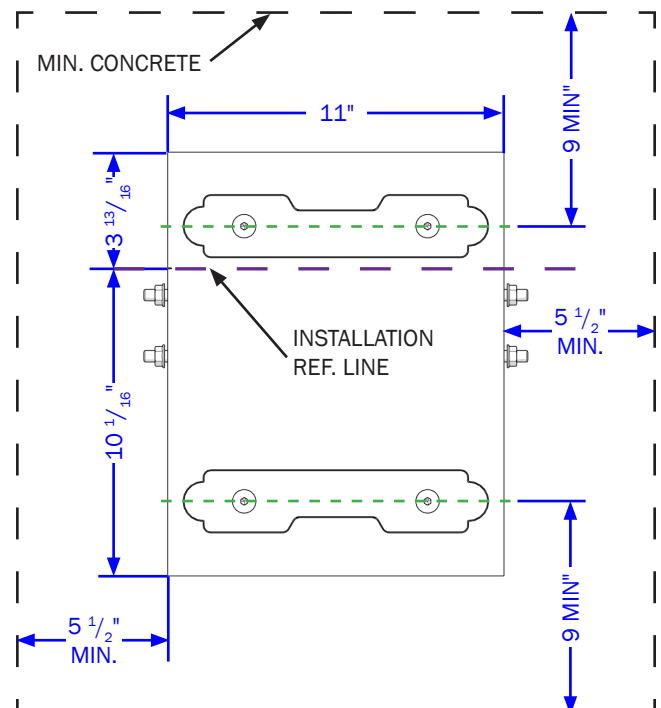
Field concrete foundation design and complete consolidation of concrete surrounding embedded item(s) anchorage points not by PS Flood Barriers.

Step 4 Illustration



Embedded Mullion Receiver Install Reference

Refer to Approved for Construction Drawings for exact placement.



EMBEDDED MULLION RECEIVER INFO:

MIN. 3000 PSI CONCRETE
 8" MIN. CONCRETE THICKNESS
 5 1/2" MIN. EDGE DISTANCE (SIDES)
 9" MIN. EDGE DISTANCE (WET SIDE)
 9" MIN. EDGE DISTANCE (DRY SIDE)

IMPORTANT! Allow concrete to fully set before proceeding with A-Frame Mullion installation.

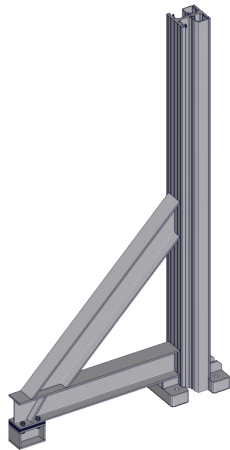
Mullion Installation

A-Frame

VII. A-Frame Mullion Installation

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

Standard (FM Approved)
A-Frame Mullion

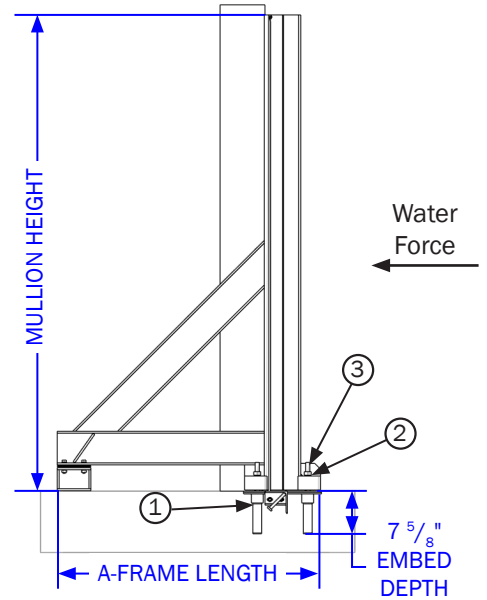


Dry-Side Supported (Non-FM)
*Installation requires bolt to be tightened to ensure contact with kick brace (with no water force).



Mullion and Embed Reference

Refer to Approved for Construction Drawings for exact height and length dimensions.

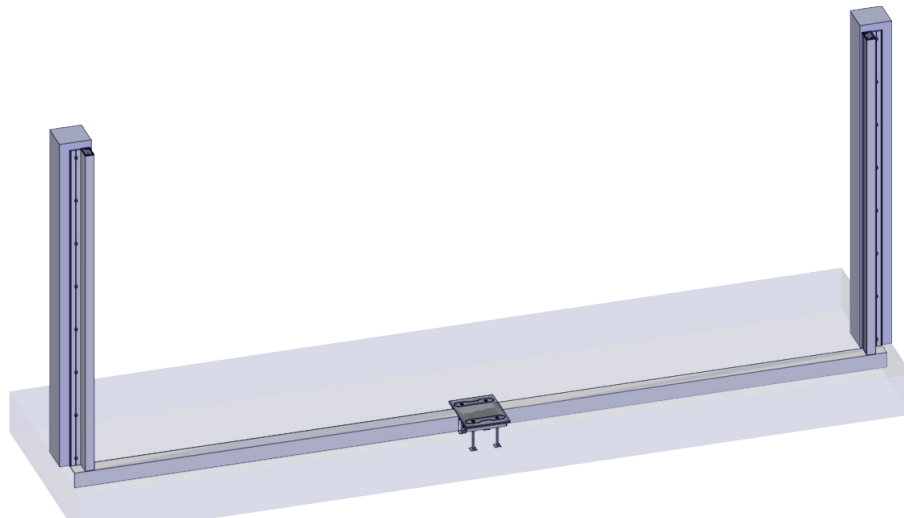


A-FRAME EMBEDDED MULLION RECEIVER HARDWARE			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	510605	FP;CENTER MULLION POST EMBED	1
2	*501941	WASHER; FLAT 3/4"x1-15/32"ZN	4
3	*510180	HALFEN TBOLT 3/4"x5" W/NUT GAL	4
*Unless otherwise specified on Approved for Construction Drawings.			

MULLION ANCHOR TORQUE RATINGS:
POST-INSTALLED THREAD INSERTS: 100 FT-LB
EMBEDDED MULLION RECEIVER: 89 FT-LB

STEP 1. Clean off debris in and around mounting surface (embedded mullion receiver) to ensure good gasket seal.

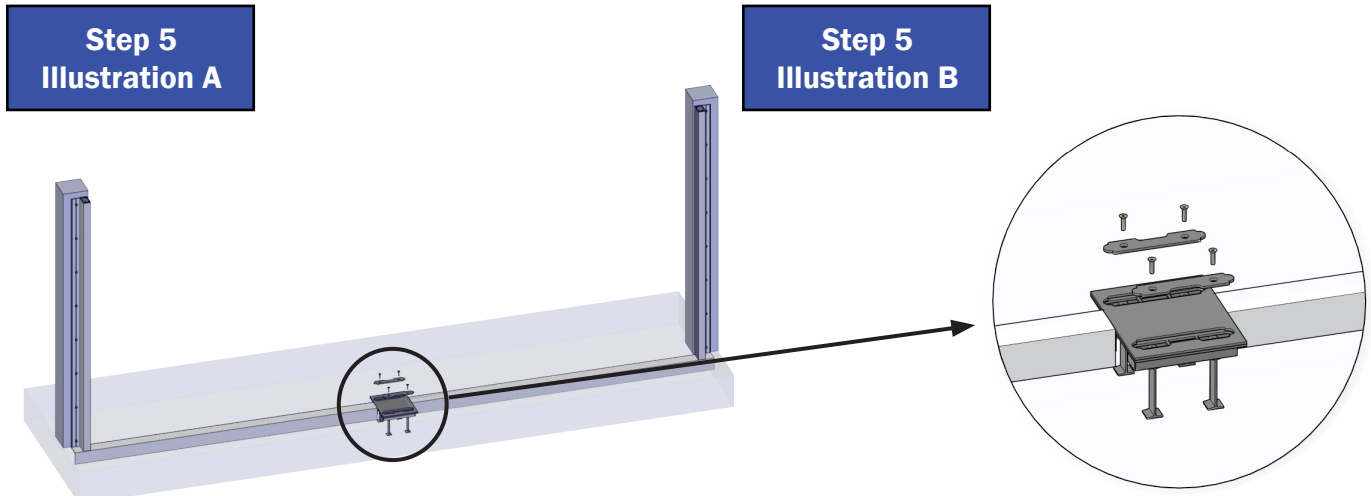
Step 1
Illustration



Mullion Installation

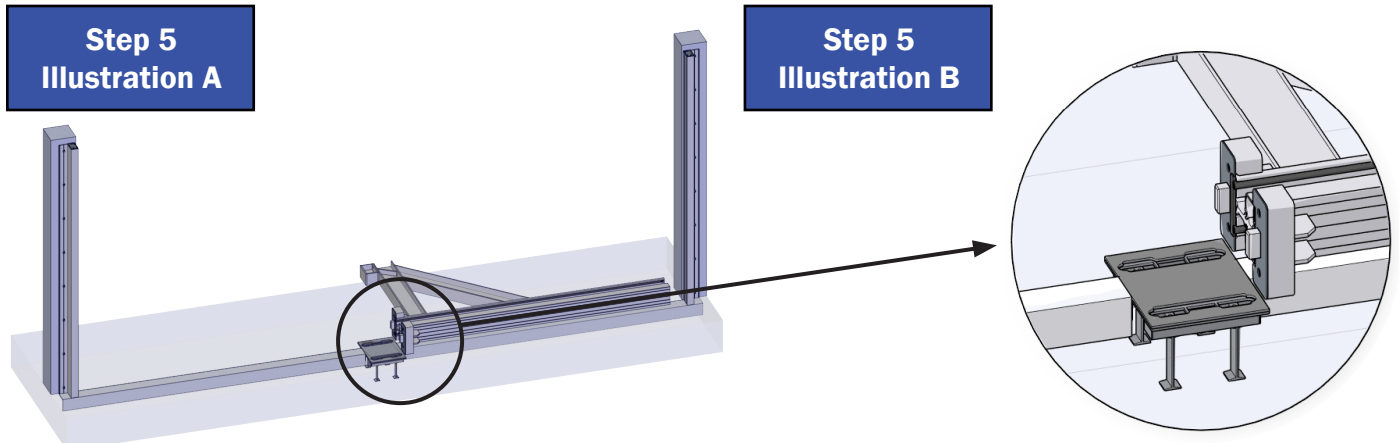
A-Frame

STEP 2. Remove channel cover plates with $7/32$ " Allen Wrench.

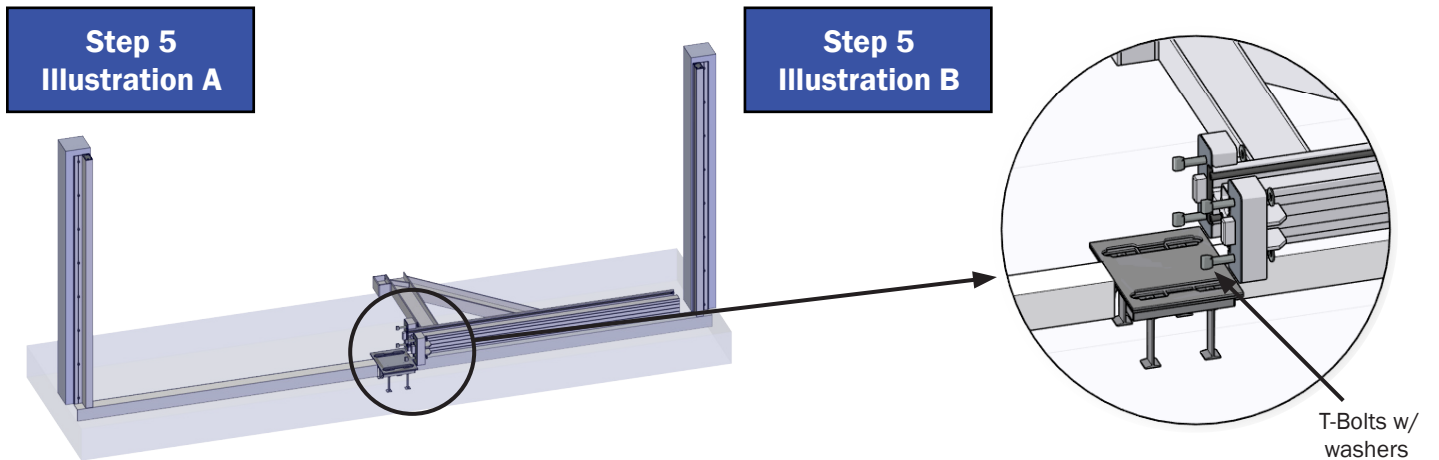


STEP 3. Remove any water and debris that has collected inside the halfen channels.

STEP 4. Lay mullion on his side next to the mounting area.
**A-Frame Mullion shown with shear lugs, dependent upon design loading required.*



STEP 5. Insert T-Bolts in bottom of mullion baseplate and loosely thread on nuts.

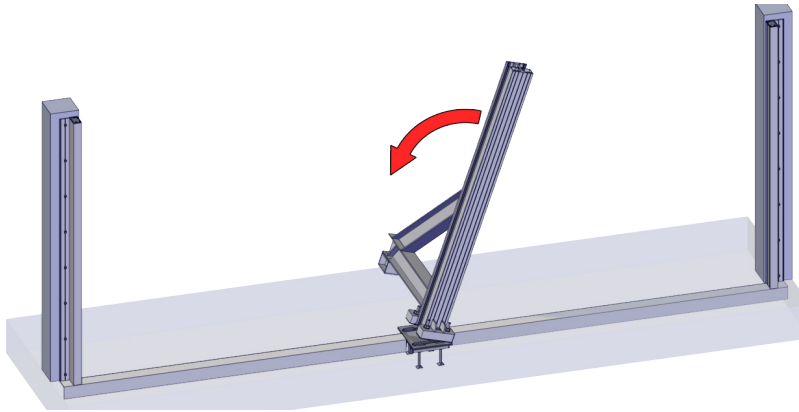


Mullion Installation

A-Frame

STEP 6. Line T-Bolts up with channels and tip mullion into place, centering it on the embedded mullion receiver.

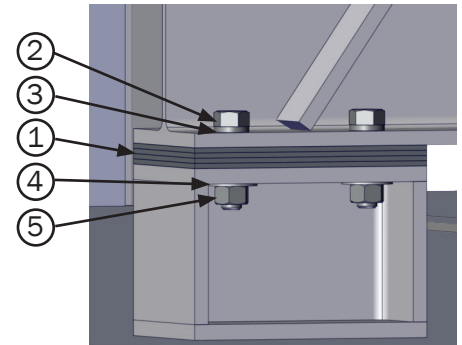
**Step 6
Illustration**



STEP 7. Add or remove shims from support foot until mullion sits flat on embedded mullion receiver top plate.

A-FRAME SUPPORT FOOT PARTS			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	513748	FP;A-FRAME SUPPORT SHIM	8
2	500352	BOLT;HEX1/2"13X2GR5ZN	4
3	501937	WASHER;FLAT 1/2"ZN USS	4
4	501959	WASHER;SPLIT LOCK 1/2" ZN	4
5	501099	NUT;HEX 1/2"13 GR5ZN	4
NOT SHOWN	500346	BOLT;HEX1/2"13X2 1/2GR5ZN <i>(REQUIRED IF MORE THAN 4 SHIMS ARE USED)</i>	4

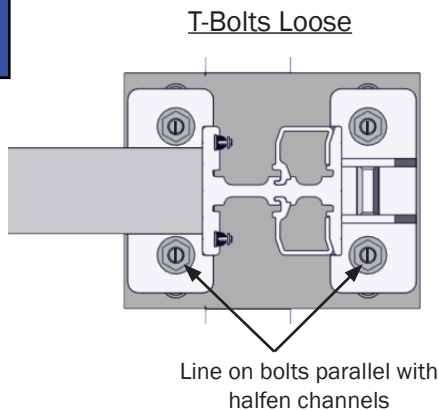
Support Foot Shims
 Installed: Quantity 4
 Loose: Quantity 4



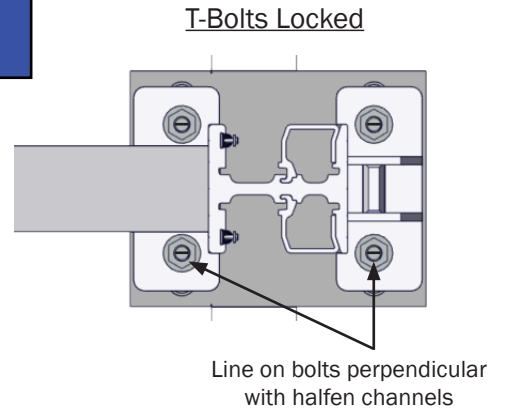
STEP 8.

- a. Spin T-Bolts until line on the bolt is perpendicular to the Halfen channel.
- b. Add or remove shims from support foot until mullion sits flat on embedded mullion receiver top plate, A-frame support foot required to be contacting surface area to restrict flexing of Mullion.
- c. Tighten nuts on embedded mullion receiver to 89 ft-lbs Unless otherwise specified on Approved for Construction Drawings and/or inside optional Calculations packet.

**Step 8
Illustration A**



**Step 8
Illustration B**



STEP 9. Continue with Flood Plank Deployment - Found on Page 30.

Mullion Installation

Corner Embedded Mullion Receiver

VIII. Corner Embedded Mullion Receiver Installation

NOTICE Only use Approved for Construction Drawings.

STEP 1. Review all Approved for Construction drawings sent with the crated Flood Wall.
The Approved for Construction Drawings are located inside a plastic bag inside the crate. Review all installation labels prior to installation.

STEP 2. Determine sill/embed types and exact placements as called out on Approved for Construction Drawings.
All sealing surfaces must be sound, flat/level, and without blemish for best performance.
Permissible tolerance is +/- 1/16" per 10 foot length.

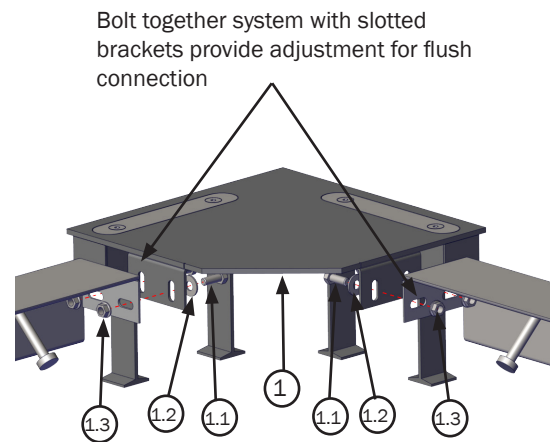
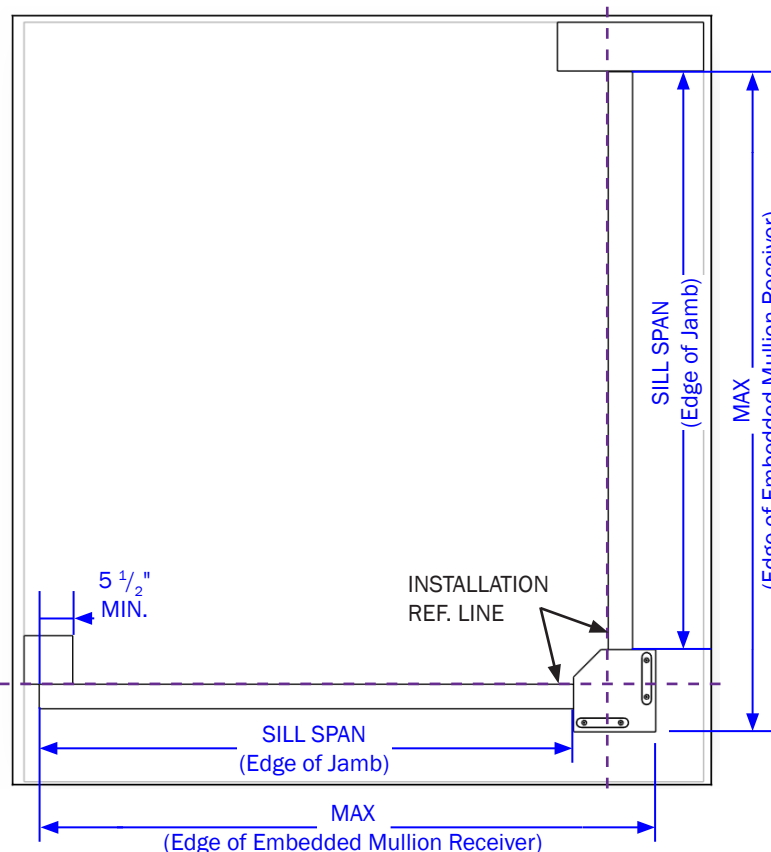
STEP 3.

- a. Locate Installation Reference Line and mark embedded mullion receiver locations on concrete surface, as detailed on **Embedded Mullion Receiver Install Reference**.
- b. Connect embedded mullion receiver to sills with included hardware.
Embedded mullion receiver includes notch for alignment with embedded sill edge.

Flood Wall Install Reference

Refer to Approved for Construction Drawings for exact dimensions.

CORNER EMBEDDED MULLION RECEIVER PARTS			
BALLOON	PART #	DESCRIPTION	QTY
1	510907	FP;CORNER MULLION EMBED 8"	1
1.1	500400	BOLT;HEX3/8"16X1GRZN	4
1.2	501947	WASHER;FLAT 3/8"ZN	4
1.3	501085	NUT;FLANGE 3/8"16ZN-CASE HARD	4
NOT SHOWN	514261	L-KEY;HEX 7/32"	1



Mullion Installation

Corner Embedded Mullion Receiver

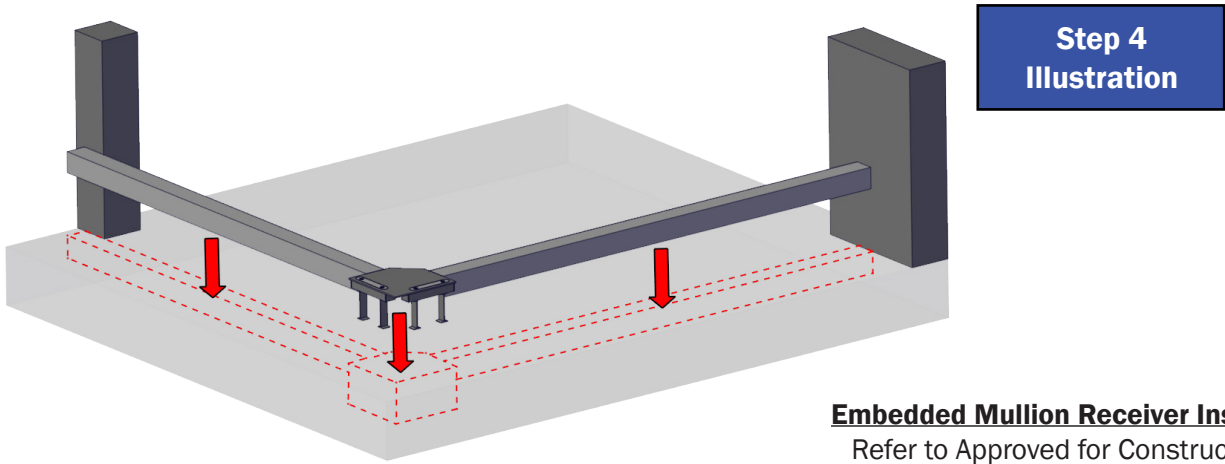
STEP 4.

- a. Place embedded mullion receiver and sills according to Approved for Construction Drawings.
- b. Fill concrete, in accordance with minimum requirements called out for embedded mullion receiver, level into concrete, keeping flush with concrete surface.

Required embedded mullion receiver edge distances specified in Approved for Construction Drawings.

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

Field concrete foundation design and complete consolidation of concrete surrounding embedded item(s) anchorage points not by PS Flood Barriers.

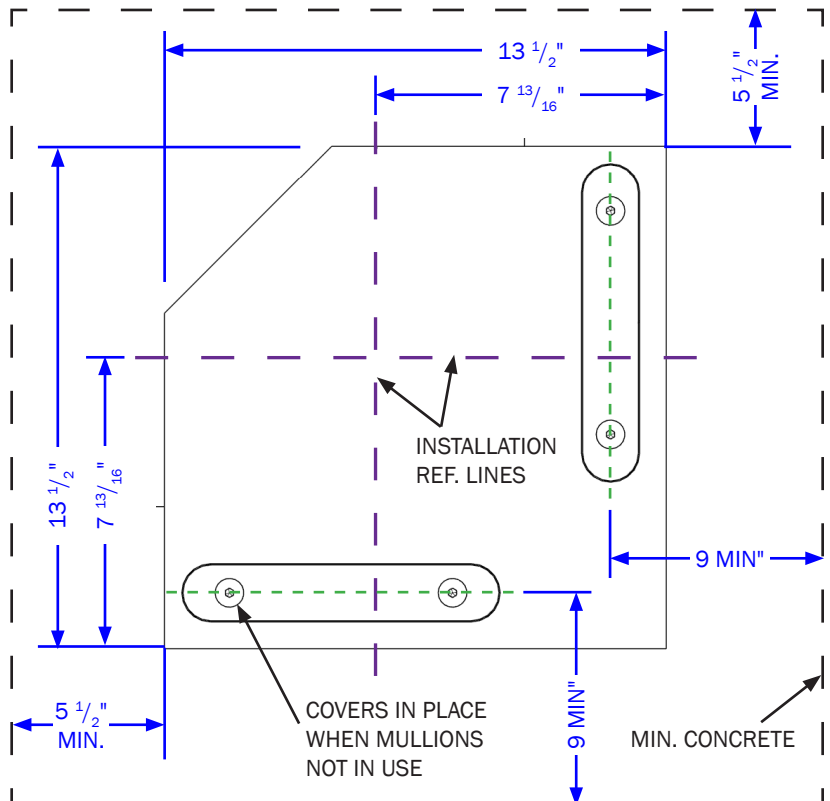


Embedded Mullion Receiver Install Reference

Refer to Approved for Construction Drawings for exact placement.

EMBEDDED MULLION RECEIVER INFO:

- MIN. 3000 PSI CONCRETE
- 8" MIN. CONCRETE THICKNESS
- 5 1/2" MIN. EDGE DISTANCE (SIDES)
- 9" MIN. EDGE DISTANCE (WET SIDE)
- 9" MIN. EDGE DISTANCE (DRY SIDE)



IMPORTANT! Allow concrete to fully set before proceeding with Corner Mullion installation.

Mullion Installation

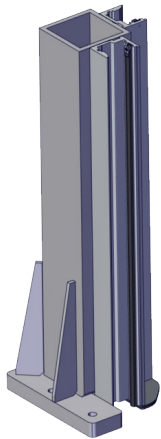
Corner

IX. Corner Mullion Installation

NOTICE: Corner Mullion is not available with FM Approval Label.

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

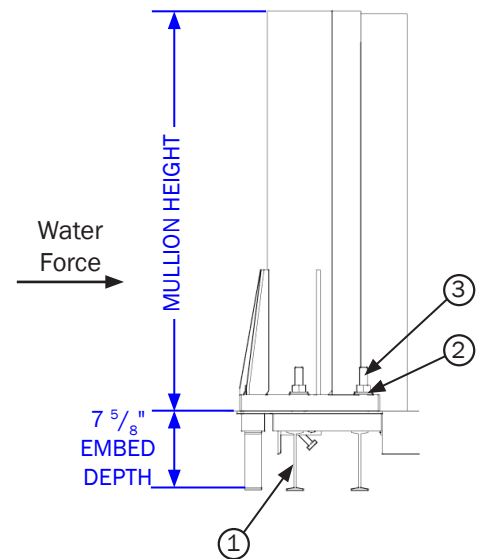
Standard
Corner Mullion



Versions Available:

- Standard Corner Mullion
- A-Frame Corner Mullion
- Tension Corner Mullion
- Inside Mullion
- Outside Mullion

Mullion and Embed Reference
Refer to Approved for Construction Drawings for exact height and length dimensions.



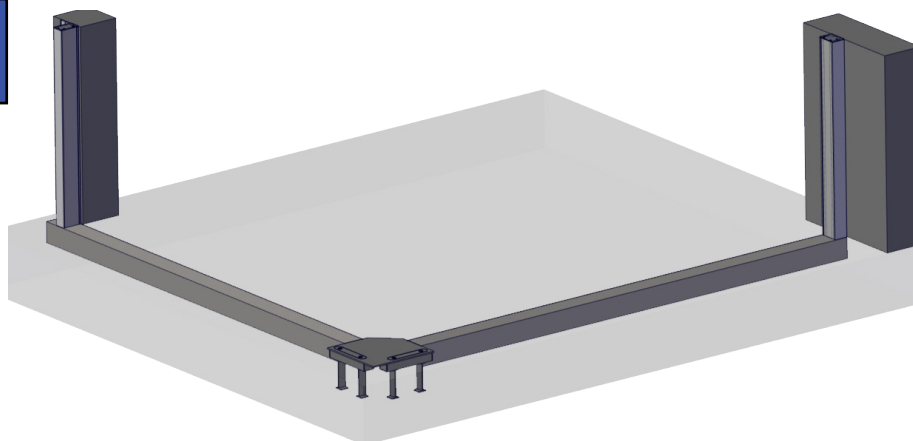
MULLION ANCHOR TORQUE RATINGS:
POST-INSTALLED THREAD INSERTS: 100 FT-LB
EMBEDDED MULLION RECEIVER: 89 FT-LB

EMBEDDED MULLION RECEIVER HARDWARE			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	510907	FP;CORNER MULLION EMBED 8"	1
2	*501941	WASHER; FLAT 3/4"x1-15/32"ZN	4
3	*500755	HALFEN TBOLT 3/4"X4" W/NUT GAL	4

*Unless otherwise specified on Approved for Construction Drawings.

STEP 1. Clean off debris in and around mounting surface (embedded mullion receiver) to ensure good gasket seal.

Step 1
Illustration

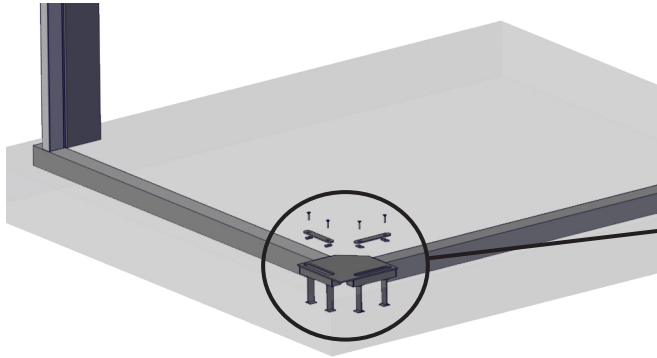


Mullion Installation

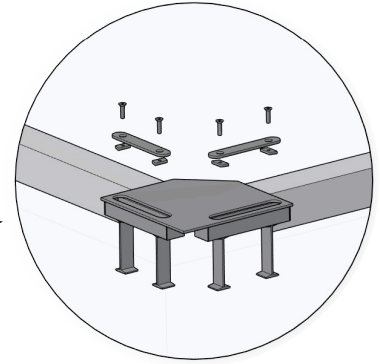
Corner

STEP 2. Remove channel cover plates with 7/32" Allen Wrench.

Step 2
Illustration A



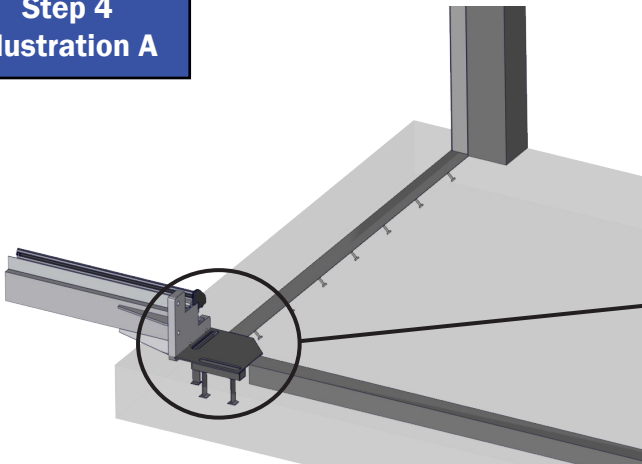
Step 2
Illustration B



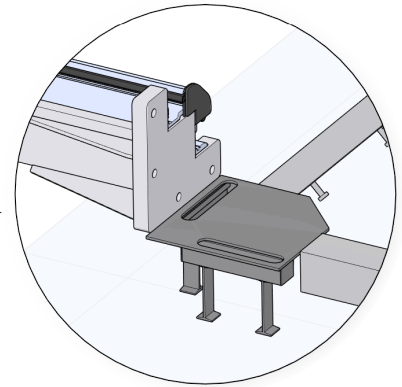
STEP 3. Remove any water and debris collected inside Halfen channel.

STEP 4. Lay mullion on his side next to the mounting area.

Step 4
Illustration A

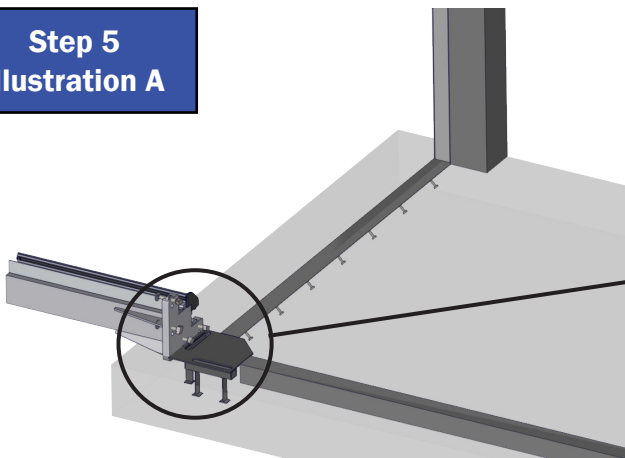


Step 4
Illustration B

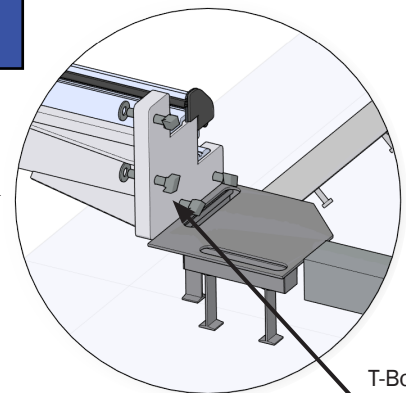


STEP 5. Insert T-Bolts in bottom of Corner Mullion baseplate and loosely thread on nuts.

Step 5
Illustration A



Step 5
Illustration B



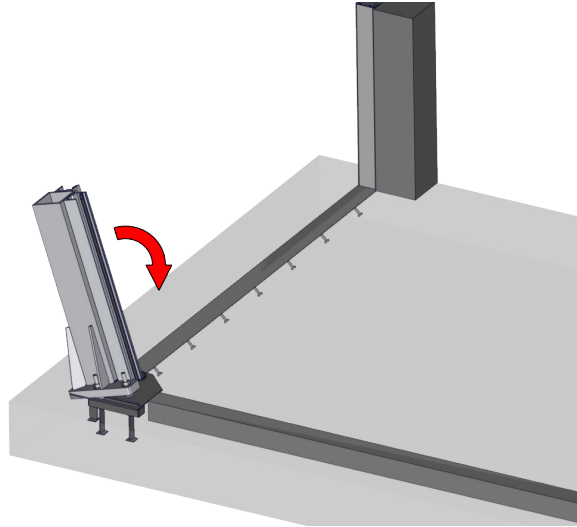
Mullion Installation

Corner

STEP 6. Line T-Bolts up with channels and tip mullion into place.

- Centering it on the embedded mullion receiver, taking care not to damage bottom gasket when installing.

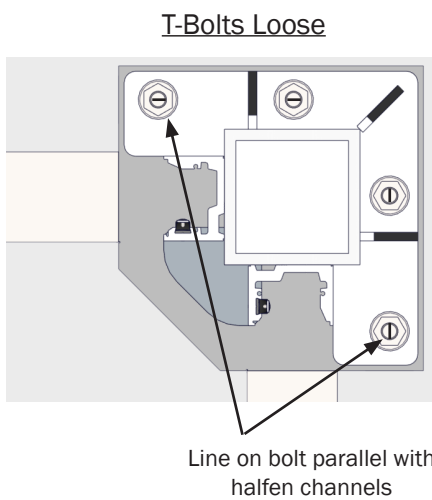
Step 6 Illustration



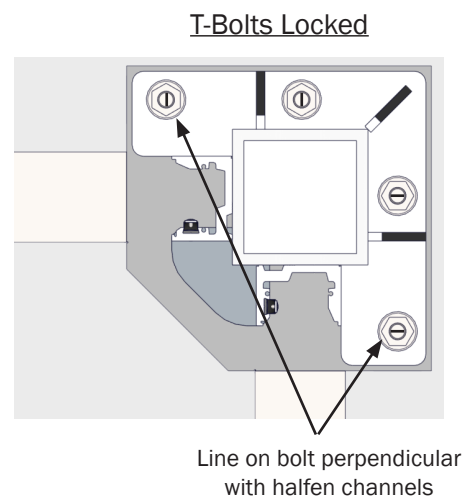
STEP 7.

- Spin T-Bolts until line on the bolt is perpendicular to the Halfen channel.
- Tighten nuts on embedded mullion receiver to 89 ft-lbs Unless otherwise specified on Approved for Construction Drawings and/or inside optional Calculations packet.

Step 7 Illustration A



Step 7 Illustration B



STEP 8. Continue with Flood Plank Deployment - Found on Page 30.

Mullion Installation

Single Base Plate Embedded Mullion Receiver

X. Single Base Plate Embedded Mullion Receiver Installation

NOTICE Only use Approved for Construction Drawings.

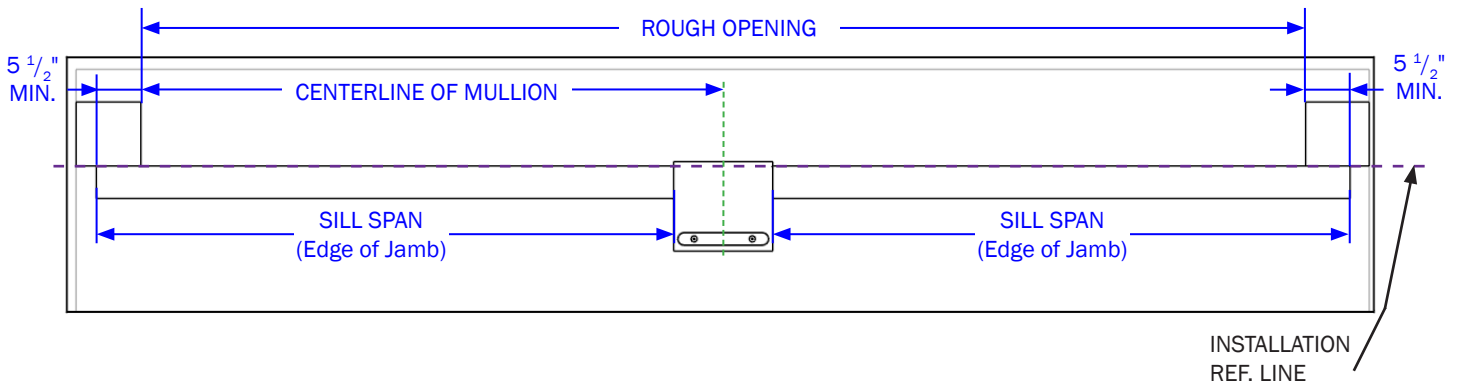
STEP 1. Review all Approved for Construction drawings sent with the crated Flood Wall.
The Approved for Construction Drawings are located inside a plastic bag inside the crate. Review all installation labels prior to installation

STEP 2. Determine sill/embed types and exact placements as called out on Approved for Construction Drawings.
All sealing surfaces must be sound, flat/level, and without blemish for best performance.
Permissible tolerance is +/- 1/16" per 10 foot length.

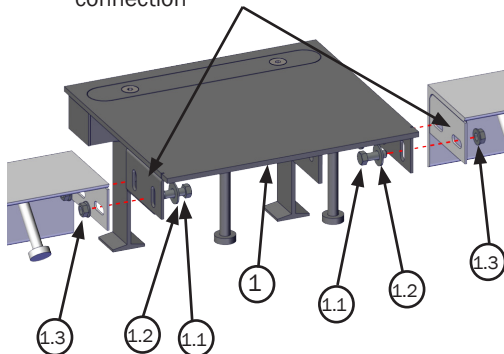
- STEP 3.**
- a. Locate Installation Reference Line and mark embedded mullion receiver locations on concrete surface, as detailed on ***Embedded Mullion Receiver Install Reference***.
 - b. Connect embedded mullion receiver to sills with included hardware.
Embedded mullion receiver includes notch for alignment with embedded sill edge.

Flood Wall Install Reference

Refer to Approved for Construction Drawings for exact dimensions.



Bolt together system with slotted brackets provide adjustment for flush connection



SINGLE BASE PLATE EMBEDDED MULLION RECEIVER PARTS			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	512904	FP;SBP MULLION EMBED ASSY	1
1.1	500400	BOLT;HEX3/8"16X1GRZN	4
1.2	501947	WASHER;FLAT 3/8"ZN	4
1.3	501085	NUT;FLANGE 3/8"16ZN-CASE HARD	4
NOT SHOWN	514261	L-KEY;HEX 7/32"	1

Mullion Installation

Single Base Plate Embedded Mullion Receiver

STEP 4.

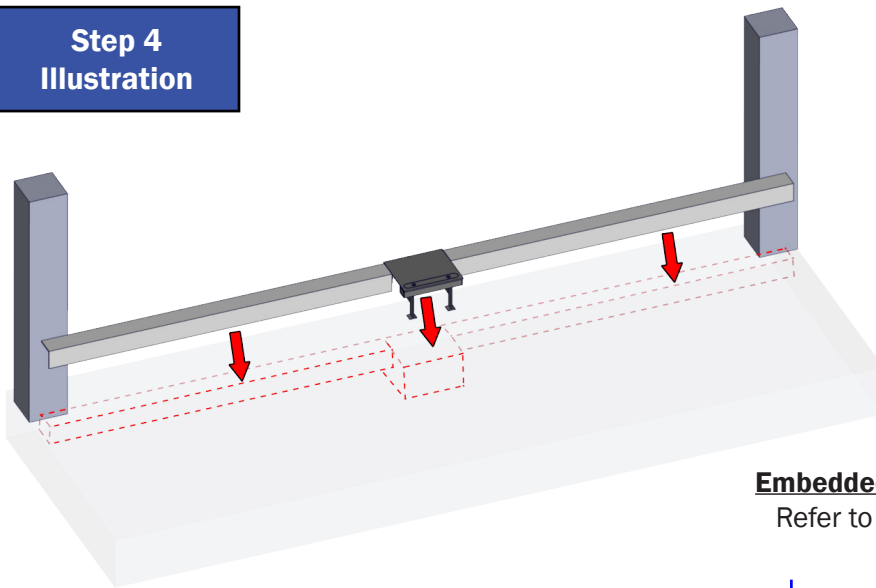
- Place embedded mullion receiver and sills according to Approved for Construction Drawings.
- Fill concrete, in accordance with minimum requirements called out for embedded mullion receiver, level into concrete, keeping flush with concrete surface.

Required embedded mullion receiver edge distances specified in Approved for Construction Drawings.

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

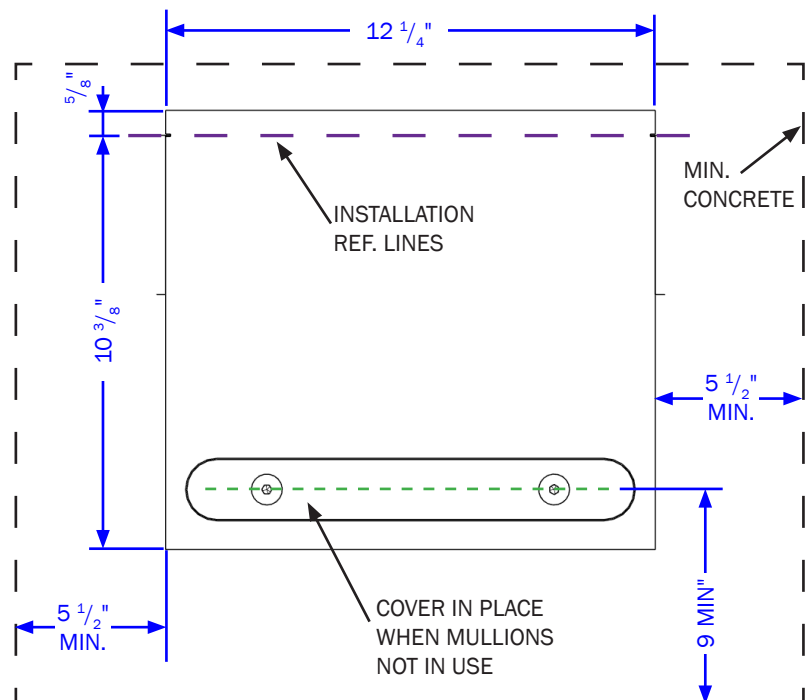
Field concrete foundation design and complete consolidation of concrete surrounding embedded item(s) anchorage points not by PS Flood Barriers.

Step 4 Illustration



Embedded Mullion Receiver Install Reference

Refer to Approved for Construction Drawings for exact placement.



EMBEDDED MULLION RECEIVER INFO:

MIN. 3000 PSI CONCRETE
 8" MIN. CONCRETE THICKNESS
 5 1/2" MIN. EDGE DISTANCE (SIDES)
 9" MIN. EDGE DISTANCE (WET SIDE)

IMPORTANT! Allow concrete to fully set before proceeding with Single Base Plate Mullion installation.

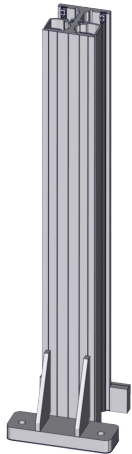
Mullion Installation

Single Base Plate

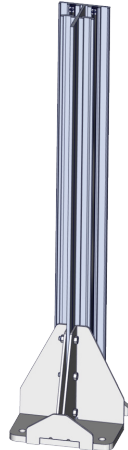
XI. Single Base Plate Mullion Installation

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

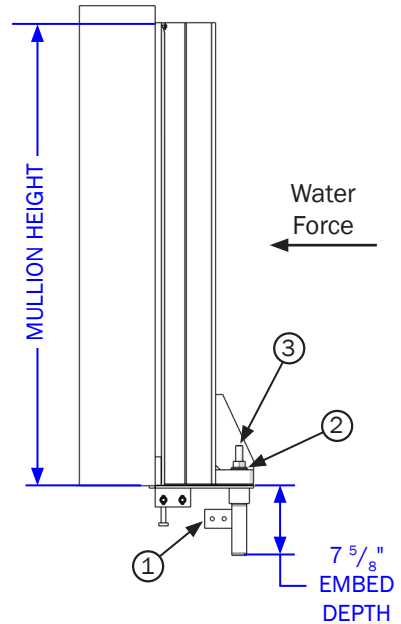
Standard (FM Approved)
Single Base Plate Mullion



Post Mullion (Non-FM)
Same installation as
Single Base Plate Mullion



Mullion and Embed Reference
Refer to Approved for Construction Drawings for exact height and length dimensions.



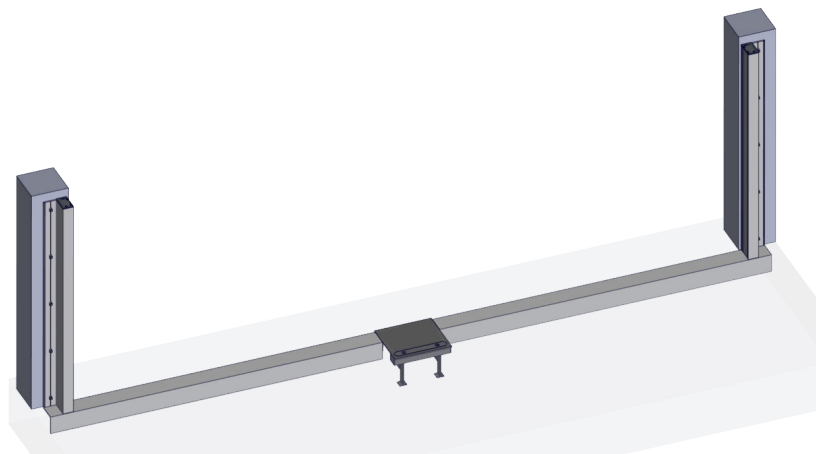
EMBEDDED MULLION RECEIVER HARDWARE			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	512904	FP;SBP MULLION EMBED ASSY	1
2	*501941	WASHER; FLAT 3/4"x1-15/32"ZN	4
3	*500755	HALFEN TBOLT 3/4"x4" W/NUT GAL	4

*Unless otherwise specified on Approved for Construction Drawings.

MULLION ANCHOR TORQUE RATINGS:
POST-INSTALLED THREAD INSERTS: 100 FT-LB
EMBEDDED MULLION RECEIVER: 89 FT-LB

STEP 1. Clean off debris in and around mounting surface (embedded mullion receiver) to ensure good gasket seal.

**Step 1
Illustration**



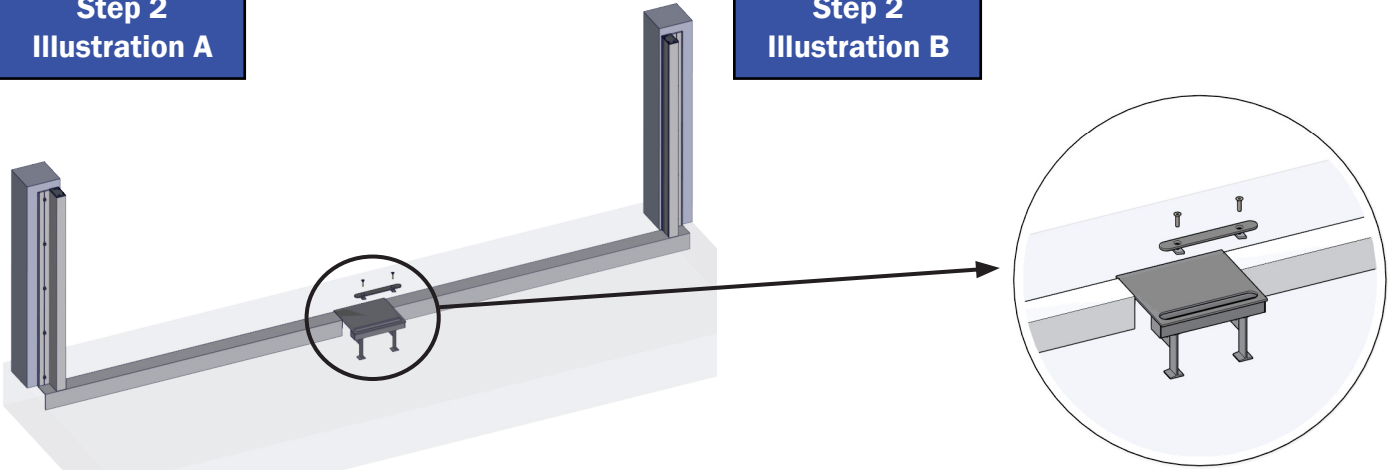
Mullion Installation

Single Base Plate

STEP 2. Remove channel cover plates with $\frac{7}{32}$ " Allen Wrench.

**Step 2
Illustration A**

**Step 2
Illustration B**

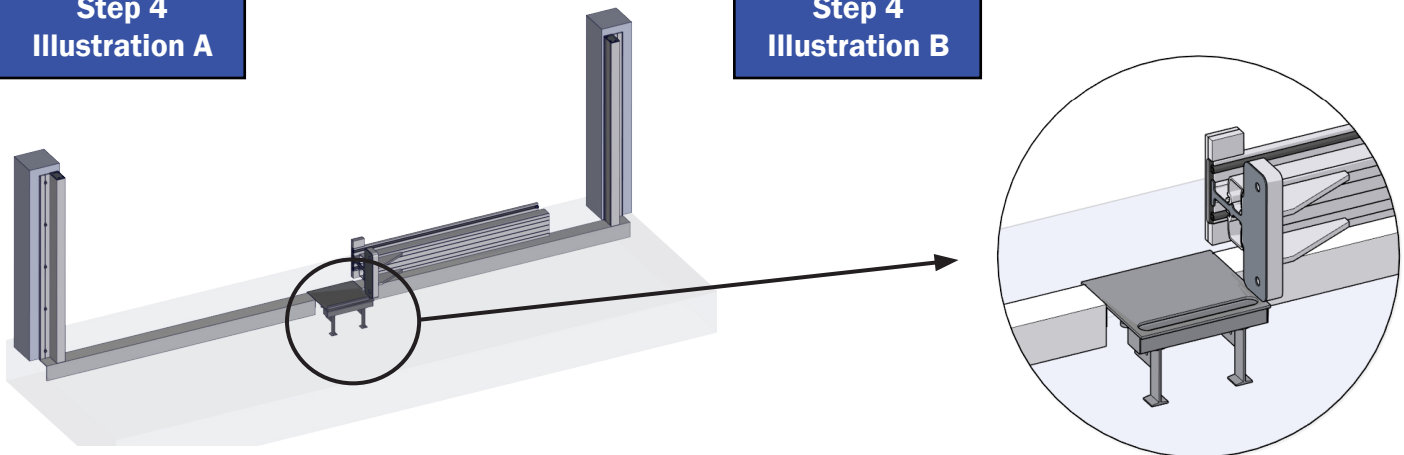


STEP 3. Remove any water and debris collected inside Halfen channel.

STEP 4. Lay mullion on his side next to the mounting area.

**Step 4
Illustration A**

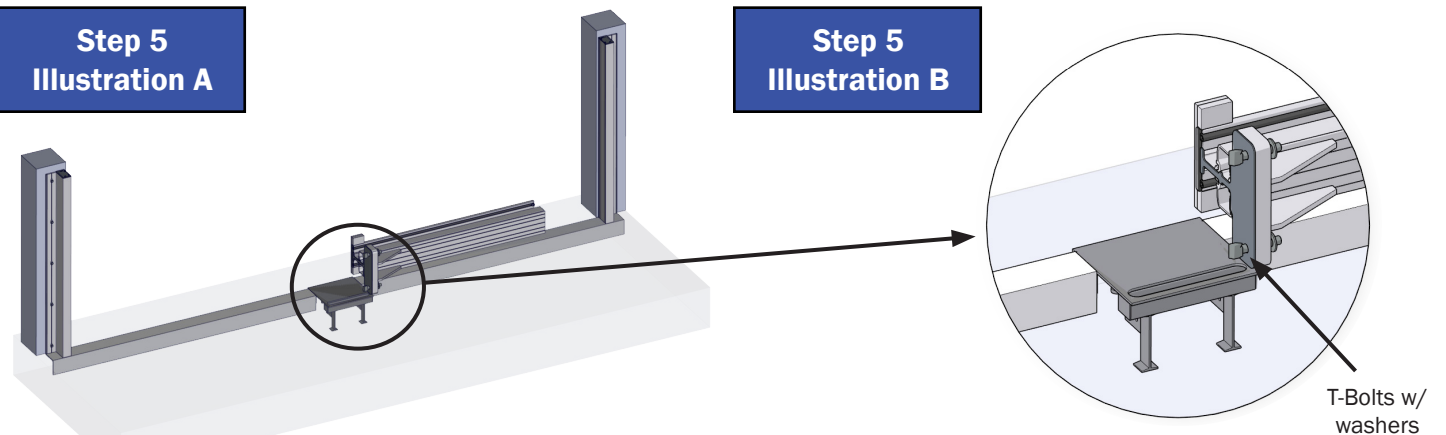
**Step 4
Illustration B**



STEP 5. Insert T-Bolts in bottom of mullion baseplate and loosely thread on nuts.

**Step 5
Illustration A**

**Step 5
Illustration B**



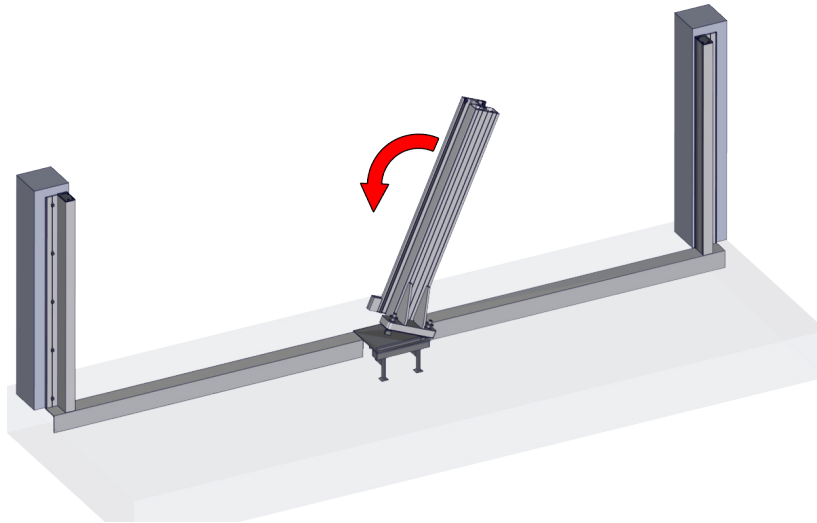
Mullion Installation

Single Base Plate

STEP 6. Line T-Bolts up with channels and tip mullion into place.

- a. Centering it on the embedded mullion receiver, making sure not to tear bottom gasket when installing.

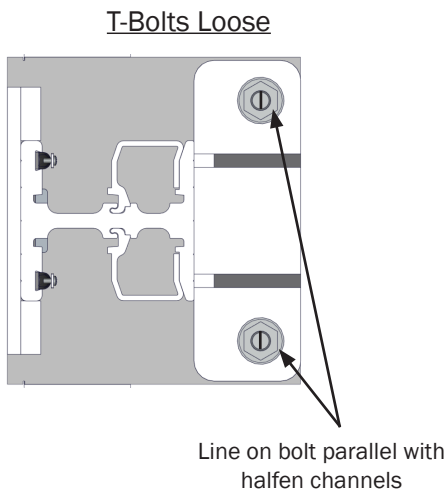
**Step 6
Illustration**



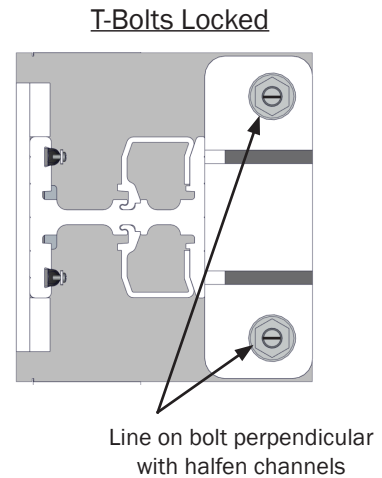
STEP 7.

- a. Spin T-Bolts until line on the bolt is perpendicular to the Halfen channel.
- b. Tighten nuts on embedded mullion receiver to 89 ft-lbs Unless otherwise specified on Approved for Construction Drawings and/or inside optional Calculations packet.

**Step 7
Illustration A**



**Step 7
Illustration B**



STEP 8. Continue with Flood Plank Deployment - Found on Page 30.

Mullion Installation

High Water Tension/Tension Embedded Mullion Receiver

XII. High Water Tension/Tension Embedded Mullion Receiver Installation

NOTICE Only use Approved for Construction Drawings.

STEP 1. Review all Approved for Construction drawings sent with the crated Flood Wall.
The Approved for Construction Drawings are located inside a plastic bag inside the crate. Review all installation labels prior to installation.

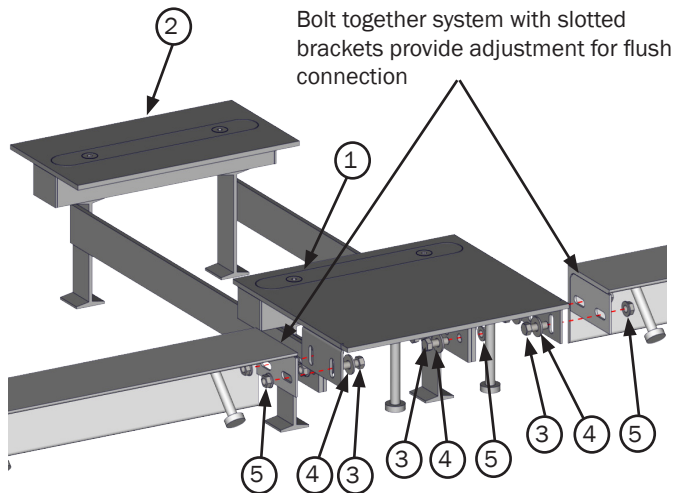
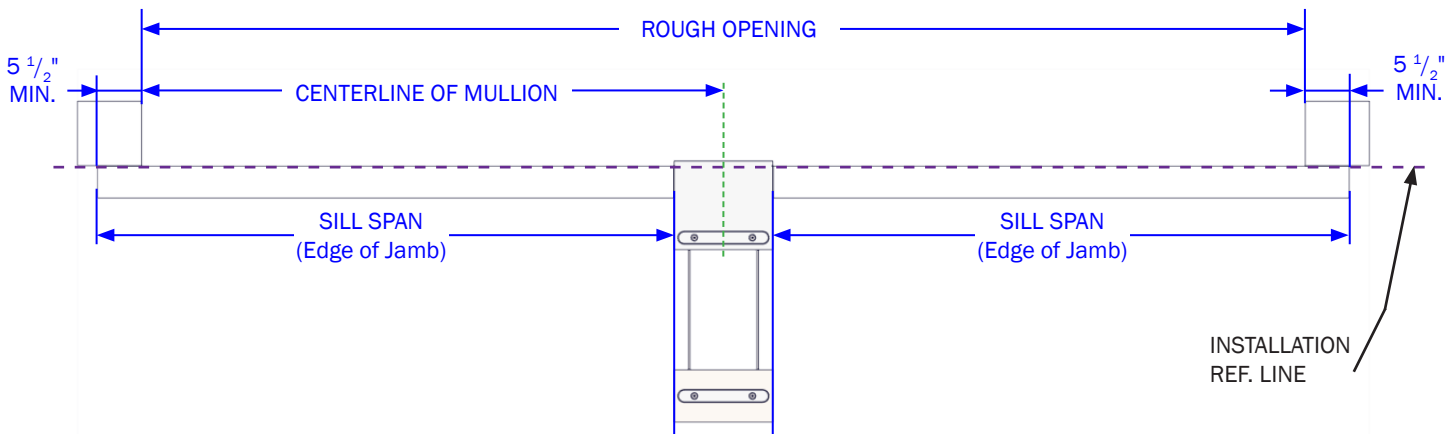
STEP 2. Determine sill/embed types and exact placements as called out on Approved for Construction Drawings.
All sealing surfaces must be sound, flat/level, and without blemish for best performance.
Permissible tolerance is +/- 1/16" per 10 foot length.

STEP 3.

- a. Locate Installation Reference Line and mark embedded mullion receiver locations on concrete surface, as detailed on **Embedded Mullion Receiver Install Reference**.
- b. Connect embedded mullion receiver to sills with included hardware.
Embedded mullion receiver includes notch for alignment with embedded sill edge.

Flood Wall Install Reference

Refer to Approved for Construction Drawings for exact dimensions.



FP;SBP H.W. TENSION EMBED ASSY (PN#513074)			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	512904	FP;SBP MULLION EMBED ASSY	1
2	513076	FP;SBP H.W. TENSION EMBED ATCH	1
3	500400	BOLT;HEX3/8"16X1GR5ZN	8
4	501947	WASHER;FLAT 3/8"ZN	8
5	501085	NUT;FLANGE 3/8"16ZN-CASE HARD	8
NOT SHOWN	514261	L-KEY;HEX 7/32"	1

FP;SBP TENSION EMBED ASSY (PN#512949)			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	512904	FP;SBP MULLION EMBED ASSY	1
2	512909	FP;SBP TENSION EMBED ATCH	1
3	500400	BOLT;HEX3/8"16X1GR5ZN	8
4	501947	WASHER;FLAT 3/8"ZN	8
5	501085	NUT;FLANGE 3/8"16ZN-CASE HARD	8
NOT SHOWN	514261	L-KEY;HEX 7/32"	1

Mullion Installation

High Water Tension/Tension Embedded Mullion Receiver

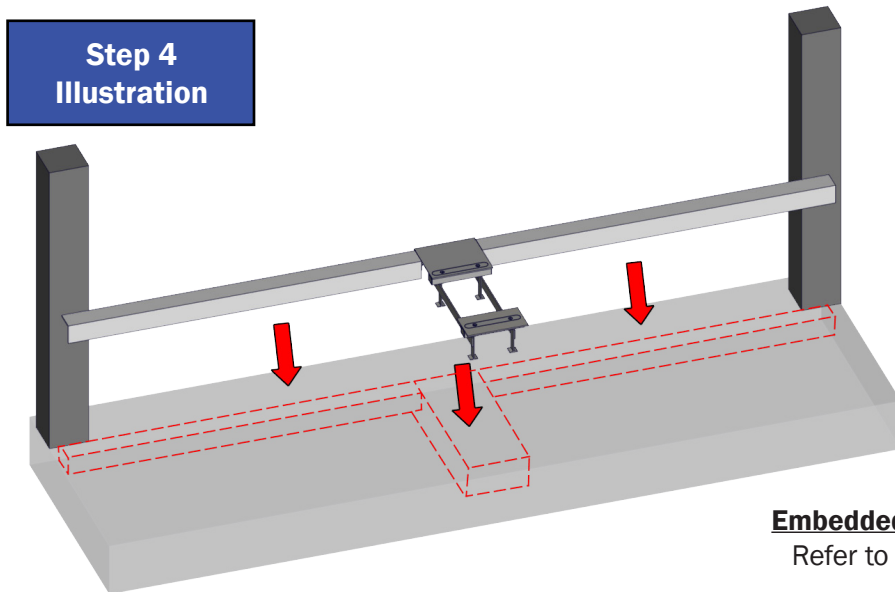
STEP 4.

- a. Place embedded mullion receiver and sills according to Approved for Construction Drawings.
- b. Fill concrete, in accordance with minimum requirements called out for embedded mullion receiver, level into concrete, keeping flush with concrete surface.

Required embedded mullion receiver edge distances specified in Approved for Construction Drawings.

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

Field concrete foundation design and complete consolidation of concrete surrounding embedded item(s) anchorage points not by PS Flood Barriers.

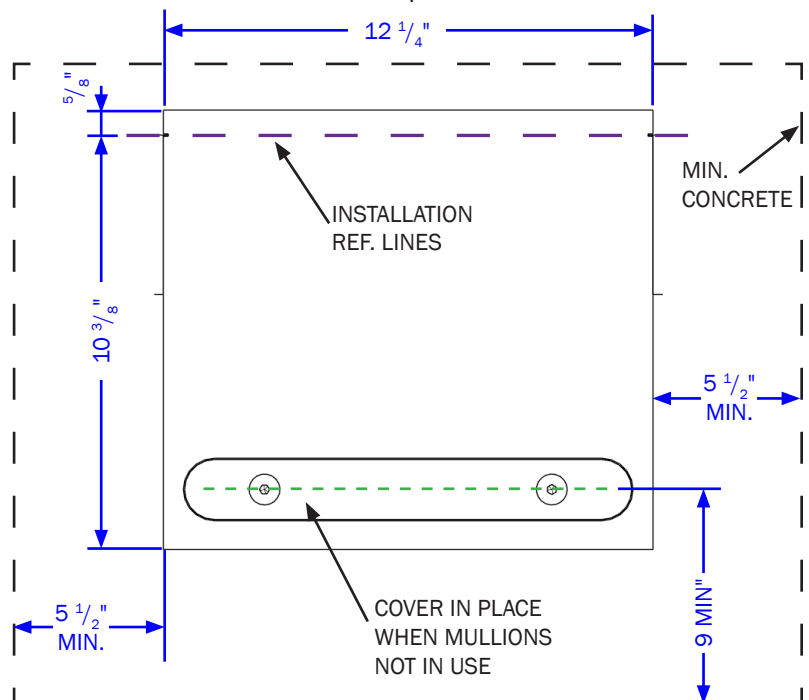


EMBEDDED MULLION RECEIVER INFO:

- MIN. 3000 PSI CONCRETE
- 8" MIN. CONCRETE THICKNESS
- 5 1/2" MIN. EDGE DISTANCE (SIDES)
- 9" MIN. EDGE DISTANCE (WET SIDE)

Embedded Mullion Receiver Install Reference

Refer to Approved for Construction Drawings for exact placement.



IMPORTANT! Allow concrete to fully set before proceeding with Single Base Plate Mullion installation.

Mullion Installation

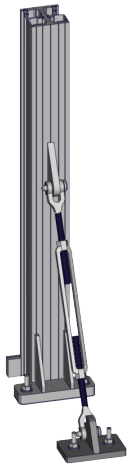
High Water Tension/Tension

XIII. Tension Mullion Installation

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

Standard (FM Approved)

High Water Tension/
Tension Mullion



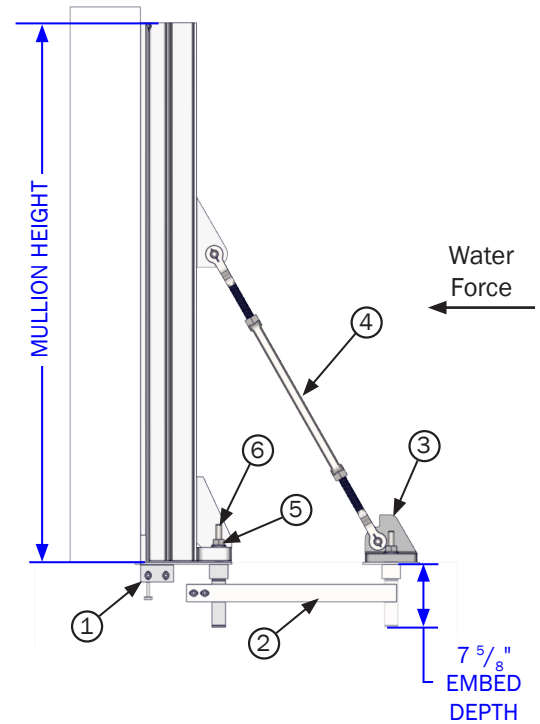
Wet-Side Mullion (Non-FM)

Same installation as
Tension Mullion



Mullion and Embed Reference

Refer to Approved for Construction Drawings for exact height and length dimensions.



MULLION ANCHOR TORQUE RATINGS:
 POST-INSTALLED THREAD INSERTS: 100 FT-LB
 EMBEDDED MULLION RECEIVER: 89 FT-LB

EMBEDDED MULLION RECEIVER HARDWARE			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	512343	FP;HW TENSION ASSY-ALUM	1
2	513074	FP;SBP H.W. TENSION EMBED ASSY	1
3	512347	FP;HW TENSION TIE PLATE PCG	1
4	511812	TURNBUCKLE;JAW-JAW44 5/32"	1
5	*501941	WASHER; FLAT 3/4"x1-15/32"ZN	4
6	*500755	HALFEN TBOLT 3/4"x4" W/NUT GAL	4

*Unless otherwise specified on Approved for Construction Drawings.

EMBEDDED MULLION RECEIVER HARDWARE			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	510191	FP;TENSION MULLION ASSY	1
2	512949	FP;SBP TENSION EMBED ASSY	1
3	510921	FP;TENSION TIE PLATE PCG	1
4	510172	FP; TURNBUCKLE, JAW 1"X 8	1
5	*501941	WASHER; FLAT 3/4"x1-15/32"ZN	4
6	*500755	HALFEN TBOLT 3/4"x4" W/NUT GAL	4

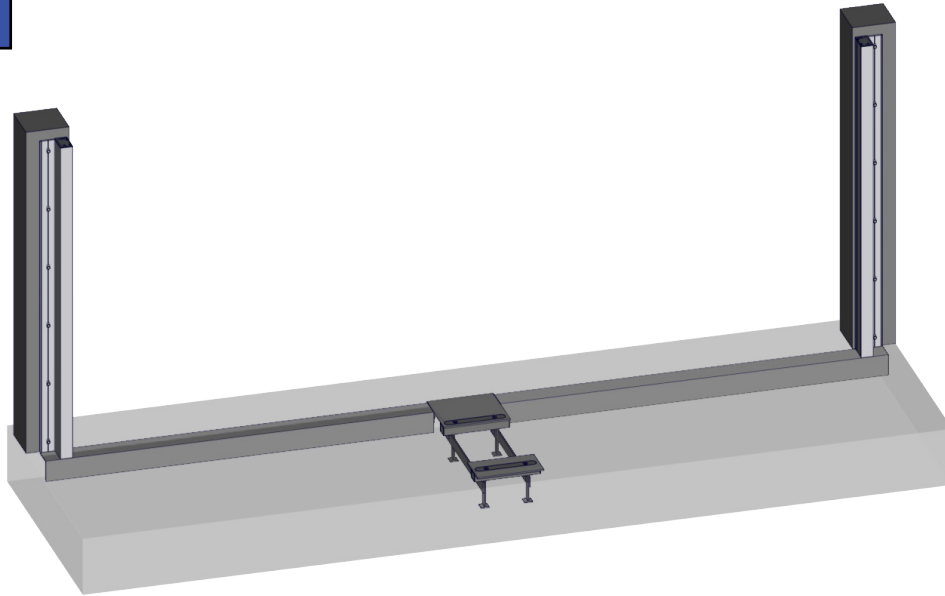
*Unless otherwise specified on Approved for Construction Drawings.

Mullion Installation

High Water Tension/Tension

STEP 1. Clean off debris in and around mounting surface (embedded mullion receiver) to ensure good gasket seal.

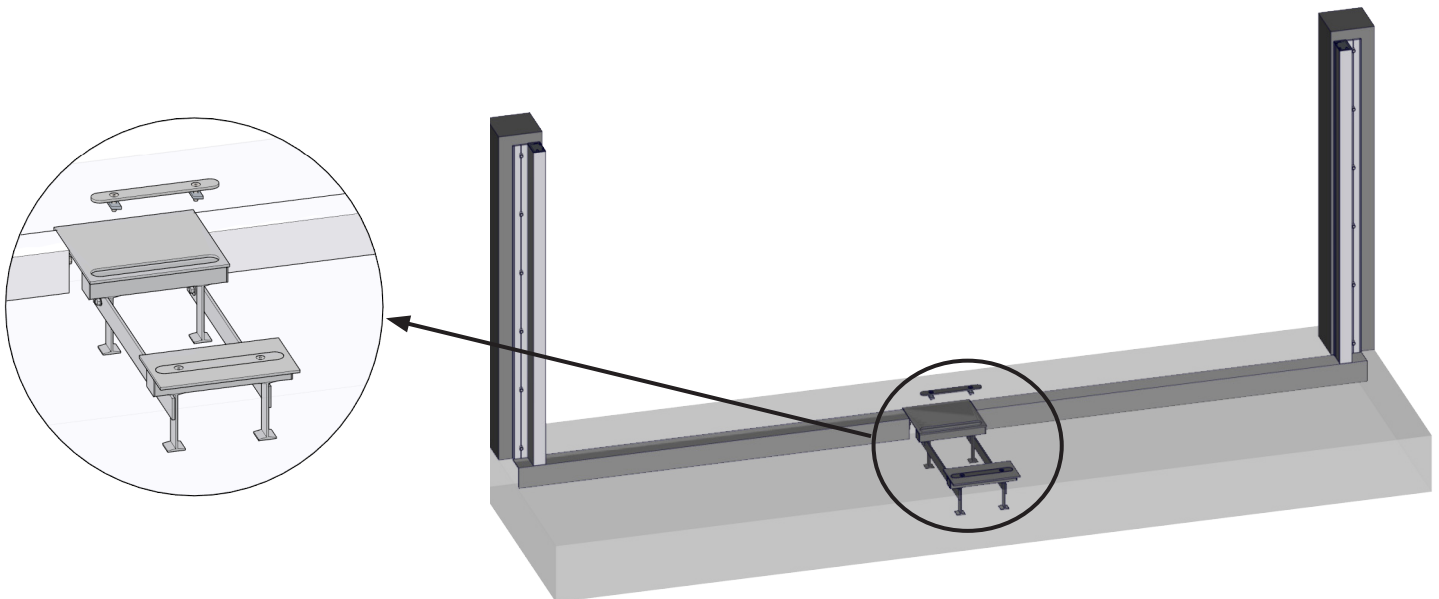
Step 1 Illustration



STEP 2. Remove channel cover plates with $\frac{7}{32}$ " Allen Wrench.

Step 2 Illustration A

Step 2 Illustration B



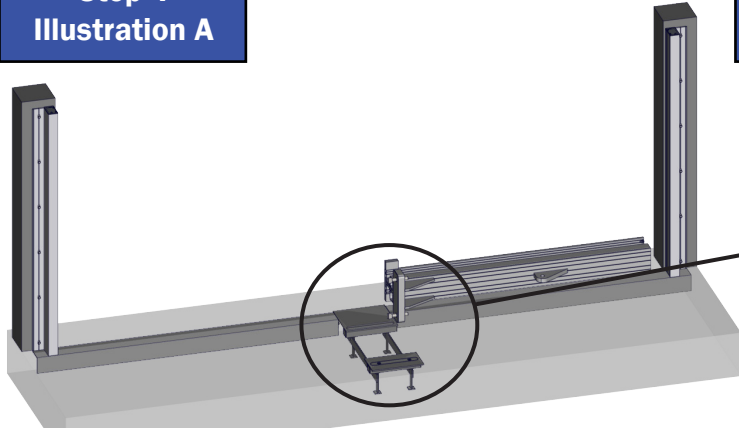
STEP 3. Remove any water and debris collected inside Halfen channel.

Mullion Installation

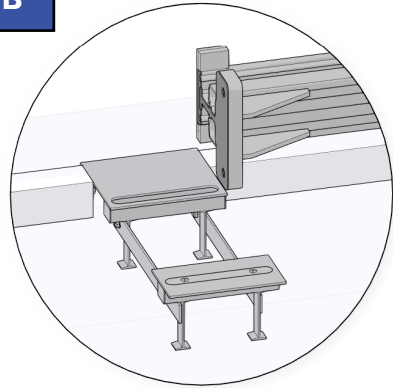
High Water Tension/Tension

STEP 4. Lay mullion on his side next to the mounting area.

**Step 4
Illustration A**

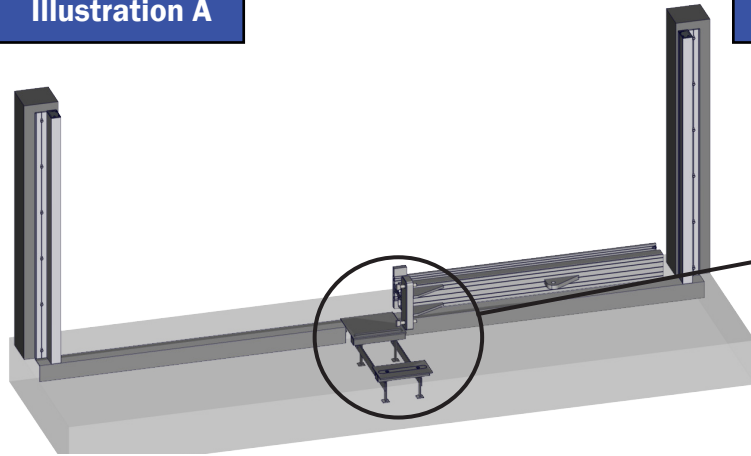


**Step 4
Illustration B**

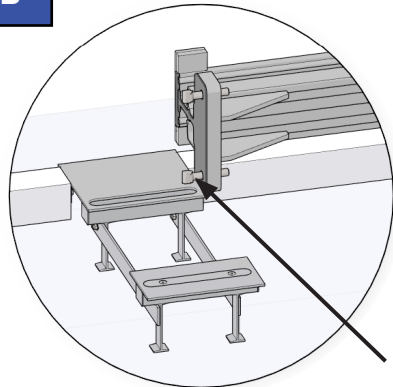


STEP 5. Insert T-Bolts in bottom of mullion baseplate and loosely thread on nuts.

**Step 5
Illustration A**



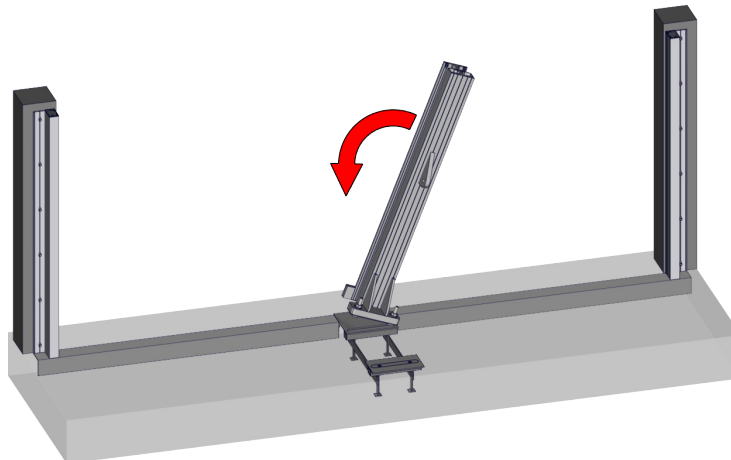
**Step 5
Illustration B**



STEP 6. Line T-Bolts up with channels and tip mullion into place.

Centering it on the embedded mullion receiver, making sure not to tear bottom gasket when installing.

**Step 6
Illustration**



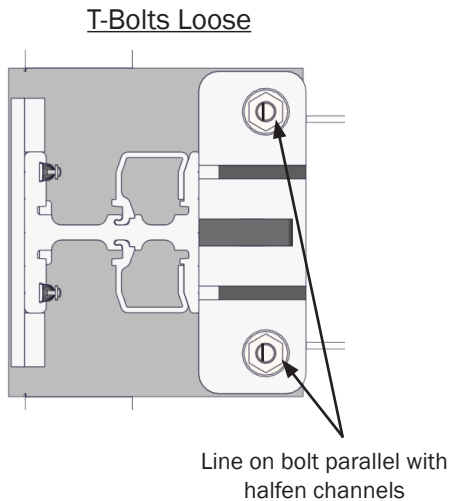
Mullion Installation

High Water Tension/Tension

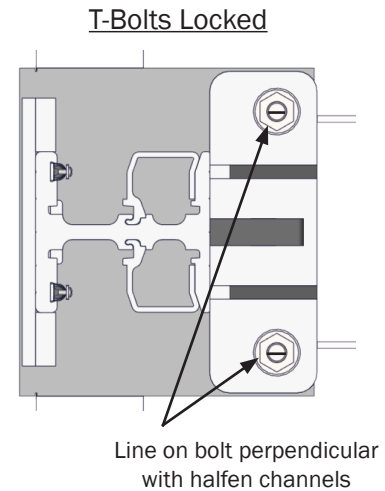
STEP 7.

- Spin T-Bolts until line on the bolt is perpendicular to the Halfen channel.
- Tighten nuts on Embeds to 89 ft-lbs Unless otherwise specified on Approved for Construction Drawings and/or inside optional Calculations packet.

Step 7 Illustration A



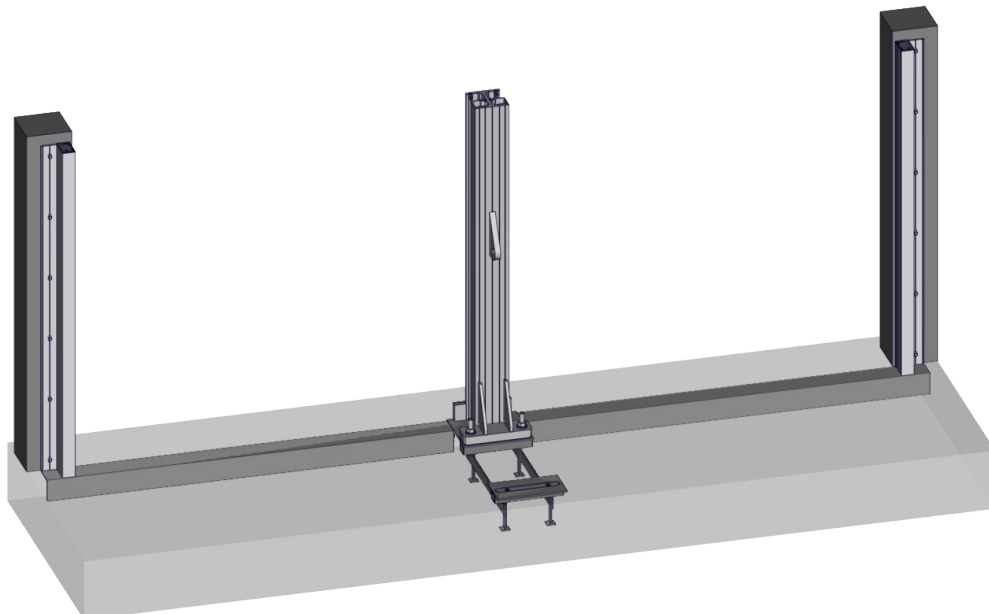
Step 7 Illustration B



STEP 8. After proper Tension Mullion installation.

- Clean off debris in and around mounting surface (embedded mullion receiver) to ensure good gasket seal.

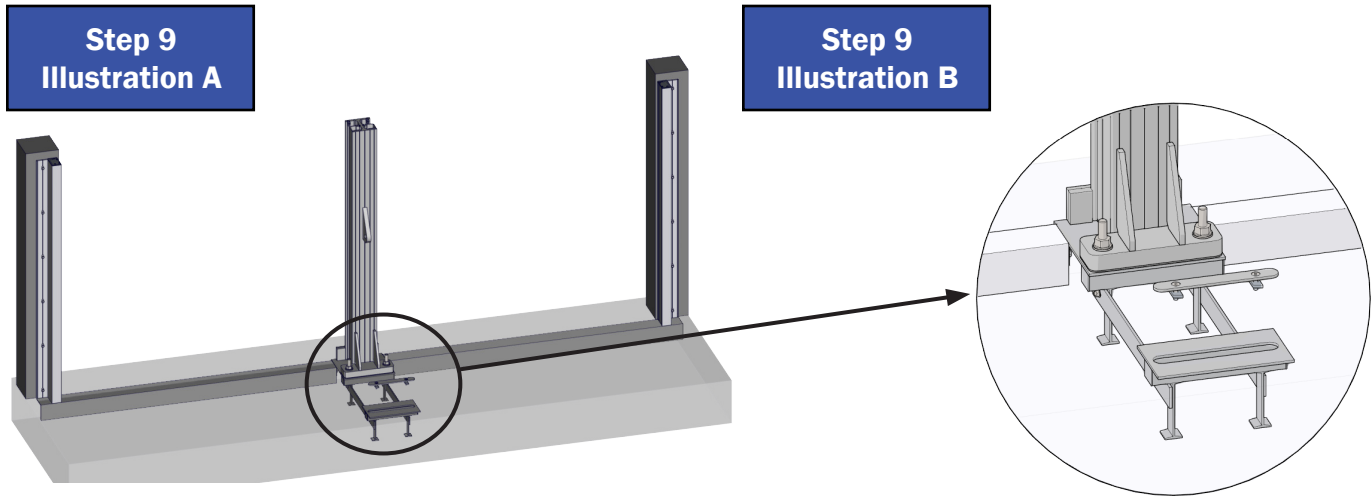
Step 8 Illustration



Mullion Installation

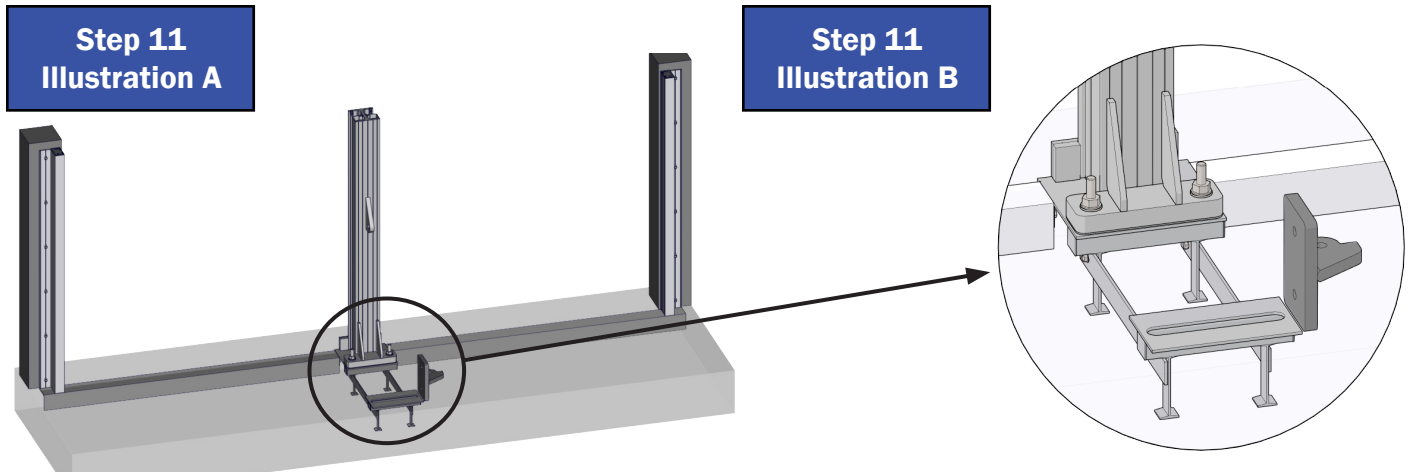
High Water Tension/Tension

STEP 9. Remove channel cover plate with $7/32$ " Allen Wrench.

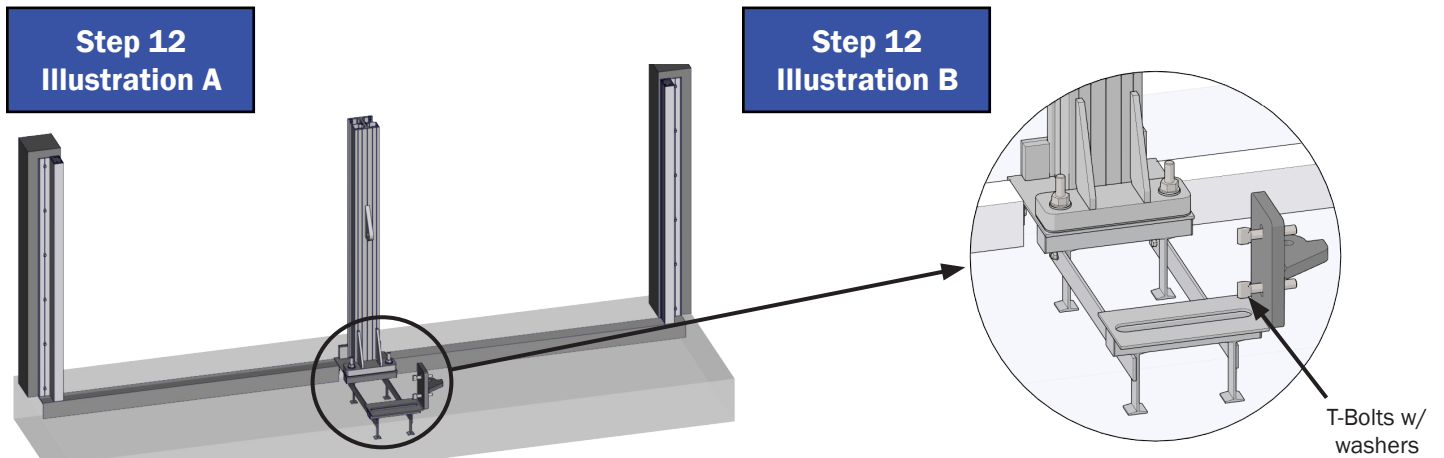


STEP 10. Remove any water and debris collected inside halfen channel.

STEP 11. Lay Turnbuckle Mount Plate on his side next to the mounting area.



STEP 12. Insert T-Bolts in bottom of Turnbuckle mount plate and loosely thread on nuts.

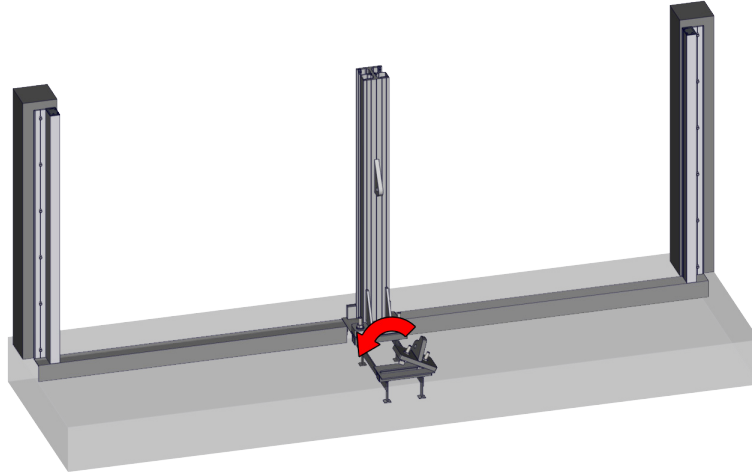


Mullion Installation

High Water Tension/Tension

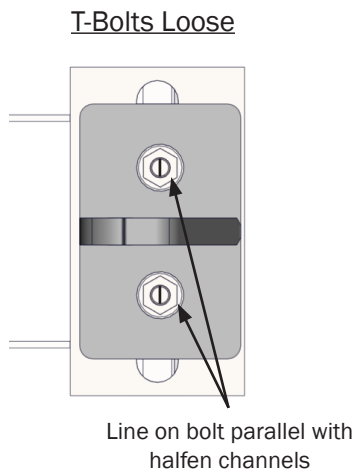
STEP 13. Line T-Bolts up with channels and tip turnbuckle mounting plate into place
 a. Centering it on the embedded mullion receiver.

**Step 13
Illustration**

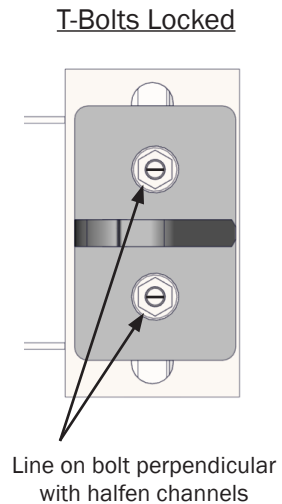


STEP 14.
 a. Spin T-Bolts until line on the bolt is perpendicular to the Halfen channel.
 b. Tighten nuts on Halfen Embeds to 89 ft-lbs Unless otherwise specified on Approved for Construction Drawings and/or inside optional Calculations packet.

**Step 14
Illustration A**



**Step 14
Illustration B**



NOTICE Do not compress gaskets during storage. Store all mullions in a way that allows gaskets to be free of contact so the gaskets do not become mis-shaped and unusable.

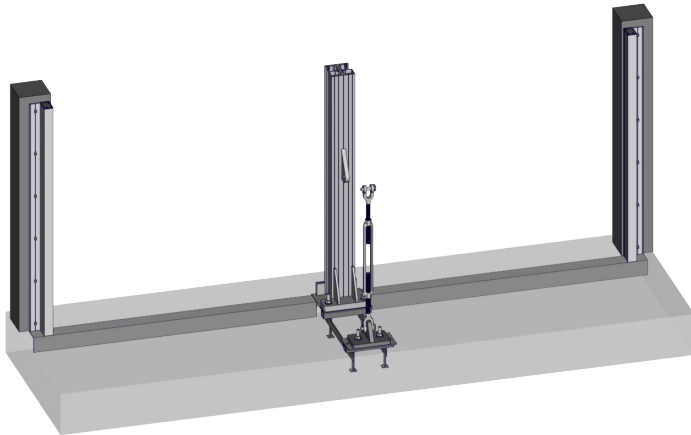
Mullion Installation

High Water Tension/Tension

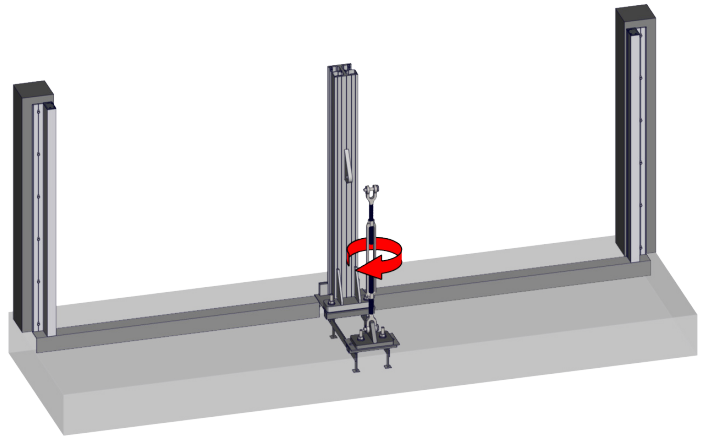
STEP 15. Attach turnbuckle to tieback mount plate

- a. Adjust until it can be attached to mounting tab on mullion (*Cotter pins required to be installed*).

Step 15
Illustration A



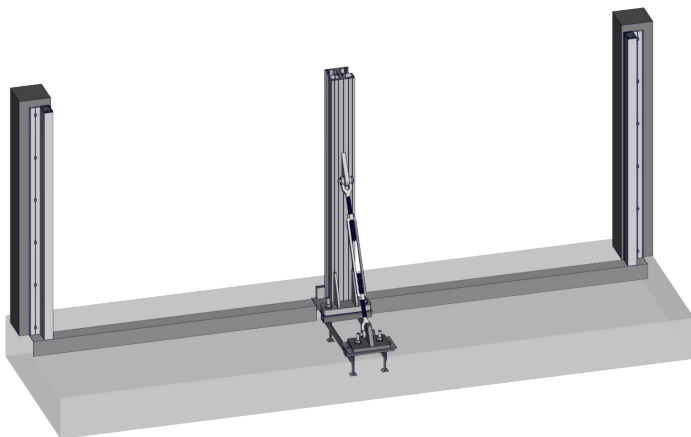
Step 15
Illustration B



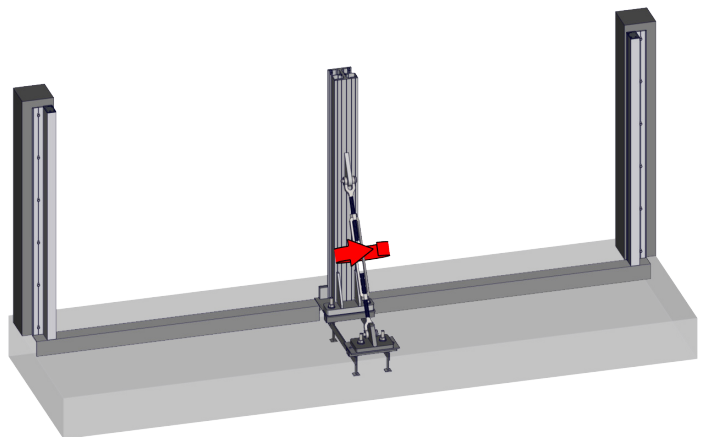
STEP 16. Tighten turnbuckle until snug, making sure to not over-tighten.

- a. Ensure gaskets do not pull off floor on dry-side of mullion.

Step 16
Illustration A



Step 16
Illustration B



STEP 17. Continue with Flood Plank Deployment - Found on Page 30.

Mullion Installation

Post-Installed Thread Inserts

XIV. Hilti Installation

IMPORTANT! Follow included Anchor Manufacturer's technical data manual/installation instructions for installation requirements and proper installation procedures.

STEP 1. Review all Approved for Construction drawings sent with the crated Flood Wall.

The Approved for Construction Drawings are located inside a plastic bag inside the crate. Review all installation labels prior to installation.

STEP 2. Determine sill/embed types and exact placements as called out on Approved for Construction Drawings.

All sealing surfaces must be sound, flat/level, and without blemish for best performance.

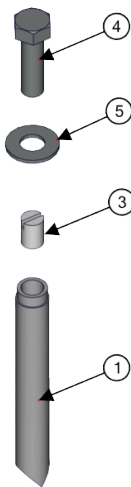
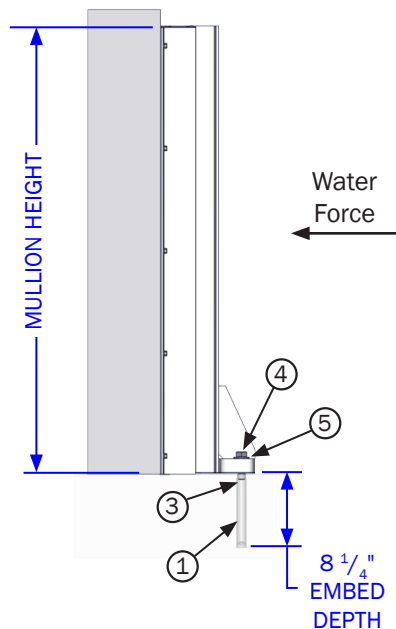
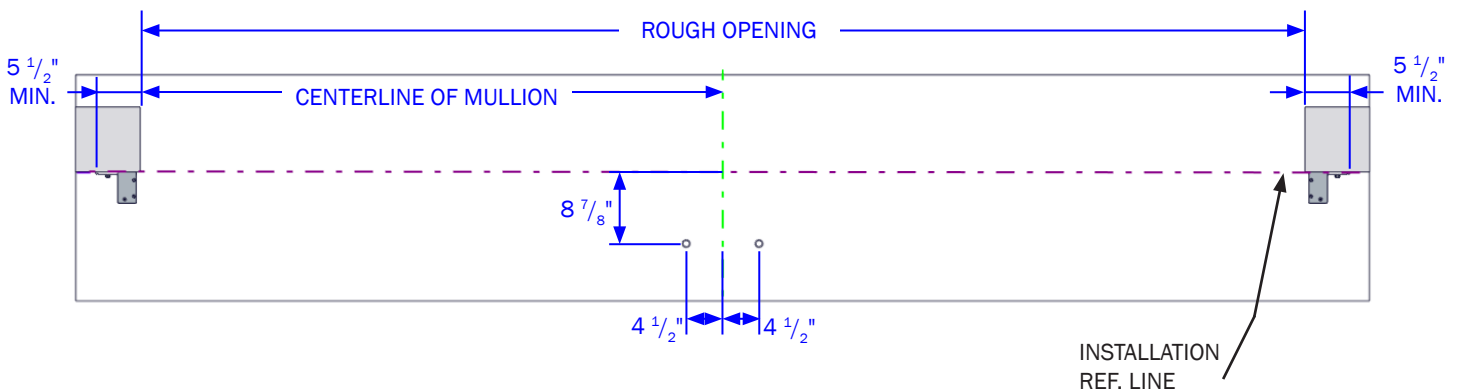
Permissible tolerance is +/- 1/16" per 10 foot length.

STEP 3. Locate Installation Reference Line and mark embedded mullion receiver locations on concrete surface, as detailed on **Post-Installed Thread Inserts Install Reference**.

Required Anchor edge distances specified in Approved for Construction Drawings.

Flood Wall Install Reference

Refer to Approved for Construction Drawings for exact dimensions.



POST-INSTALLED THREAD INSERTS INFO:

- MIN. 3000 PSI CONCRETE
- 14" MIN. CONCRETE THICKNESS
- 18" MIN. EDGE DISTANCE (SIDES)
- 13" MIN. EDGE DISTANCE (WET SIDE)
- 13" MIN. EDGE DISTANCE (DRY SIDE)

POST-INSTALLED THREAD INSERTS HARDWARE			
BALLOON	PART #	DESCRIPTION	QUANTITY
1	511818	ANCHOR;HILTI HIS-RN 3/4"-8 1/4"	2
2	512348	EPOXY;HYBRID HY 200-R 16.9 OZ	1
3	512415	SCREW;SET 3/4"-10 X 1" NYLON	2
4	509441	BOLT;HEX3/4"10X2 1/2GR5ZN	2
5	501941	WASHER; FLAT 3/4"x1-15/32"ZN	2

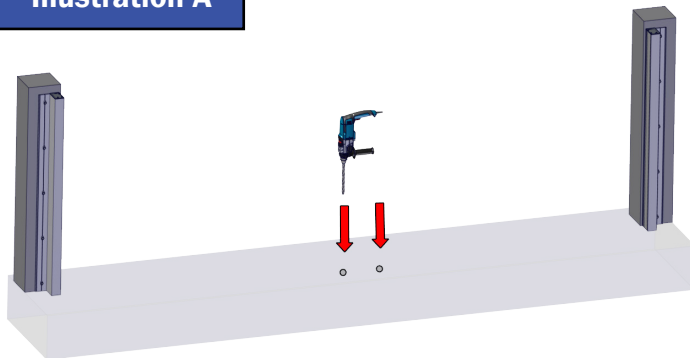
*Unless otherwise specified on Approved for Construction Drawings. Post-Installed Thread Insert Hardware is based upon sub-floor material.

Mullion Installation

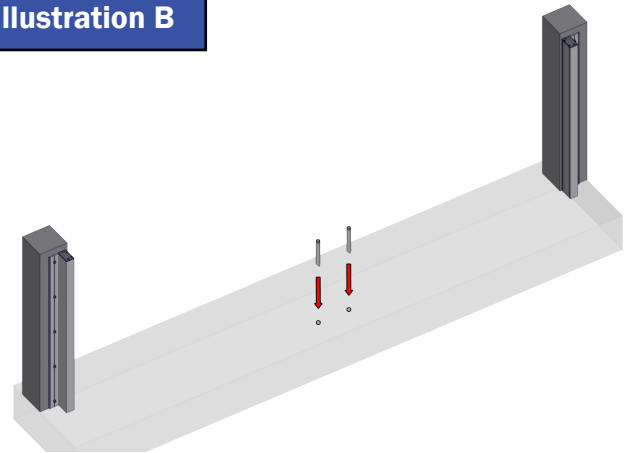
Post-Installed Thread Inserts

- STEP 4.** Installation of internally threaded anchors Refer to included anchor manufacturer's technical manual.
- Drill holes; drill bit diameter as required per included anchor manufacturer's technical manual. Remove all dust and debris from the anchor holes.
 - Fill anchor holes with supplied anchor epoxy before inserting post-installed threaded inserts. Nylon set screws (not shown) are provided for inserts when Mullions are not in use.
 - Clean-up excess anchor epoxy.

**Step 4
Illustration A**

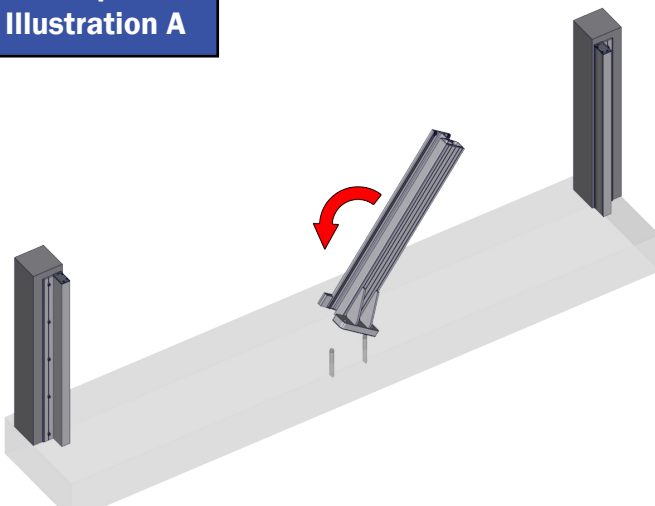


**Step 4
Illustration B**

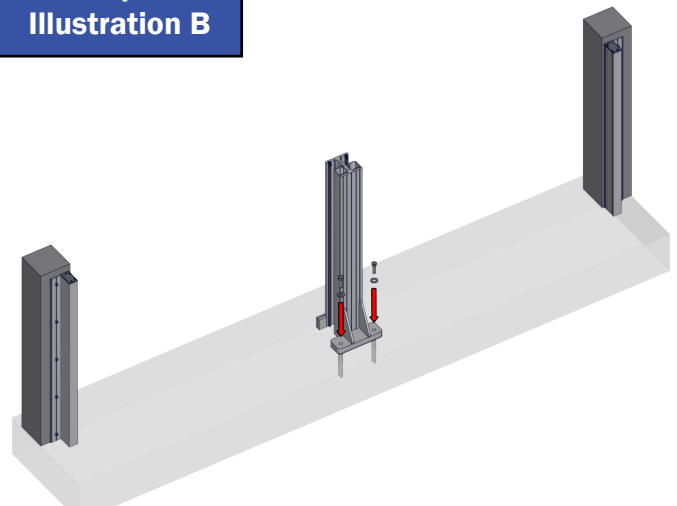


- STEP 5.** Set Mullion in place, referencing Installation Reference Line as specified in Approved for Construction Drawings. Completely thread-in supplied bolts through mullion base plate into post-installed thread inserts.

**Step 5
Illustration A**



**Step 5
Illustration B**



IMPORTANT! Let epoxy fully set before proceeding; required time as specified per included anchor manufacturer's technical manual.

NOTICE PS Flood Barriers recommends completing installation steps fully, testing, and completing a Training Drill for activation prior to storage of Removable Flood Wall.

Flood Plank Installation

Deployment

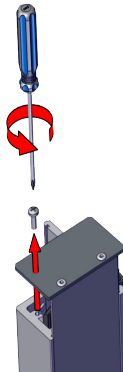
XV. Plank Deployment Procedure

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

NOTE: Conduct Inspection and Maintenance activities as described in this Operation and Maintenance Manual, at a minimum, annually and seasonally if seasonal flood conditions exist, prior to the flood season. This may require the replacement of gaskets, sealants, anchors, and accounting for all of the latching devices.

STEP 1. Remove cover assembly from jambs.

Step 1 Illustration

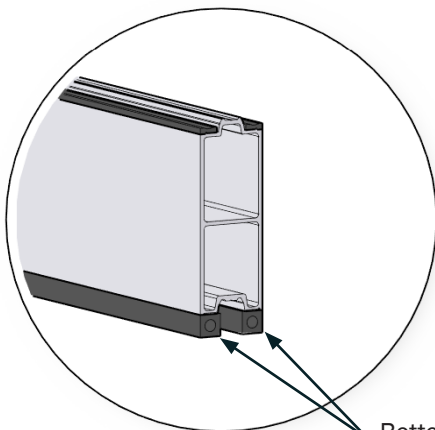


STEP 2. Lube Jamb Seals (recommended to allow flood plank to slide more easily into the jambs)
 a. Using a spray bottle filled with a water-dish soap mixture. This may need to be repeated as planks are placed in the jamb. Keep jamb gaskets moist during Flood Plank Deployment.

STEP 3. Remove all debris from sill/gasket sealing surface.

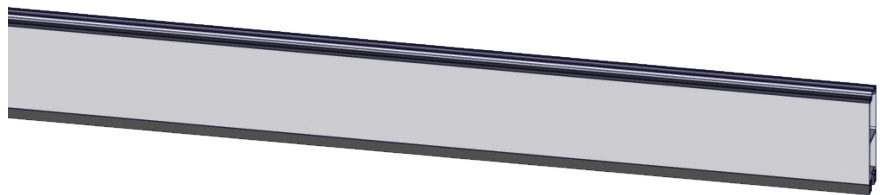
STEP 4. The bottom plank is unique and must be installed first.
 a. Locate the flood plank that is labeled "bottom" flood plank, as shown in Illustration A. The ends of the gaskets have two thick (1") gaskets mounted to the bottom of the plank.

Step 4 Illustration A



Bottom Plank:
1" Gaskets on Bottom

Step 4 Illustration B



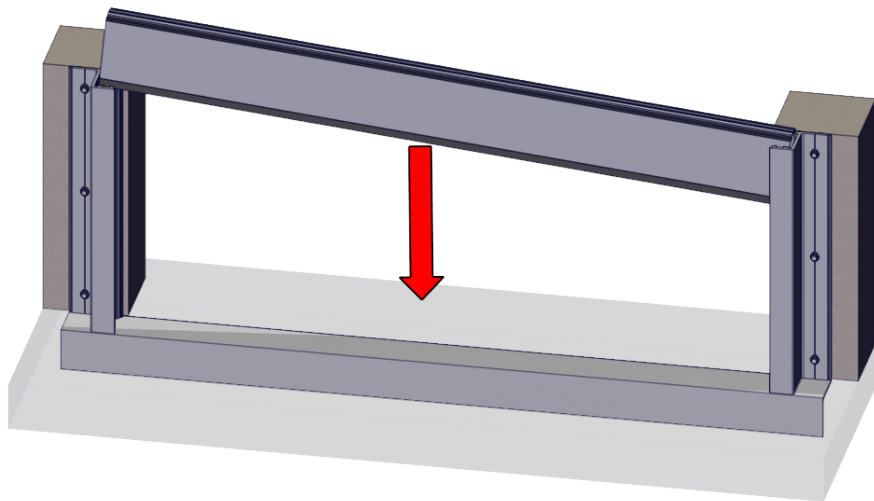
Flood Plank Installation

Deployment

STEP 5. Installation of bottom plank.

- Place one corner of the bottom plank into the bottom corner of the jamb.
- Angle the opposite end of the plank upward until it clears the opposite jamb.
- Slide into the jamb, taking care to not tear the jamb gasket.
- Level plank and slide down to sill/gasket sealing surface.
- Center plank evenly between jambs, ensuring plank fully overlaps the jamb gasket.

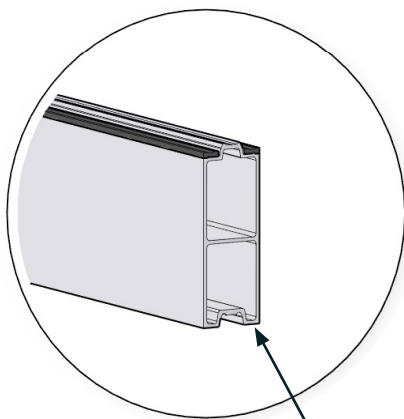
Step 5 Illustration



STEP 6. Install intermediate planks in the same manner as the bottom plank, ensuring contact with plank below.

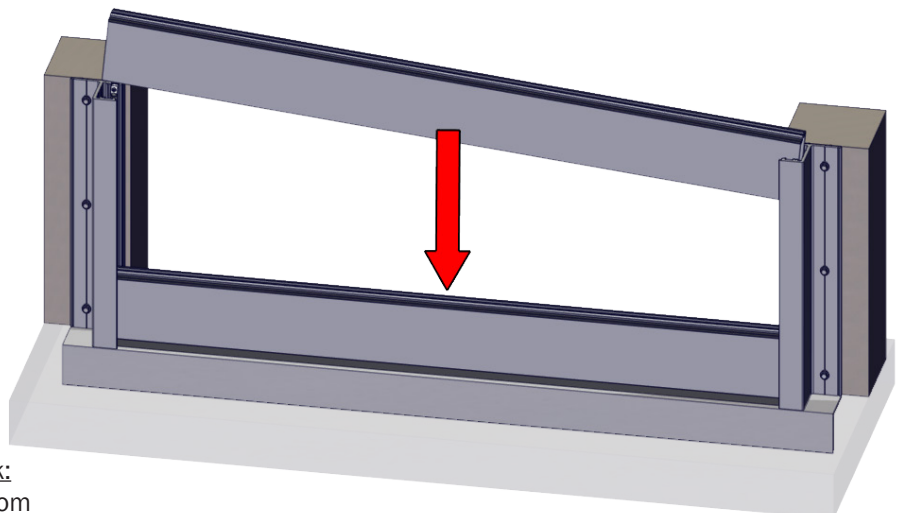
- Ensure each additional plank is fully seated onto the plank below by inspecting for continuous and uniform plank gasket contact between planks. If this is not achieved; remove and re-install the plank before installing subsequent planks.

Step 6 Illustration A



Intermediate Plank:
No Gasket on Bottom

Step 6 Illustration B



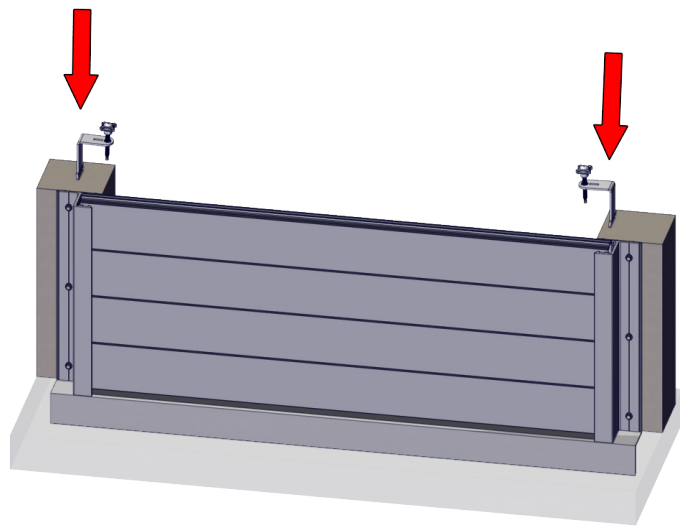
Flood Plank Installation

Deployment

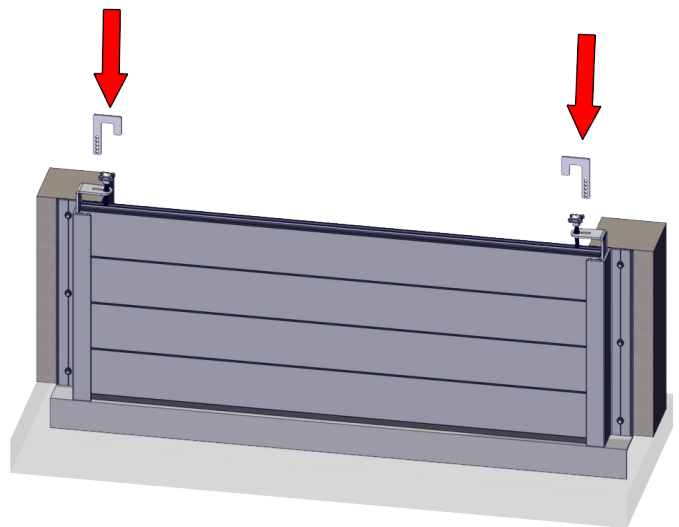
STEP 7. Install latching, making certain to tighten both latch sides evenly to compress planks uniformly. Refer to your Approved for Construction Drawings to determine the type of latching supplied for your Flood Plank Barrier.

NOTICE Use of supplied Plank Latch Lock is optional, recommended in locations where tampering of Flood Plank Barrier is prevalent. (Shown in Illustration D and Illustration E)

**Step 7
Illustration A**

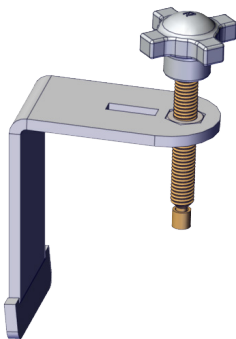


**Step 7
Illustration B**

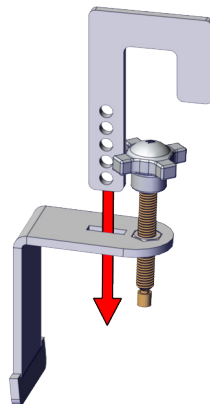


NOTE: PS Flood Barriers requires tightening the Latch Spin Knob to a torque of 40 in-lbs for proper plank gasket compression. *Torque wrench supplied by others, NOT PS Flood Barriers.

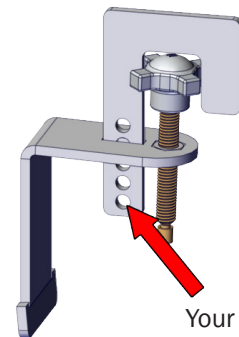
**Step 7
Illustration C**



**Step 7
Illustration D**



**Step 7
Illustration E**



Your Padlock in highest hole below latch.

Flood Plank Installation

Removal

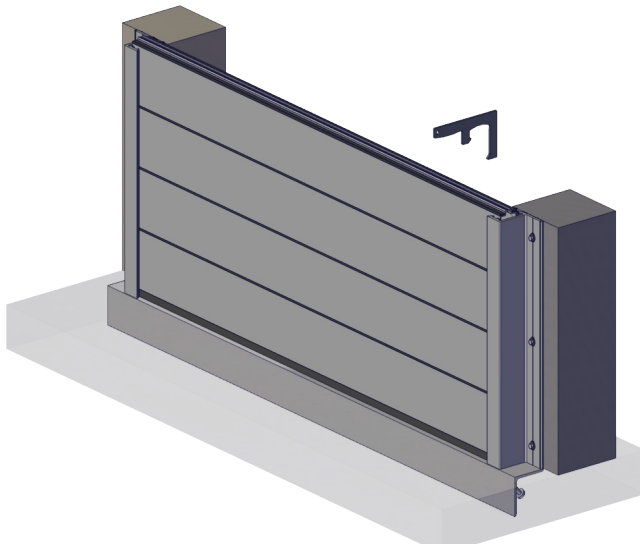
XVI. Plank Removal Procedure

NOTICE Operation in a manner other than intended could result in damage or less than acceptable performance at time of need for which the manufacturer will not be held responsible.

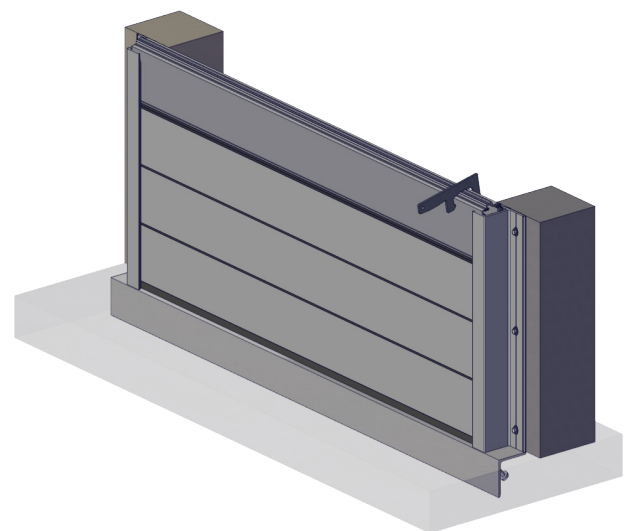
NOTE: *Inspect all components of Flood Plank Barrier before storage, making sure to properly clean and remove contaminants. Contact PS Flood Barriers at 877-446-1519 for purchase of replacement components, if necessary.*

- STEP 1.** If planks have been deployed for an extended period of time, spray/hose water to moisten plank/jamb gaskets prior to removal.
- Place plank removal tool on the top plank, shown in Illustration A.
 - Rock back and forth until plank is released from the plank below, shown in Illustration B.
 - Remove plank, taking care not to damage jamb gasket

Step 1
Illustration A



Step 1
Illustration B



STEP 2. Repeat Step 1 for all remaining planks.

STEP 3. Inspect all gaskets for damage, continuous adhesion to the attached surface, and proper position and compression before storage.

CRITICAL Do not compress gaskets during storage. Store all planks in a way that allows gaskets to be free of contact so the gaskets do not become mis-shaped and unusable.

Inspection and Maintenance

XVII. Inspection and Maintenance (Minimum Annually)

A. Sills, and Embedded items:

1. Inspect items for damage and misalignment. Adjust, repair, or replace as needed, to meet original design tolerances.
2. Check all connections, making sure they meet original design standards (refer to Approved for Construction Drawings and Anchor Specifications).

B. Fasteners and mechanical connections:

1. All fasteners must be in place and adjusted to their original design standards. Replace any damaged components (refer to Approved for Construction Drawings and Anchor Specifications).

C. Sealants and Waterstops:

1. Inspect all sealants used on jambs and connections to insure their effectiveness.
2. Replace any cracked, loose, or otherwise non-performing sealants.
3. Use only factory approved/supplied products.
 - a. Permanent Jamb factory approved sealant/waterstops: Sika; Sikaflex-227, Quellpaste Typ E
 - b. Removable Jamb factory approved sealant/waterstop: Red Devil, Inc.; Zip-a-Way Removable Sealant

D. Gasketing:

1. Inspect all gaskets for damage, continuous adhesion to the attached surface, and proper positioning and compression.
 - a. Inspect all plank gaskets.
 - b. Inspect all jamb gaskets as required.
2. Replace or repair if damage or deterioration to gaskets has occurred.
3. Use only factory approved materials (refer to Approved for Construction Drawings).

E. Latching:

1. Operate all latching hardware to ensure smooth, uninhibited movement of all mechanical components.
2. Place flood barrier and check latches for proper engagement. If gaskets are not properly positioned and properly compressed, unlatch barrier panel and adjust latching accordingly.

F. Finishes:

1. Inspect and clean finishes annually.
2. Touch-up repair finishes, or refinish as necessary to protect the structural integrity of the Flood Plank Barrier.

G. Labels and Placards:

1. Inspect all labels and placards.
2. Replace any labels and placards which are unreadable/missing.

H. Housekeeping:

1. Clean sill and jamb of any debris and keep the area clean throughout Flood Plank Barrier opening.

PS FLOOD BARRIER WARRANTY REGISTRATION FORM

PS Flood Barriers™ Product Warranty Registration: For PS Flood Barriers™ Products, the Limited Warranty will only be valid if the Owner completes, and returns, this PS Flood Barrier Warranty Registration Form within thirty (30) days of Product installation.

To request additional copies of the Warranty Registration Form, contact PS INDUSTRIES INCORPORATED, 1150 S. 48th Street, Grand Forks, ND 58201, phone 877-446-1519, email: 4psinfo@psindustries.com. For a fillable form, download a copy from www.psfloodbarriers.com/download-center/

The following information is required:

Owner Name: _____ Product Name: Flood Wall

Company: _____ Model: FP-530

Address: _____ Serial Number: _____

State/Provence: _____ Date Installed: _____

Zip/Postal Code: _____

Country: _____

Although testing of flood barriers is not required, PS INDUSTRIES INCORPORATED recommends testing flood barriers after installation to verify the suitability of the installation and ensure proper adjustment of flood barrier for optimum performance.

The following information and signatures are required to ensure warranty coverage of installed product.

- Was the flood barrier field tested after installation? Yes No
- If tested, which type(s) of testing was conducted?
 - Hose Test per PS Flood Barriers testing procedure.
 - Hydrostatic Test per PS Flood Barriers testing procedure.
 - Other Testing Method (*describe below*):

Owner or Installer Name (Please print.)

Test Witness Name (Please print.)

Signature

Signature

Date

Date

Return form to:

PS Flood Barriers
Attention: Warranty
1150 S. 48th Street
Grand Forks, ND 58201

Fax: 701-746-8340
E-mail: 4psinfo@psindustries.com

(Make additional copies as necessary)



877.446.1519

4psinfo@psindustries.com | psfloodbarriers.com

1150 South 48th Street | Grand Forks, ND 58201