



RIDG-U-RAK®
STORAGE SYSTEMS

A GENERAL INSTALLATION GUIDE FOR
RIDG-U-RAK
PUSH-BACK STORAGE RACK SYSTEMS



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IMPORTANT INFORMATION

- **This Ridg-U-Rak Push-Back rack installation guide document supersedes any previously published Ridg-U-Rak Push-Back rack installation guides.**
- **All Ridg-U-Rak storage racks must be installed by trained professionals experienced with proper installation procedures. Installation personnel must also read and understand these installation guidelines. Ridg-U-Rak explicitly disclaims any responsibility for damage or injuries resulting from interpretation or use of this installation guide.**
- **Do not install racks outdoors, unless specifically designed by Ridg-U-Rak for such an application and environment.**
- **All Ridg-U-Rak racks must be installed on a concrete floor. The floor must be structurally adequate to support the storage rack design loads and able to accept the installation of anchors. Ridg-U-Rak accepts no responsibility or liability for the floor design or performance. The floor should be level so that a plumb installation of the rack can be achieved. If the floor is not level and has a slope, contact Ridg-U-Rak immediately and DO NOT start the installation.**
- **Never mix Ridg-U-Rak product with product from other manufacturers or used racking in the same installation unless specifically designed and approved by Ridg-U-Rak.**
- **Push-Back storage rack is not designed for use as scaffolding or for any type of human support. Never climb on the rack at any time. It is the installer's responsibility to meet current OSHA requirements for personal fall arrest.**
- **Never cut, weld, or modify any rack component during installation unless approved and specified in writing by Ridg-U-Rak engineering.**
- **Never install damaged or compromised rack components.**
- **Never leave an unanchored rack unattended.**

I. INTRODUCTION

- This document is a procedural guide only and is intended to be used as a reference for installing a new Ridg-U-Rak Push-Back storage rack system. This guide is not a guideline for removal or demolition of existing racking systems. Due to the numerous types of storage rack systems, the installer must thoroughly review this guide and all instructions, bills of material, and Ridg-U-Rak installation drawings prior to starting. By doing so, you will provide yourself with a basic understanding on how to install a Ridg-U-Rak storage system. Some rack system designs may be unique, driven by a variety of factors. Understanding these differences is critical in determining the best procedure for erecting the system. A well-executed and properly installed system will ultimately depend on the experience of the installation crew and how well they understand the specific system configuration and characteristics. Any questions regarding the above information should be brought to the attention of Ridg-U-Rak prior to the start of installation.

II. PRIOR TO INSTALLATION

- Ensure that all members of the installation crew are trained regarding proper installation procedures and safety protocol necessary for creating a safe working environment. Many customers enforce their own safety program and installers must also adhere to the requirements of the customer's safety program, along with any federal, state, or local guidelines.
- It is important to use the packing list provided to verify all items have been received. If provided, "Supplemental Drawing(s)" may be used to identify and locate components in the system. Do not, under any circumstances, use hardware other than that which is specified.
- Determine the installation location of the racks within the building. Completely inspect the area verifying building column locations and checking for any other types of obstructions such as piping, electrical panels, ducts, lights, doorways, etc. Building column locations should be noted, and if there are any places where aisle widths are compromised or interference with the rack system is apparent, the installer should notify the onsite contact person. Prior approval must be obtained from Ridg-U-Rak if it becomes necessary to modify the configuration of the racks in any way.
- A good installation begins with accurate and straight chalk lines to lay out the floor. Establish the correct starting point, using a tape measure and a chalk line. This reference starting point is critical as it establishes the base location for the entire grid pattern that will be used for locating the racks. Squareness of the grid pattern must be maintained.
- At no time shall a bay of rack be preassembled on the floor and then lifted into place as a complete assembly. This method may damage the rack components.

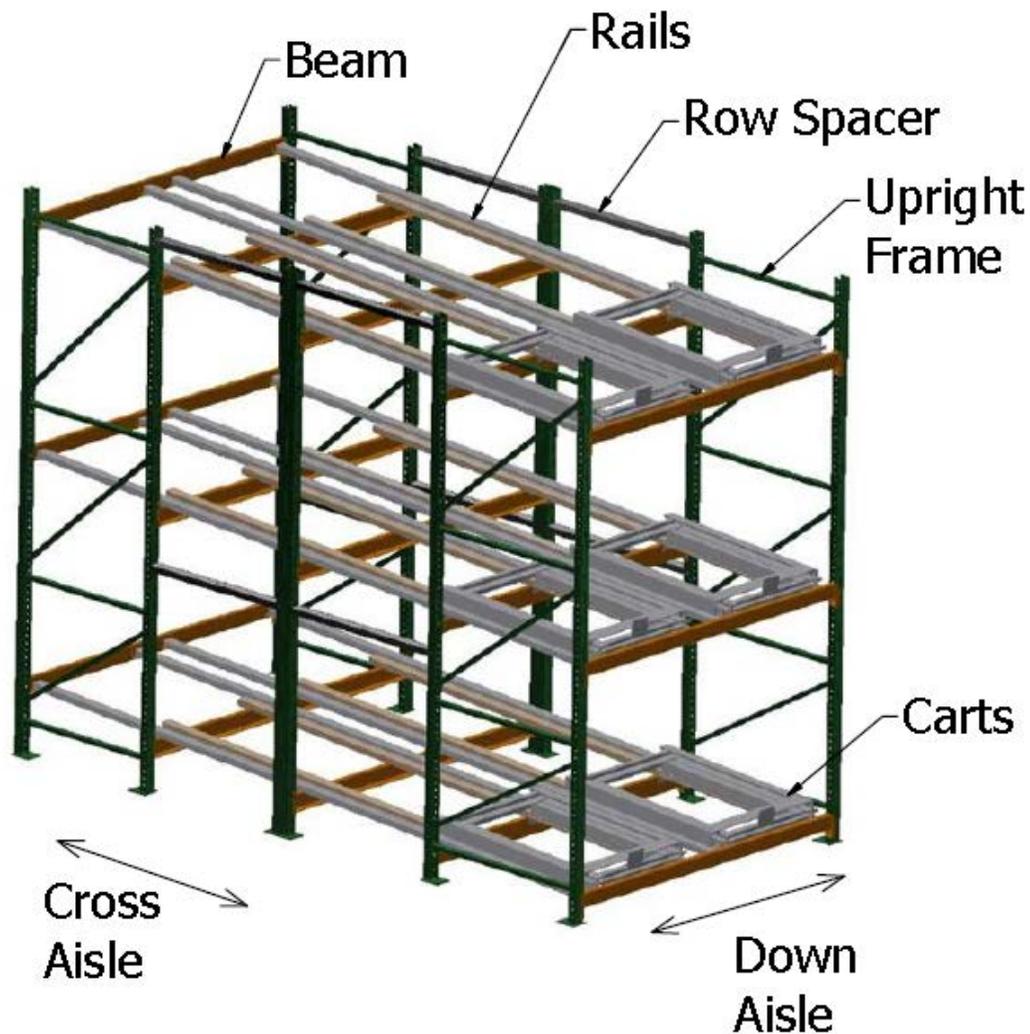
III. GENERAL DESCRIPTION OF SYSTEM

Push-Back systems are a high-density storage system, using a reversed flow in and out concept. Push-Back storage provides high density storage and accessibility. Any lane can be 100% filled from the aisle without affecting any other adjacent lanes above or below.

These storage rack systems feature multi-depth pallet storage lanes, running perpendicular to the working aisles.

Push-Back racking systems should be started with the installation of a single bay. Refer to the proper **“Rack Profile, Supplemental Drawings, and the Bill of Material,”** prepared for this particular system. The instructions herein may also contain pertinent information. Identify and gather the correct components for a single bay at this time. Be sure to check for special or optional components before initiating the installation process.

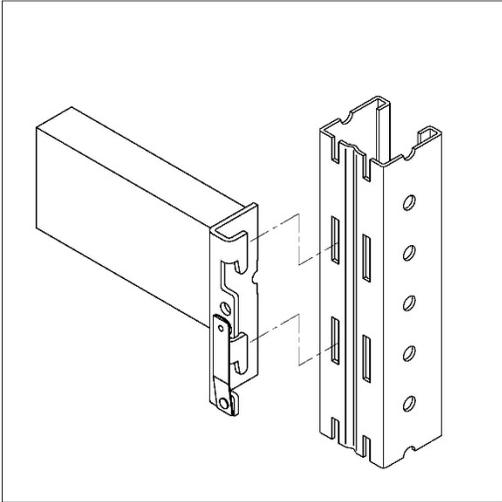
Ex. Rack Profile- See supplemental drawings provided specific to your Push-Back system.



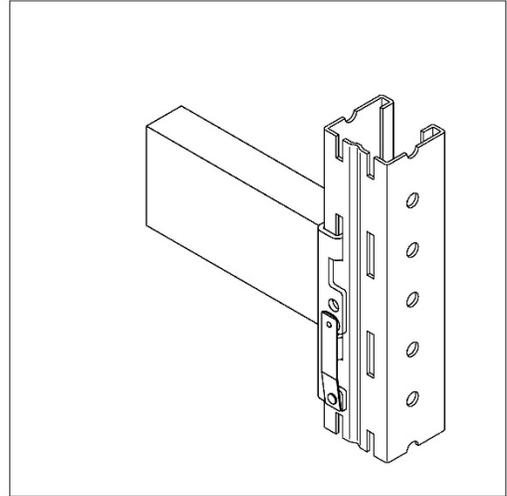
IV. PUSH-BACK COMPONENTS

BEAMS – Slotted

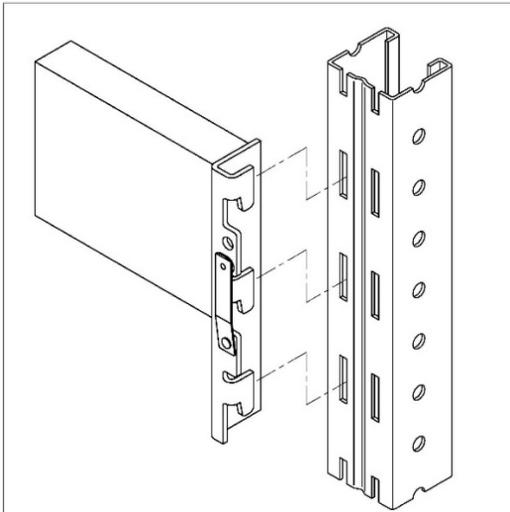
Upright and Beam with 2 Lug Hook



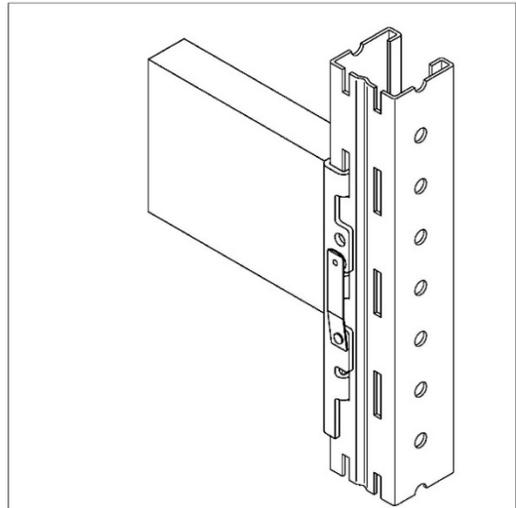
Upright and Beam with 2 Lug Hook Connected



Upright and Beam with 3 Lug Hook

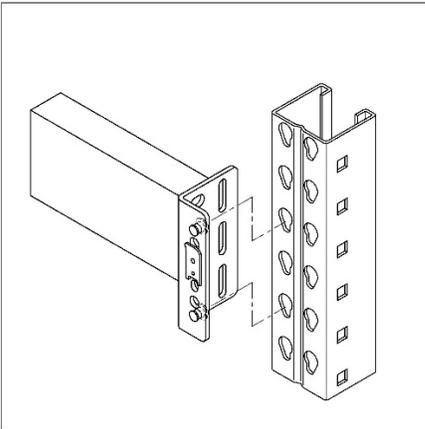


Upright and Beam with 3 Lug Hook Connected

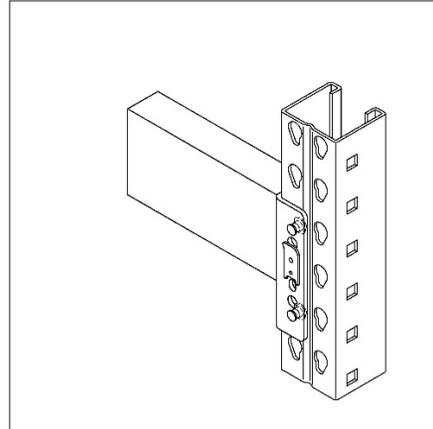


BEAMS - Tear Drop

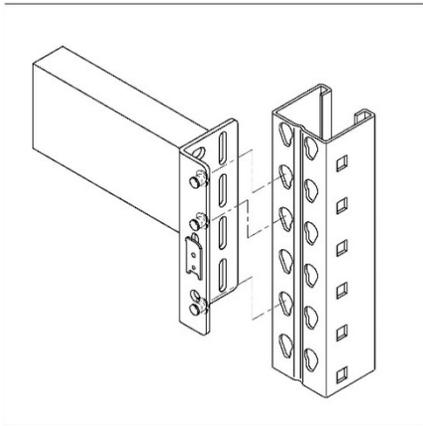
Upright and Beam with 2 Pin Connector



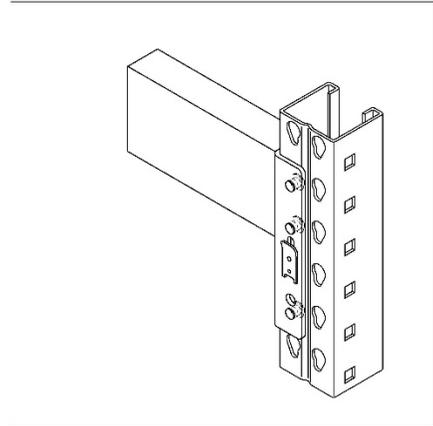
Upright and Beam with 2 Pins Connected



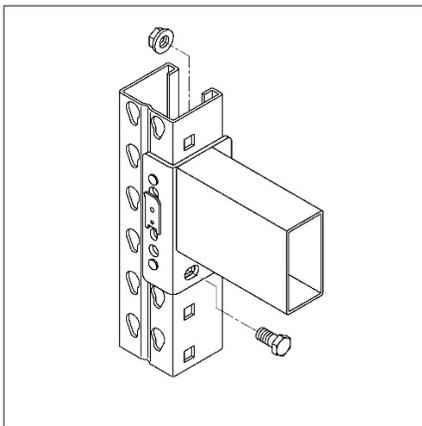
Upright and Beam with 3 Pin Connector



Upright and Beam with 3 Pins Connected



Upright and Front Beam



Upright and Front Beam Connected

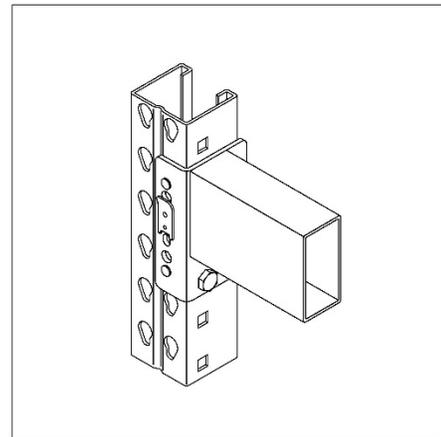


Figure 1 - 1/2"-13x1"LG Hex HD Bolt & Whiz-Lok Nuts (Torque) = 57ft.lbs

Figure 2 – Attach both ends (1 end shown)

(1 Required per Connector)

BEAMS - Bolted

Roll Form

Upright and Beam with 2 Bolt Connection

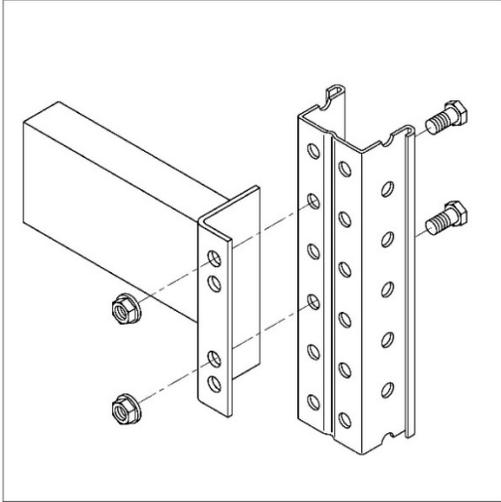


Figure 3 - (2) ½-13x1"LG Hex HD Bolt & Whiz-Lok Nuts (Torque) = 57ft.lbs

Upright and Beam with 2 Bolt Connected

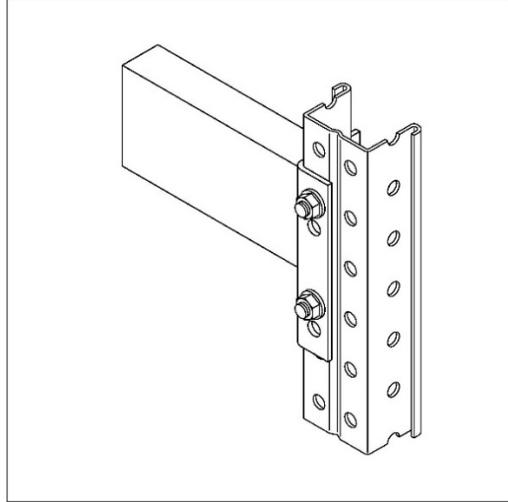


Figure 4 – Attach both ends (1 end shown)

Structural

Upright and Beam with 2 Bolt Connection

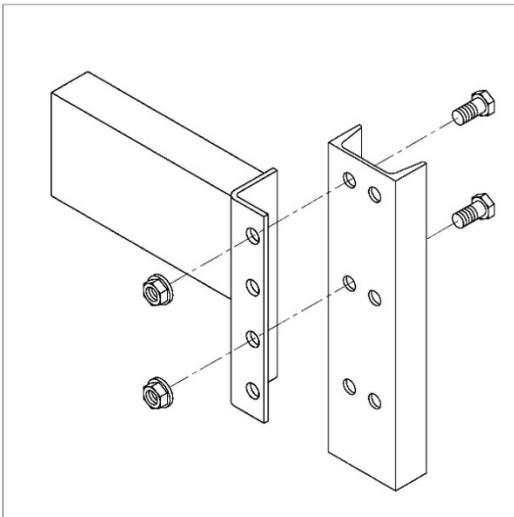


Figure 5 - (2) ½-13x1"LG Hex HD Bolt & Whiz-Lok Nuts (Torque) = 57ft.lbs

Upright and Beam with 2 Bolt Connected

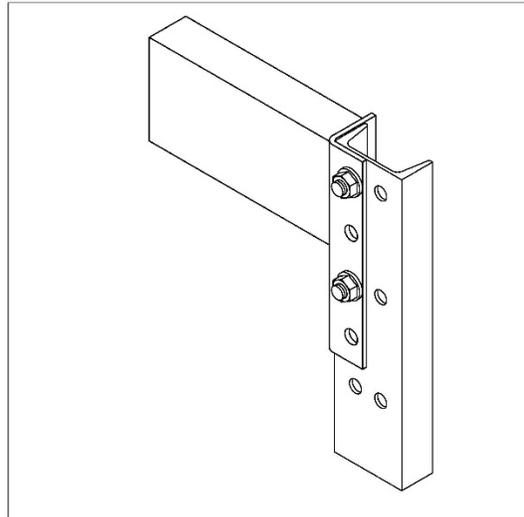
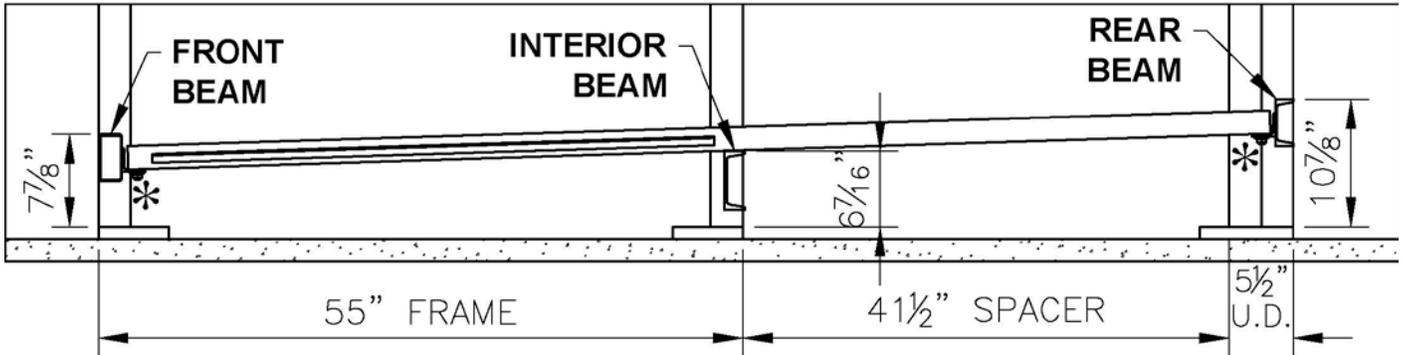


Figure 6 – Attach both ends (1 end shown)

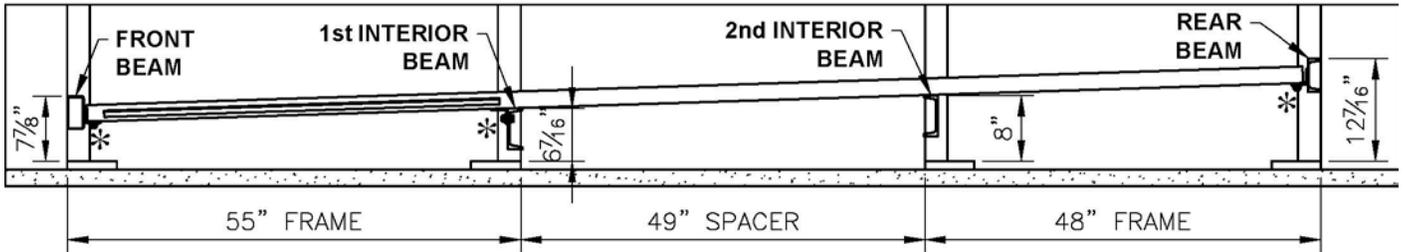
BEAM ELEVATIONS

- The elevations shown are for a standard Push-Back system. Elevations for non-standard systems will vary (see supplemental drawings). The elevation dimensions are from the top of the upright frame base plate to the top of the beam.
- A * next to a beam indicates that the Push-Back rail is attached to that beam.

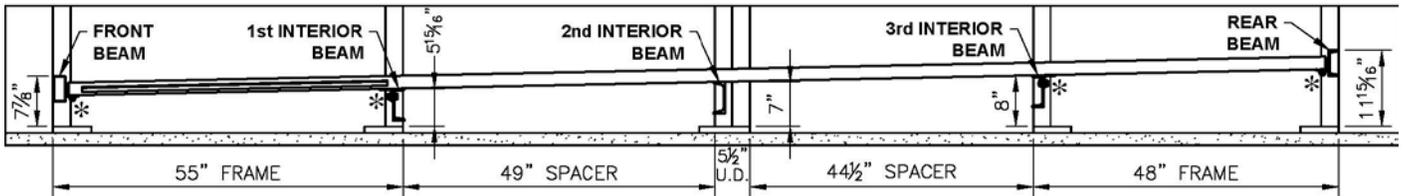
2 Deep System



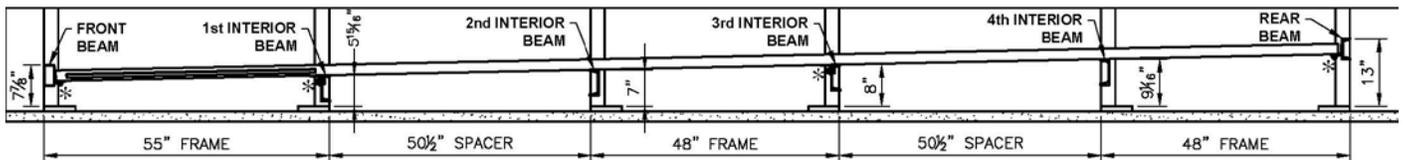
3 Deep System



4 Deep System



5 Deep System



TIE RODS

- Tie Rods are only used on 5-Deep double wide systems.
- Tie Rods go under the Push-Back rails.

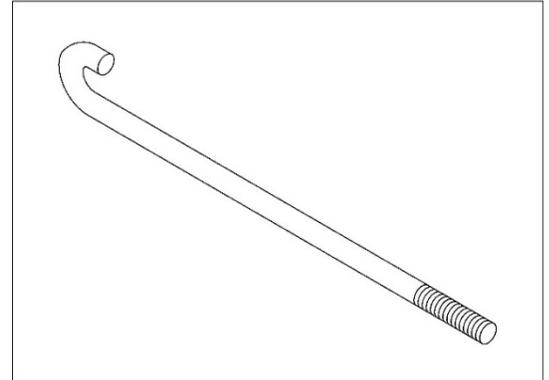
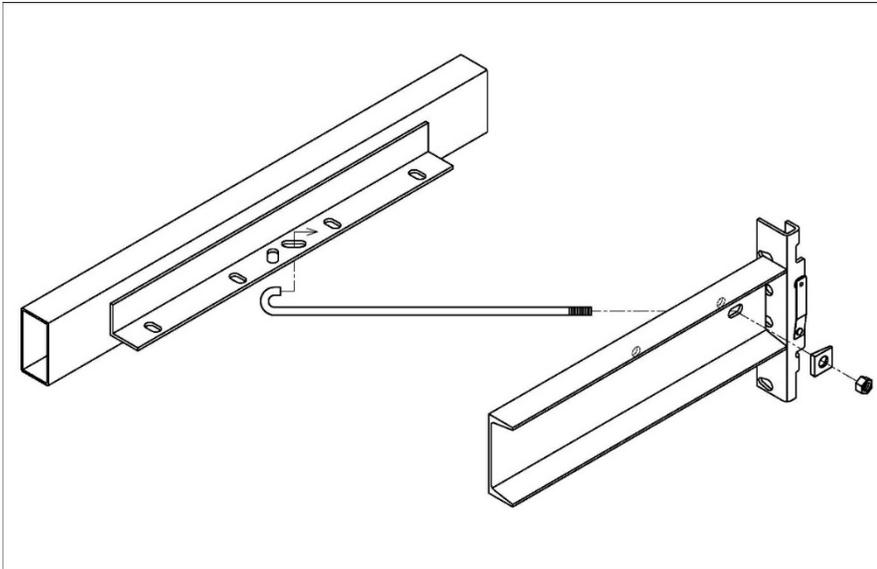
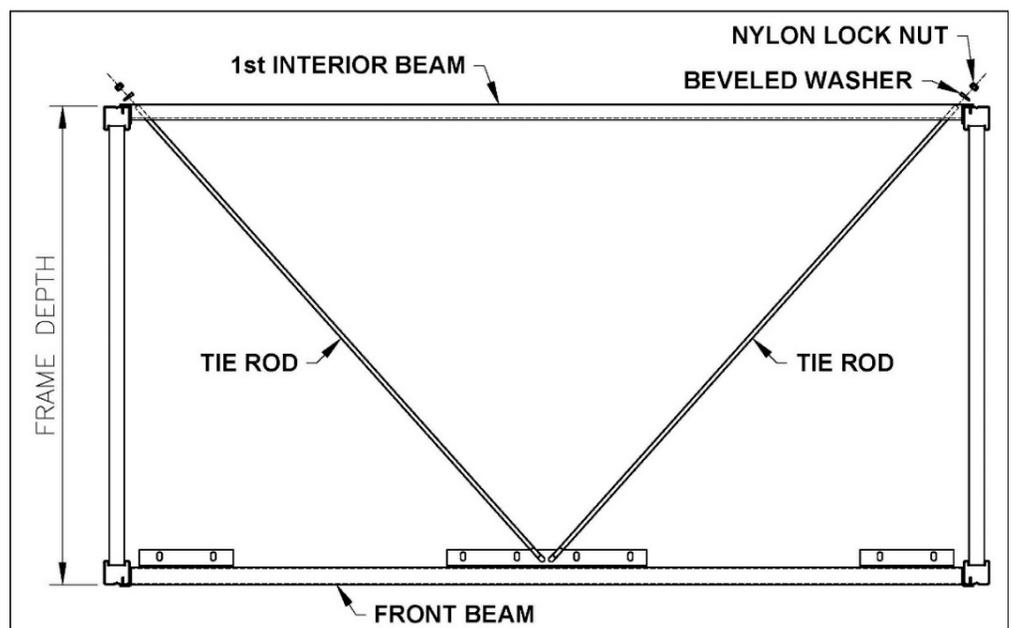


Figure 7 – Tie Rod



- Hook end thru underside of the front beam angle.
- Threaded end thru slot in the first interior beam.
 - Attach with square beveled washer and ½-13 nylon lock nut.



RAIL CONNECTION

Front Beam and Rail Connection with Hardware

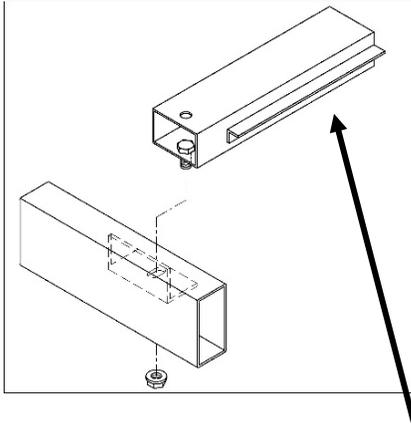


Figure 8 - Install rail with anti-lift angle as shown above

Front Beam and Rail Connector Attached

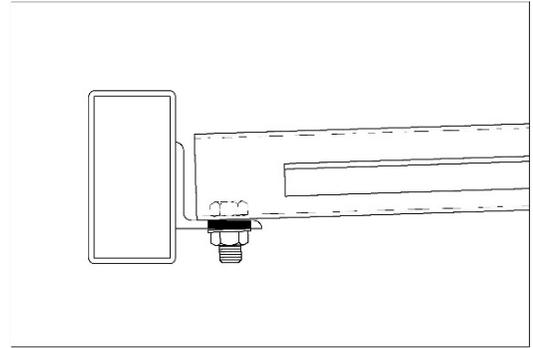
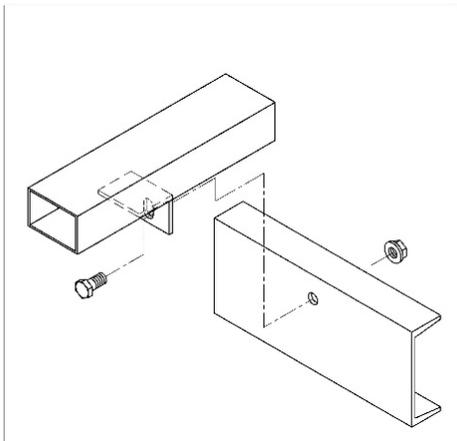


Figure 9 – (1) ½-13 Whiz-Lok Nut (Torque = 57ft.lbs)

Interior Beam and Rail Connection with Hardware



Interior Beam and Rail Connector Attached

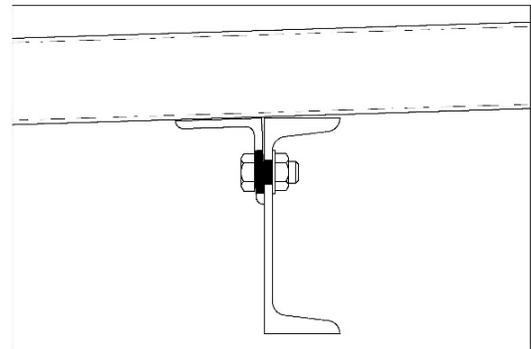
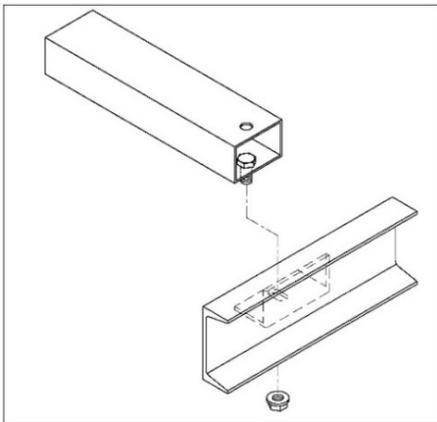


Figure 10 – (1) ½-13x1" Hex HD Bolt & Whiz-Lok Nut (Torque = 57ft.lbs)

Rear Beam and Rail Connection with Hardware



Rear Beam and Rail Connector Attached

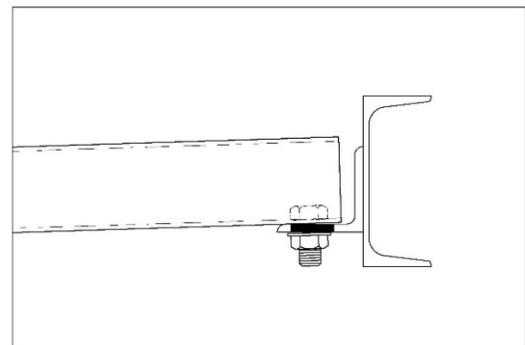
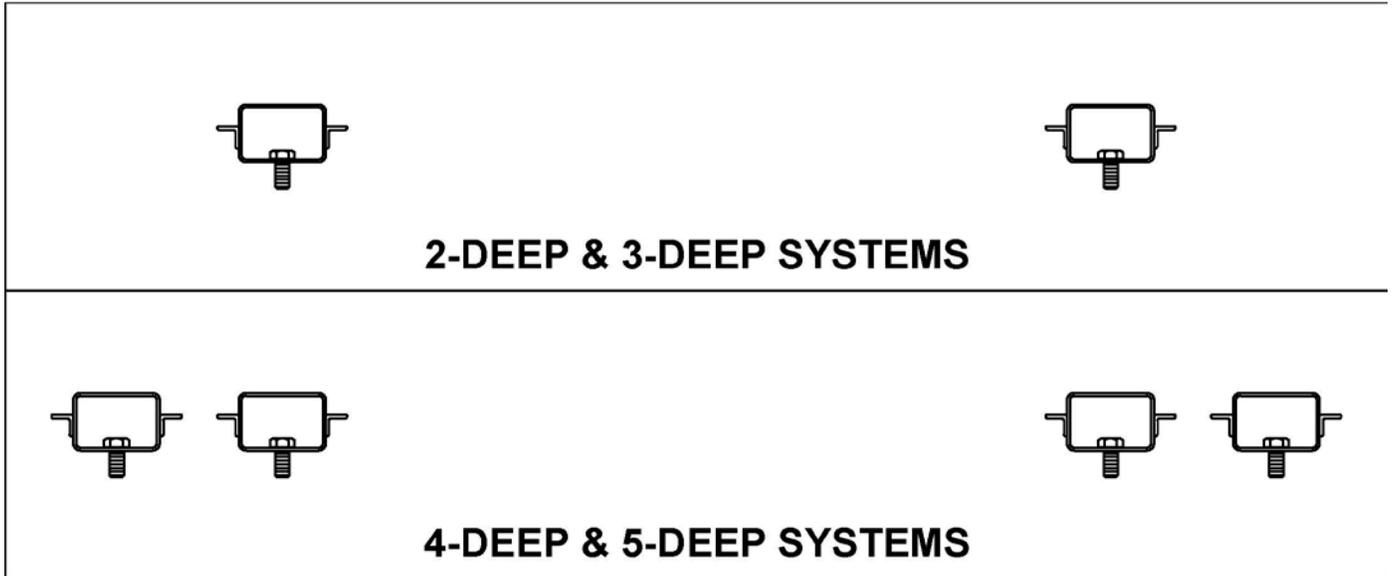


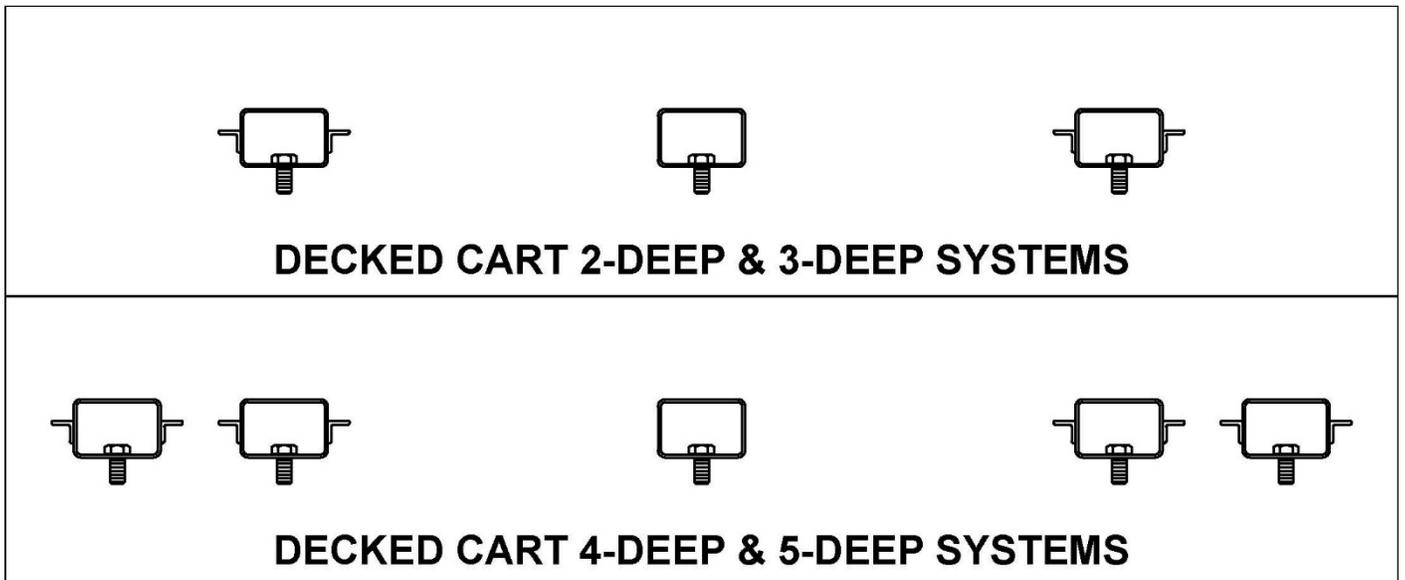
Figure 11 – (1) ½-13 Whiz-Lok Nut (Torque = 57ft.lbs)

RAIL ORIENTATIONS

Standard Push-Back System – Front View



Decked Cart Push-Back System – Front View

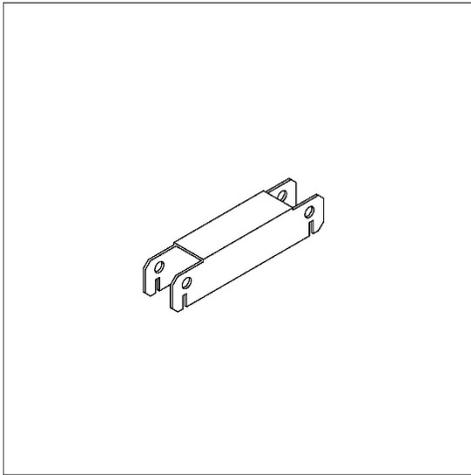


V. START INSTALLATION

- It is extremely important that the base plates be on the same horizontal plane throughout the entire installation of this system.
- Fully erect the first bay of rack ensuring that the beam elevations are correct. The starter bay must be plumb in both the down-aisle and the cross-aisle directions to a maximum deviation of $H''/480$ (1/4" in 10') over the rack frame height. Frame base plate shims may be required to achieve proper plumbness. Square the rack bay and align it with the chalk lines on the floor. Once the first rack bay is plumb and square, all connection hardware can be tightened and all beam-to-column connections and locking devices checked for proper engagement. Use of a plumb bob from the top of the frame column to the floor or laser equipment is recommended. Ridg-U-Rak does NOT recommend the use of a carpenter level to determine plumb conditions as they are not as accurate.
- Recommended tightening torque values for Grade 5 hardware unless specified otherwise:
 - 3/8" Dia. = 23 ft-lb.
 - 7/16" Dia. = 37 ft-lb.
 - 1/2" Dia. = 57 ft-lb.
 - While the above values are recommended, tightening torque should never be applied to the point of crushing any of the connecting members.
- **The installation of row spacers** – Attach the spacers to the starter bay upright frames, beginning at the top. Install the upper most spacer as close to the top horizontal of the upright frame, as possible. Attach the remaining required row spacers in intervals of approximately 10 feet with the bottom spacer no higher than 14 feet above the floor, or as instructed on any supplemental drawings provided.

ROW SPACERS – Slotted

Spacer (SRS)



Spacer with Upright

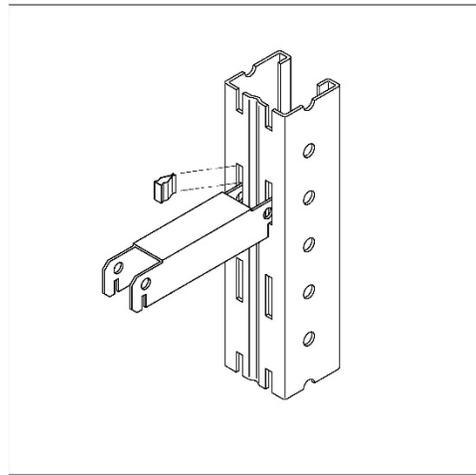


Figure 12 – CL Clip (2 Per Spacer)

Spacer Attached to Upright with CL Clips

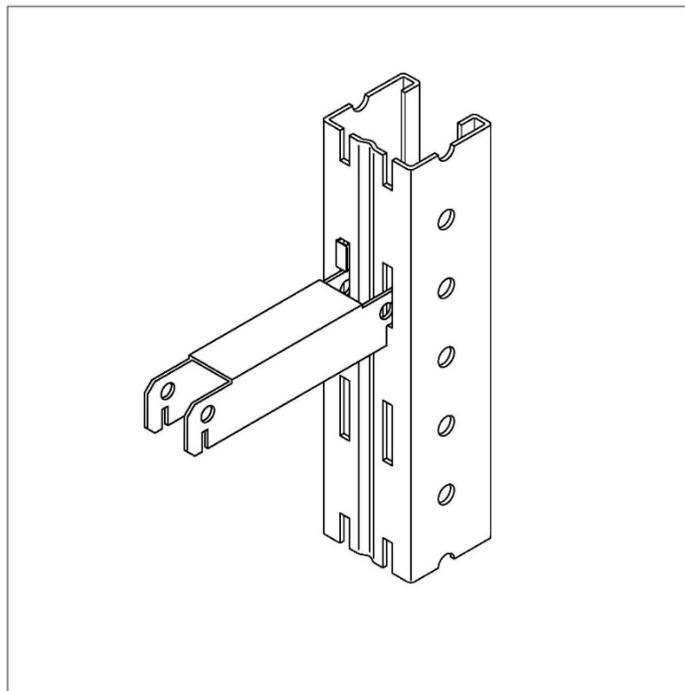
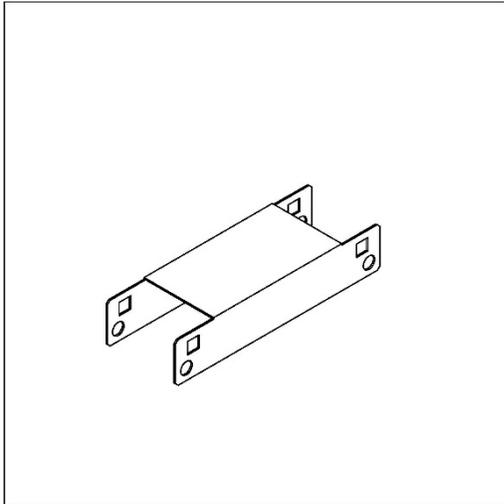


Figure 13 - Attach both ends (1 end shown)

ROW SPACERS – Slotted

Spacer (RS)



Spacer with Upright

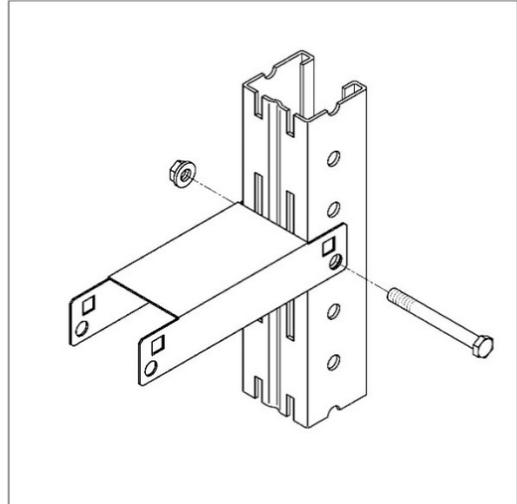


Figure 14 - (2) 7/16-14x3-1/2" (3" Column) or 4-1/2" (4" Column)

Hex HD Bolt & Whiz-Lok Nuts (Torque = 15ft.lbs.)

Spacer Bolted to Upright with Hardware

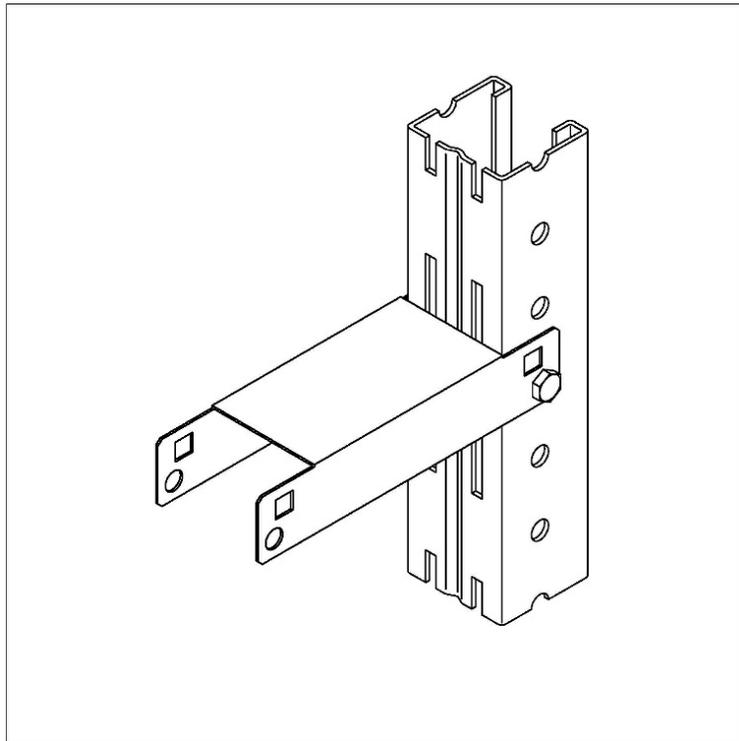
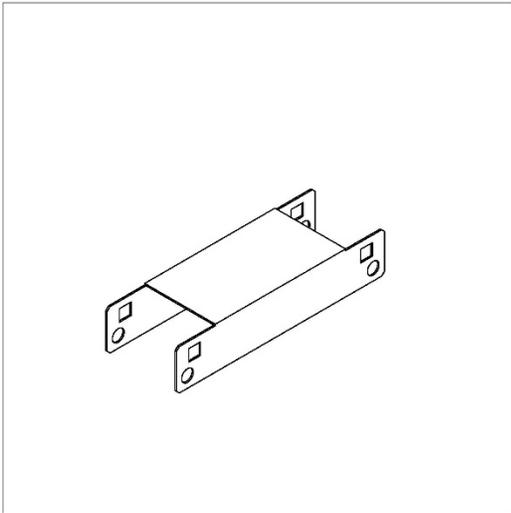


Figure 15 - Attach both ends (1 end shown)

ROW SPACERS – Tear Drop

Spacer (RS)



Spacer with Upright

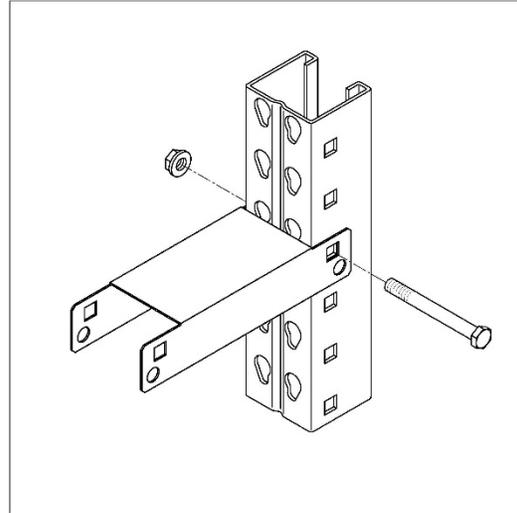


Figure 16 - (2) 7/16-14x3-1/2" (3" Column) or 4-1/2" (4" Column)

Hex HD Bolt & Whiz-Lok Nuts (Torque = 15ft.lbs.)

Spacer Bolted to Upright with Hardware

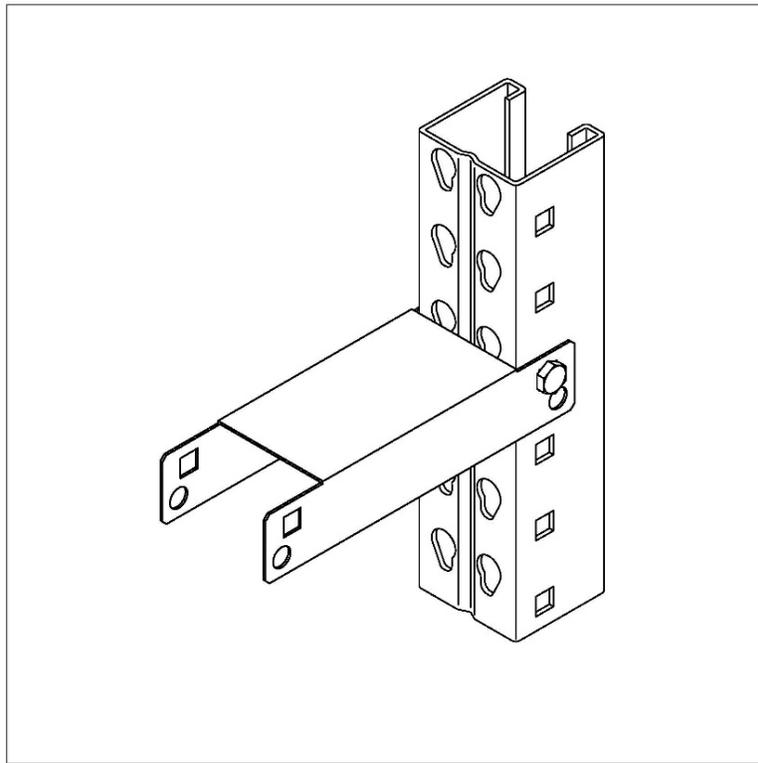
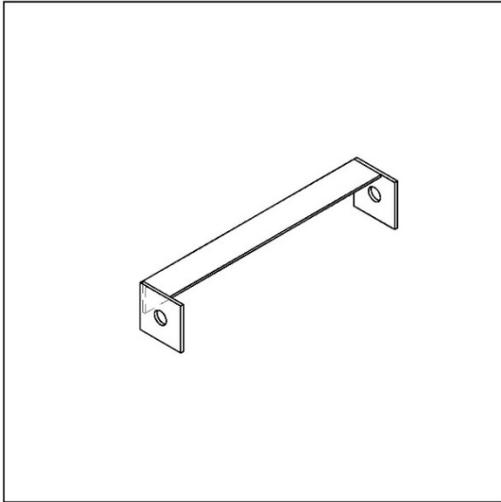


Figure 17 - Attach both ends (1 end shown)

ROW SPACER – Structural Upright Frame

Structural Frame Spacer (SFS)



Structural Frame Spacer with Upright

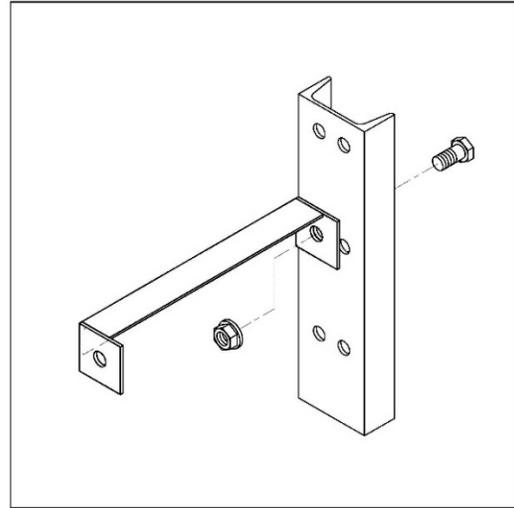


Figure 18 - (2) ½-13x1" Hex HD Bolt & Whiz-Lok Nuts (Torque = 57ft.lbs)

Structural Frame Spacer Connected to Upright with Hardware

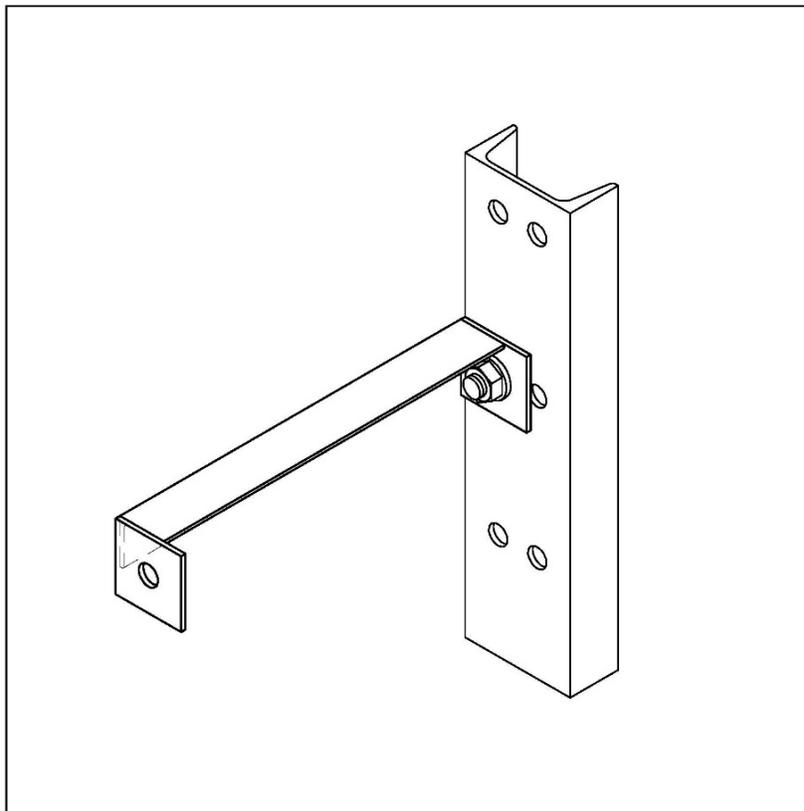
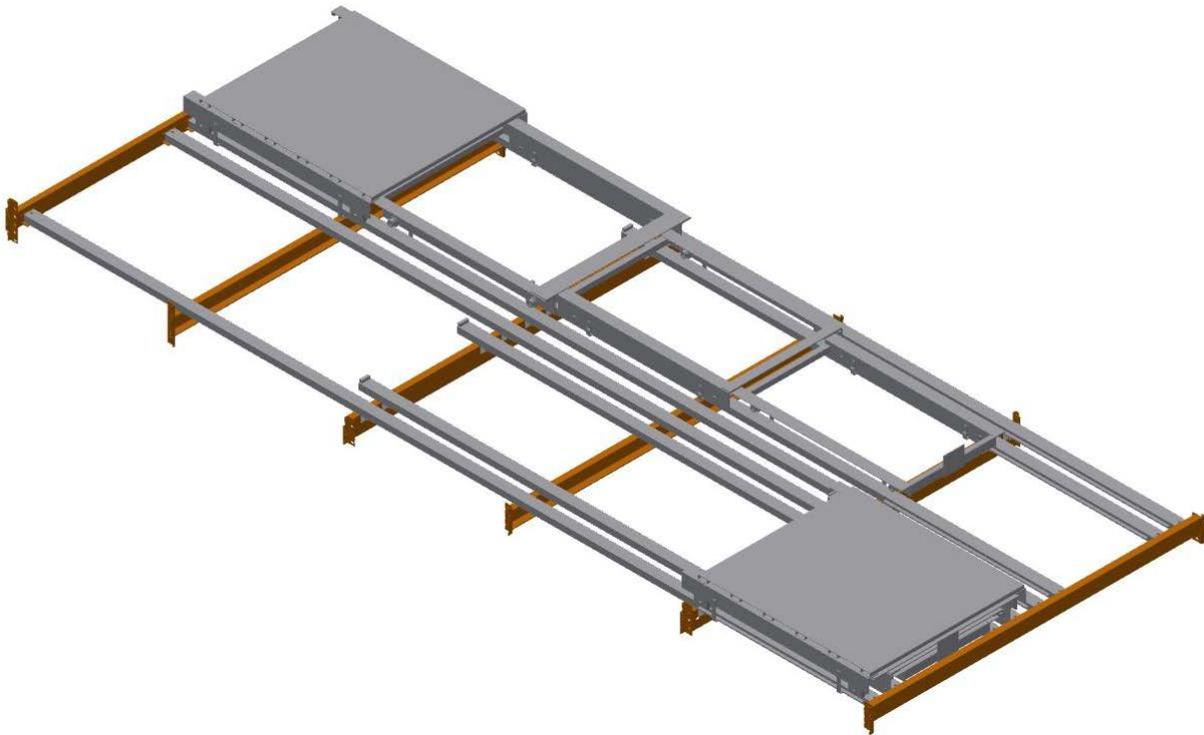


Figure 19 - Attach both ends (1 end shown)

CARTS

- **Place carts into the lanes** – Position all carts in each lane and onto the rails, making sure that each cart and lane flow freely and unimpeded. When all carts flow freely in each lane, torque the rail bolt hardware to the recommended torque specification.



VI. ANCHORING

- Once the first bay of rack is plumb, square, and aligned, it can be anchored to the floor. Many installations require specific types, sizes, and quantities of anchors. This information is typically detailed on the Ridg-U-Rak installation drawings. These anchoring details are to be followed by the installer. In the absence of such details, it is the installer's responsibility to ensure that the anchoring used will meet all structural and code requirements for the application. If unsure, contact Ridg-U-Rak engineering for guidance.
- The installer should refer to the anchor bolt manufacturer's instructions for proper installation information and torque values for the anchors.
- Anchors are to be installed perpendicular to the baseplate surface, with an installation tolerance of +/- 6 degrees.
- Ridg-U-Rak requires that all rack frames be anchored to the concrete floor, regardless of height. A minimum of one ½" diameter anchor per rack column should be used with a minimum nominal embedment of 2½".

VII. INSTALLATION OF REMAINING BAYS

- The remaining bays can now be installed making sure that the rows are properly aligned with the chalk line and that all frames remain square and plumb (maximum deviation of H"/480 over the rack height) in both the down-aisle and the cross-aisle directions. The rest of the rack row can be set up prior to anchoring.
- Once the rack row is complete and verified to meet the configuration, square, plumb and alignment requirements, all frames of the remaining bays are to be anchored and the beam-to-column connections and locking devices checked for proper engagement, the same as the first bay.
- Never attempt to pull a rack into plumb after fasteners or anchors have been tightened or use excessive force to plumb a rack. This could bend or otherwise damage the rack members.
- Periodically check square, plumb and alignment as the rack installation proceeds.
- Never leave an unanchored rack unattended.

VIII. INSPECTION

- Throughout the installation process, the rack installer should periodically inspect the racks to ensure that proper installation procedures and the Installation Drawings have been followed and that racks remain properly square, plumb, and aligned, and that no rack components have been damaged during the installation.

IX. FURTHER INFORMATION

- These installation guidelines cover the installation of new Ridg-U-Rak Push-Back storage rack. The proper installation of the rack is the responsibility of the installer. The installation is not covered by any warranty from Ridg-U-Rak.
- For general information on storage racks, the user should refer to the following:
Rack Manufacturer's Institute
8720 Red Oak Blvd., Suite 201
Charlotte, NC 28217-3992.
<http://www.mhi.org/rmi>

Rack Safety Blog: <http://www.rmiracksafety.org/>

If questions still exist, contact Ridg-U-Rak for technical support at 814-725-8751



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