ZiLINE CONVEYOR

Installation Manual: Side Covers and Guide Rail

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Bastian SOLUTIONS
a TOYOTA ADVANCED LOGISTICS company

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Term and Acronym Definitions

TERM/ACRONYM	DEFINITION
BHCS	Button head cap screw
BZPDC	Belted Zero Pressure Direct Current; DC belted conveyor format powered by MDRs with the intent to maintain zero pressure conditions
DC	Direct current
Flange	A feature in sheet metal consisting of a face and bend connected to an existing face along a straight edge.
Guide Rail	Mechanism used to maintain the desired position of conveyable cartons, cases, or totes on their respective conveying surface.
HHCS	Hex head cap screw
ID	Inner diameter of a circular, cylindrical or arced body.
LOTO	Lockout Tagout
OD	Outer diameter of a circular, cylindrical, or arced body.
Plow	To gradually force a carton, case, or tote to move perpendicular to the initial direction of travel by means of physical contact with adjustable guide rail if and when the carton, case, or tote is outside the desirable bounds on the conveying surface.
PPE	Personal protective equipment
PVC	Polyvinyl Chloride
RZPDC	Roller Zero Pressure Direct Current; DC roller conveyor powered by MDRs with the intent to maintain zero pressure conditions.
Side Cover	A PVC cover used to conceal and protect electrical components and wiring from foreign debris and moving obstacles.
Side Frame	Structural member used to support rotating components needed for conveyor beds.
Skatewheel	Small unpowered wheels used to replicate nearly frictionless guidance or support of conveyable cartons, cases, or totes.
Splice Assembly	A five-component assembly-consisting of a plate (or formed plate), two bolts, and two nuts-that is used to secure a piece of guide rail to an adjacent piece of guide rail, or a side frame to an adjacent side frame. This is used to provide additional structural rigidity and ensure relative position of components is maintained.
Waterfall	Method of overlapping guide rail such that cartons, cases, or totes cannot catch on downstream guide rail.
Wiz Nut	A serrated flange nut used to cut into the surface of the component it is tightened against.

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1. Introduction

Thank you for choosing ZiPline Conveyor. The following manual will serve as a guide for installation, part replacement, and general maintenance for your material handling equipment side covers and guide rail. Guide rail and side covers are always shipped loose and installed in the field, so this manual is provided for and only to be used by conveyor installation technicians. The information contained in this manual applies only to the products described. Uses, activities, or processes related to installing or maintaining the equipment that are not explicitly described in this manual are considered out of scope. Please contact Bastian Solutions ZiPline Conveyor for any questions or support that is not clearly addressed in this document. ZiPline Conveyor is not responsible for misuse of the equipment described or information provided in this manual. If you have any questions, contact ZiPline Conveyor Customer Service or Support at ZiPlineSupport@BastianSolutions.com.

2. Safety

- When handling parts with sharp edges or operating cutting power tools, gloves are required.
- Ensure adherence to PPE and hearing protection requirements associated with the building in which work is to be performed.
- When performing meticulous work (i.e. landing cables, or hand-tightening hardware) or working with rotating equipment, gloves shall not be used.
- Long hair and loose clothing must be restrained when working with rotating equipment.
- When performing work which may produce flying debris such as drilling or cutting, a face shield must be worn.
- Guarding on stationary machines and handheld power tools must never be disabled or removed.
- When performing electrical work on or with equipment which requires adherence to LOTO procedures, ensure adherence to Appendix A to §1910. 147 – Typical Minimal Lockout Procedure.
- If there is a need to perform hot work (lifting and/or landing on live electrical circuits) with anything above 50V, ensure a Hot Work Permit or Live Electrical Work Form has been filled out and approved.
- Questions about other safety protocol? Contact your Environmental Health and Safety Officer.

3. Side Covers

Side covers are often used in ZiPline Conveyor's products to conceal electrical components and wiring in any conveyor using standard ZiPline Conveyor side frames. They are made of rigid PVC and designed for simple installation and removal for system maintenance or inspection.

3.1 Installation

- Side covers may be installed using one of two methods:
  - Slide the cover into place from the end of the side frame as shown in Figure 1.
    - **Note: Side cover orientation shown in the right-hand side of Figure 1 is critical.**
    - The longer of the two tabs circled must be vertically above the shorter of the two tabs.
    - If this requirement is violated, the side cover is likely to fall from the conveyor.

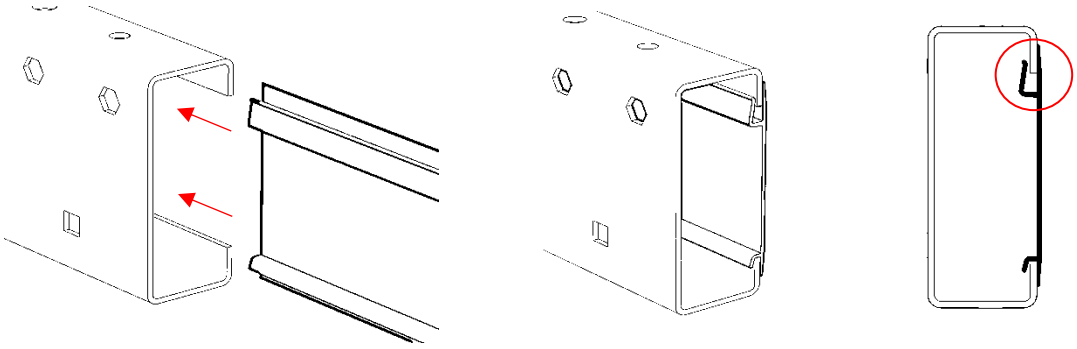

Figure 1: Side cover installation diagram depicting the action of both methods discussed

  - Drop side cover in place as shown in Figure 2.
    - The side cover may be installed in any position along the side frame and slid into place as needed.
    - Just as in the slide-in method, tab orientation shown must be maintained for the side cover to remain in place.

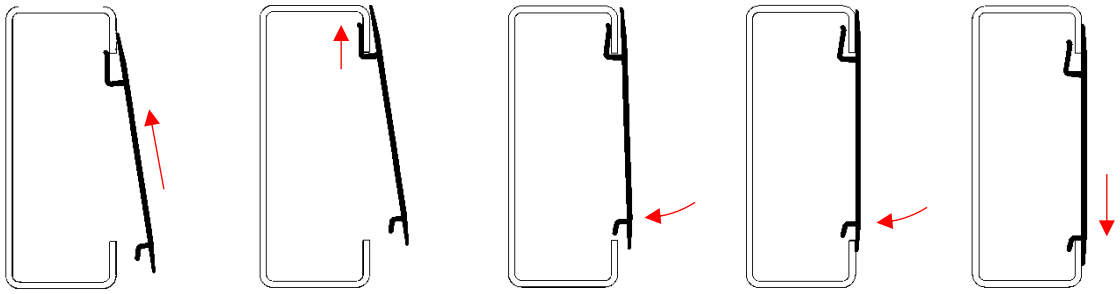

Figure 2: Side cover installation diagram of the drop-in method.

4. Guide Rail – General Requirements

Guide rail is used on a wide variety of ZiPline Conveyor's products for guidance of packages of varying sizes, weights, and formats. Each guide rail format presented in this document is installed on side frames such as the one shown on the left-hand side of Figure 3. Each hole on the top-side of side frames are placed 2in center-to-center. Though the image presented on the right-hand side of Figure 3 shows a specific type of guide rail, the dimension shown applies to all guide rail formats presented in this document. Hardware used to secure guide rail to side frames is to occupy the hole 4in from the edge of any side frame as shown in the right-hand side of Figure 3. The number and spacing of standoffs installed between these points of installation is to be determined by the installer based on the type of guide rail, and the weight and speed of packages being conveyed.

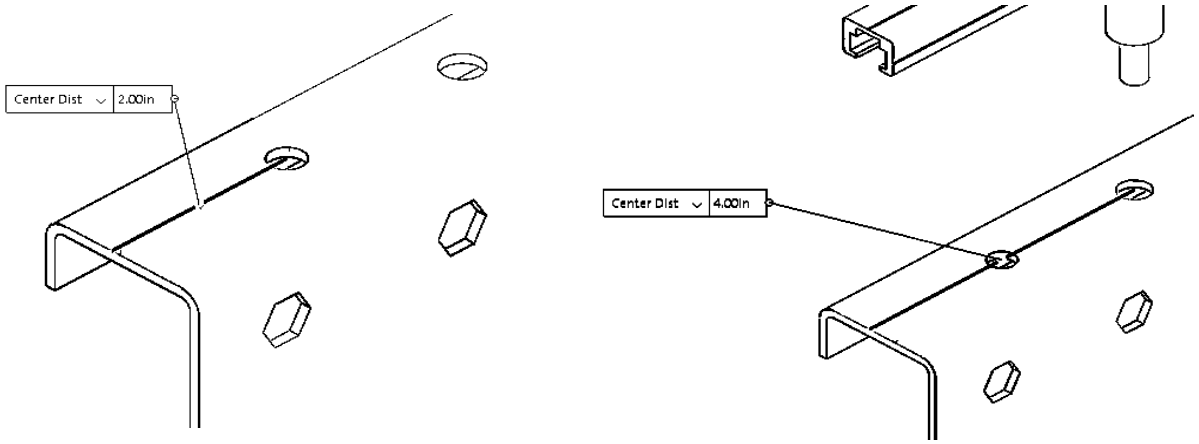

Figure 3: 2in hole spacing on top of side frame (left) 4in edge distance to first guide rail standoff (right)

5. Light Duty Guide Rail

Standard light duty guide rail is installed on a variety of ZiPline Conveyor's products for guidance of light to medium-weight cartons cases or totes. As shown in Figure 4, it is made of standard aluminum extrusion and secured with bolting, aluminum standoffs, and standard guide rail splice assemblies to secure in-line rails to one another.

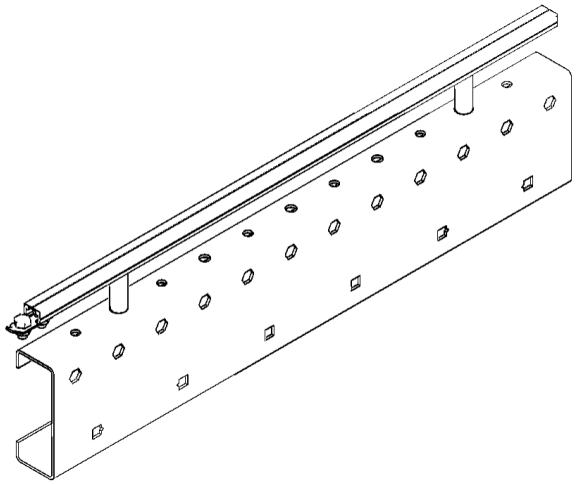

Figure 4: Light duty guide rail installed on side frame

5.1 Installation

- Installation of light duty guide rail requires the following hardware:
  - 2-1/4in-long partially threaded 5/16”-18 HHCS
  - 1.5in-long aluminum spacers (5/16in ID and 5/8in OD)
  - 5/16”-18 serrated flange nut (wiz nut)
  - Standard aluminum extrusion shown throughout this section
- While holding the aluminum extrusion (guide rail) in a horizontal orientation, slide the required number of HHCS into the side of the guide rail as shown in the left-hand side of Figure 5

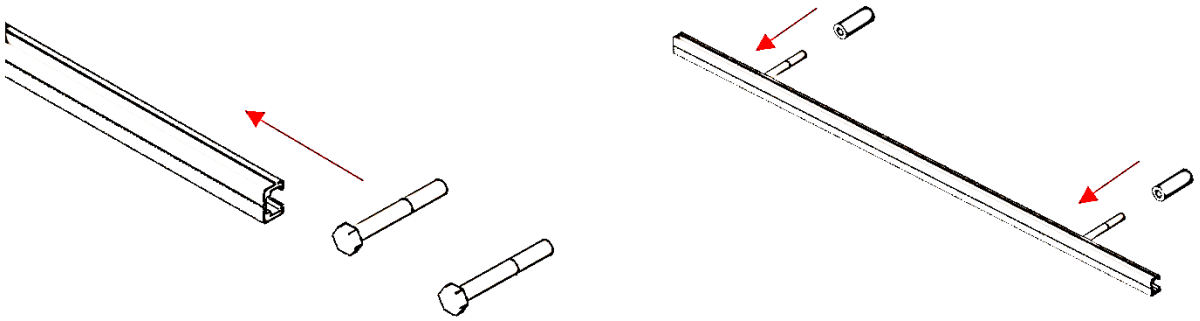

Figure 5: HHCS sliding into end of guide rail (left) Aluminum spacers sliding onto HHCS (right)

- Next, slide the aluminum spacers over the HHCS as shown in the right-hand side of Figure 5
- Component orientation shown in Figure 5 is maintained until the standoff hardware is moved to approximately their final location along the side frame, as shown in the left-hand image of Figure 6.
- Lift the hardware per the curved arrows until the HHCS threads slide into their respective mounting holes on top of the side frame

NOTE

- **Note: The ends of the side frame and guide rail circled in Figure 6 are aligned prior to securing the HHCS as shown in the center image.**
- Once side frame and guide rail ends are aligned, the wiz nuts are installed in the right-hand image, securing the respective section of guide rail in place.

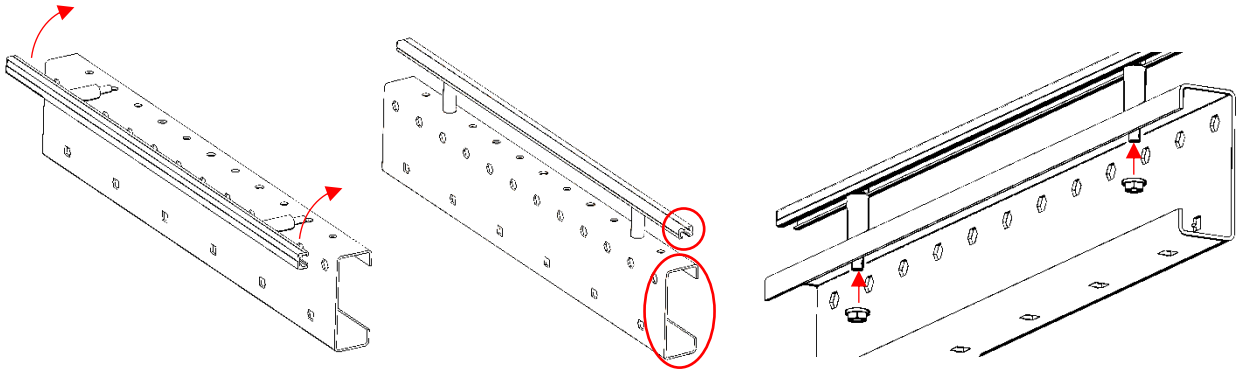

Figure 6: Light duty guide rail positioning and installation

- When installing adjacent zones with light duty guide rail, a splice assembly is used to lock each guide rail's position relative to the other
- To install the splice assembly, loosen hardware until it can slide into the end of the guide rail as shown in the left-hand image of Figure 7.
- Slide the assembly halfway into the end of the guide rail and secure the wiz nut circled.

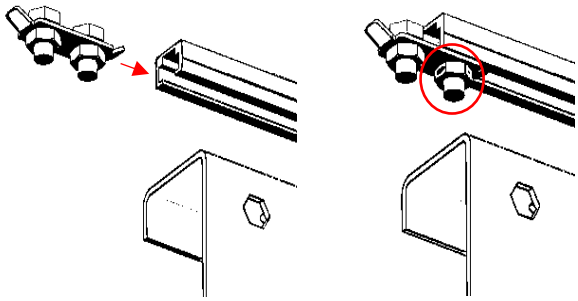

Figure 7: Light-duty guide rail splice assembly installation

6. Angle Guide Rail

Angle guide rail is installed on a variety of ZiPline Conveyor's products for guidance of light to heavy-weight cartons, cases, or totes. As shown in Figure 8, it is made of 1-3/4in steel angle and secured with bolting and aluminum standoffs. Due to inherently higher material strength, angle guide rail does not require splice assemblies typically used to secure guide rail to guide rail on adjacent zones.

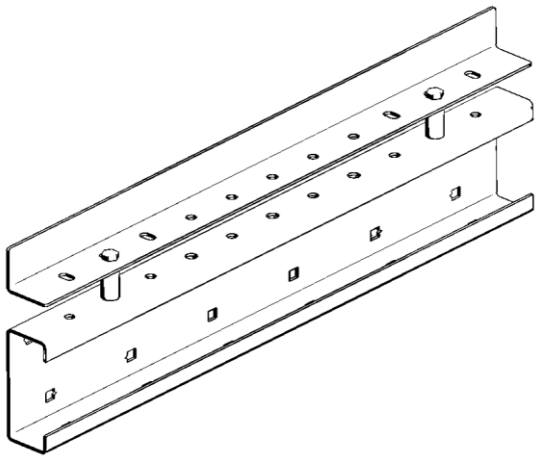

Figure 8: Angle guide rail installed on side frame

6.1 Installation

- Installation of angle guide rail requires the following hardware:
  - 2-1/4in-long partially threaded 5/16"-18 HHCS
  - 1.5in-long aluminum spacers (5/16in ID and 5/8in OD)
  - 5/16"-18 serrated flange nut (wiz nut)
  - Standard angle guide rail shown throughout this section
- While holding the angle guide rail in the horizontal orientation shown in the left-hand side of Figure 9, slide the required number of HHCS into their respective slot or hole
- Slide the aluminum spacers over the HHCS as shown in the right-hand side.

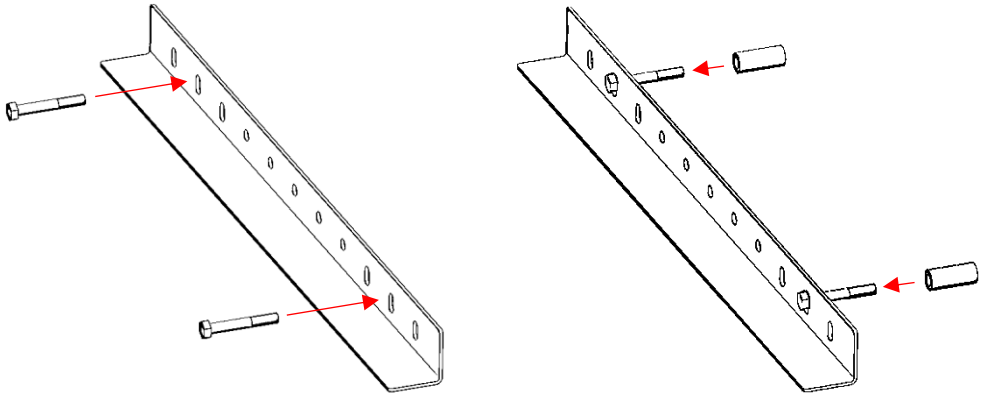

Figure 9: HHCS sliding into respective holes (left) Aluminum spacers sliding onto HHCS (right)

- Component orientation shown in Figure 9 is maintained until the angle guide rail is well-positioned relative to its final location on the side frame
- Lift and drop the components into place, as shown in the left-hand and center images of Figure 10

NOTE

- **Note: If the appropriate hole positions were selected, the side of both the guide rail and side frame circled Figure 10 are aligned prior to securing the HHCS**
- Upon verification of side frame and guide rail end alignment, the wiz nuts are installed as shown in the right-hand image, securing the respective section of guide rail in place.

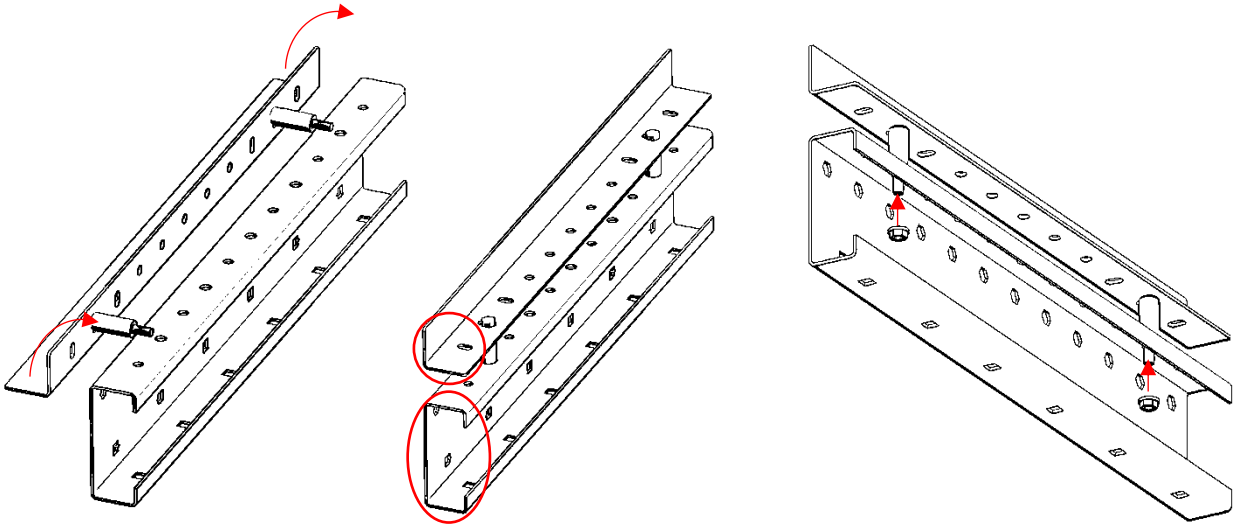

Figure 10: Angle guide rail positioning and installation

7. 6in/12in Fixed Guide Rail

Fixed guide rail comes in 6in and 12in heights and may have additional accessories installed on them to improve their overall performance based on the respective application. This format of guide rail is installed on a variety of ZiPline Conveyor's products for guidance of fast-moving and/or heavy-weight

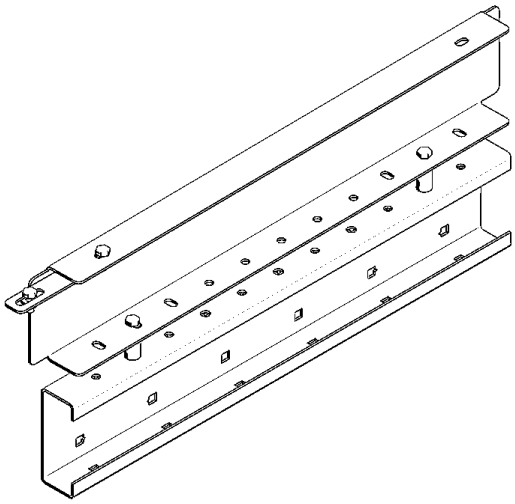

Figure 11: 6in fixed guide rail installed on side frame

packages of various formats. As shown in Figure 11, it is made of formed steel and secured with bolting, aluminum standoffs, and fixed guide rail splice assemblies to secure in-line rails to one another.

7.1 Installation

- Installation of fixed guide rail requires the following hardware:
  - 2-1/4in-long partially threaded 5/16”-18 HHCS
  - 1.5in-long aluminum spacers (5/16in ID and 5/8in OD)
  - 5/16”-18 serrated flange nut (wiz nut)
  - Formed channel shown throughout this section
- Fixed guide rail comes in both 6in and 12in height configurations.
- While holding the channel (guide rail) in a horizontal orientation, slide the required number of HHCS into their respective slot or hole as shown in the left-hand side of Figure 12.

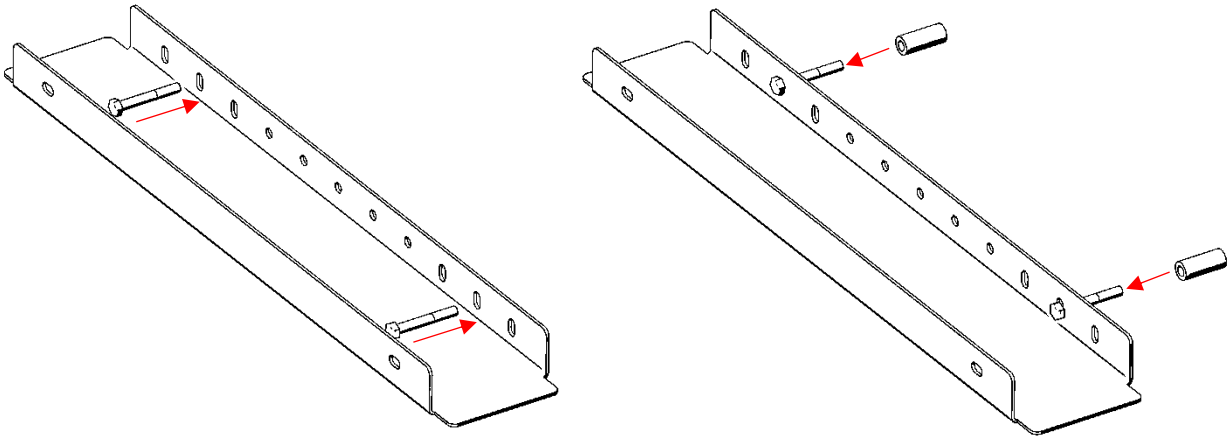

Figure 12: HHCS sliding into respective holes (left) aluminum spacers sliding onto HHCS (right)

- Slide the aluminum spacers over the HHCS as shown in the right-hand side.
- Component orientation shown in Figure 12 is maintained until the guide rail is well-positioned relative to its final location on the side frame.
- Lift and drop components into place as shown in Figure 13.

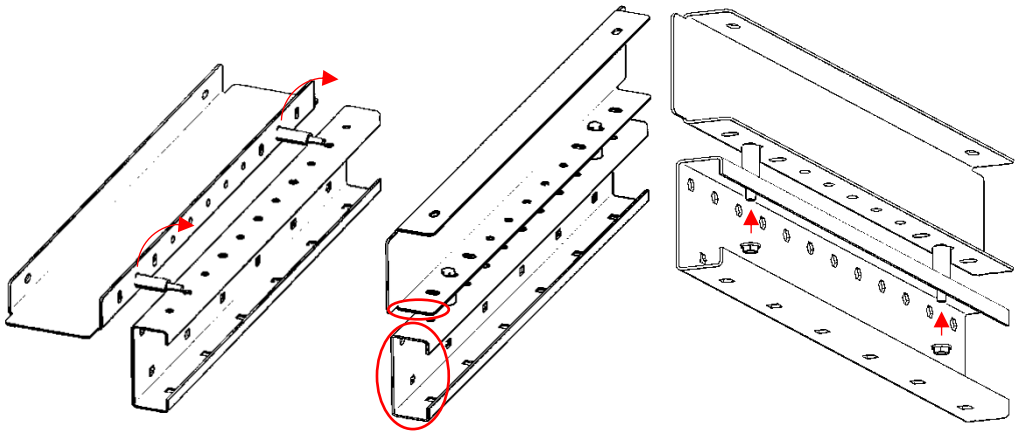

Figure 13: Fixed guide rail positioning and alignment

- **Note: If the appropriate hole positions were selected, the horizontal flange and side frame end circled in Figure 13 are aligned prior to securing the HHCS.**
- Once the side frame and guide rail flange end alignment is verified, the wiz nuts are installed as shown in the right-hand image, securing the respective section of guide rail in place on the side frame.
- When installing adjacent zones with fixed guide rail, a splice assembly is used to lock each guide rail's position relative to the other.
- To install the splice assembly, the fixed guide rail splice plate must be loosely secured to the installed guide rail as shown in the left-most image of Figure 14.
- **Note: The slotted holes on the bottom horizontal flange of the fixed guide rail are used to make minor adjustments to the angle of the guide rail relative to its respective side frame, allowing the installer to interlock adjacent fixed guide rail as shown in the second and third images from the left in Figure 14.**

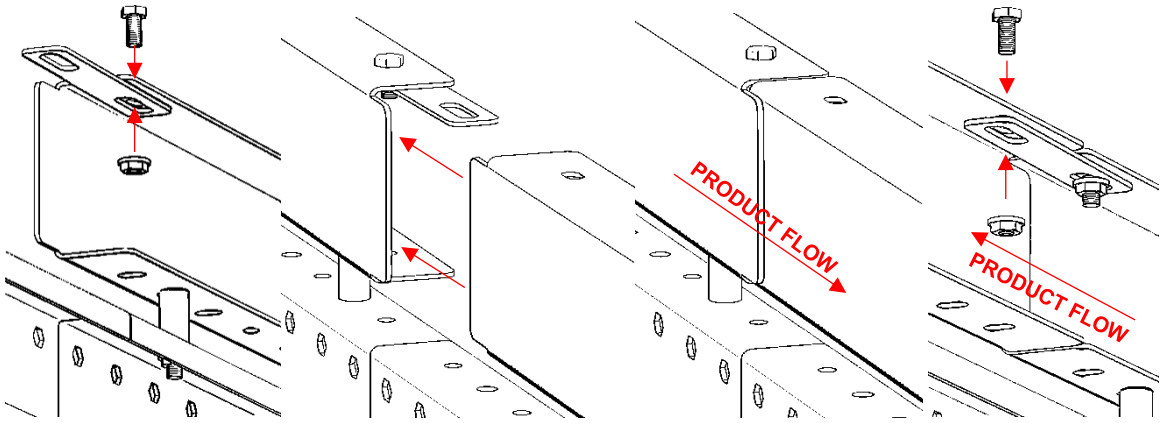

Figure 14: Fixed guide rail splice plate installation and demonstration of proper waterfall technique

- When installing a consecutive series of fixed guide rail, overlap the guide rail in a "waterfall" format
    - i.e. When looking at the guide rail from the conveyed-product-side of the conveyor zone, the exposed tab should appear to "point" in the direction of product flow.)
    - This tab orientation is required to prevent product packaging from getting hung up and/or torn on guide rail edges.
- Finally, install the remainder of the splice assembly shown in the right-hand image of Figure 14 and torque down any of the remaining loose splice assembly hardware.

8. Skatewheel Guide Rail

Skatewheel guide rail is installed on a variety of ZiPline Conveyor's products for guidance of light to medium-weight packages of various formats to reduce friction when product is expected to ride along the guide rail (typically for ensuring carton/tote orientation) for an extended period. As shown in Figure 15, it is made of 11-gauge steel plate and skatewheels and is secured with bolting and aluminum standoffs. Splice assemblies typically used to secure guide rail to guide rail on adjacent zones are not used for installation of consecutive sections of skatewheel guide rail.

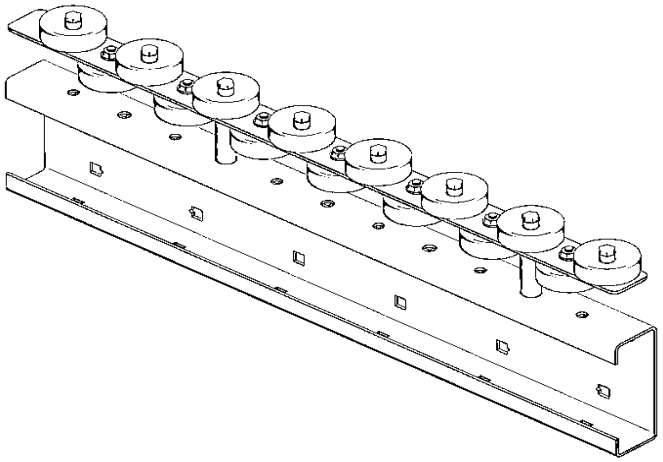

Figure 15: Skate wheel guide rail installed on side frame

8.1 Installation

- Installation of skatewheel guide rail requires the following hardware:
  - 3-1/2in-long partially threaded 5/16"-18 HHCS
  - 1.5in-long aluminum spacers (5/16in ID and 5/8in OD)
  - 5/16"-18 serrated flange nut (wiz nut)
  - Skatewheel assembly shown throughout this section
- While holding the guide rail in a horizontal orientation, slide the required number of HHCS into their respective slot or hole as shown in the left-hand side of Figure 16.

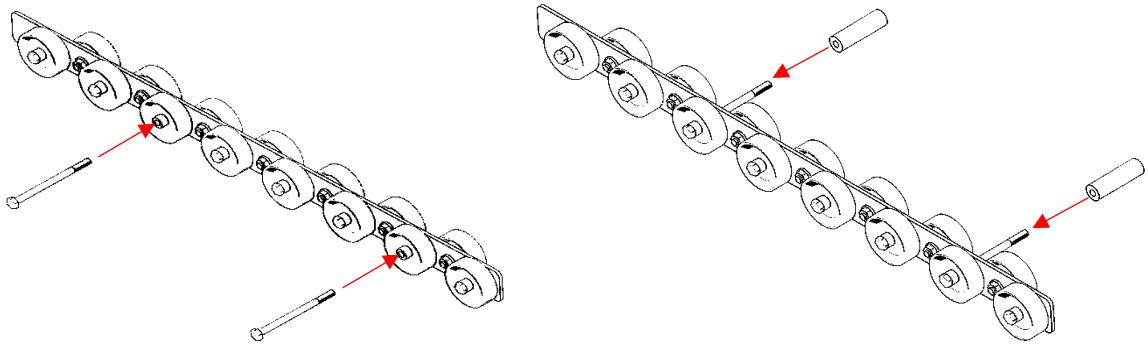

Figure 16: HHCS sliding into respective holes (left) aluminum spacers sliding onto HHCS (right)

- Slide the aluminum spacers over the HHCS as shown in the right-hand side.
- Unlike guide rail mentioned in previous sections, the center to center distance between thru-holes on skatewheel guide rail is 1.5in rather than 2in. For this reason, selecting evenly-spaced mounting locations is not always possible.

- Component orientation shown in Figure 16 is maintained until the skatewheel guide rail is well-positioned relative to its final location on the side frame.
- Lift and drop into place, as shown in the left-hand and center images of Figure 17.
- **Note: If the appropriate hole positions were selected, the side of both the guide rail and side frame circled in Figure 17 are aligned prior to securing the HHCS.**
- Once the side frame and guide rail end alignment is verified, the wiz nuts are installed as shown in the right-hand image, securing the respective section of guide rail in place.

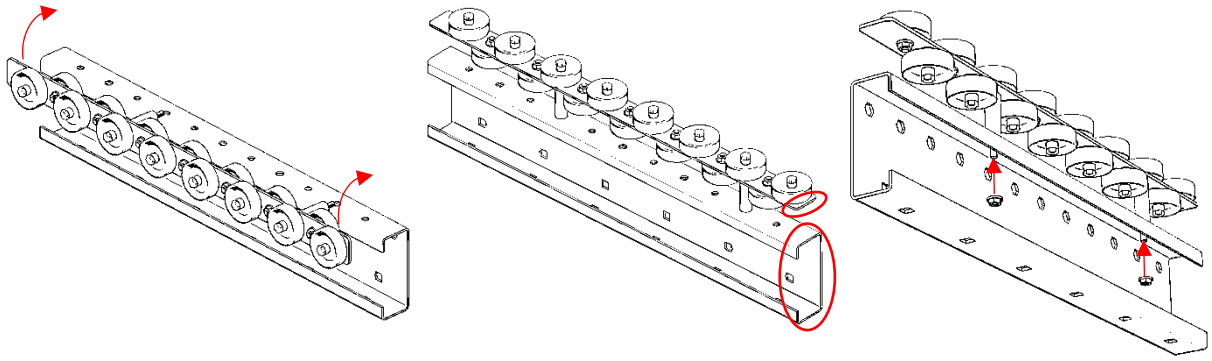

Figure 17: Skatewheel guide rail positioning and installation

9. Curve Guide Rail

Curve guide rail is installed on a variety of ZiPline Conveyor's DC conveyor curves for conveyance of light to heavy-weight packages of various formats. It is made of base plate(s), tabbed plate, and is secured with bolting and aluminum standoffs as shown in Figure 18. Unlike other guide rail, curve guide rail requires assembly prior to installation, guidelines and instructions for which are provided in sections 9.2 through 9.3.

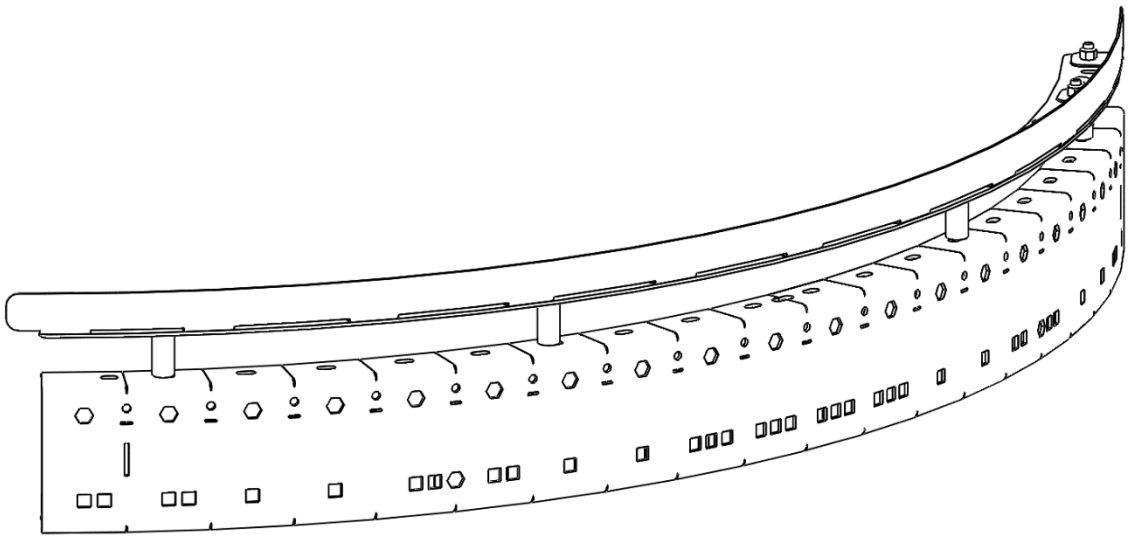

Figure 18: Curve angle guide rail for a 90deg inner radius

9.1 General Curve Guiderail Guidelines

- Every curve that requires guide rail needs an inner radius and outer radius guide rail assembly.
- Available formats:
  - Angle guide rail
  - 6in fixed guide rail
  - 12in fixed guide rail
- Available curve configurations:
  - 30deg
  - 45deg
  - 60deg
  - 90deg
  - **Note: Tabs circled in Figure 19 will always point away from the conveyor it is being mounted to. This makes it simple to tell the difference between inner radius and outer radius tabbed plates prior to assembly.**

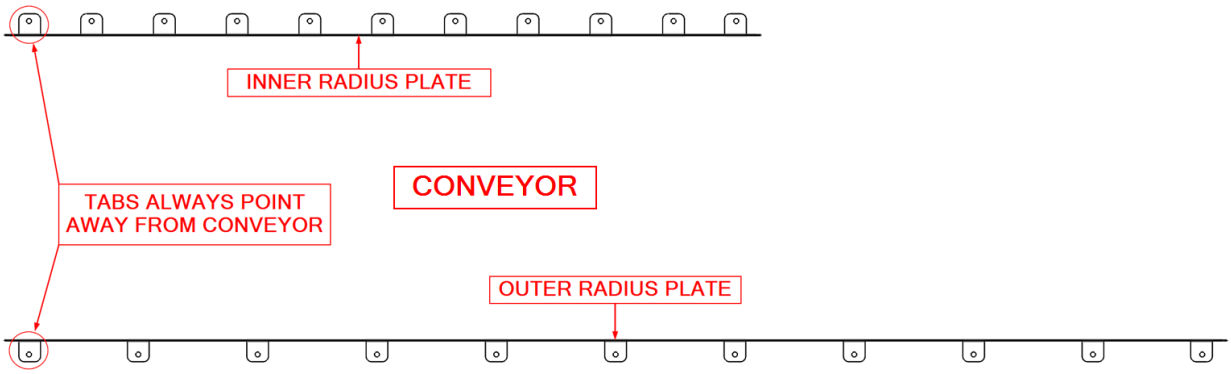

Figure 19: Inner and outer radius formed channel

- Bend the tabbed plate as shown in Figure 20 to make sure the tabbed plate matches up with the respective base plate.
- **Note: There is no need to keep the tabbed plate bent until after the first set of hardware has been installed**
  - This will be shown in sections 9.2 and 9.3 as needed for the angle guide rail and fixed guide rail installation, respectively
- For this set of installation guidelines, the example of choice is 90deg inner radius guide rails.

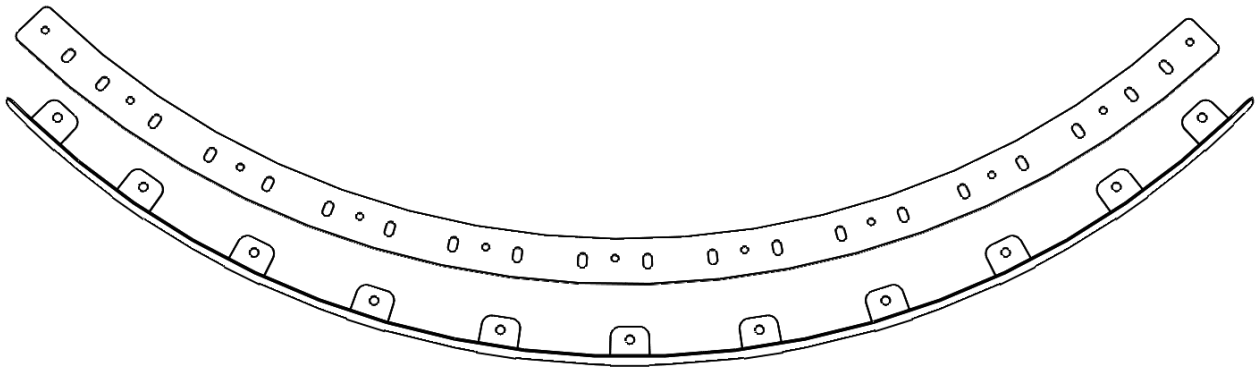

Figure 20: Inner radius tabbed plate bent to match curvature profile of base plate

9.2 Angle Guide Rail Installation

- Installation of curve angle guide rail requires the following hardware:
  - 5/8in-long 1/4”-20 BHCS
  - 1/4”-20 locknut
  - Curve guide rail base plate
  - Curve angle guide rail tabbed plate

NOTE

- **Note: It is advisable to assemble and install curve angle guide rail with at least two people.**
- While holding the arced base plate in a horizontal position, place the first tab of the tabbed plate on top of the base plate, aligning the first circular holes of both components with one another as shown in Figure 21.
- Install (1) each of the BHCS and locknut in the aligned holes.

NOTE

- **Note: Do not torque the locknut down until after completing the steps shown in Figure 22**

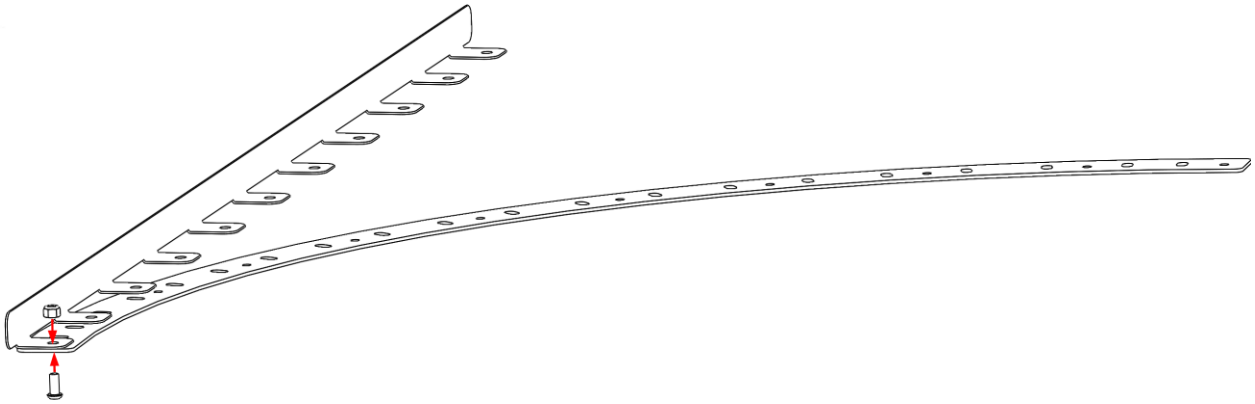

Figure 21: Installation of hardware in first mounting hole on curve angle guide rail

- Bend tabbed plate until the circular holes furthest from the installed BHCS and locknut are aligned and install a second set of BHCS and locknut with the threads on the upper side of the assembly.

NOTE

- **Note: The BHCS threads must be pointing up to ensure there are no interferences with photoeyes or reflectors.**
- Given that the arcs of both the base plate and tabbed plate are aligned as shown in the right-hand image of Figure 22, torque down both locknuts.

NOTE

- **Note: If the arcs of both the base plate and tabbed plate do not match, stop and review component selection to ensure correct parts for the respective assembly.**

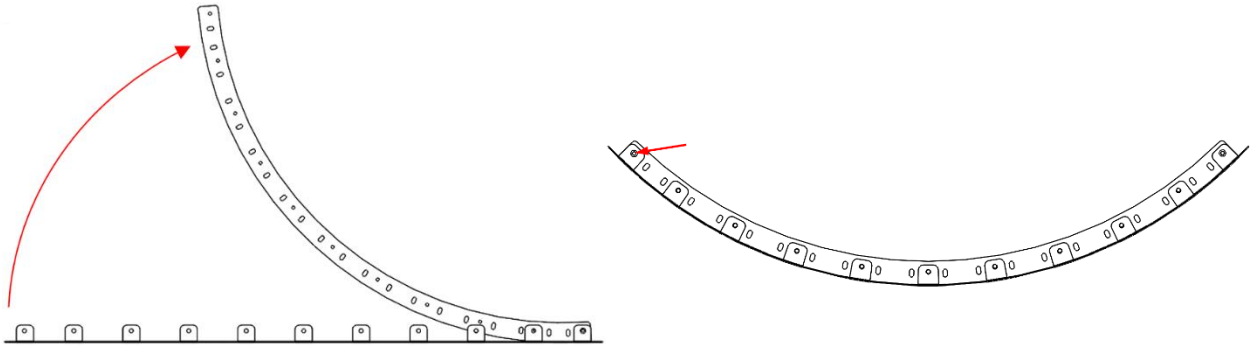

Figure 22: Initial bending motion required to install second set of hardware on angle guide rail

- Install BHCS(s) and locknut(s) in the remaining circular holes in whatever order desired as shown in Figure 23.

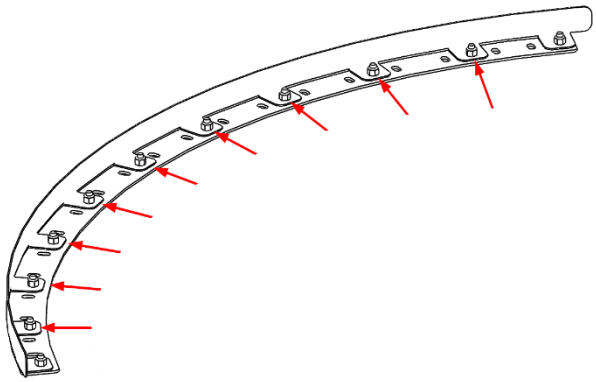

Figure 23: Installation of hardware to complete curve angle guide rail pre-installation assembly

- Torque down all BHCS(s) and locknut(s) until they are secure
- While holding the guide rail in a horizontal orientation, slide the required number of HHCS into their respective slot or hole as shown in the left-hand side of Figure 24.

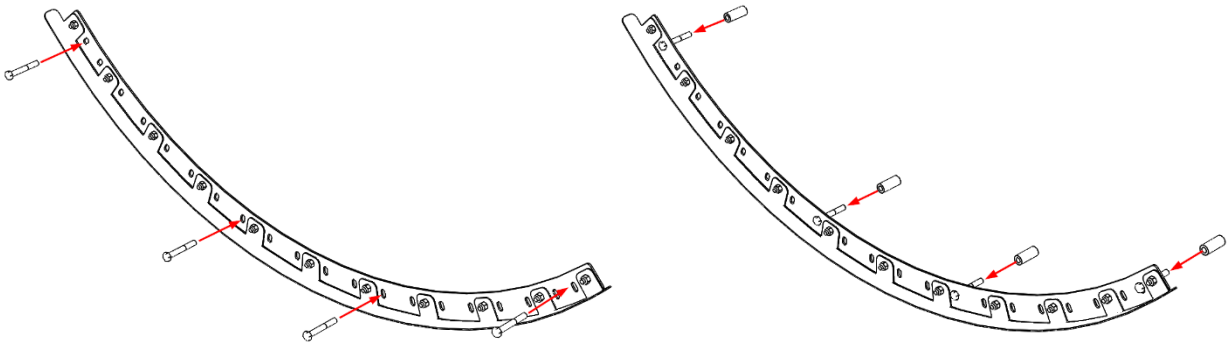

Figure 24: HHCS sliding into respective holes (left) aluminum spacers sliding onto HHCS (right)

- Slide the aluminum spacers over the HHCS as shown in the right-hand side.
- Component orientation shown in Figure 24 is maintained until the curve angle guide rail is well-positioned relative to its final location on the side frame.
- While holding the head of the circled BHCSs in the left-hand image of Figure 25 against the respective tabbed plate tab, and the circled aluminum spacers against the arced base plate, lift and drop the assembly and hardware into the desired side frame hole positions.

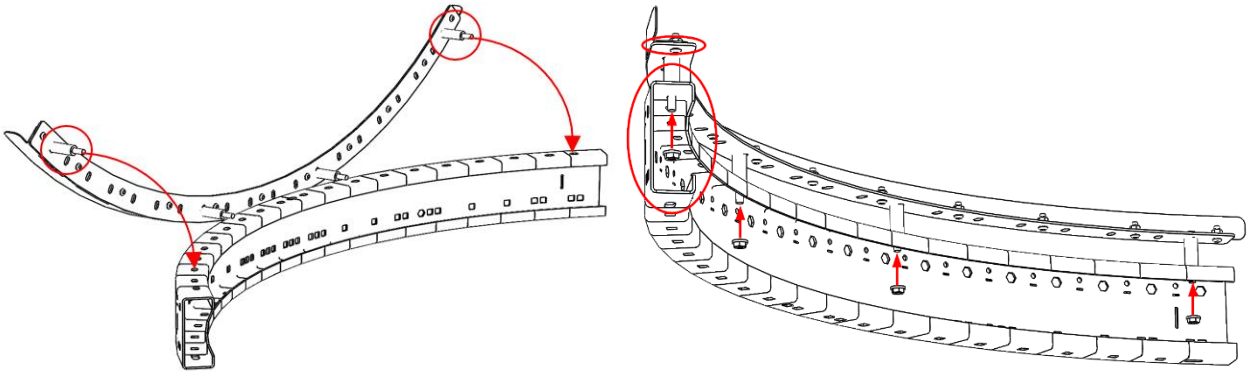

Figure 25: Curve angle guide rail positioning and installation

- **Note: If the appropriate hole positions were selected, the side of both the guide rail and side frame circled in Figure 25 are aligned prior to securing the HHCS.**
- Once the side frame and guide rail end alignment is verified, the wiz nuts are installed as shown in the right-hand image, securing the respective section of guide rail in place.

9.3 Fixed Guide Rail Installation

- Installation of curve angle guide rail requires the following hardware:
  - 5/8in-long 1/4”-20 BHCS
  - 1/4”-20 locknut
  - Curve guide rail base plate
  - Curve fixed guide rail tabbed plate
- **Note: It is advisable to assemble and install curve fixed guide rail with at least two people.**
- While holding the arced base plate in a horizontal position, place the first tab of the tabbed plate on top of the base plate, aligning the first circular holes of both components with one another as shown in Figure 26.
- Install (1) each of the BHCS and locknut in the aligned holes.
- **Note: Do not torque the locknut down until after completing the steps shown in Figure 27.**

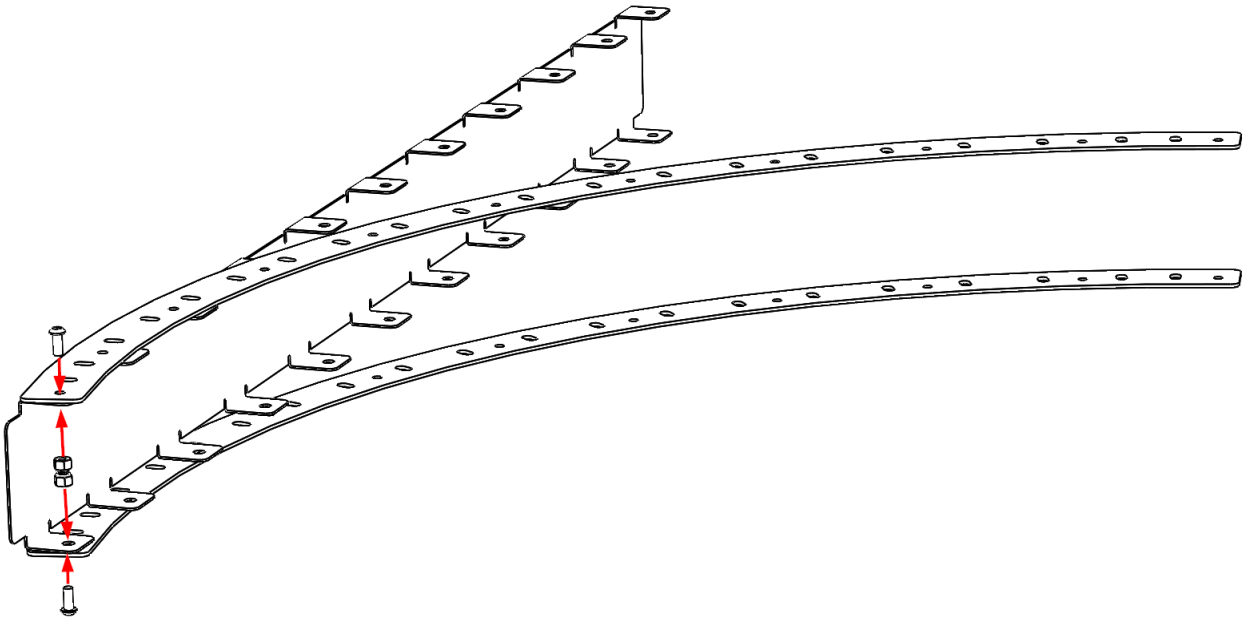

Figure 26: Installation of hardware in first mounting hole on curve fixed guide rail

- Bend tabbed plate until the circular holes furthest from the installed BHCS and locknut are aligned and install a second set of BHCS and locknut with the threads on the upper side of the assembly.
- **Note: (For the bottom set of BHCSs only) The BHCS threads must be pointing up to ensure there are no interferences with photoeyes or reflectors.**
- Given that the arcs of both the base plate and tabbed plate are aligned as shown in the right-hand image of Figure 27, torque down both locknuts.
- **Note: If the arcs of both the base plate and tabbed plate do not match, stop and review component selection to ensure correct parts for the respective assembly.**

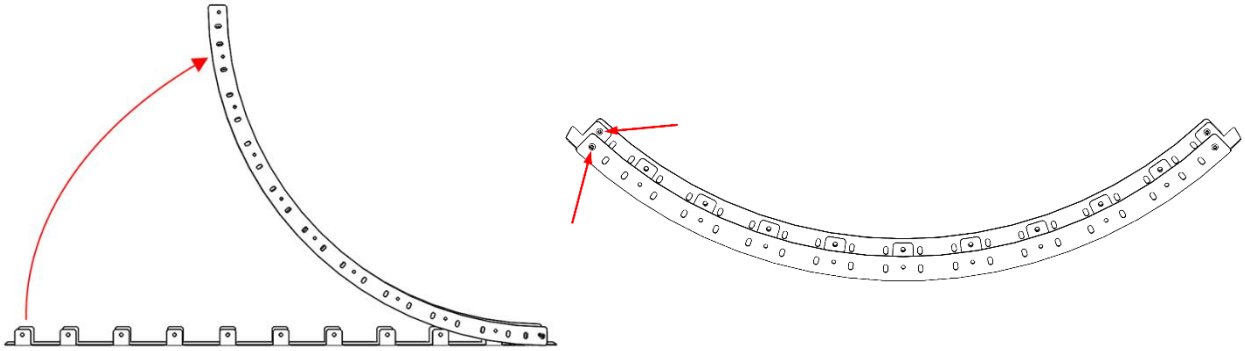

Figure 27: Initial bending motion required to install second set of hardware on fixed guide rail

- Install BHCS(s) and locknut(s) in the remaining circular holes in whatever order desired as shown in Figure 28.
- Torque down all BHCS(s) and locknut(s) until they are secure

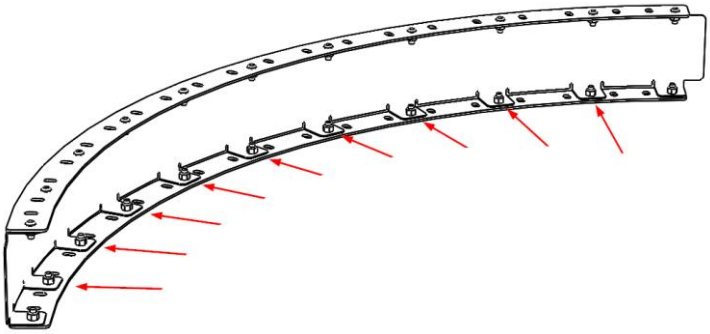

Figure 28: Installation of hardware to complete curve fixed angle guide rail pre-installation assembly

- While holding the guide rail in a horizontal orientation, slide the required number of HHCS into their respective slot or hole as shown in the left-hand side of Figure 29.
- Slide the aluminum spacers over the HHCS as shown in the right-hand side.
- Component orientation shown in Figure 29 is maintained until the curve angle guide rail is well-positioned relative to its final location on the side frame.

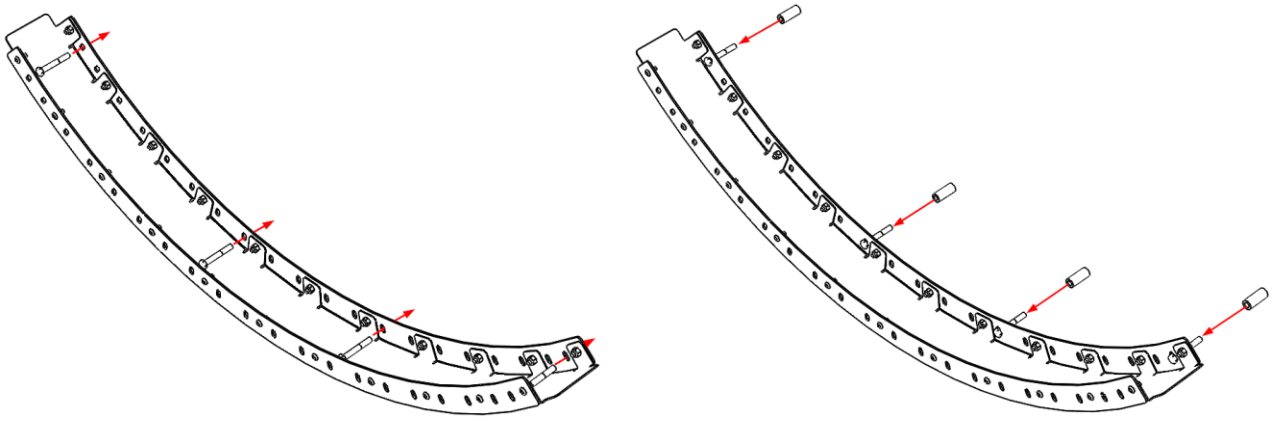

Figure 29: HHCS sliding into respective holes (left) aluminum spacers sliding onto HHCS (right)

- While holding the head of the circled BHCSs in the left-hand image of Figure 30 against the respective tabbed plate tab, and the circled aluminum spacers against the arced base plate, lift and drop the assembly and hardware into the desired side frame hole positions.

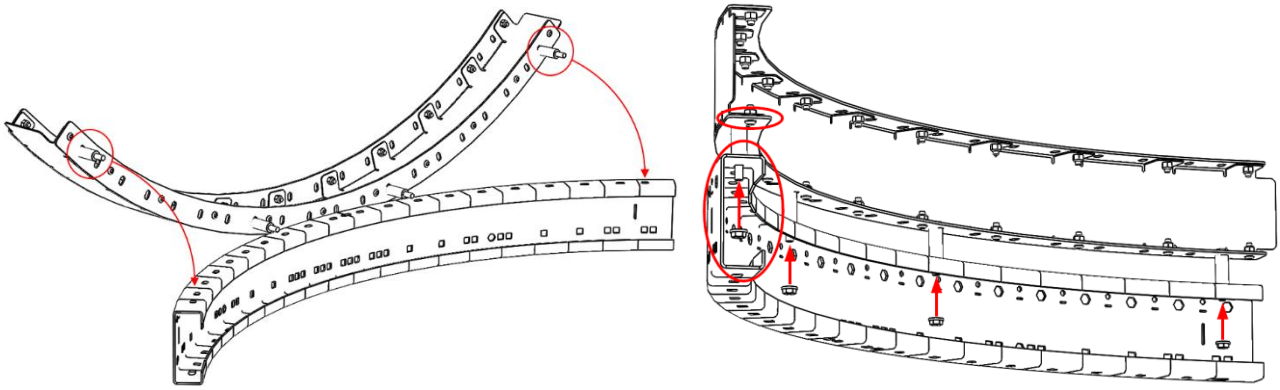

Figure 30: Curve fixed guide rail positioning and installation

NOTE

- **Note: If the appropriate hole positions were selected, the side of both the guide rail and side frame circled in Figure 30 are aligned prior to securing the HHCS.**
- Once the side frame and guide rail end alignment is verified, the wiz nuts are installed as shown in the right-hand image, securing the respective section of guide rail in place.

10.Transition Guide Rail

To make smooth transitions to and from various formats of guide rail, ZiPline Conveyor offers transition guide rails. Standard options include transitions to and from 6” fixed guide rail, 12” fixed guide rail, and/or light duty guide rail. The transition guide rail is made of 12-gauge steel formed to provide a gradually tapered transition between sizes.

10.1 Installation – Light Duty to 6in Fixed

- Installation of light duty to 6in fixed transition guide rail requires the following hardware:
  - 2-1/4in-long partially threaded 5/16”-18 HHCS
  - 1.5in-long aluminum spacers (5/16in ID and 5/8in OD)
  - 5/16”-18 serrated flange nut (wiz nut)
  - Formed channel and aluminum extrusion shown throughout this section
- Before installing the 6in transition guide rail (which comes in a variety of lengths), ensure the light duty guide rail required is installed per 5.1 as shown in Figure 31.

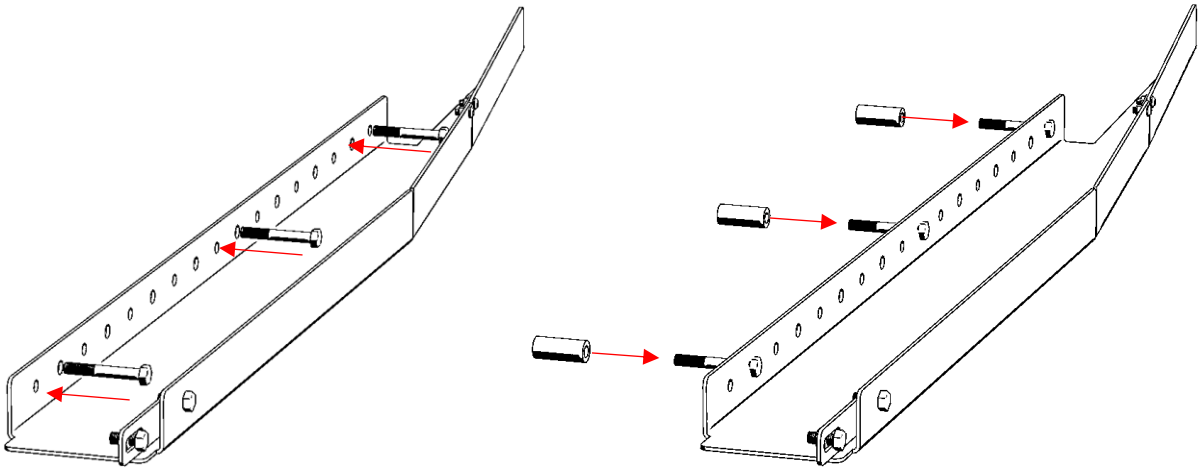

Figure 31: HHCS sliding into respective holes (left) aluminum spacers sliding onto HHCS (right)

- While holding the guide rail in a horizontal orientation, slide the required number of HHCS into their respective slot or hole as shown in the left-hand side of Figure 32.
- Slide the aluminum spacers over the HHCS as shown in the right-hand side.

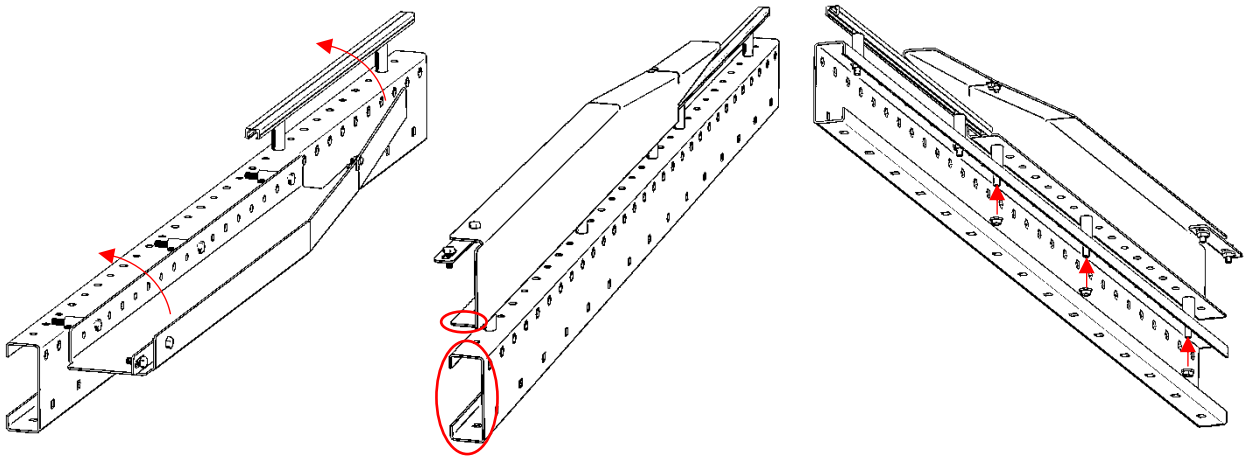

Figure 32: Light duty to 6in fixed transition guide rail positioning and installation

- Component orientation shown in Figure 31 is maintained until the transition guide rail is well-positioned relative to its final location on the side frame
- Lift and drop components into place, as shown in the left-hand and center images of Figure 32

NOTE

- **Note: If the appropriate hole positions were selected, the side of both the guide rail and side frame circled in Figure 32 are aligned prior to securing the HHCS.**
- Once the side frame and guide rail end alignment is verified, the wiz nuts are installed as shown in the right-hand image of Figure 32
- When installing adjacent zones with light duty guide rail and when installing adjacent 6in fixed guide rail to the transition guide rail, a splice assembly is used to lock each guide rail's position relative to the other (circled in the right-hand image of Figure 32)
- For additional guidance on light duty and fixed guide rail splice assembly installation, refer to Figure 7 in 5.1 and Figure 14 in 7.1, respectively.

10.2 Installation – Light Duty to 12in Fixed

- Assembly of the light duty to 12in fixed transition guide rail requires the following hardware:
  - 2-1/4in-long partially threaded 5/16"-18 HHCS
  - 1.5in-long aluminum spacers (5/16in ID and 5/8in OD)
  - 5/16"-18 serrated flange nut (wiz nut)
  - Formed channel and aluminum extrusion shown throughout this section
- Before installing the 12in transition guide rail (which comes in a variety of lengths), ensure the light duty guide rail required is installed per 5.1.
- While holding the guide rail in a horizontal orientation, slide the required number of HHCS into their respective slot or hole as shown in the left-hand side of Figure 33.

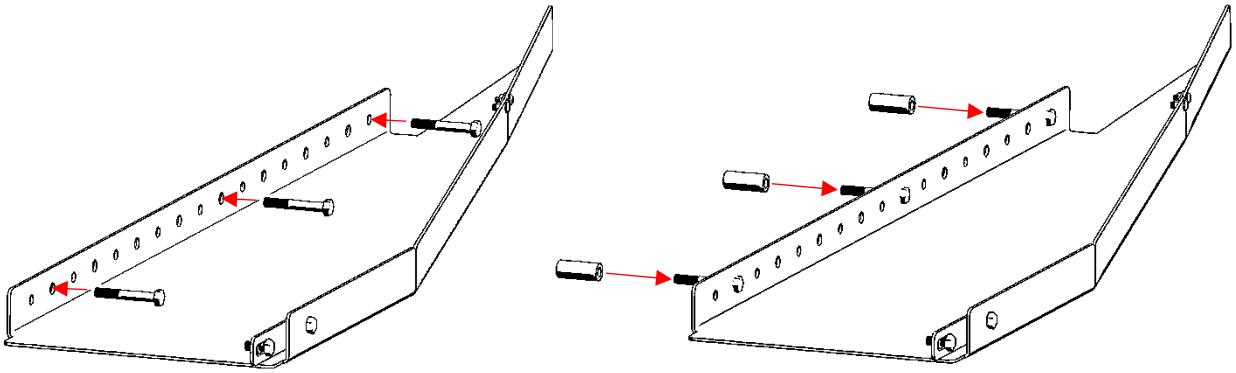

Figure 33: HHCS sliding into respective holes (left) aluminum spacers sliding onto HHCS (right)

- As shown in the right-hand side, slide the aluminum spacers over the HHCS.
- Component orientation shown in Figure 33 is maintained until the transition guide rail is well-positioned relative to its final location on the side frame
- Lift and drop into place, as shown in the left-hand and center images of Figure 34

NOTE

- **Note: If the appropriate hole positions were selected, the side of both the guide rail and side frame circled in Figure 34 are aligned prior to securing the HHCS.**

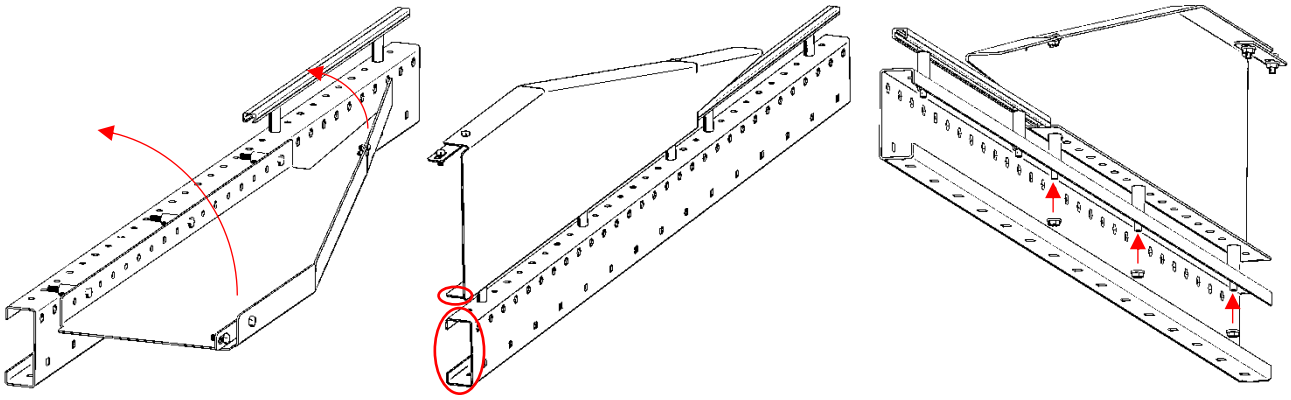

Figure 34: Light duty to 12in fixed transition guide rail positioning and installation

- Once the side frame and guide rail end alignment is verified, the wiz nuts are installed as shown in the right-hand image.
- When installing adjacent zones with light duty guide rail and when installing adjacent 12in fixed guide rail to the transition guide rail, a splice assembly is used to lock each guide rail's position relative to the other.
- For additional guidance on light duty splice assembly installation, refer to Figure 7 in 5.1.
- For additional guidance on 6in fixed guide rail splice assembly installation, refer to Figure 14 in 7.1.

10.3 Installation – 6in Fixed to 12in Fixed

- Assembly of the 6in fixed to 12in fixed transition guide rail requires the following hardware:
  - 2-1/4in-long partially threaded 5/16”-18 HHCS
  - 1.5in-long aluminum spacers (5/16in ID and 5/8in OD)
  - 5/16”-18 serrated flange nut (wiz nut)
  - Formed channel shown throughout this section
- While holding the transition guide rail in a horizontal orientation, slide the required number of HHCS into their respective slot or hole as shown in the left-hand side of Figure 35
- As shown in the right-hand side, slide the aluminum spacers over the HHCS.

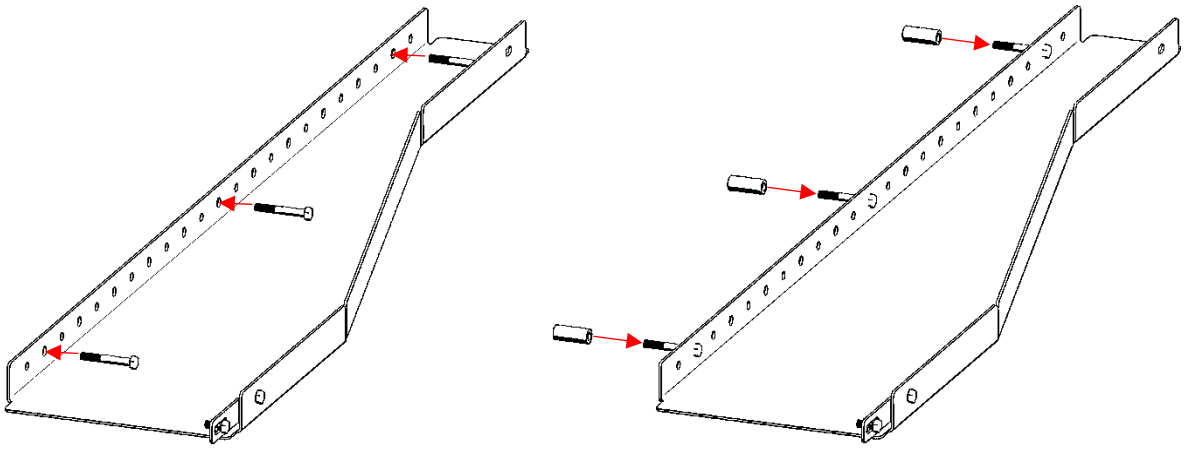

Figure 35: HHCS sliding into respective holes (left) aluminum spacers sliding onto HHCS (right)

- Component orientation shown in Figure 35 is maintained until the transition guide rail is well-positioned relative to its final location on the side frame
- Lift and drop into place, as shown in the left-hand and center images of Figure 36
- **Note: If the appropriate hole positions were selected, the side of both the guide rail and side frame circled in Figure 36 are aligned prior to securing the HHCS.**
- Once the side frame and guide rail end alignment is verified, the wiz nuts are installed as shown in the right-hand image.

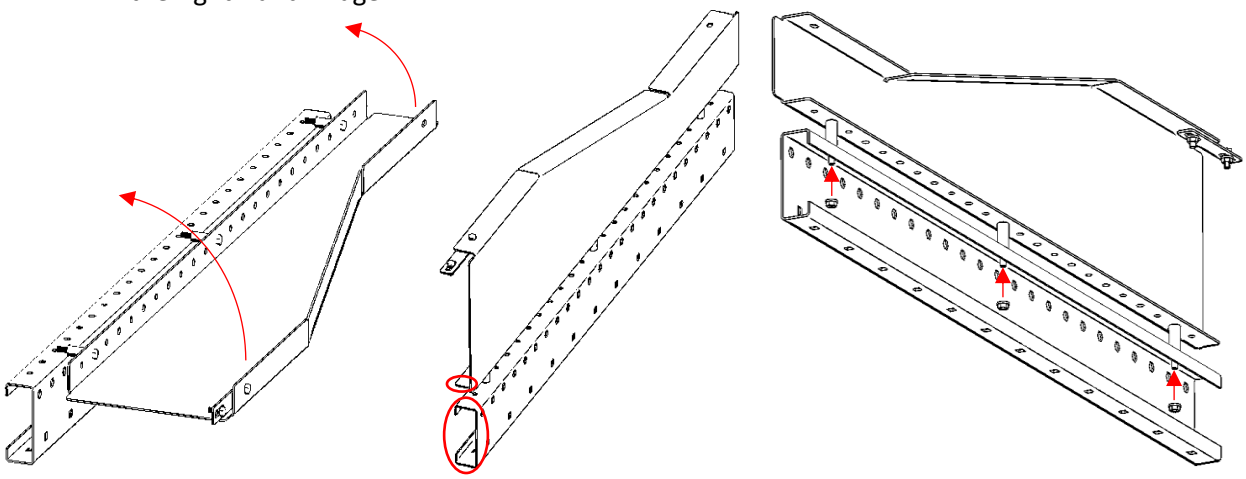

Figure 36: 6in fixed to 12in fixed transition guide rail positioning and installation

- When installing 6in and 12in fixed guide rail, ensure adherence to installation instructions provided in 7.1. More specifically, ensure use of “waterfall” installation method, and use the fixed guide rail splice assembly to secure all fixed guide rail to the transition guide rail as shown in Figure 14.

11.Adjustable Guide Rail

The adjustable guide rail is installed on a variety of ZiPline Conveyor’s products for guidance of packaging varying in height and format. Adjustability is provided in both horizontal and vertical directions. The assembly shown in Figure 37 shows how an adjustable guide rail might be installed on a 24in side frame; however, due to the nature of the assembly, there are several ways and positions in which an adjustable guide rail can be mounted. Each guide rail support assembly requires one square hole on the bottom-side of the side frame for proper support.

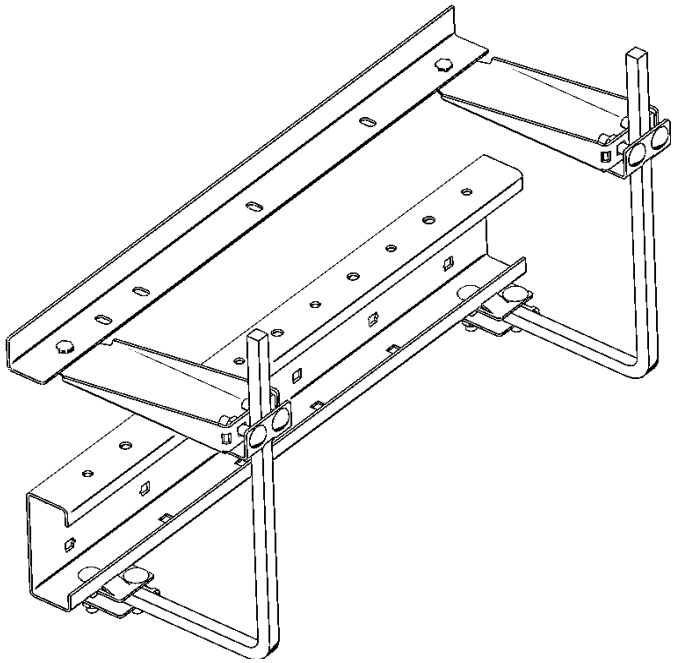

Figure 37: Single adjustable guide rail installed on 24in side frame

11.1 Installation

- Installation of adjustable guide rail requires the following hardware per mount location:
  - (4) 1.5in-long 3/8”-16 CB
  - (4) 3/8”-16 wiz nuts
  - (1) 7/8in-long 5/16”-18 HHCS
  - (1) 5/16”-18 wiz nut
  - (1) Adjustable guide rail rod guide (shown in left-most image of Figure 38)
  - (1) Formed square rod (shown in left-most image of Figure 39)
  - The desired format guide rail (all guide rail formats but fixed 12in may be secured to the updated adjustable guide rail format), and (though not shown in this section) a guide rail splice assembly as needed.
- The first component mounted is the adjustable guide rail rod guide shown mounted to the bottom-side of standard side frame in Figure 38

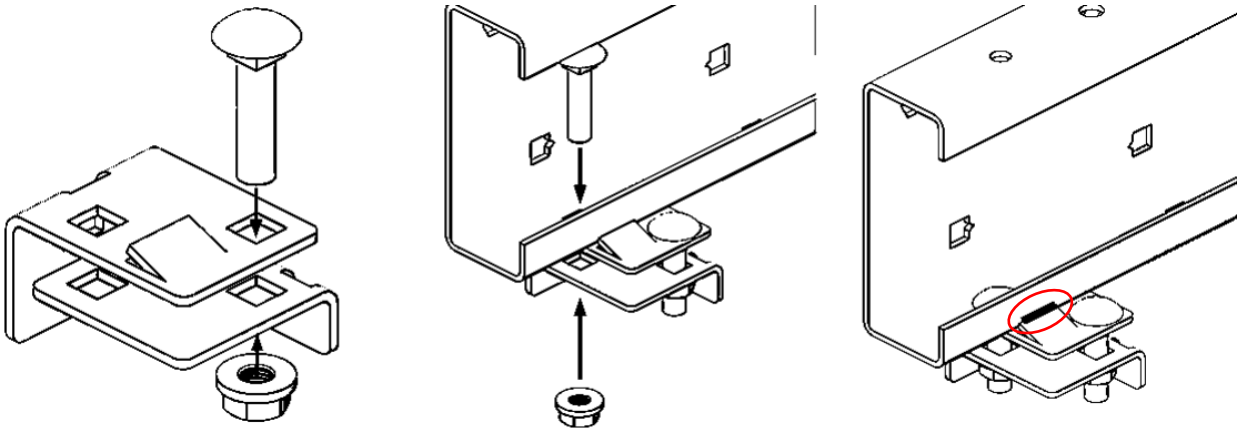

Figure 38: Installation of adjustable guide rail rod guide.

- Install the rod clamping CB prior to the anchoring bolt as shown in Figure 38.
- This hardware should be finger-tight prior to continuing with the assembly installation.
- **Note: In far-right image that the positioning tab is butted up against the outside of the side frame to prevent free rotation of the rod guide (contact surface circled in right image).**
- The short side of the adjustable guide rail rod is then inserted into the guide to its desired depth and tightened in place using the clamping CB as shown in Figure 39.

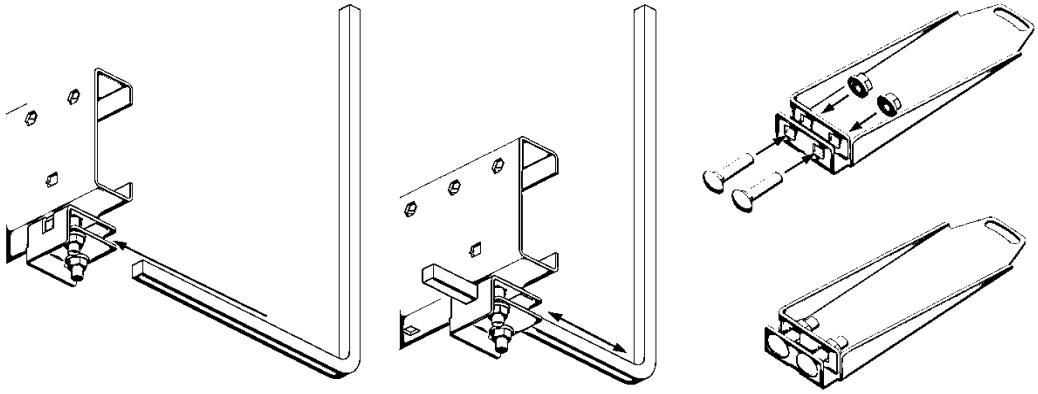

Figure 39: Insertion of adjustable guide rail rod and pre-assembly of guide rail mounting flag

- **Note: This position may be changed post-installation (given that all guide rail sections connected to the one requiring adjustment are being adjusted simultaneously).**
- The rod must be positioned such that the long side of the adjustable guide rail rod is vertically oriented with the highest point above the side frame.
- Prior to continuing to the next phase of installation, assemble and finger-tighten the flag assembly as shown in the right-hand image of Figure 39.

11.2 Single-Flag Format Installation

- Figure 40 shows the alignment, selection of flag assembly height, then tightening of the flag assembly in place.
- **Note: There is a specific sequence of tightening the hardware.**
- If the left-hand CB and wiz nut are tightened prior to the right-hand CB, the flag may end up rotated and out of square.

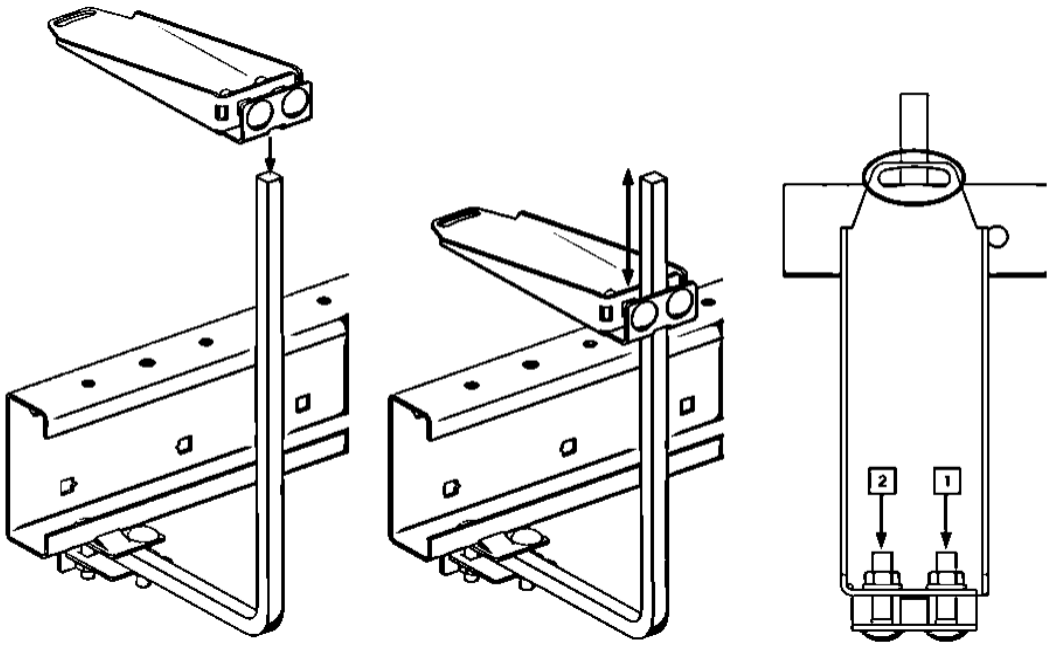

Figure 40: Adjustable guide rail flag positioning and installation

- The right-hand hardware (when viewing the flag assembly from above the guide rail) should be secured first.
- From left to right in Figure 41:
  - Position desired guide rail with slotted hole in-line with the arced slot (shown circled on the right-hand side of Figure 40) and finger-tighten hardware
  - Align guide rail as desired within slotted arc
  - Tighten remaining hardware in the order shown in the far-right image
- **Note: The slotted arc is to provide the user with the ability to set up the guide rail for plowing product on RZPDC conveyor. Plowing is not recommended on BZPDC conveyor.**

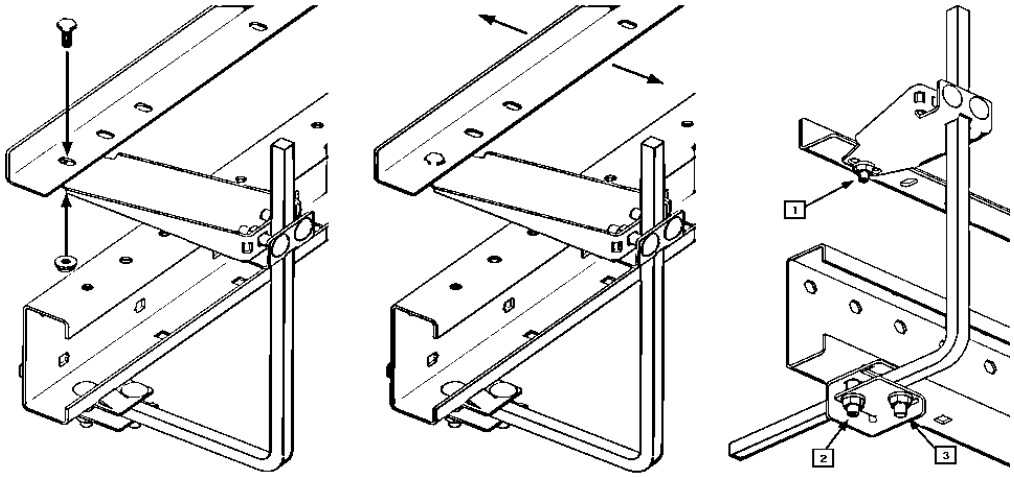

Figure 41: Installation, adjustment, and tightening of angle guide rail as required

11.3 Double-Flag Format Installation

When installing a double adjustable guide rail (which uses two flags instead of one as shown in Figure 42), the process provided in 12.2 is followed again while making sure the first set of flags is installed low enough for the second set of flags to have sufficient space for mounting on the rod. When using light duty guide rail or fixed guide rail, ensure installation of respective guide rail splice assembly to interlock both upper and lower guide rails with adjacent sections of guide rail. For diagrams showing installation of guide rail splice assemblies, see Figure 7, and Figure 14.

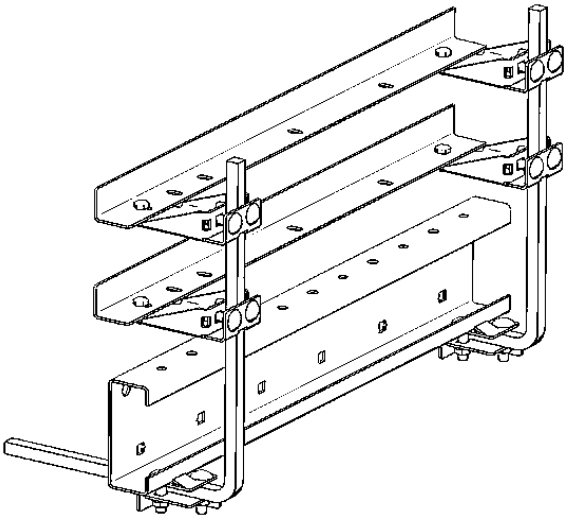

Figure 42: Double-flag adjustable guide rail

12.Legacy Adjustable Guide Rail

The legacy adjustable guide rail is installed on a variety of ZiPline Conveyor's products for guidance of packaging varying in height and format. Adjustability is provided in both horizontal and vertical directions. The assembly shown in Figure 43 shows how an legacy adjustable guide rail might be installed on a 24in side frame; however, due to the nature of the assembly, there are several ways and positions in which legacy adjustable guide rail can be mounted. For the sake of brevity, the legacy adjustable guide rail will be referred to as adjustable guide rail throughout this section. Each guide rail support assembly requires one square hole on the bottom-side of the side frame for proper support.

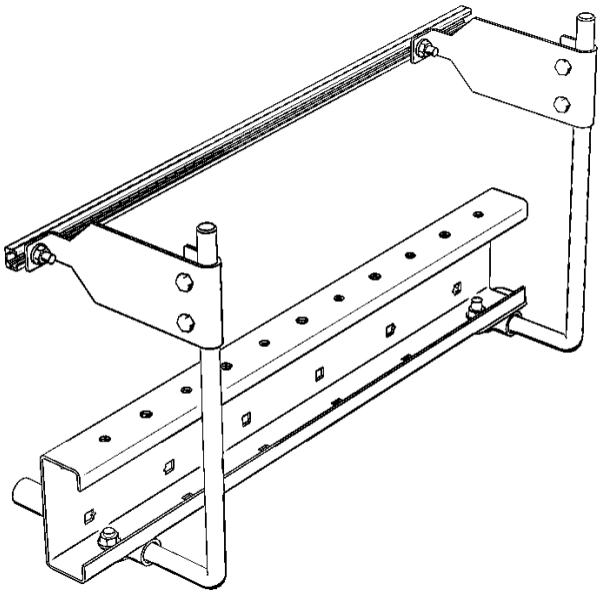

Figure 43: Single adjustable guide rail installed on side frame

12.1 Installation

- Installation of adjustable guide rail requires the following hardware per mount location:
  - (1) 1in-long 3/8"-16 CB
  - (1) 3/8"-16 wiz nut
  - (1) 7/8in-long 5/16"-18 HHCS
  - (1) 5/16"-18 wiz nut
  - Aluminum Extrusion (see section 5)
  - Light Duty Guide Rail Splice Assembly
- One of the assemblies shown will be needed per mounting location
- The first component mounted is the adjustable guide rail rod guide shown mounted to the bottom-side of standard side frame in Figure 44 with a 3/8"-16 CB and wiz nut.
- This should be well-secured prior to continuing with the assembly installation.

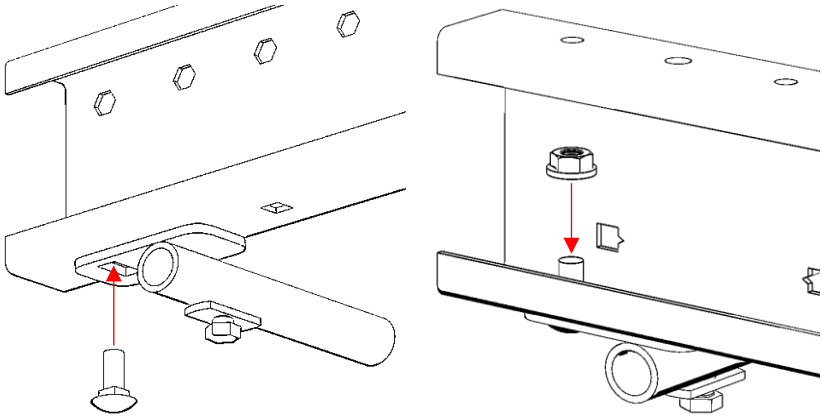

Figure 44: Installation of adjustable guide rail rod guide on bottom-side of standard side frame

- The rod guide may be rotated 180° if it is desirable to extend the guide rail further away from the outer limits of the conveying surface.
- Insert the short side of the adjustable guide rail rod into the guide to its desired depth
- Tighten in place using the set screw as shown in Figure 45.
- This position may be changed post-installation (given that all guide rail sections connected to the one requiring adjustment are being adjusted simultaneously).
- The rod must be positioned such that the long side of the adjustable guide rail rod is vertically oriented with the highest point above the side frame.

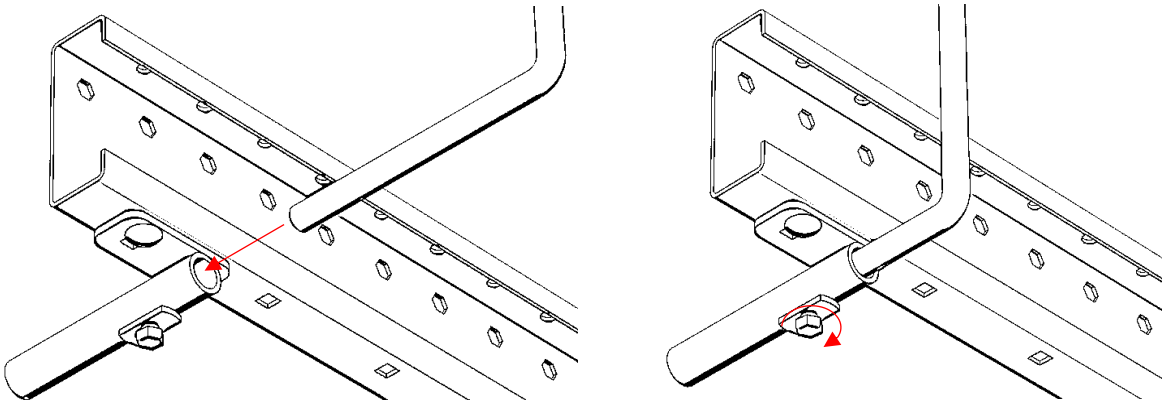

Figure 45: Insert adjustable guide rail rod into rod guide (left) tighten rod guide set screw (right)

12.2 Single-Flag Format Installation

- Slide the flag onto the adjustable guide rail rod
- Hold at the desired height while tightening the bolting as shown in the image second from the left.
- The flag should be parallel to the short leg of the adjustable guide rail rod when it is secured in position.
- Secure the 5/16”-18 HHCS and wiz nut loosely enough for the head of the screw to slide into the open side of a piece of the aluminum extrusion as shown in the third image

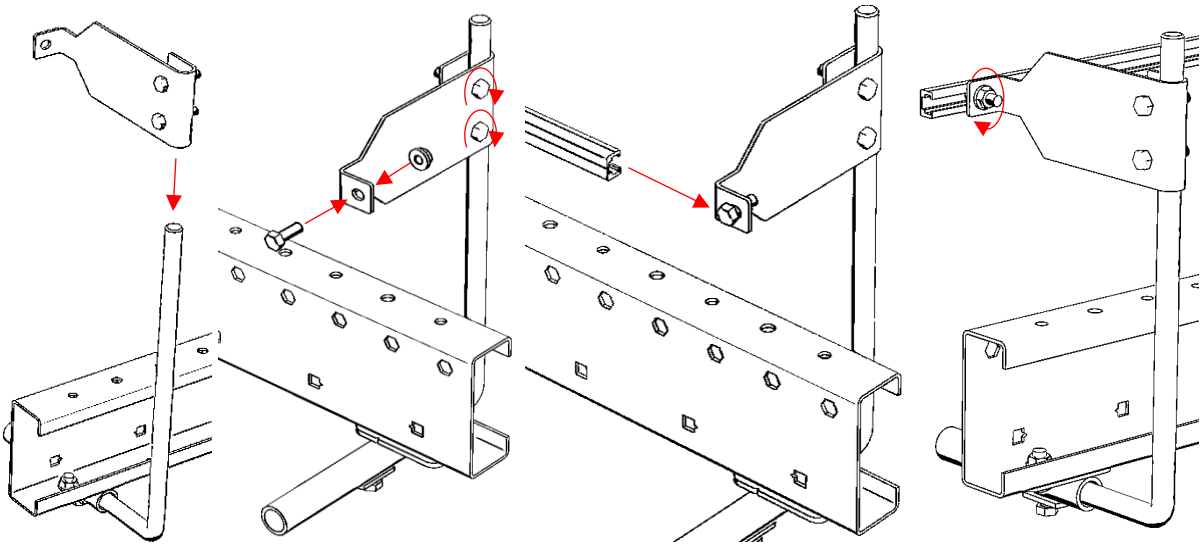

Figure 46: Legacy guide rail flag positioning and installation

- When well-positioned, tighten the HHCS
- If adjacent sections of adjustable guide rail are to be installed, they must be interlocked using a light duty guide rail splice assembly.
- For light duty guide rail installation instructions see 5.1.
- For a diagram of the splice assembly installation, see Figure 7.

12.3 Double-Flag Format Installation

When installing a double adjustable guide rail (which uses two flags instead of one as shown in Figure 47), the process provided in 12.2 is followed again while making sure the first set of flags is installed low enough for the second set of flags to have sufficient space for mounting on the rod. Ensure installation of light duty guide rail splice assembly to interlock both upper and lower light duty guide rails with adjacent sections of guide rail. For light duty guide rail installation instructions, see 5.1. For a diagram of the splice assembly installation, see Figure 7.

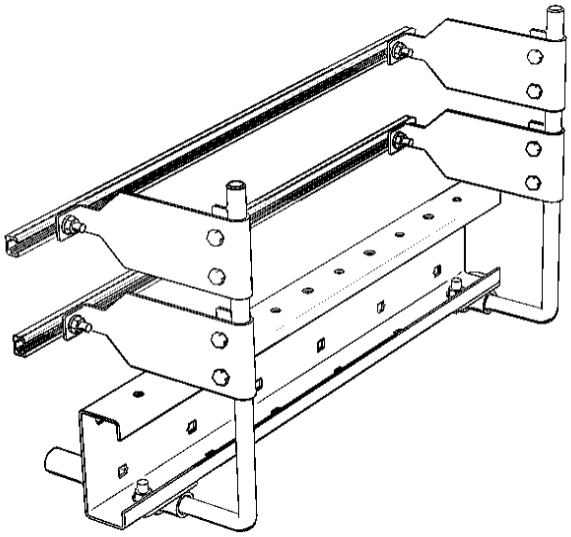

Figure 47: Double adjustable guide rail installed on 24in side frame

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