

# 2-Leg Towers

20' to 55' Tall  
F/C Series

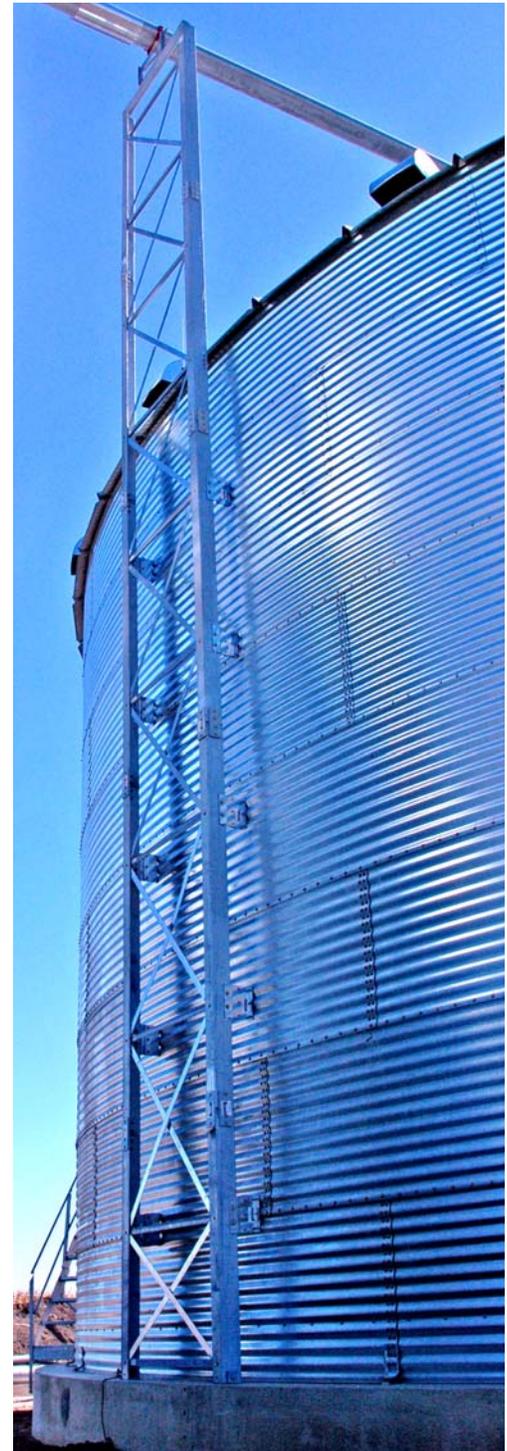
Chain Loop and  
Catwalk Designs

Installation Manual

PNEG-1412

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PNEG-1412

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**All information, illustrations, photos and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.**

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# 1. Introduction

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## Overview

This assembly manual is for 2-Leg Towers for chain loop and catwalk support. Be sure and review all pages before planning foundation work. Depending on application, the foundation could vary. Choose the anchor bolt layout that fits the design, and follow those dimensions for proper layout. Once all concrete work is done and bins have been erected, locate parts and hardware for towers. Check packing list and count all parts. Report any missing components. Layout and sort parts for easy identification. Depending on the work environment, these instructions may need to be altered to fit the needs.

The tower can be assembled flat laying on a level surface and stood upright after all hardware has been tightened. Make sure tower legs are aligned and straight.

## Tools

1. Drift Punches for 3/8" to 1/2" Bolts
2. 3/4" Wrenches and Sockets
3. Ratchet and Impact Gun
4. 9/16" Wrenches and Sockets
5. String

## Safety Guidelines

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting **personal safety** and **preventing equipment problems**. It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



This symbol indicates an imminently hazardous situation which, if not avoided, **will result in serious injury or death**.



This symbol indicates a potentially hazardous situation which, if not avoided, **may result in serious injury or death**.



This symbol indicates a potentially hazardous situation which, if not avoided, **may result in minor or moderate injury**.



This symbol indicates a potentially hazardous situation which, if not avoided, **may result in property damage**.

## 1. Safety

### Safety Instructions

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems that may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards, and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation, where **SERIOUS INJURY** or **DEATH** may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

#### Follow Safety Instructions

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual or need assistance, contact your dealer.



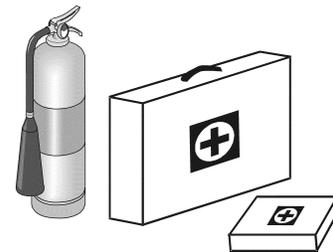
#### Read and Understand Manual

#### Prepare for Emergencies

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



#### Keep Emergency Equipment Quickly Accessible

**Wear Protective Clothing**

Wear close-fitting clothing and safety equipment appropriate to the job.

Remove all jewelry.

Tie long hair up and back.

Wear safety glasses at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

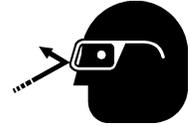
Wear steel-toed boots to help protect your feet from falling debris. Tuck in any loose or dangling shoestrings.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

Wear a hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than six feet (6').

**Eye Protection**



**Gloves**



**Steel-Toed Boots**



**Respirator**



**Hard Hat**



**Fall Protection**





# Anchor Bolt Layout for Chain Loop Support

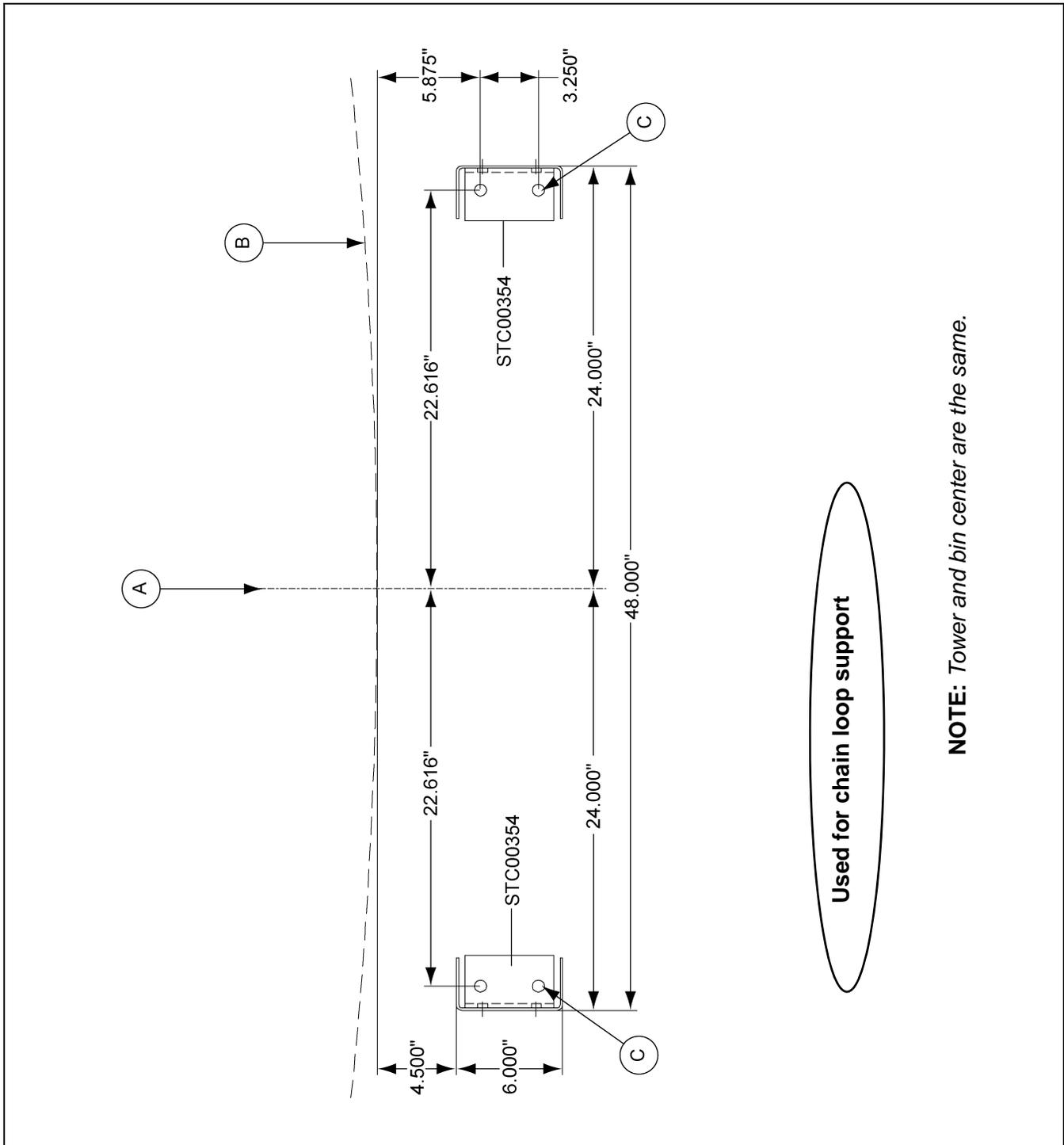


Figure 2A Anchor layout (A-A)

Ref #	Description
A	Tower And Bin Centerline
B	Bin Wall
C	2- $\phi$ 5/8" Headed Anchor Bolts With 8" Embedment Depth

**NOTE:** Tower and bin center are the same.

Used for chain loop support

# Anchor Bolt Layout for Catwalk Support

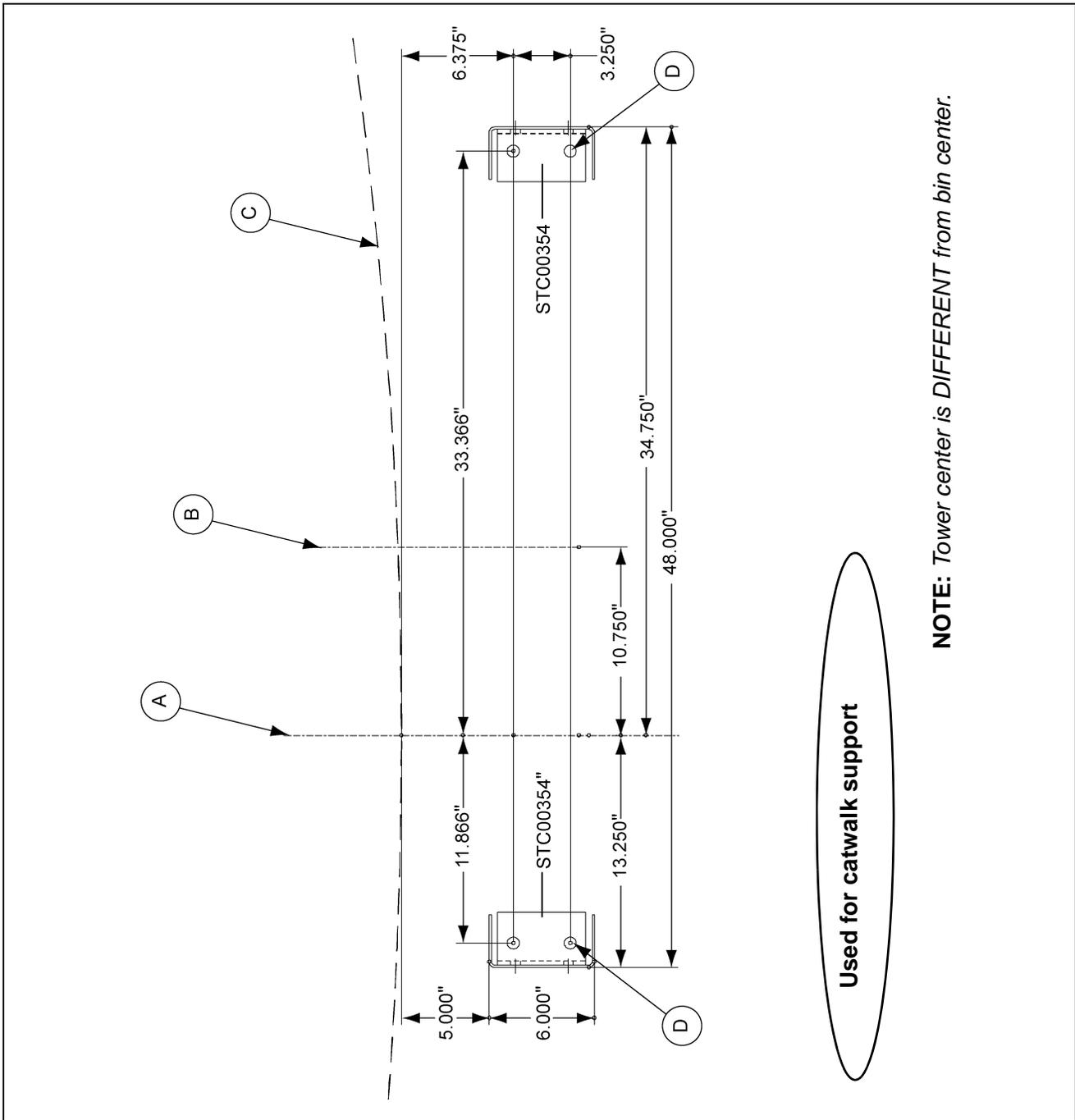


Figure 2B Anchor layout (A-A)

Ref #	Description
A	Bin/Conveyor Center Line
B	Tower Center Line
C	Bin Wall
D	2- $\phi$ 5/8" Headed Anchor Bolts With 8" Embedment Depth

# Lateral Bracket to Bin for Chain Loop Support

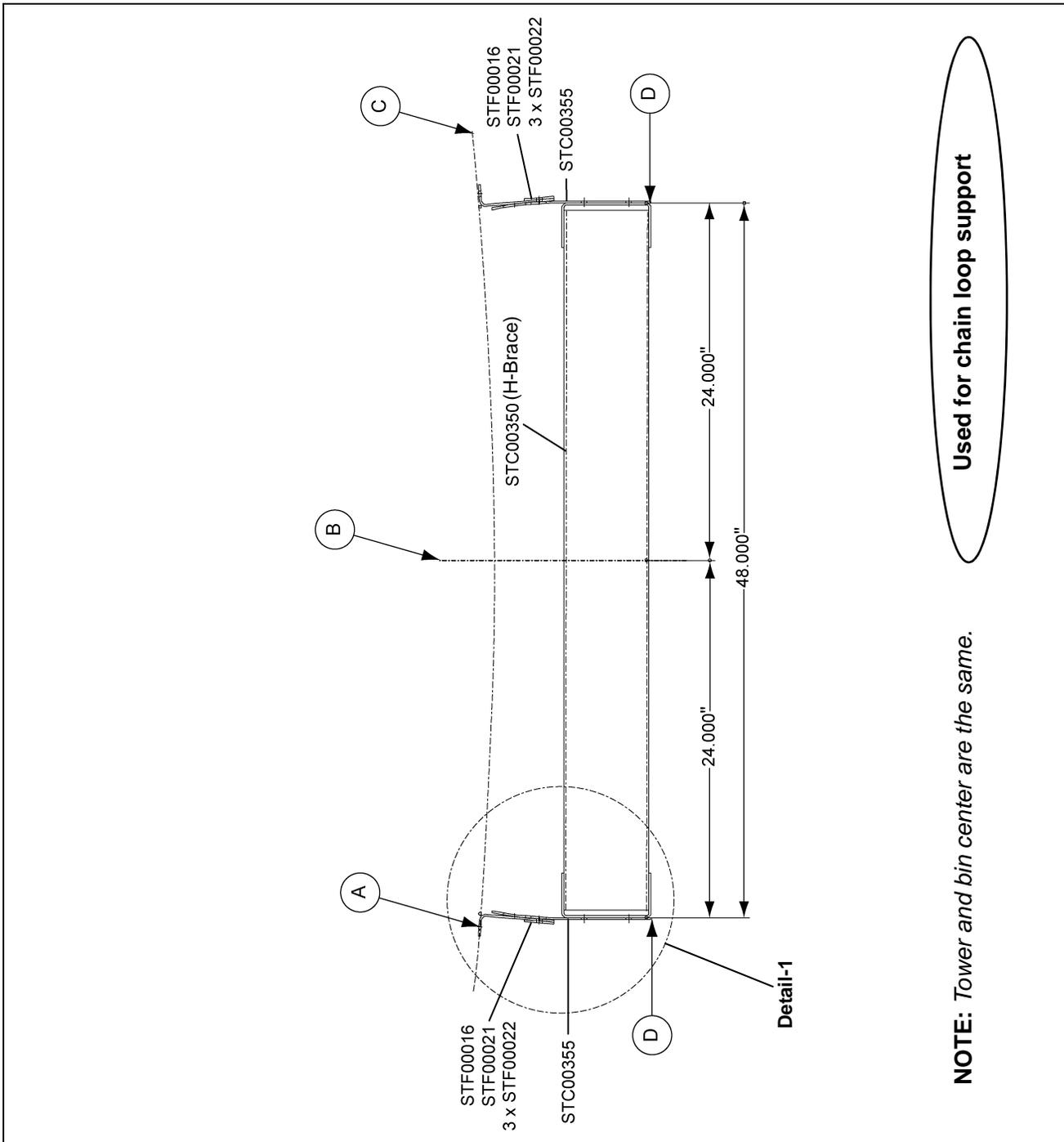


Figure 2C Tower plan (B-B)

Ref #	Description
A	Field Drill Holes On Wall Sheet to Install Tower Lateral Bracket
B	Tower and Bin Center Line
C	Bin Wall
D	Tower Column

Lateral Bracket to Bin for Chain Loop Support (Continued)

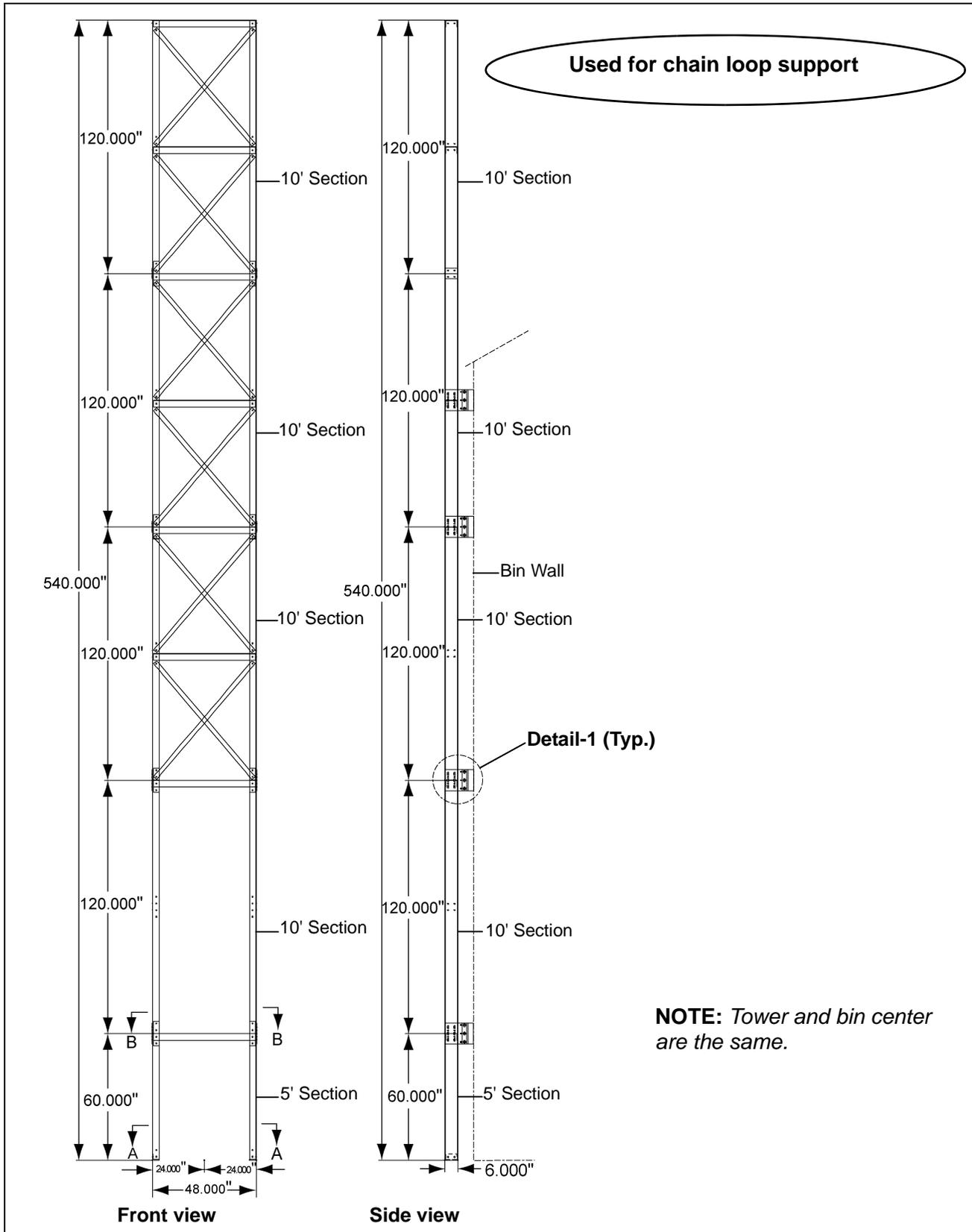


Figure 2D

# Lateral Bracket to Bin for Catwalk Support

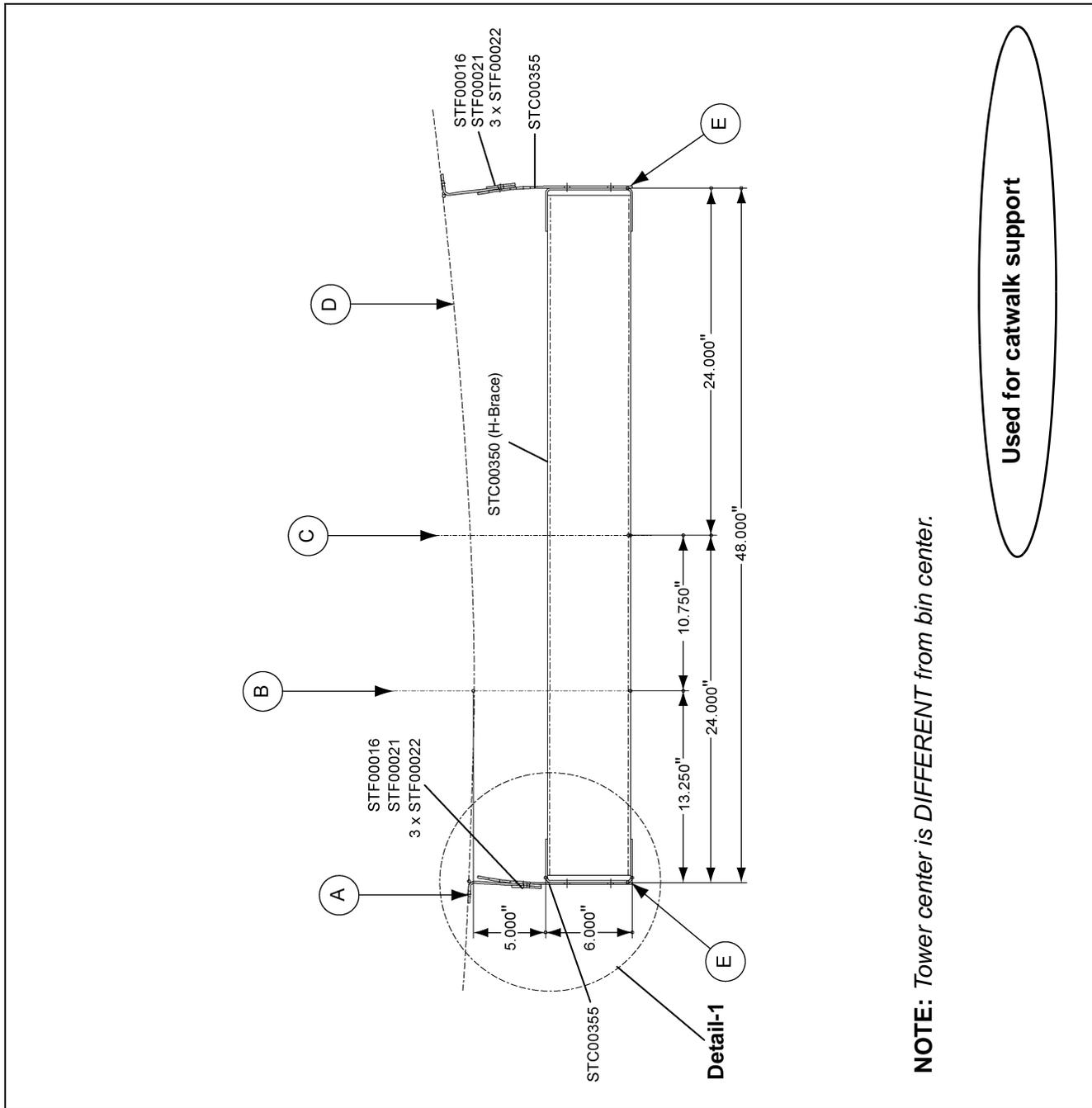


Figure 2E Tower plan (B-B)

Ref #	Description
A	Field Drill Holes On Wall Sheet to Install Tower Lateral Bracket
B	Bin Center (Conveyor Center)
C	Tower Center
D	Bin Wall
E	Tower Column

# Lateral Bracket to Bin for Catwalk Support (Continued)

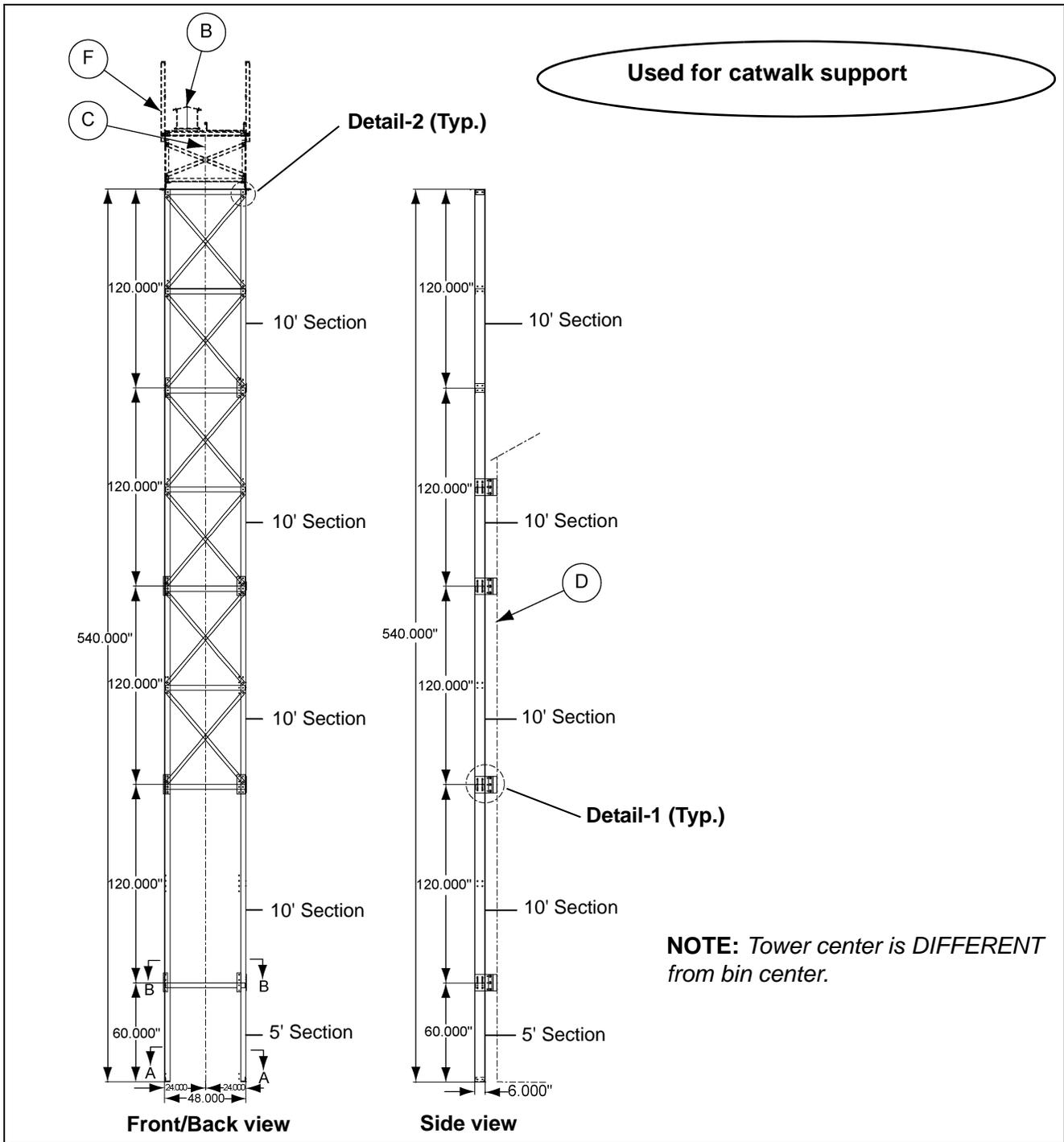


Figure 2F

Ref #	Description
B	Bin/Conveyor Center Line
C	Tower Center Line
D	Bin Wall
F	Catwalk

## Assemble Bottom Angle Joints to Columns

1. Start assembly by taking the two (2) bottom columns (**STC00348** - 5' or **STC00349** - 10' depending on height of tower) and attaching bottom angle joint (**STC00354**) using four (4) 1/2" x 1" HHCS bolts and four (4) 1/2" hex nuts. (See [Figure 2G.](#)) **NOTE:** Angles go to inside of leg channel.

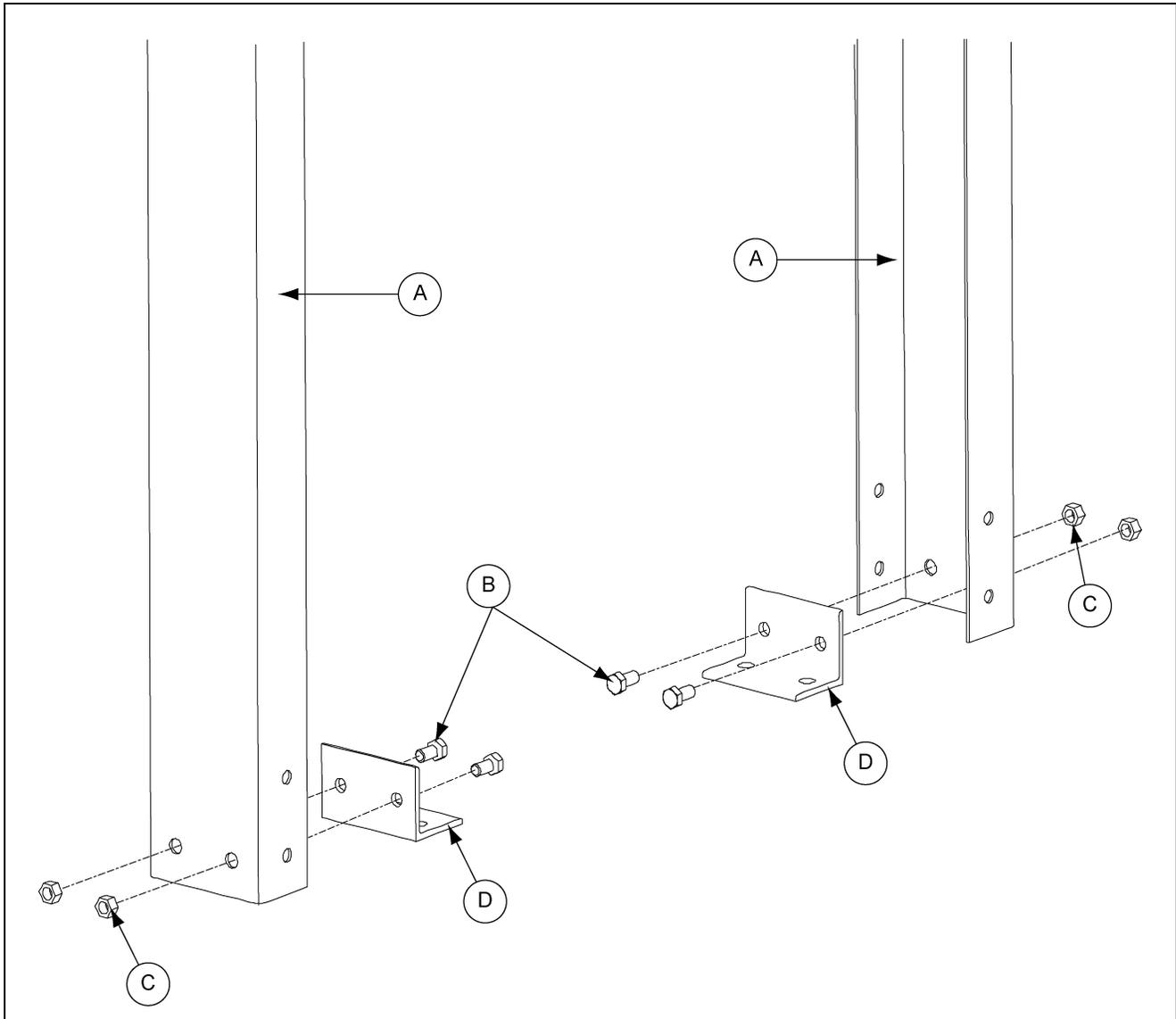


Figure 2G

Ref #	Part #	Description
A	STC00348 STC00349	10' Columns 5' Columns
B	S-4492	1/2" x 1" HHCS Bolts
C	S-3729	1/2" Hex Nut
D	STC00354	Bottom Angle Joint

## Bottom Column Sections with Bottom Angle Joints

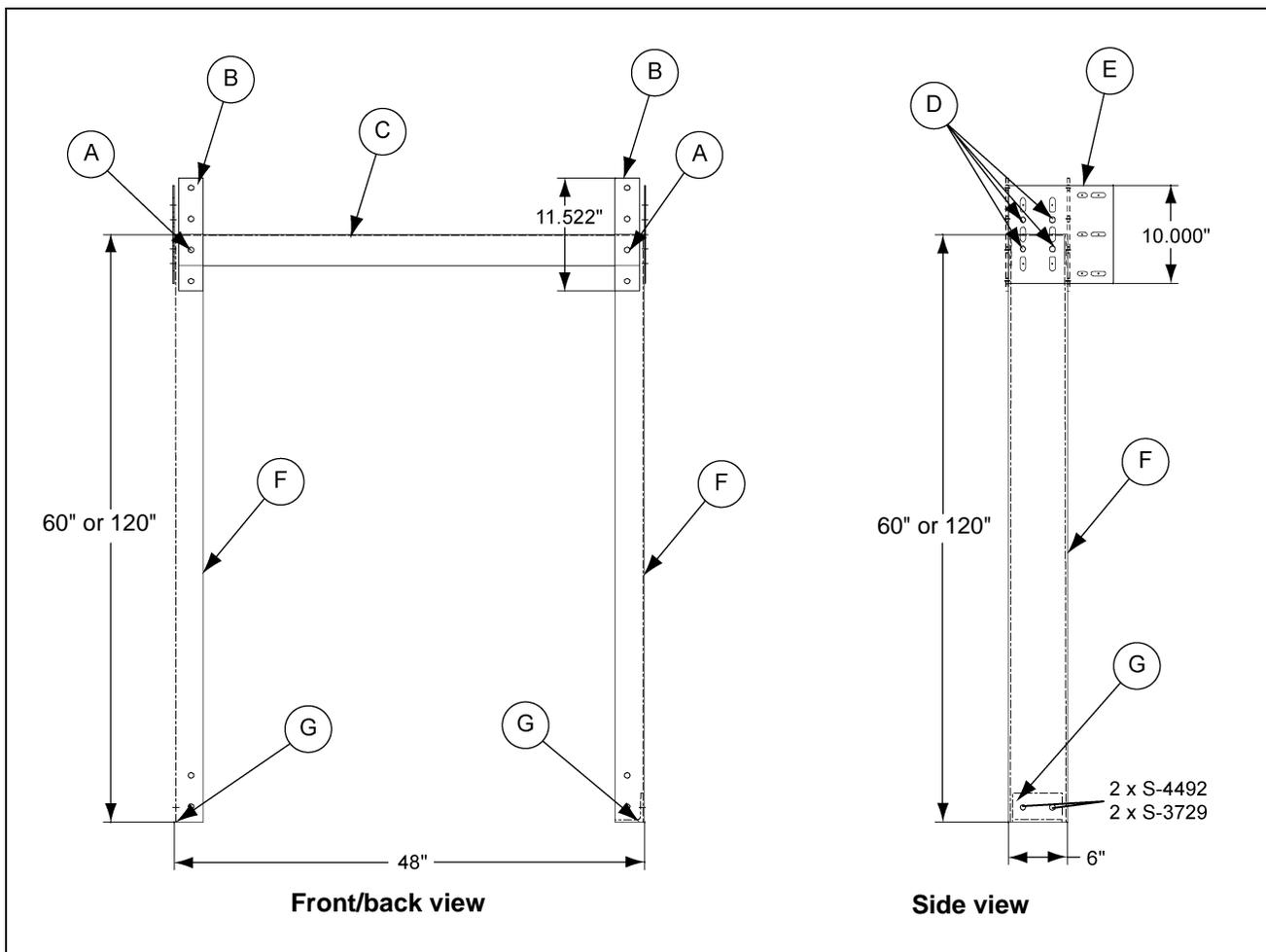


Figure 2H

Ref #	Part #	Description
A		4 x S-4492, 4 x S-3729 on Each Face
B	STC00353	Flange Joint Plate
C	STC00350	"H" Channel Brace
D		4 x S-4492, 4 x S-3729 and 4 x S-2120 (Outside) on Each Face
E	STC00355	Lateral Bracket
F	STC00349 STC00348	10' Columns 5' Columns
G	STC00354	Bottom Angle Joint

## Pre-Measuring for Alignment

This step is to locate the placement of the bin bracket. All bin bracket bolts must line up on the “hill” of the corrugation. If this “pre-measuring” is done correctly, no adjustments should be needed to align holes on hills after the tower is lifted into place.

## Attaching Lateral Bracket, Bin Bracket, and Backing Plate to Columns

1. Align holes and attach lateral brackets (**STC00355**) to top of bottom columns using two (2) 1/2" x 1" bolts, two (2) 1/2" flat washers, and two (2) 1/2" hex nuts for each column. **NOTE:** Bolt heads go to inside of column. Do not fully tighten bolts. (See Figure 21.)

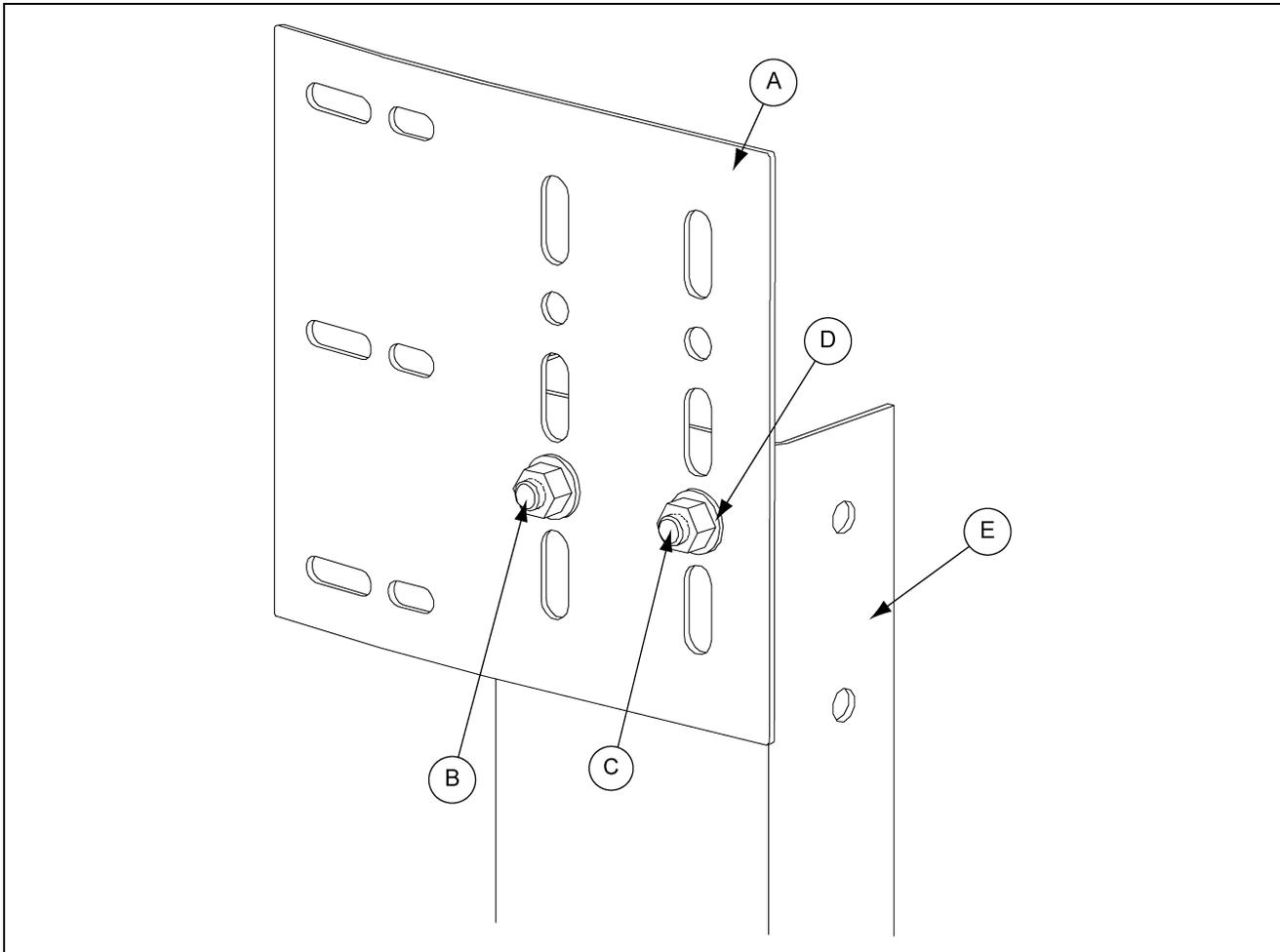


Figure 21

Ref #	Part #	Description
A	STC00355	Lateral Bracket
B	S-4492	1/2" x 1" HHCS Bolt
C	S-3729	1/2" Hex Nut
D	S-2120	1/2" Flat Washer
E		Column

## Pre-Measuring for Alignment (Continued)

2. Attach bin brackets (**STF00016**) and backing plates (**STF00021**) to lateral brackets using three (3) 3/8" x 1" HHCS bolts, three (3) spacers, six (6) washers and three (3) hex nuts as shown in [Figure 2J](#) for each column. **NOTE:** Bolts should be placed in the bottom half of the bin bracket slots. Fasten only finger tight to allow bin to settle.

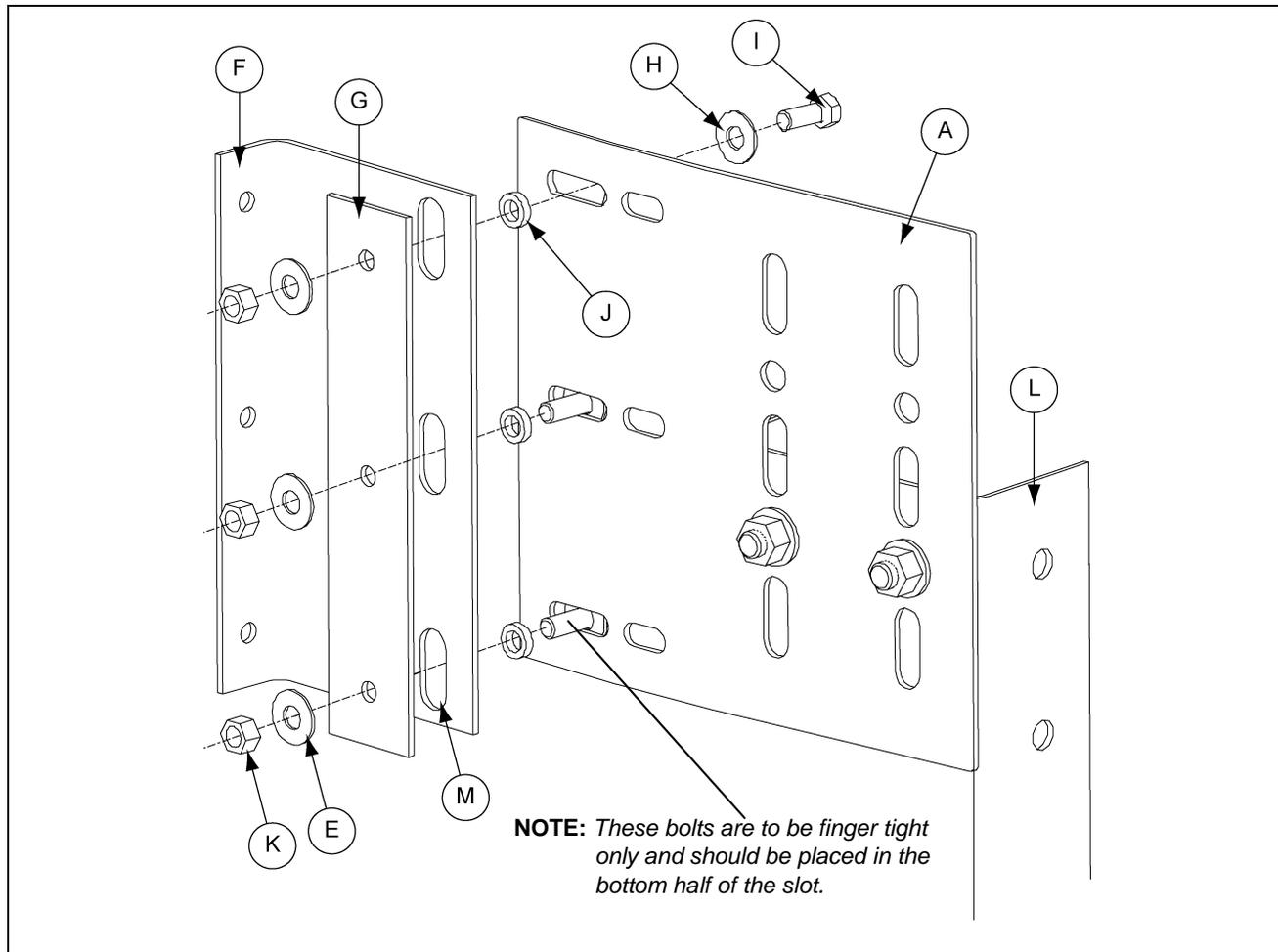


Figure 2J

Ref #	Part #	Description
A	STC00355	Lateral Bracket
E	S-248	3/8" Flat Washer
F	STF00016	Bin Bracket
G	STF00021	Backing Plate
H	S-248	3/8" Flat Washer
I	S-8671	3/8" x 1" HHCS Bolt
J	STF00022	3/8" Spacer
K	S-7489	3/8" Hex Nut
L		Column
M		Bin Bracket Slots

## Pre-Measuring for Alignment (Continued)

3. Take columns and set on foundation so anchor bolts go through angle joints. The bin bracket bolt holes should line up on the “hills” of the corrugation (See Figure 2K).

**NOTE:** Do not attach to bin, this is for alignment only.

4. If holes do not line up on the “hills” of the corrugation, then you need to remove the **LATERAL BRACKET (STC00355)** from the column and reattach it to the column using the slots in the lateral bracket. (See Figure 2K) Then adjust the lateral bracket up or down in the slots to line the holes in **BIN BRACKET (STF00016)** on the “hills” of the corrugation. Then fully tighten lateral bracket bolts.

**NOTE:** **DO NOT** use slots in **BIN BRACKET (STF00016)** for adjustment. Bolts holding lateral bracket, bin bracket, and backing plate need to stay in the bottom half of the slot to allow the bin to settle. These bolts should only be finger tight or damage may occur to the bin.

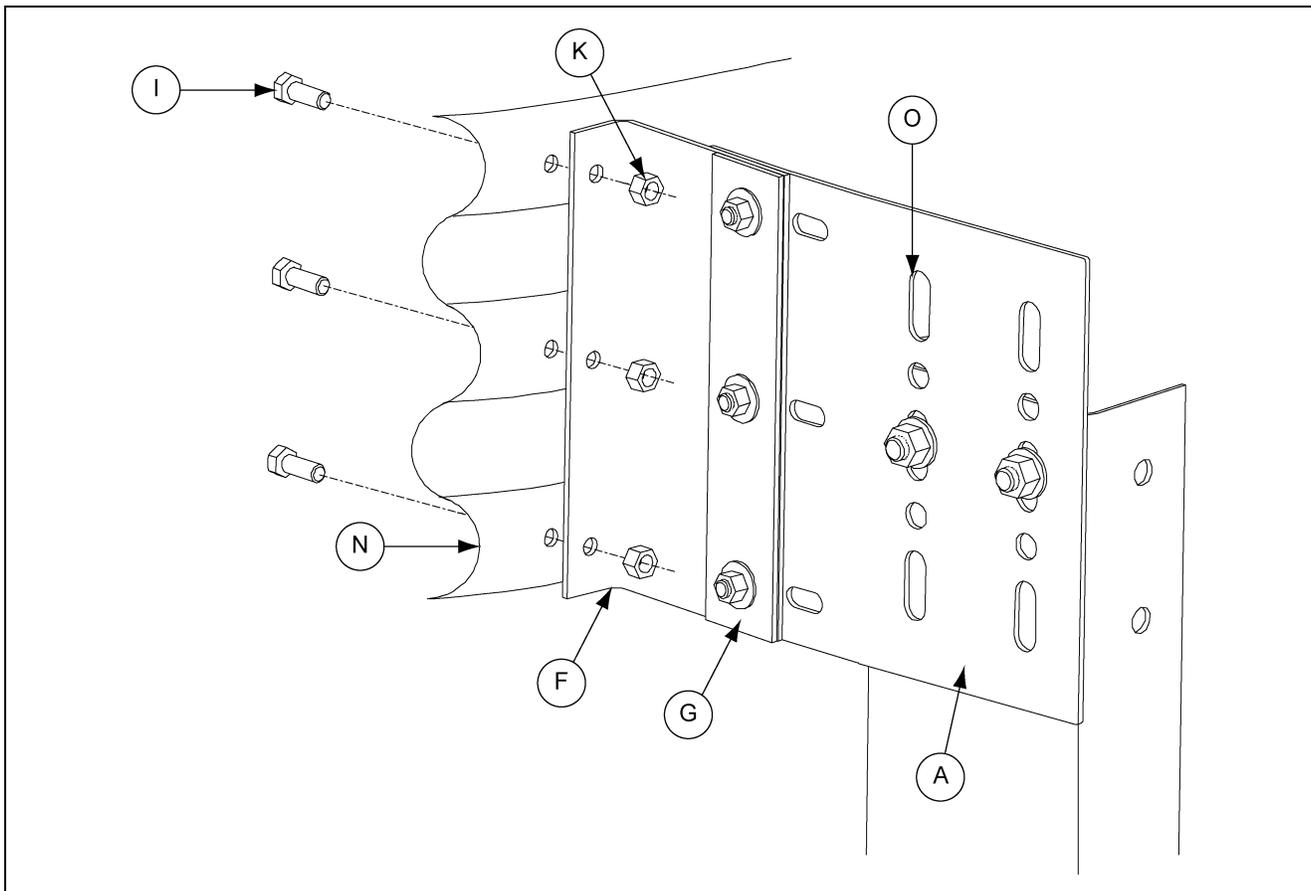


Figure 2K

Ref #	Part #	Description
A	STC00355	Lateral Bracket
F	STF00016	Bin Bracket
G	STF00021	Backing Plate
I	S-8671	3/8" x 1" HHCS Bolt
K	S-7489	3/8" Hex Nut
N		"Hills" of Corrugation
O		Ladder Bracket Slots

## Pre-Measuring for Alignment (Continued)

5. To make sure the next set of lateral brackets, bin brackets, and backing plates line up on the “hills” of the corrugation, measure from the top hole of the previously installed bin bracket to the top hole on the bin bracket being installed. The holes should measure 120" apart. If they do not, then adjust the lateral bracket being installed following [Step 4 on Page 19](#), until the holes measure 120" apart. [See Figure 2L](#). Repeat this step for all bin brackets as the columns are installed.

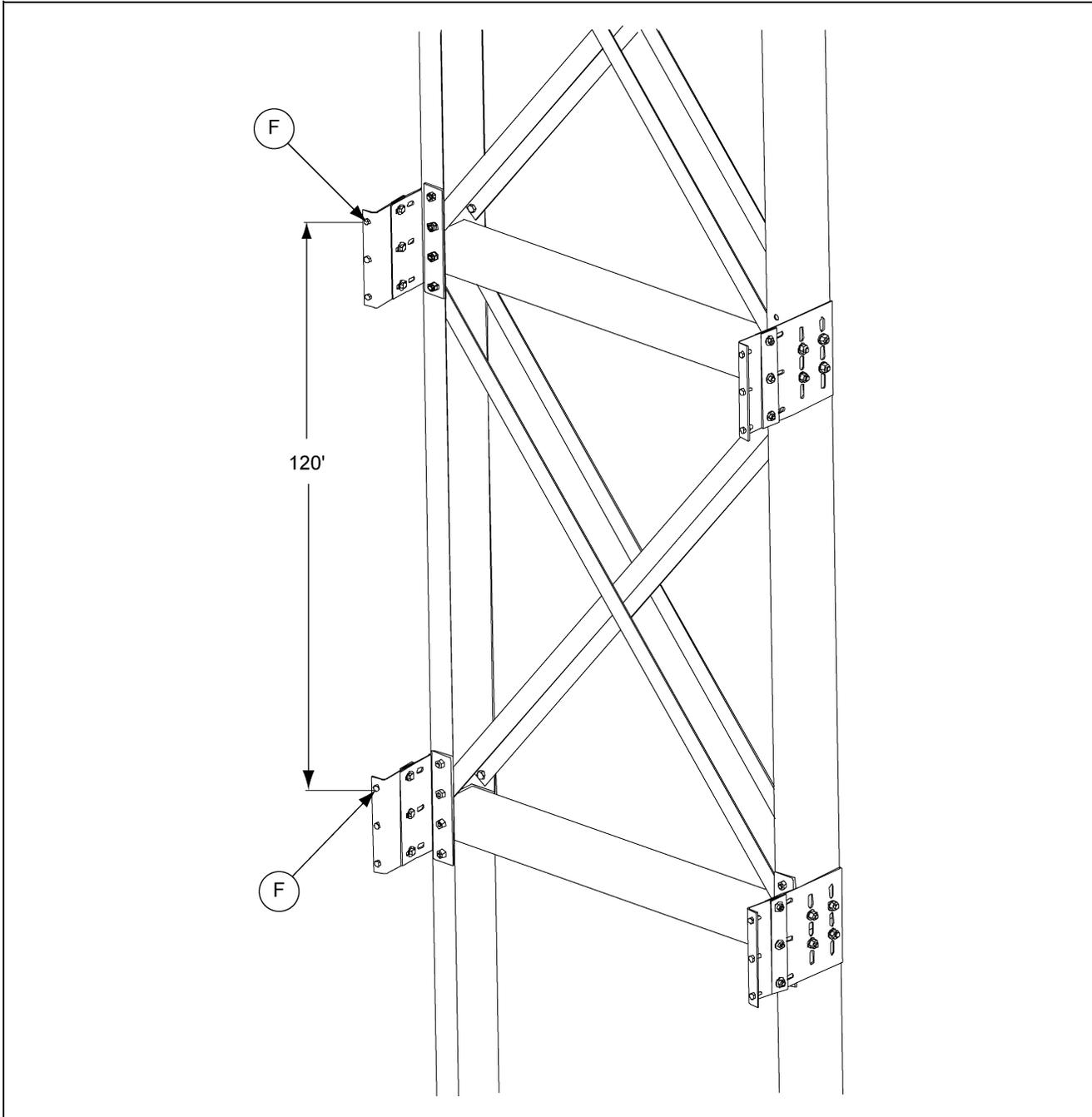


Figure 2L

Ref #	Part #	Description
F	STF00016	Bin Bracket (Top Hole)

# Lateral Bracket, Bin Bracket and Backing Plate Top and Side Views

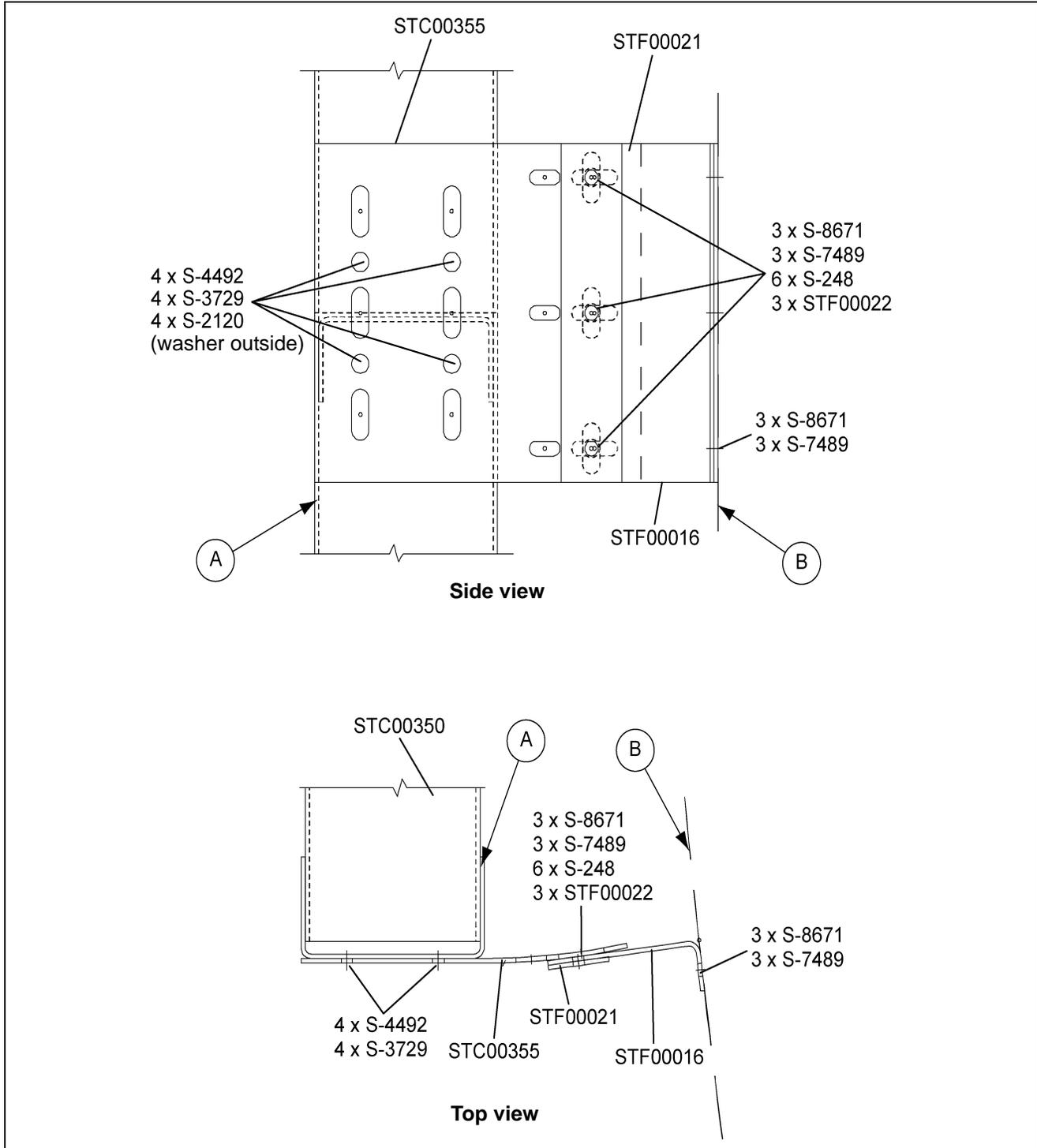


Figure 2M

Ref #	Description
A	Tower Column
B	Bin Wall

## Diagonal “X” Bracing Configurations

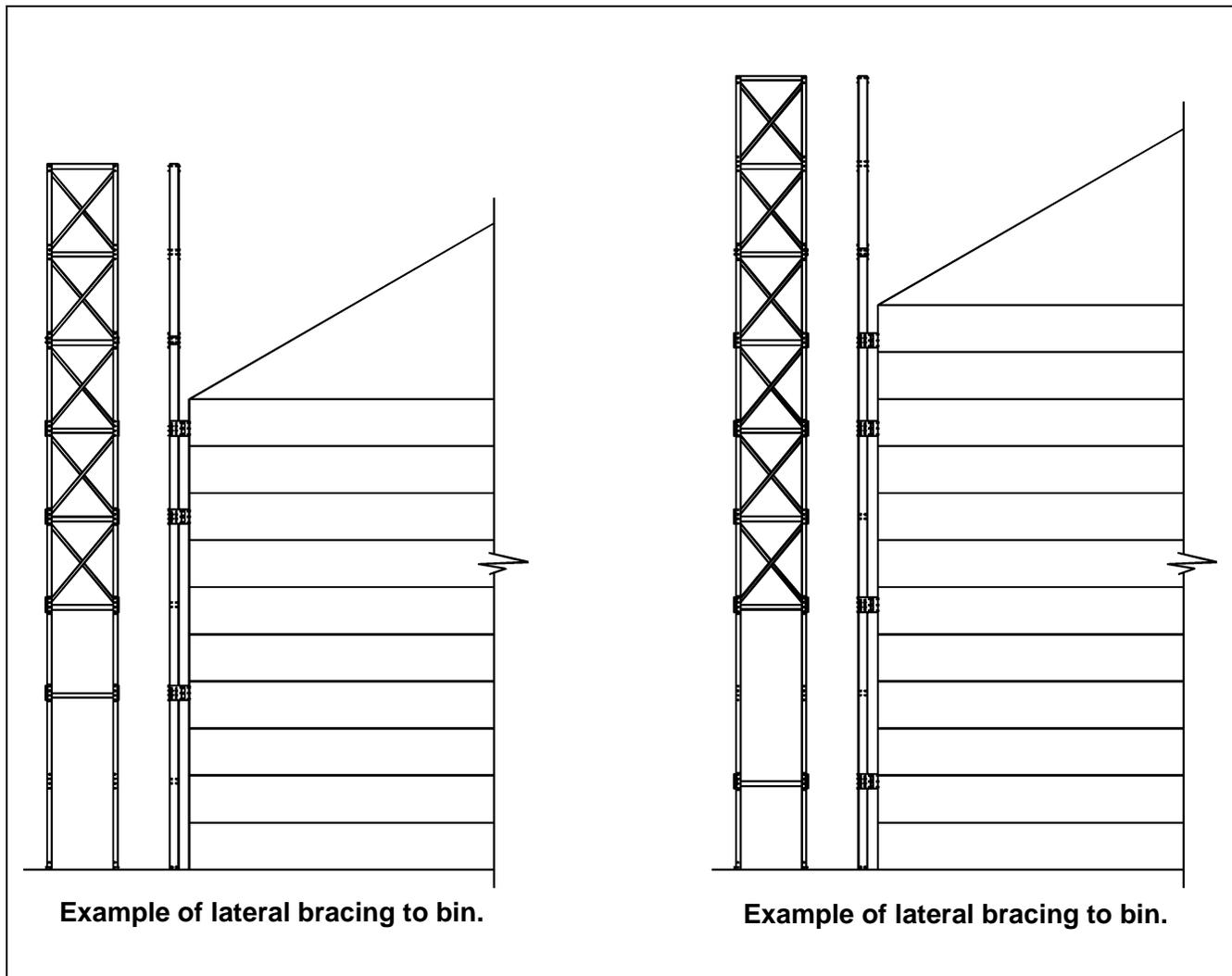


Figure 2N

**Lateral bracing is used to attach tower to grain bin.**

- “X”-Bracing is to be used in all upper sections of a tower.
- All 20'-25'-30' tall towers should all be “X”-braced, except for the lower 10' that is not “X” braced. *(See Figure 2N.)*
- All 35' and taller towers should all be “X”-braced, except for the lower 15' that is not “X”-braced. *(See Figure 2N.)*

## Column Joints without Diagonal “X” Bracing

1. Place next columns on top of bottom columns.
2. Fasten top column to lateral brackets (**STC00355**) using two (2) 1/2" x 1" bolts, washers, and hex nuts for each column. (See Figure 20.)
3. Align flange joint plates (STC00353) with holes in columns and attach using six (6) 1/2" x 1" HHCS bolts and hex nuts. **NOTE:** Bolt heads go to inside of channel. Skip top hole in bottom channel until next step. DO NOT fully tighten bolts.
4. Attach “H” channel braces (**STC00350**) to the inside of the columns and the flange joint plates using two (2) 1/2" x 1" HHCS bolts and hex nuts for each column. (See Figure 20.)

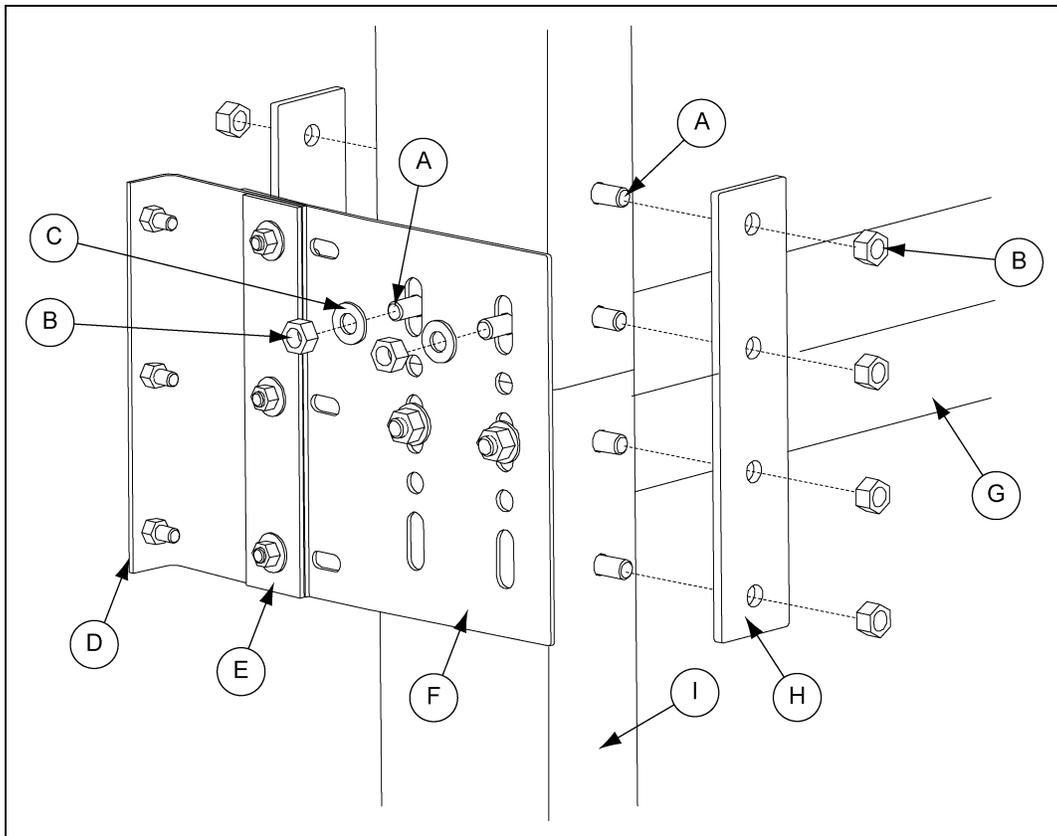


Figure 20

Ref #	Part #	Description
A	S-4492	1/2" x 1" HHCS Bolt
B	S-3729	1/2" Hex Nut
C	S-2120	1/2" Flat Washer
D	STF00016	Bin Bracket
E	STF00021	Backing Plate
F	STC00355	Lateral Bracket
G	STC00350	“H” Channel Brace
H	STC00353	Flange Joint Plate
I		Column

## 2. Assembly

### Column Joints with Diagonal “X” Bracing

Review diagonal “X” bracing configurations on [Page 22](#) and determine the proper layout for the bin diameter. Diagonal bracing covers 5' of vertical height, additional “H” braces are to be installed at these increments.

1. To install diagonal bracing, align columns on top of each other and fasten together using a web plate (**STC00352**), four (4) 1/2" x 1" HHCS bolts and 1/2" hex nuts for each column. **NOTE:** Bolt heads go to inside of column. (See [Figure 2P.](#))
2. Using top hole, attach flange joint plates (**STC00353**) to columns using two (2) 1/2" x 1" HHCS bolts and hex nuts for each column as shown.
3. Attach eight (8) diagonal braces (**STC00351**) to inside of both right and left columns and flange joint plates using eight (8) 1/2" x 1" HHCS bolts and hex nuts. One set of four (4) braces go above “H” channel brace (**STC00350**) and one set goes below. (See [Figure 2P.](#)) **NOTE:** Diagonal braces are located on both front and back flanges.
4. Attach “H” channel brace (**STC00350**) to both left and right columns and flange joint plates (**STC00353**) using four (4) 1/2" x 1" HHCS bolts and nuts for each column. (See [Figure 2P.](#))

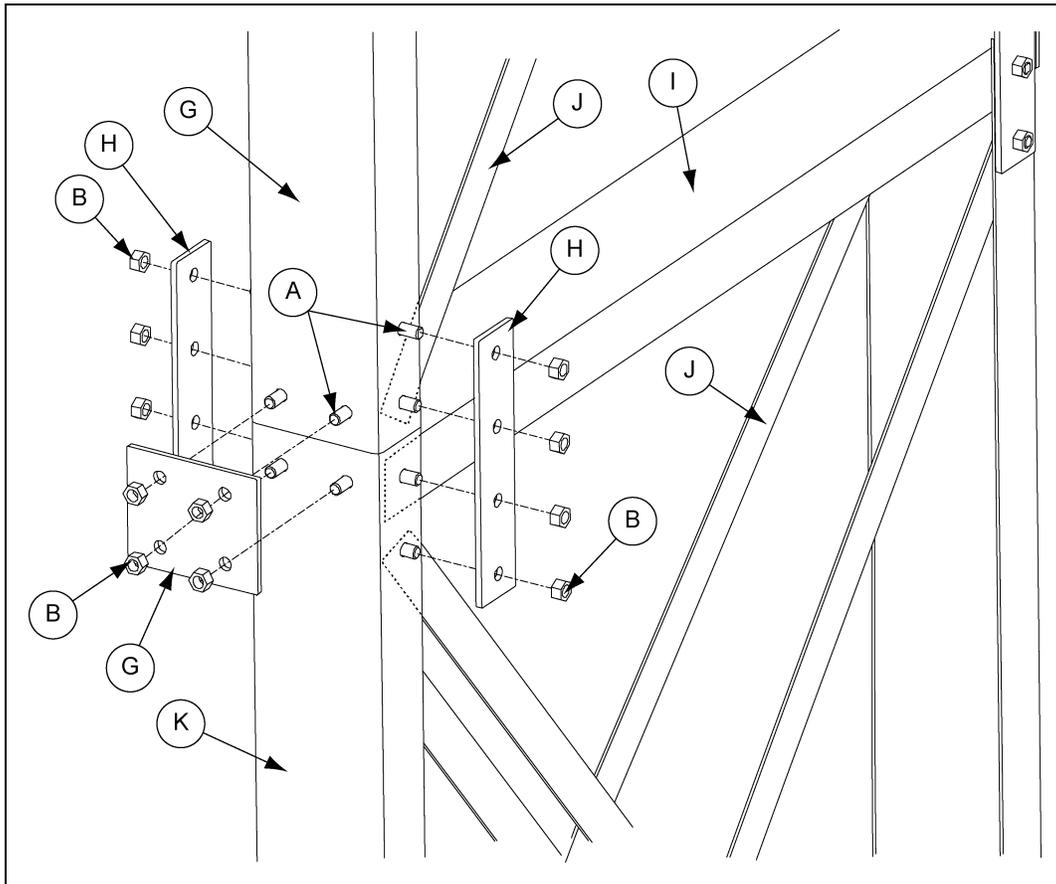


Figure 2P

Ref #	Part #	Description
A	S-4492	1/2" x 1" HHCS Bolt
B	S-3729	1/2" Hex Nut
G	STC00352	Web Plate
H	STC00353	Flange Joint Plate

Ref #	Part #	Description
I	STC00350	“H” Channel Brace
J	STC00351	Diagonal “X” Brace
K		Column

## Column Joints with Diagonal “X” Bracing (Continued)

5. For “X” bracing where a lateral bracket is used instead of a web plate, see [Figure 2Q](#).

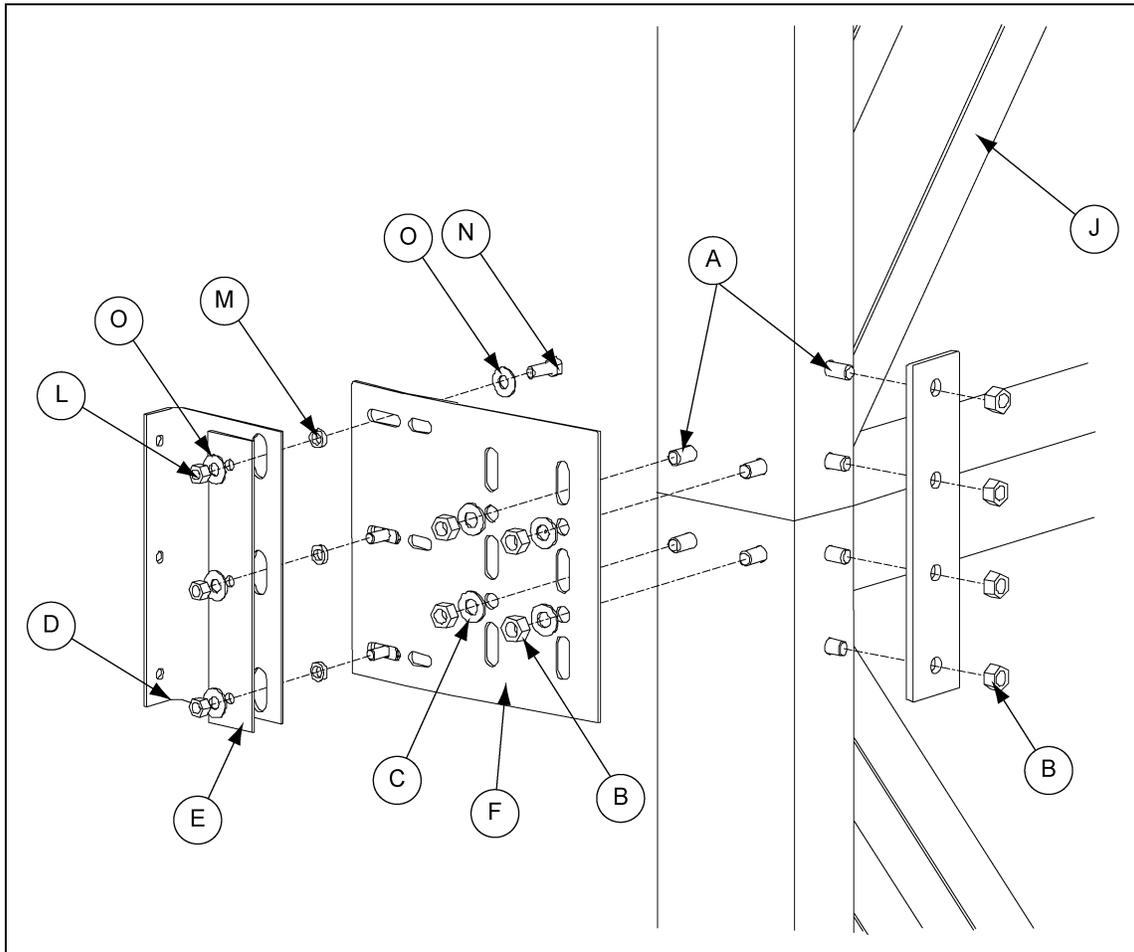


Figure 2Q

Ref #	Part #	Description
A	S-4492	1/2" x 1" HHCS Bolt
B	S-3729	1/2" Hex Nut
C	S-2120	1/2" Flat Washer
D	STF00016	Bin Bracket
E	STF00021	Backing Plate
F	STC00355	Lateral Bracket
J	STC00351	Diagonal “X” Brace
L	S-7489	Hex Nut, 3/8"-16 JS500 Grade
M	STF00022	3/8" Spacer
N	S-8671	3/8" x 1" HHCS Bolt
O	S-248	3/8" Flat Washers

## Column Joints with Diagonal “X” Bracing (Continued)

6. Install an “H” channel brace (**STC00350**) to the top of the columns and “X” bracing as shown using four (4) 1/2" x 1" HHCS bolts and nuts. (See *Figure 2R.*)

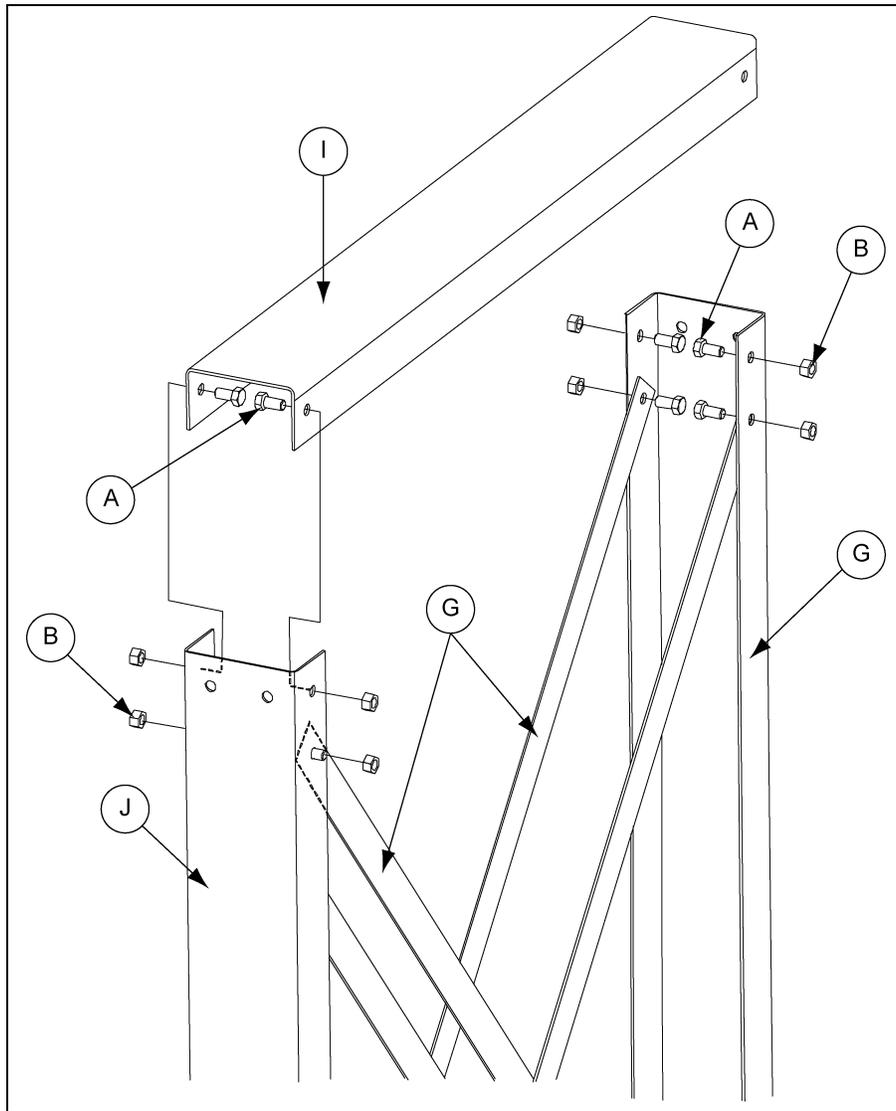


Figure 2R

Ref #	Part #	Description
A	S-4492	1/2" x 1" HHCS Bolt
B	S-3729	1/2" Hex Nut
G	STC00351	Diagonal “X” Brace
I	STC00350	“H” Channel Brace
J		Column

# Diagonal "X" Bracing

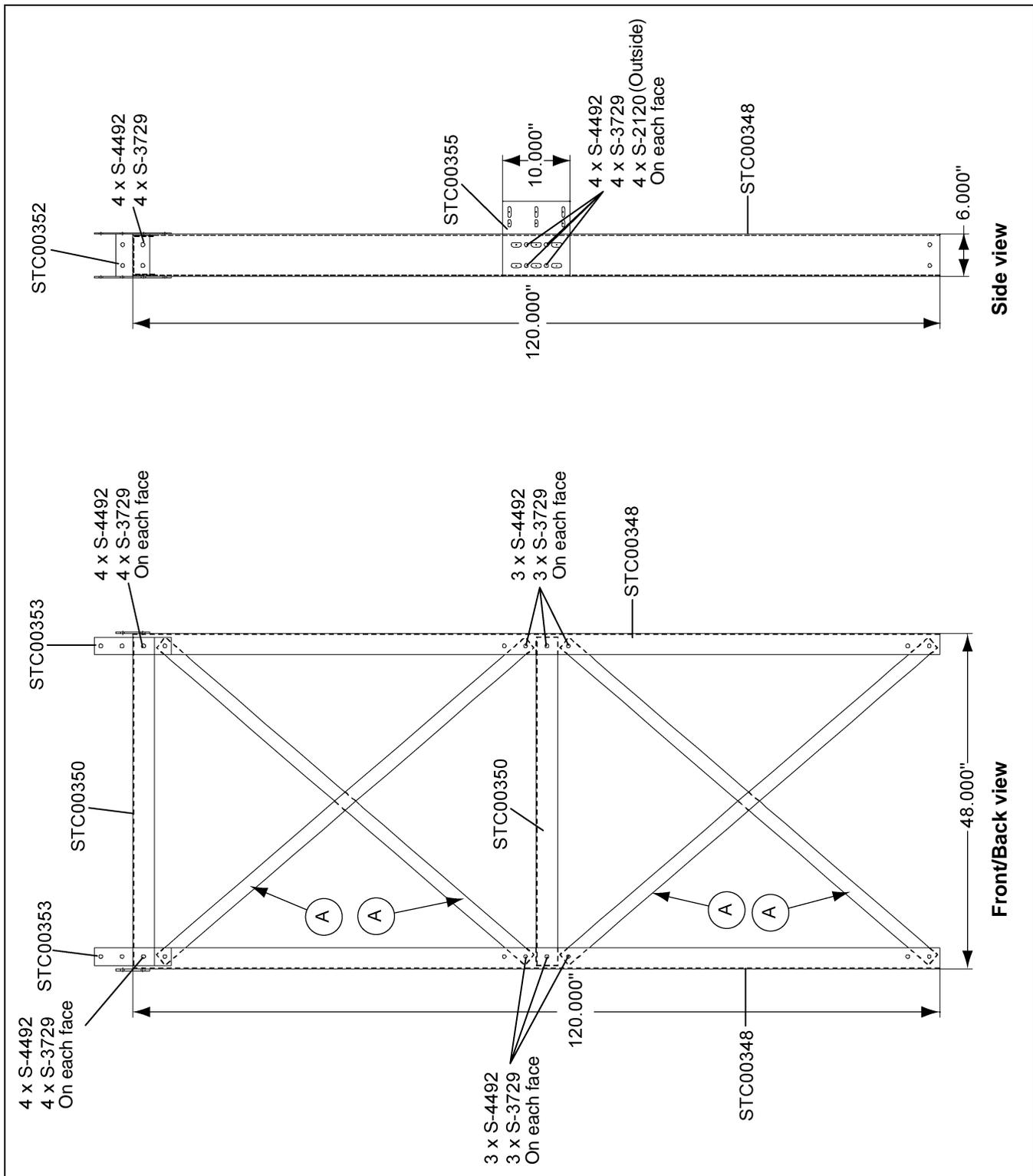


Figure 2S

Ref #	Part #	Description
A	STC00351	One on back flange and One on front flange (2)

## 2. Assembly

### Straighten Columns and Stand Towers in Place

1. Start with one column and run a string from top to bottom, align all joints and straighten. Tighten all hardware. Repeat process for both columns. **NOTE: *DO NOT* tighten hardware that connects the bin bracket and backing plate to the lateral bracket. These bolts need to be finger tight only to allow bin to settle.**
2. When assembly is complete and hardware tightened. Stand tower assembly upright and set in place over anchor bolts. All bin bracket holes should line up on the hills of the corrugation. Field drill through bin brackets into hills of corrugation and bolt the tower bin brackets to bin sidewall using 3/8" x 1" HHCS bolts and hex nuts. **NOTE: *Bolt heads go on outside of bin.***

### Catwalk Support Brackets

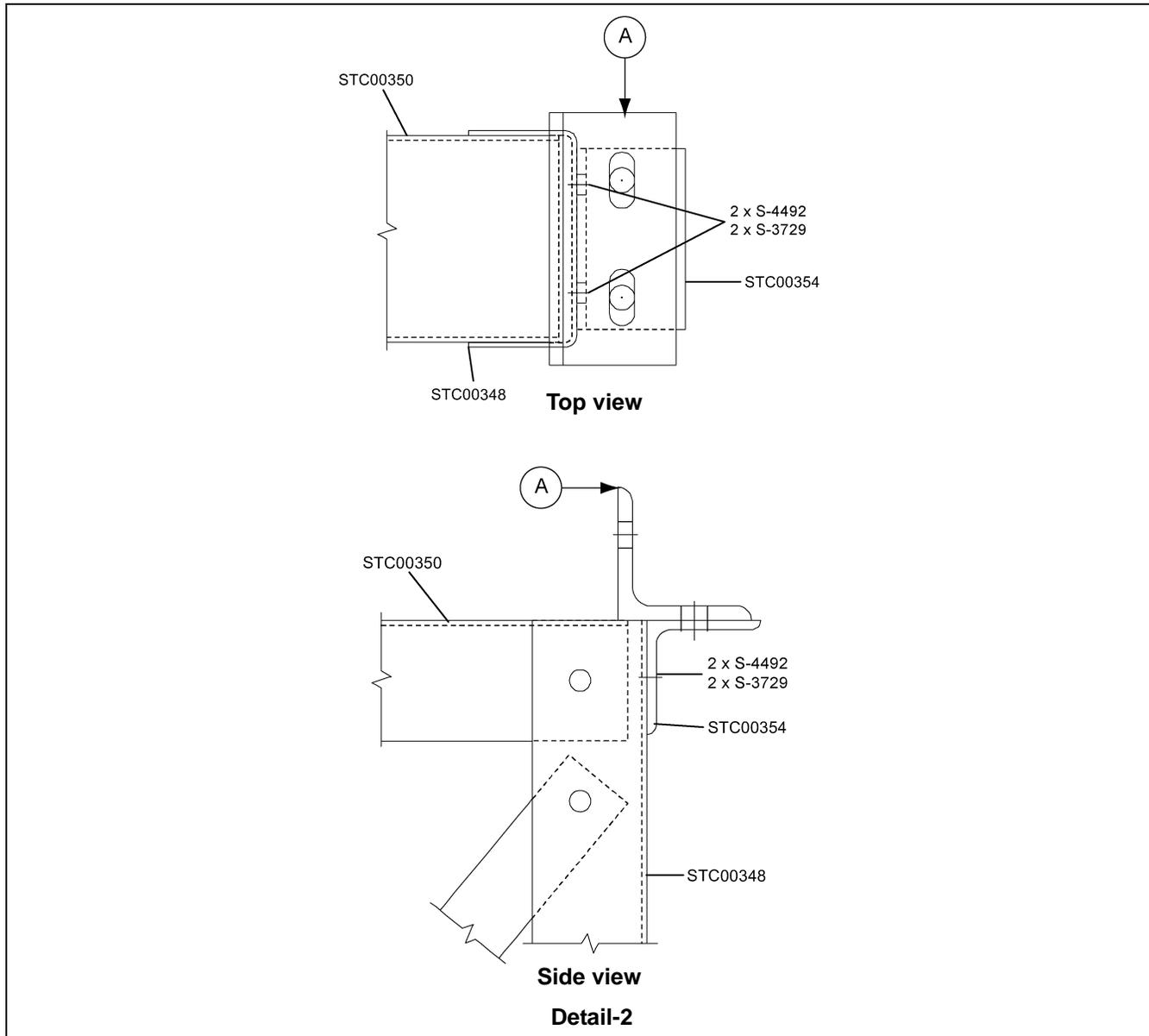


Figure 2T

Ref #	Description
A	Catwalk Support Bracket

## Limited Warranty — N.A. Grain Products

The GSI Group, LLC. (“GSI”) warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI’s sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

**Warranty Enhancements:** The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
<b>Storage</b>	Grain Bin Structural Design • Sidewall, roof, doors, platforms and walkarounds • Flooring (when installed using GSI specified floor support system for that floor) • Hopper tanks (BFT, GHT, NCHT, and FCHT)	5 Years
<b>Conditioning</b>	Dryer Structural Design – (Tower, Portable and TopDry) • Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: • Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
<b>Material Handling</b>	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

### Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY PRODUCT MANUFACTURED OR SOLD BY GSI, OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

#### Notice Procedure:

In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

#### Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



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