



Bolted Bin

Instructions Manual

PNEG-2138

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PNEG-2138

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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Safety Guidelines

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines for future reference.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY** or **DEATH**.

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

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

Personnel operating or working around equipment must read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

ST-0001-3

Cautionary Symbol Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



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, **can result in serious injury or death.**



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



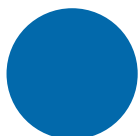
This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

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



ST-0002-1

Maintain Equipment and Work Area

- Understand service procedures before doing work. Keep area clean and dry.
- Never service equipment while it is operating. Keep hands, feet, and clothing away from moving parts
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.



ST-0003-1

Stay Clear of Hoisted Equipment

- Always use proper lifting or hoisting equipment when assembling or disassembling equipment.
- Do not walk or stand under hoisted equipment.
- Always use sturdy and stable supports when needed for installation. Not following these safety precautions creates the risk of falling equipment, which could crush personnel and cause serious injury or death.



ST-0047-1

Sharp Edge Hazard

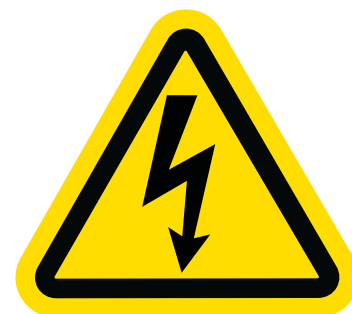
- This product has sharp edges, which can cause serious injury.
- To avoid injury, handle sharp edges with caution and always use proper protective clothing and equipment



ST-0036-2

Install and Operate Electrical Equipment Properly

- Electrical controls must be installed by a qualified electrician and must meet the standards set by applicable local codes (National Electrical Code for the US, Canadian Electric Code, or EN60204 along with applicable European Directives for Europe).
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Make sure all equipment is properly grounded.



ST-0027-4

1. Safety

Stay Clear of Moving Parts

- Stay clear - machine can start without warning.
- Entanglement in gate will cause serious injury.
- Keep all shields and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0070-1

Confined Space Hazards and Entry Procedures

- Note that the interior of this equipment is considered a confined space. Maintenance of this equipment can require access to the confined space.
- Access doors must be shut and locked except when access is required.
- Doors giving access to dangerous equipment must be safety interlocked.
- The following entry procedures must be followed:
 - Be aware of all possible hazards present inside the confined space and wear personal protective equipment (PPE) as needed.
 - Complete a permit to work and follow all permit required confined space entry procedures defined by the site manager.
 - Make sure that the area has been purged of any hazardous products or gases. Check the atmosphere for harmful gases or vapors with a suitable gas analyzer and make sure levels are safe before entering.
 - Do not smoke or use naked flames.
 - Lock out and tag out power supplies and fuel supplies to all equipment.
 - Do not work alone. Work in teams of at least three so that help is immediately available in the event of an emergency.
 - Confirm that all personnel have safely exited the equipment and tools have been recovered once work is complete.



ST-0055-1

Fall Hazard

- Ladders, stairways and platforms are for use by competent and trained personnel only. Do not allow children or other unauthorized persons to have access to the equipment.
- Access to the equipment must be restricted by the use of security fencing and lockable gates.
- Lower sections of ladders must be fitted with a lockable safety gate to prevent unauthorized access.
- Make sure that hot surfaces have had adequate time to cool before working on or in the equipment.
- Lock out and tag out power supplies and fuel supplies to all equipment.
- Do not attach lifting equipment to ladders or platforms.
- Do not go outside of the safety rails provided on elevated platforms.
- Do not work at heights during high winds, rain, snow, or ice storms.



ST-0056-1

Do Not Enter Bin

- Rotating flighting will kill or dismember.
- Flowing material will trap and suffocate.
- Crusted material will collapse and suffocate.
 - If you must enter the bin:
 1. Shut off and lock out all power sources.
 2. Use a safety harness and safety line.
 3. Station another person outside the bin.
 4. Avoid the center of the bin.
 5. Wear proper breathing equipment or respirator.



ST-0061-1

Hopper Starter Strip Assembly for 45° Corners

Select Hopper Position

You can choose any of the four (4) corners of the bin for the discharge.

With the bin's unique design you can easily change hopper discharge position even after erection. This can be done by unbolting the hopper from the starter strip relocating the discharge and rebolting the hopper. The bolt holes in the hopper starter strip and hopper are jig welded for perfect alignment.

(See Figure 2A.)

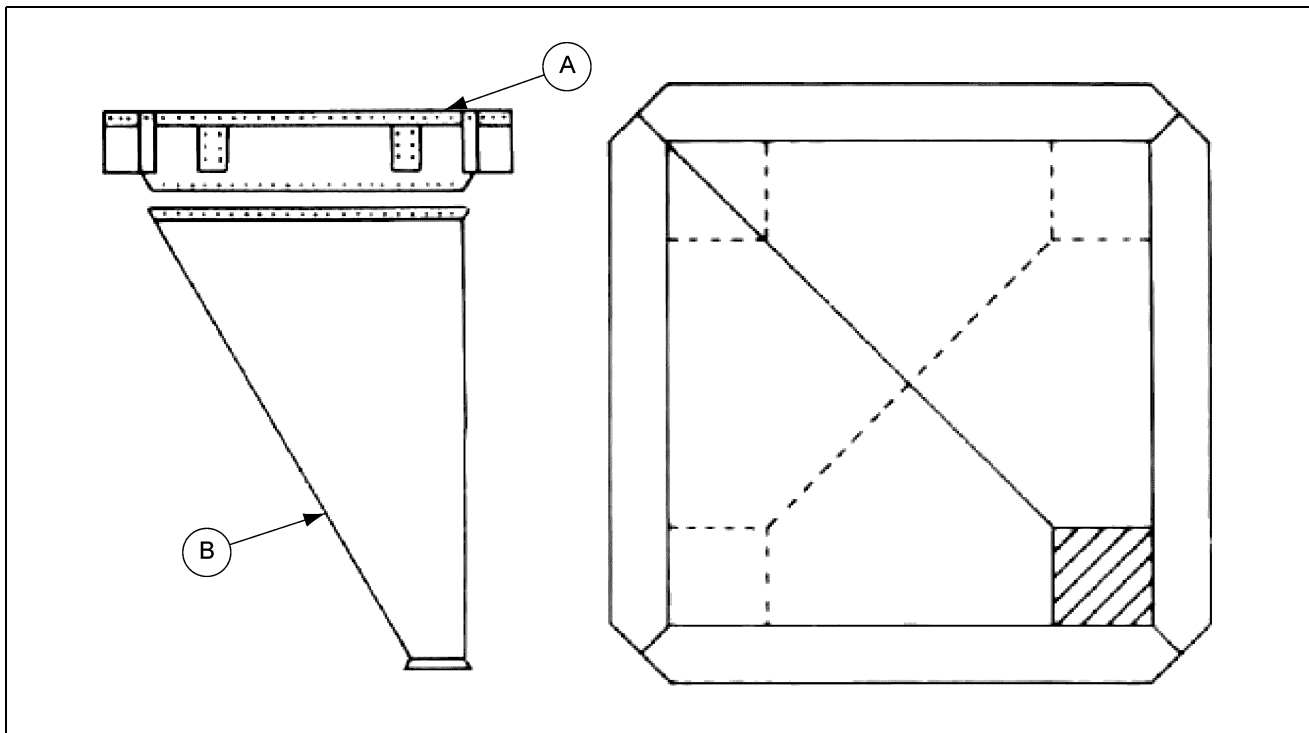


Figure 2A

Ref #	Description
A	Starter Strip
B	Hopper

2. Assembly Instructions

Bolting Gussets to the Hopper Starter Strip

Turn the starter strip upside down and bolt on the supporting gussets. Insert two (2) pins as illustrated in [Figure 2B](#) to assure proper alignment. Then install two (2) bolts as shown and tighten. Then remove the two (2) pins and install the four (4) remaining bolts. The round head of the bolt should be on the inside of the starter strip, with the nut mounted on the outside of the gusset.



Figure 2B

Caulking the Hopper

Put caulking on the upper end of the hopper between the bolt holes and the outer edge. ([See Figure 2B.](#))

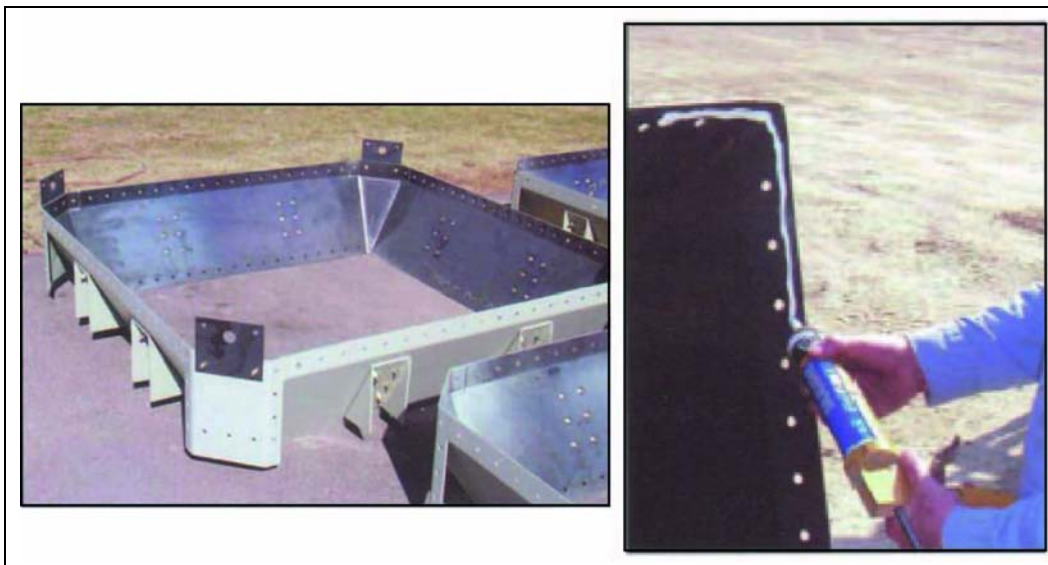


Figure 2C

Hopper Starter Strip and Hopper Bottom Assembly

The starter strip is connected to the hopper by putting the bottom end of the starter strip inside the upper end of the hopper. Use several pins in each of the two (2) bottom corners to provide accurate hole alignment. In order to provide a proper working clearance for the mounting of the starter strip, it is advisable to place a 10" steel beam below the upper end of the hopper as shown in [Figure 2D](#).



Figure 2D

Then tip the upper end of the starter strip into the upper end of the hopper and bolt it in place. Always put the rounded end of the bolts on the inside of the hopper with the nuts on the outside. (See [Figure 2E.](#))



Figure 2E

2. Assembly Instructions

How to Lift Hopper Starter Strip and Hopper Bottom



Figure 2F



Figure 2G

Hopper Alignment on Structural Steel

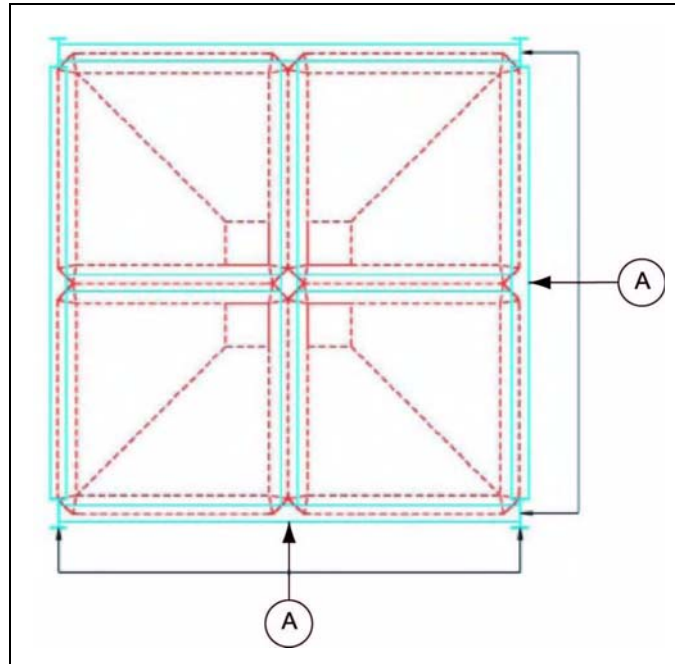


Figure 2H

Ref #	Description
A	Center Line

After the structural steel has been assembled, it is very important to make sure that the tops of the beams, where the bins will be assembled, are both level and flat. After all of the structural steel has been leveled, it is advisable to mark the centerlines of the beams. This can easily be done by using a chalk string. Due to the hopper gussets, horizontal beams must not have any flanges that are wider than 11".

(See Figure 2I.)

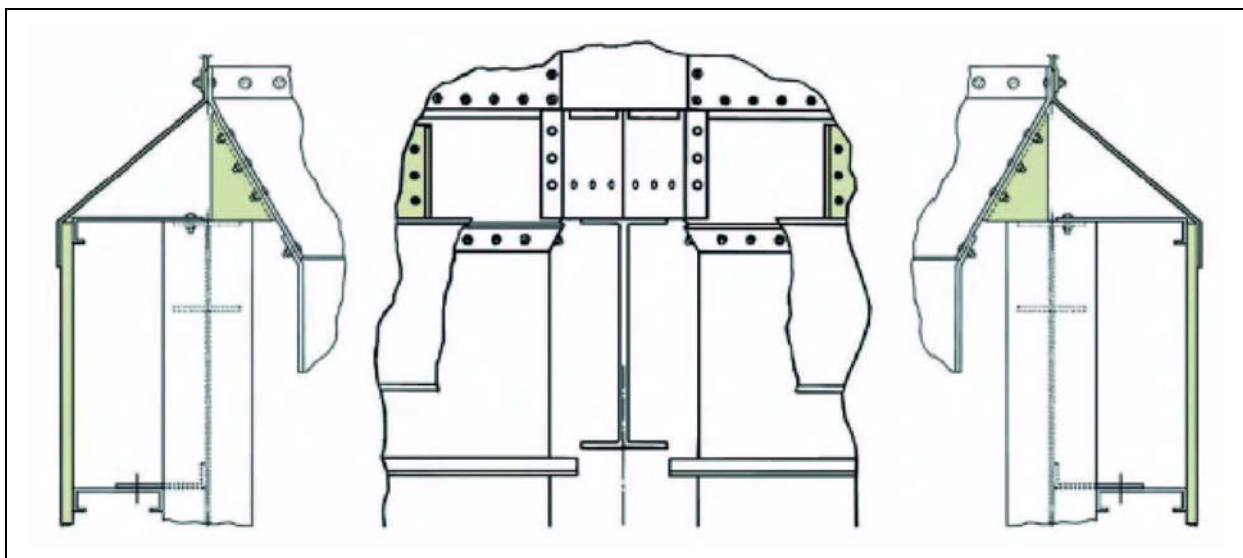


Figure 2I

Hopper Starter Strip and Corner Angle Assembly

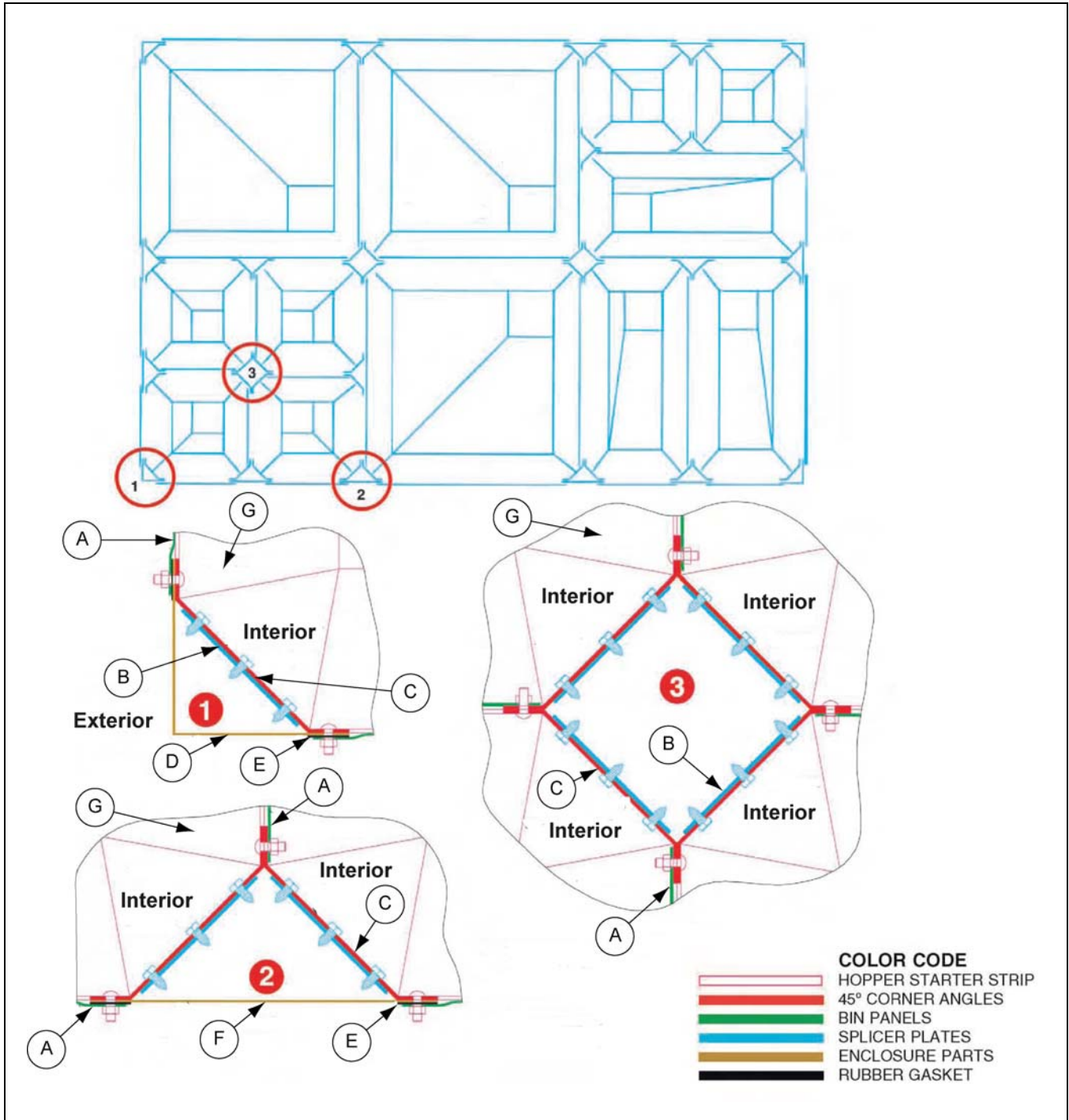


Figure 2J

Ref #	Description
A	Bin Panel
B	Splice Plate
C	Corner Angle
D	Enclosure Corner

Ref #	Description
E	Rubber Gasket
F	Seam Strip
G	Starter Strip

Corner Angle Assembly and Erection

Pre-assembling corner angle components on the ground is a useful way to speed erection. Splicer plates are included to connect the corner angles end to end. Self-tapping fasteners are provided to install the splicer plates. We recommend that bolts in the splicer plates remain somewhat loose until the corner angles are installed and connected to adjacent bin components. (See [Figure 2K.](#))



Figure 2K

[Figure 2L](#) shows some pre-assembly work of the corner angles. It is efficient to do this type of work on the ground on days when the weather prevents you from working up in the air. (See [Figure 2L.](#))



Figure 2L

2. Assembly Instructions

Please note that the corner angle rubber gasket has been added to the corner angle columns on the ground. This gasket has a self-adhesive back that can be applied directly to the corner angle. To prevent gaps in the gasket, we recommend that you do not cut this gasket in short lengths. You can leave the unfinished roll connected to the top of the corner angle. The gasket can then be extended upward when the next section of corner angles are installed. (See [Figure 2M.](#))



Figure 2M

Attachment of Corner Angle to Hopper Starter Strip

Figure 2N shows the first set of corner angles being installed on top of the starter strips.



Figure 2N

Tightening of the three (3) self-tapping bolts into the hopper starter strip. (*See Figure 2O.*)



Figure 2O

2. Assembly Instructions

After the corner angles are in position, install three (3) more of the self-tapping bolts to hold the assembly into place. (See [Figure 2P](#).)

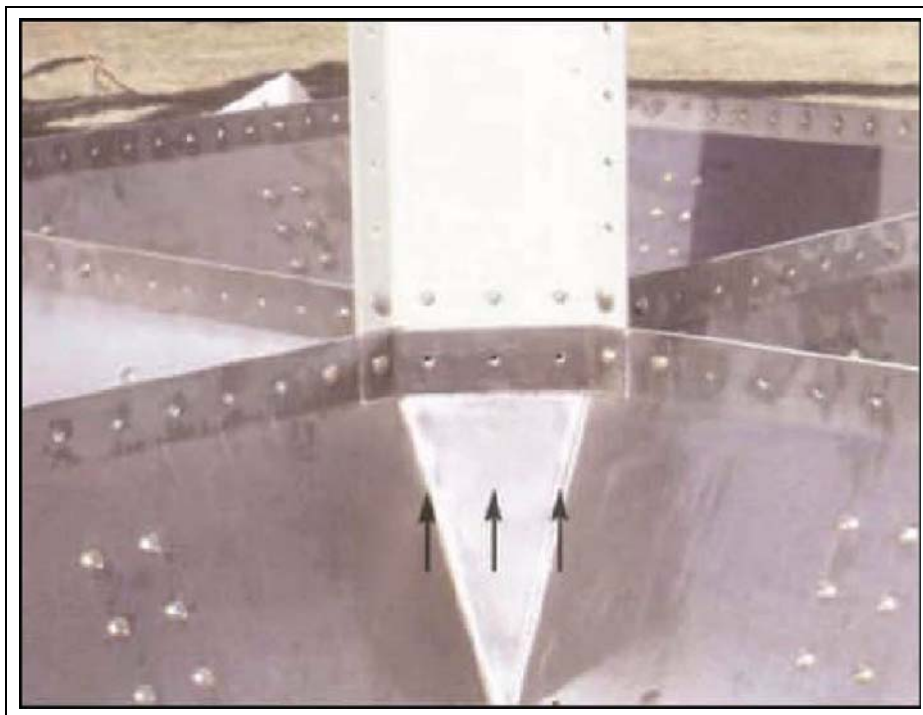


Figure 2P

[Figure 2Q](#) show the starter strips before and after the installation of the corner angles. Please notice the splicer plates with the self-tapping fasteners.

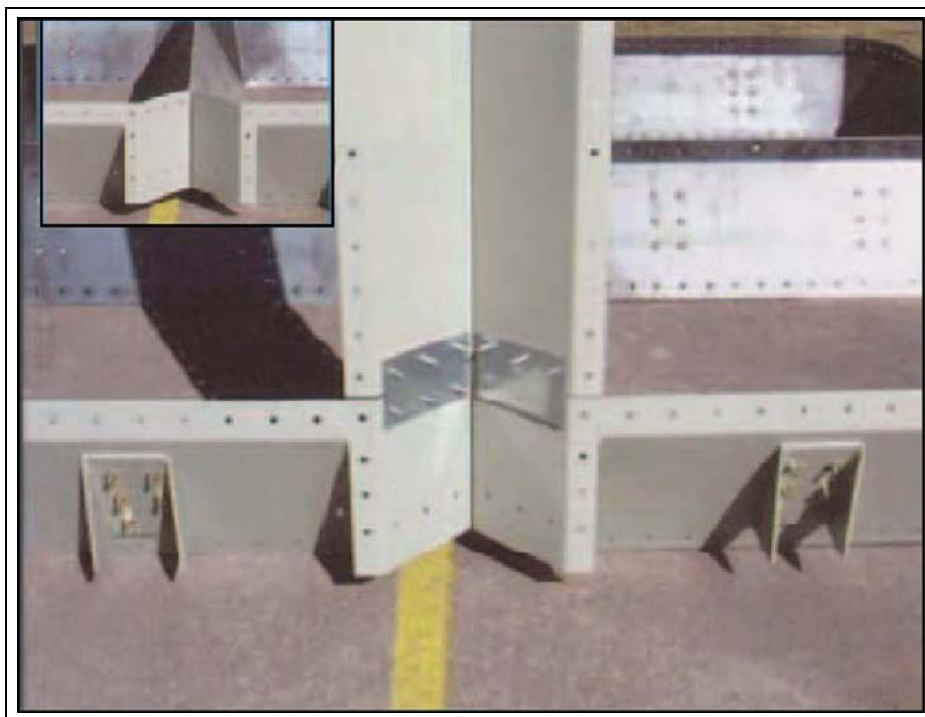


Figure 2Q

Bin Corner Angle Erection

Figure 2R shows the corner angle assemblies being quickly lifted into position.



Figure 2R

On bin projects that require reinforced corners, extra exterior corner angles are included. These angles extend down to the structural steel as shown. It is always necessary to bolt every connection on the outer corner angles to prevent moisture penetration. (*See Figure 2S.*)

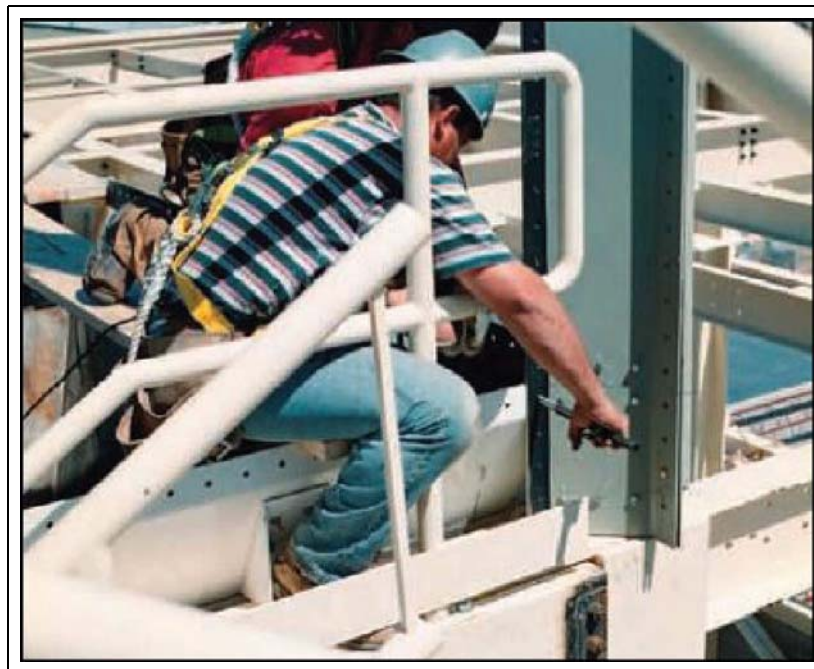


Figure 2S

2. Assembly Instructions

Installation of an interior corner angle column. (See [Figure 2T.](#))



Figure 2T


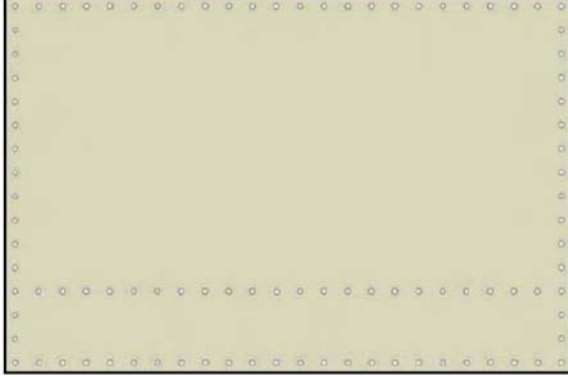
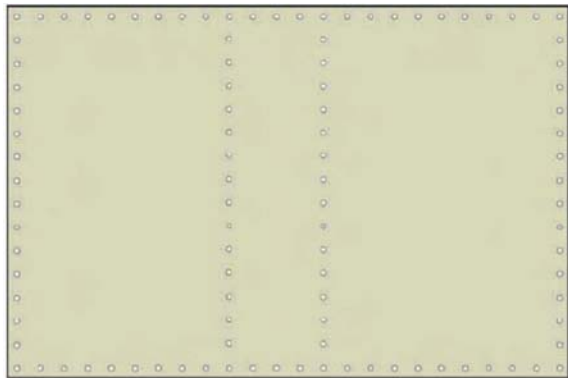

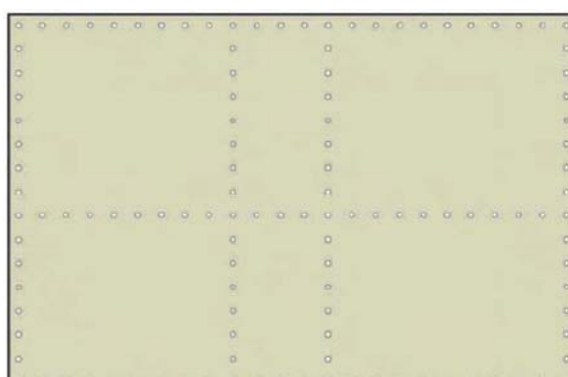
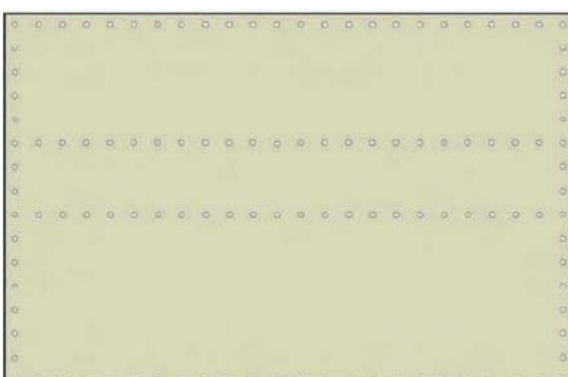
[Figure 2U](#) shows a typical outside corner angle assembly with the enclosure components installed. Please notice the way the rubber gasket has been connected to the top of the corner angles for the next extension.



Figure 2U

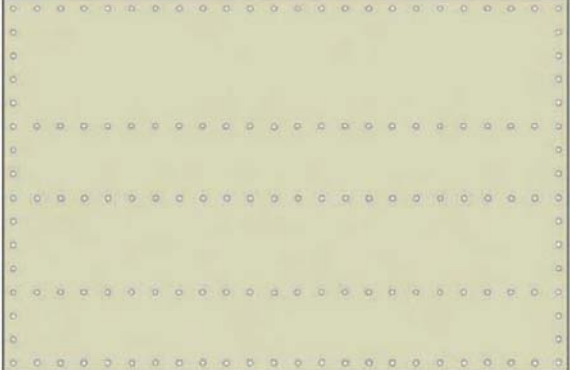
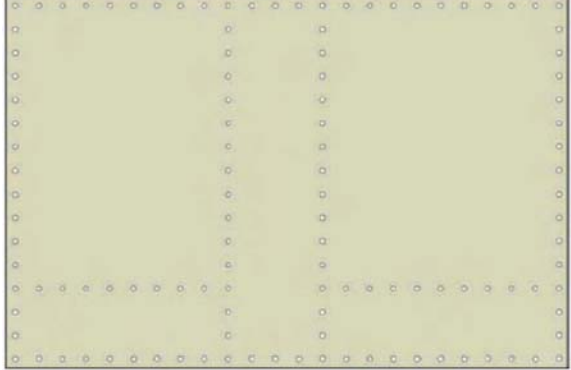
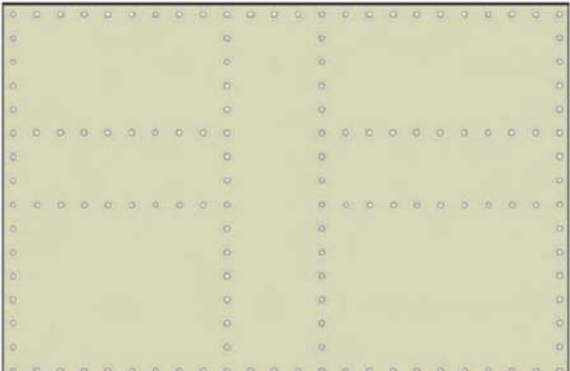
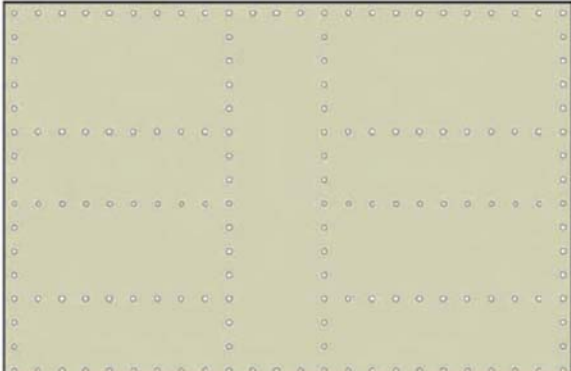


Bin Erection Panel Designs

Standard Designs

<p style="text-align: center;">Design - A</p>	<p style="text-align: center;">Design - B</p>
	
<p style="text-align: center;">Design - C</p>	<p style="text-align: center;">Design - D</p>
	
<p style="text-align: center;">Design - E</p>	<p style="text-align: center;">Design - F</p>
	

NOTE: *NOT all the panel designs shown are necessarily used on any one bin project.*

2. Assembly Instructions

Design - G	Design - H
	
Design - I	Design - J
	
Special Design - 1	Special Design - 2
	

Bin Wall Assembly

Ground Level Bin Wall Assembly

Partially assembling bin wall components on the ground saves time and increases safety by reducing the amount of work that needs to be done high above the ground. (See [Figure 2V.](#))



Figure 2V

[Figure 2W](#) shows the assembly of two (2) wall panels along with an interior type stiffener.



Figure 2W

2. Assembly Instructions

We recommend assembling two (2) bin wall panels, along with their stiffeners, into one assembly. Assemblies of three (3) or more panels can be difficult to control and is not recommended. (See [Figure 2X.](#))



Figure 2X

A large crane, along with a light duty hydraulic crane, would be the most efficient way to assembly a large bin structure as shown in [Figure 2Y.](#) While the light crane is doing the ground assembly work, the larger crane can be lifting the pre-assembled panels into place.



Figure 2Y

Bin Wall Caulking Locations

Caulking must be used to seal the small gap that is formed when an upper wall panel overlaps a lower wall panel. (See Figure 2Z.)

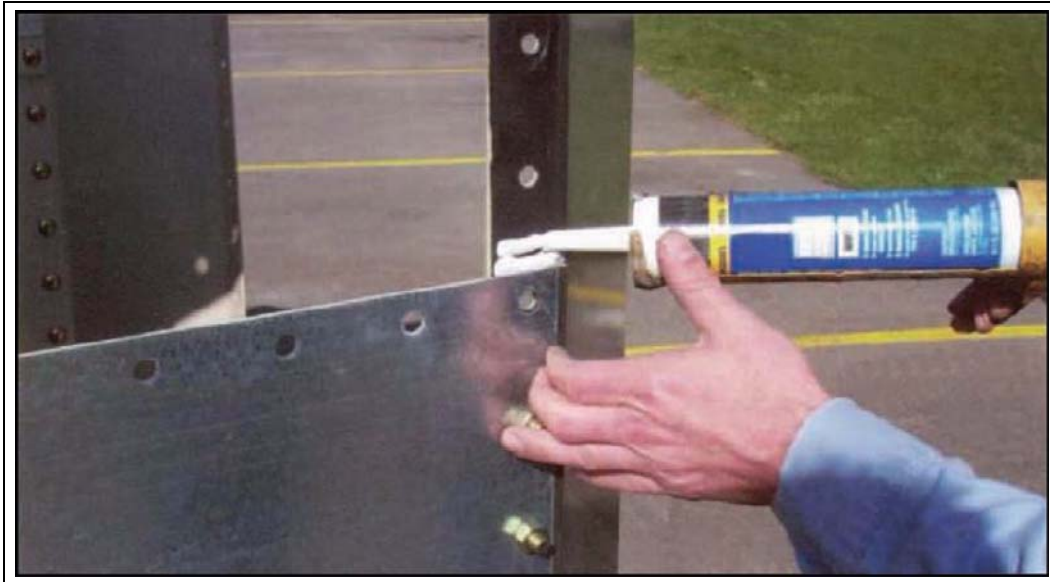


Figure 2Z

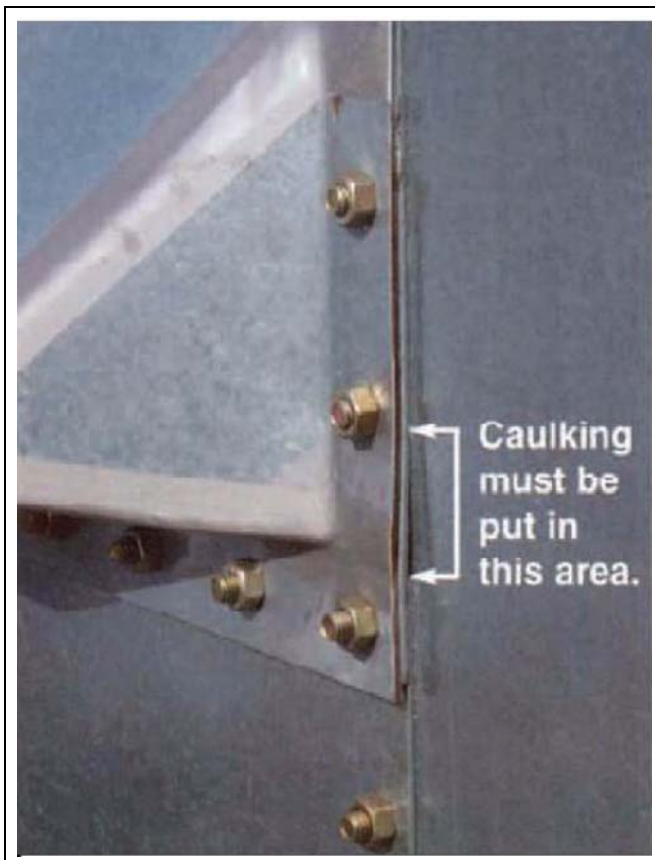


Figure 2AA Connection without Caulking



Figure 2AB Connection with Caulking

2. Assembly Instructions

Caulking the Starter Strip Corner

Put caulking in the small gap that forms in this area. (See [Figure 2AC.](#))



Figure 2AC

Outside Corner Assembly

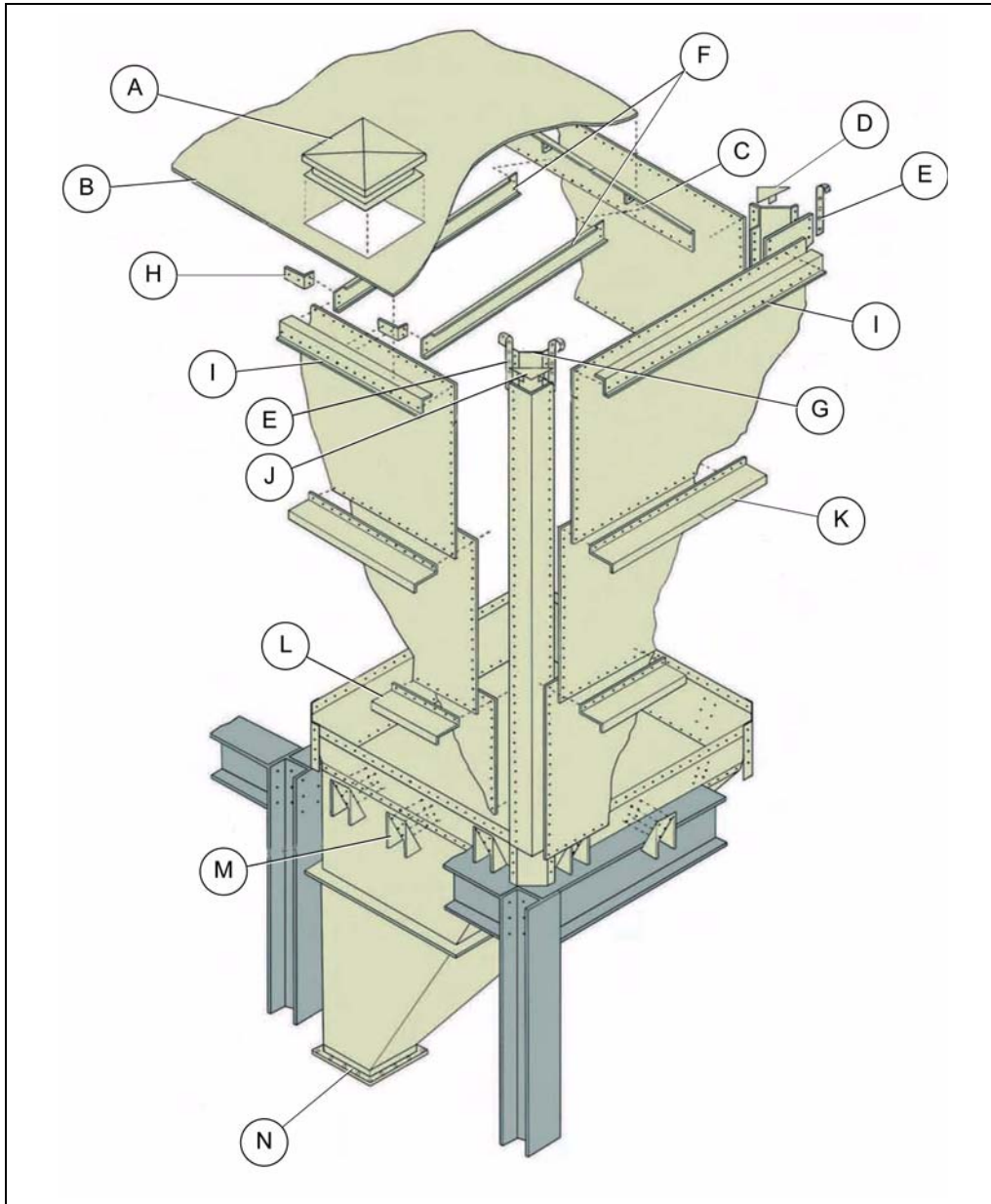


Figure 2AD

Ref #	Description
A	Manhole
B	Roof Sheet
C	Inside Roof Angles
D	Side Column Cap
E	Gasket Strip
F	Roof Channel
G	Corner Angle

Ref #	Description
H	Roof Channel Clip
I	Outside Roof Angle
J	Corner Column Cap
K	Exterior "Z" Panel Channel
L	Hopper Bottom Starter Strip
M	Starter Strip Gusset
N	Hopper Bottom

Typical Sidewall Assembly

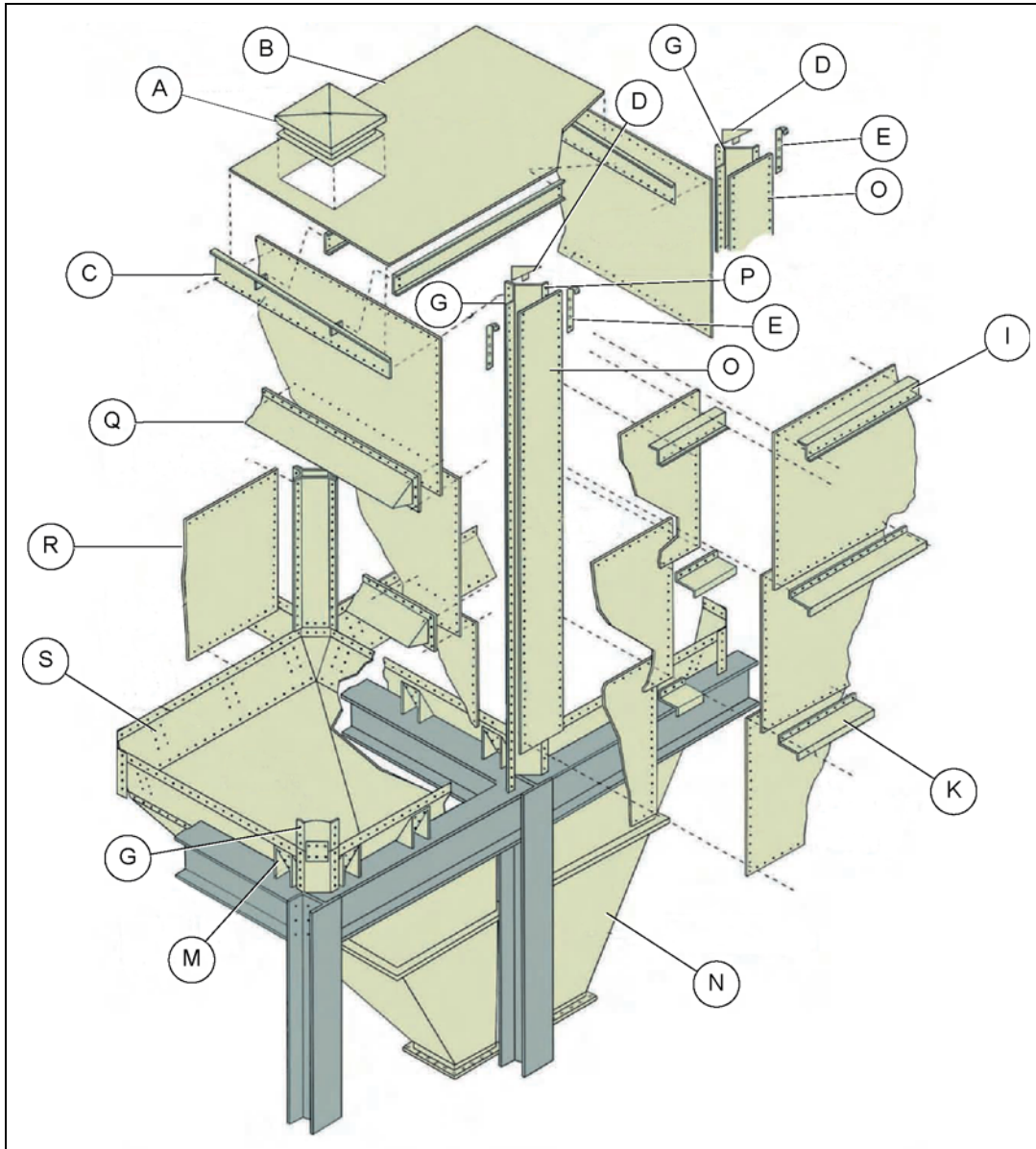


Figure 2AE

Ref #	Description
A	Manhole
B	Roof Sheet
C	Inside Roof Angles
D	Side Column Cap
E	Gasket Strip
F	Roof Channel
G	Corner Angle
I	Outside Roof Angle
J	Corner Column Cap

Ref #	Description
K	Exterior "Z" Panel Channel
L	Hopper Bottom Starter Strip
M	Starter Strip Gusset
N	Hopper Bottom
O	Seam Strip
P	Vertical Seam Strip
Q	Interior Baffle Panel Channel
R	Bin Panel
S	Hopper Starter Strip

Interior Bin Assembly

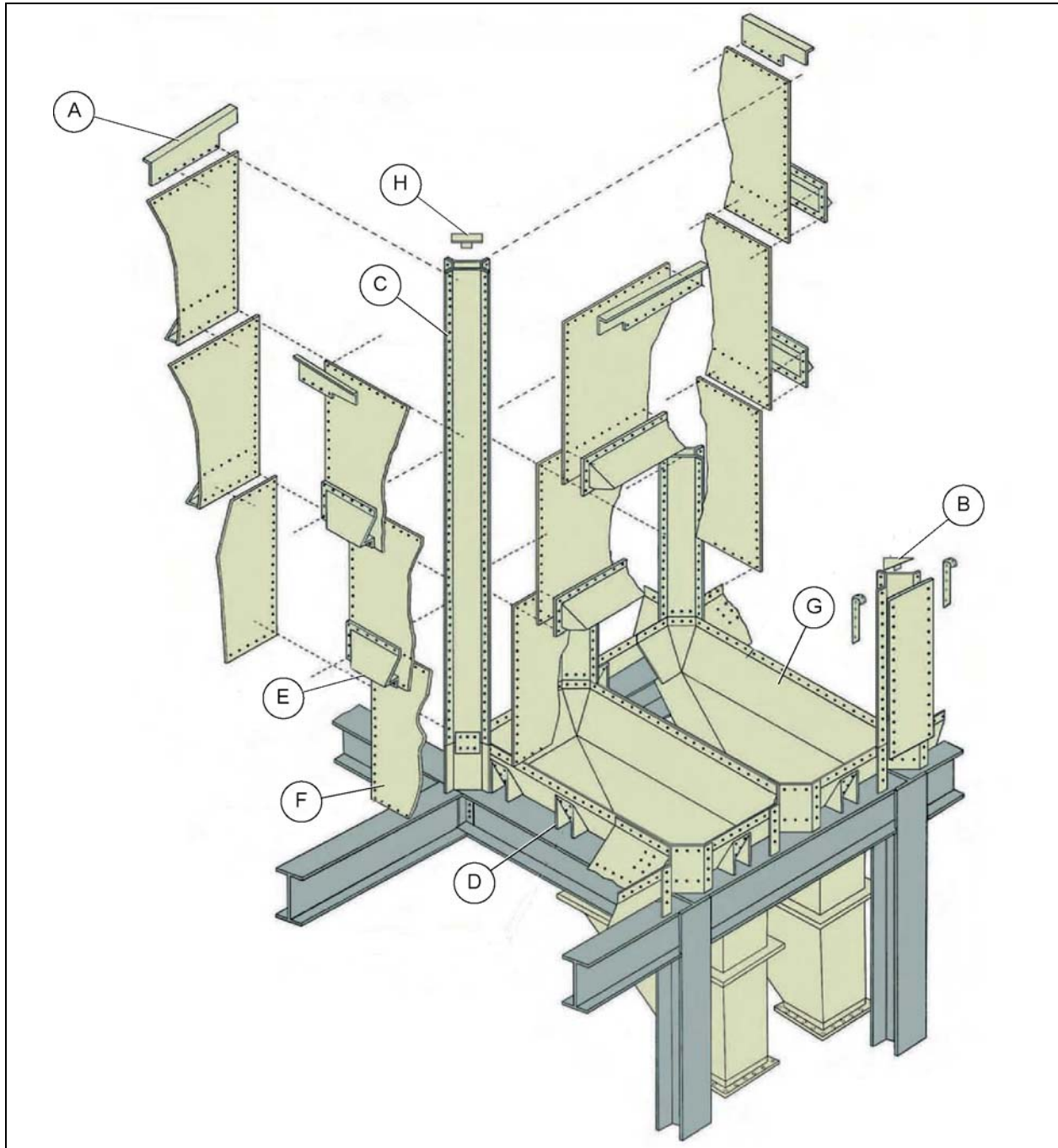


Figure 2AF

Ref #	Description
A	Inside Roof Angle
B	Side Column Cap
C	Corner Angle
D	Starter Strip Gusset

Ref #	Description
E	Interior Baffle Panel Channel
F	Bin Panel
G	Hopper Starter Strip
H	Interior Column Cap

Service Ladder and Rest Platform Assembly

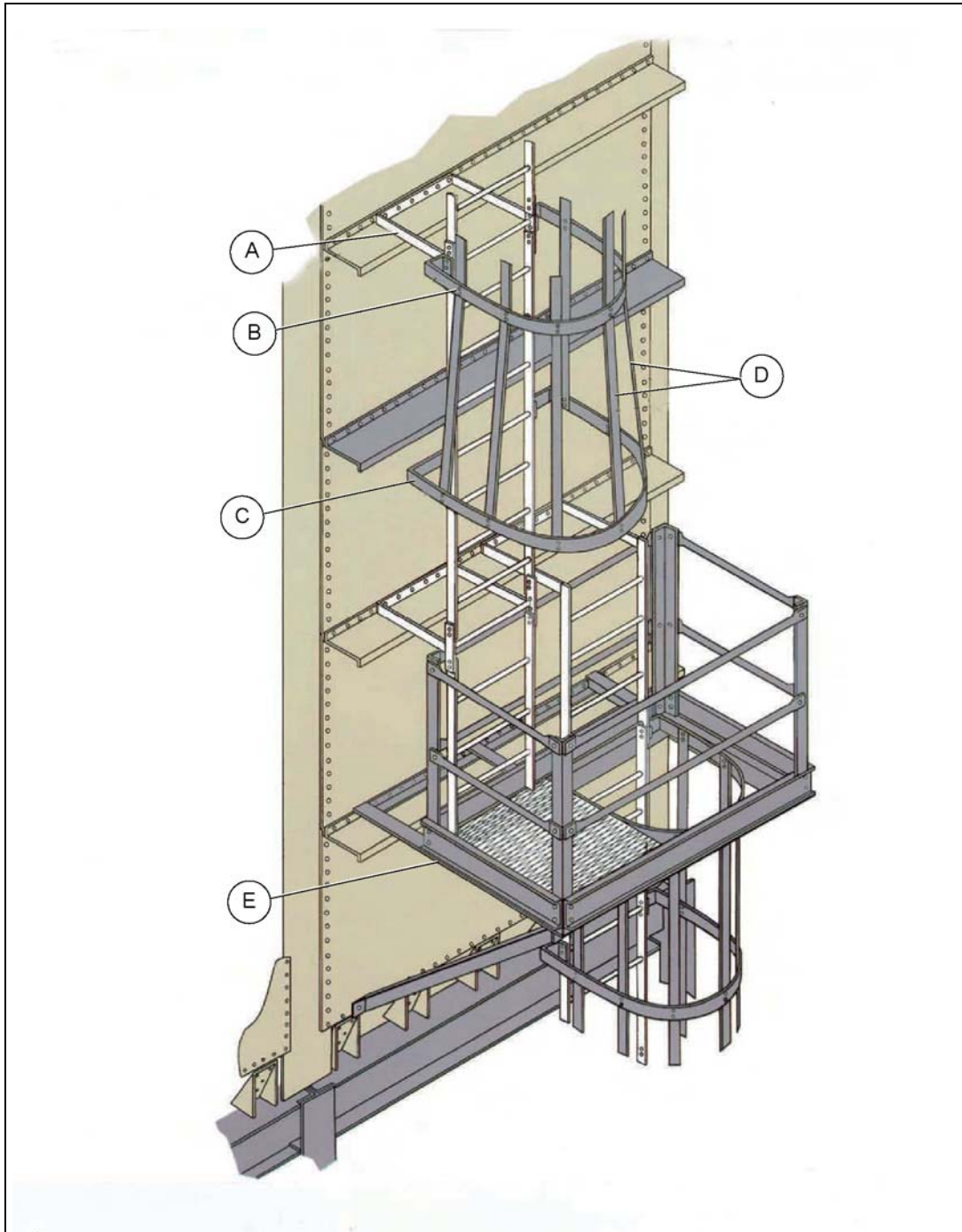


Figure 2AG

Ref #	Description
A	Ladder Splicer With Mounting Bracket
B	Safety Cage Hoop (27")
C	Safety Cage Hoop (30")

Ref #	Description
D	Safety Cage Straps
E	Rest Platform

Railing and Top Ladder Assembly

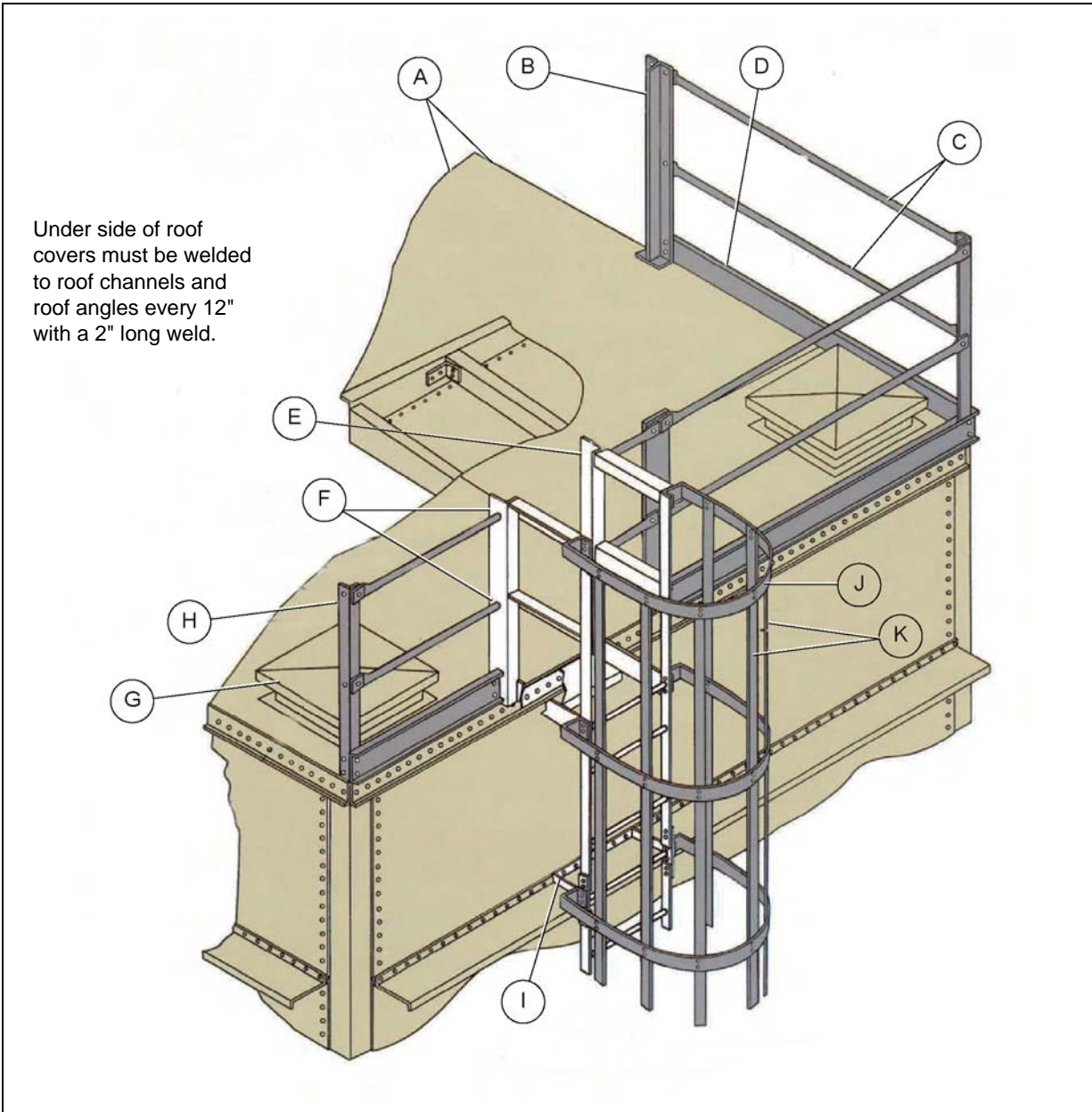


Figure 2AH

Ref #	Description
A	Field weld all roof covers continuously along all seams so they are water tight.
B	Center Side Railing Post
C	Pipe Railing
D	Kick Plate
E	Ladder Top Section
F	Field cut and weld railing and kick plate to ladder top section.

Ref #	Description
G	Manholes to be located between roof channel and to owners needs and field welded.
H	Outside Railing Corner Post
I	Ladder Splicer With Mounting Bracket
J	Safety Cage Hoop (27")
K	Safety Cage Straps

2. Assembly Instructions

Bin Wall Flashing

General Information

Wall girts and siding material for the structural steel can be be provided on special report. (See Figure 2AI.)

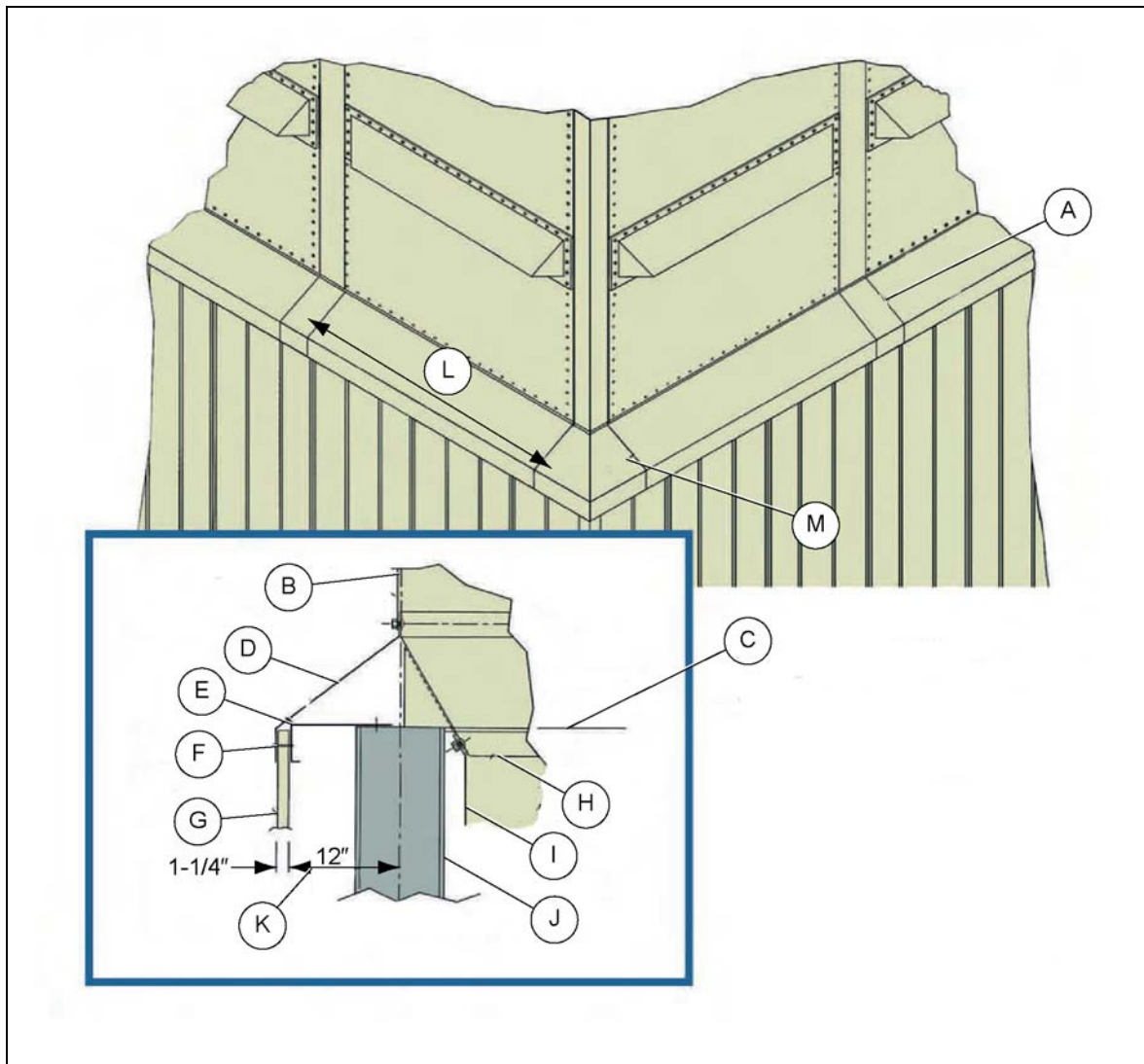


Figure 2AI

Ref #	Description
A	Flashing Splice
B	Bin Sidewall
C	Top of Structure
D	Flashing
E	Top Angle
F	Self-Tapping Fasteners
G	Siding

Ref #	Description
H	Starter Strip
I	Hopper
J	Bin Wall and Structural Steel
K	Typical Around Entire Bin Cluster
L	Lap joints to be secured by caulking and sheet metal screws or field welding.
M	Preformed Outside Corner

Four Steps to Accurate Placement of Anchor Bolts

Step 1: Set up survey boards to establish column centers

Check diagonal measurement in both ways. (See [Figure 2AJ](#).)

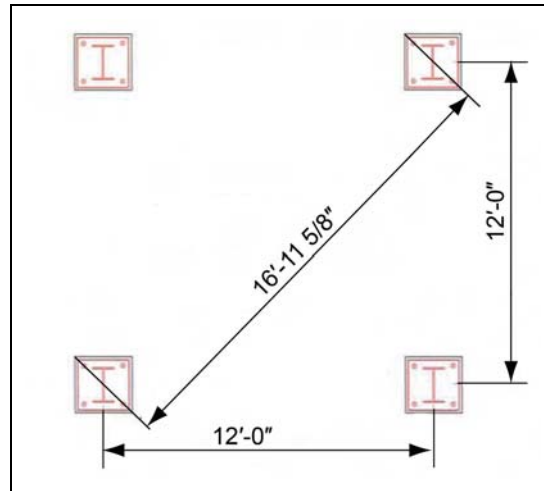


Figure 2AJ

Step 2: Anchor Bolts Template

Make thick plywood templates that are 1" larger than the column base plates. Please refer to the structural prints for the size of each base plate, and the size and location of each anchor bolt. The holes drilled in the template should be no more than 1/32" of an inch larger than the anchor bolt. We recommend that you weld a washer where the anchor bolt threads end as shown in [Figure 2AK](#). Then slide the bolts into the plywood pattern and hold them in place with a nut. This assembly accurately positions the anchor bolts in the concrete when the piers are poured. Please put cross hairs on each of the templates with which to properly align to the center of each of the columns. Then remove the plywood templates when concrete is hard.

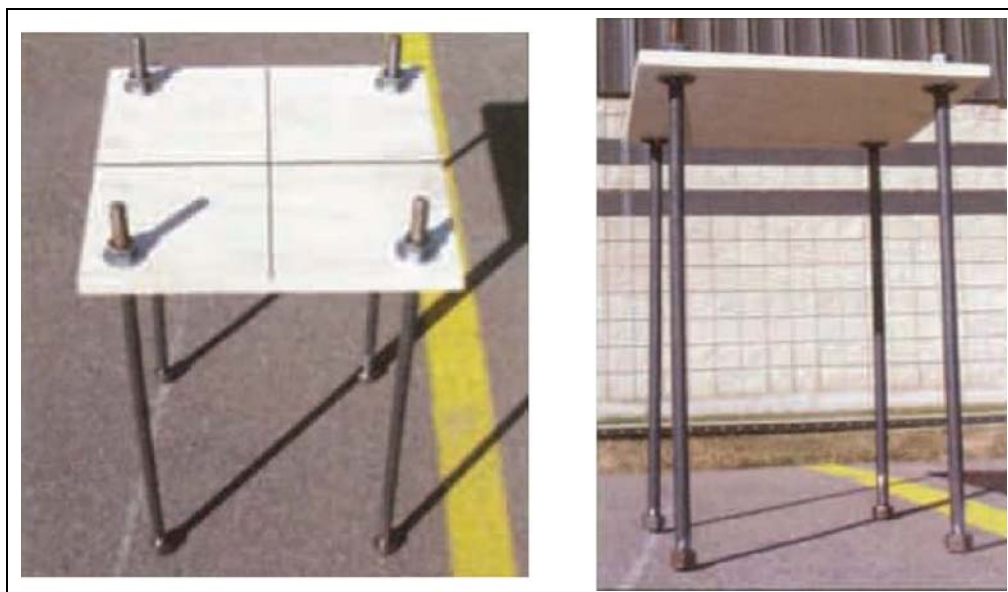


Figure 2AK

2. Assembly Instructions

Step 3: Typical Concrete Pier

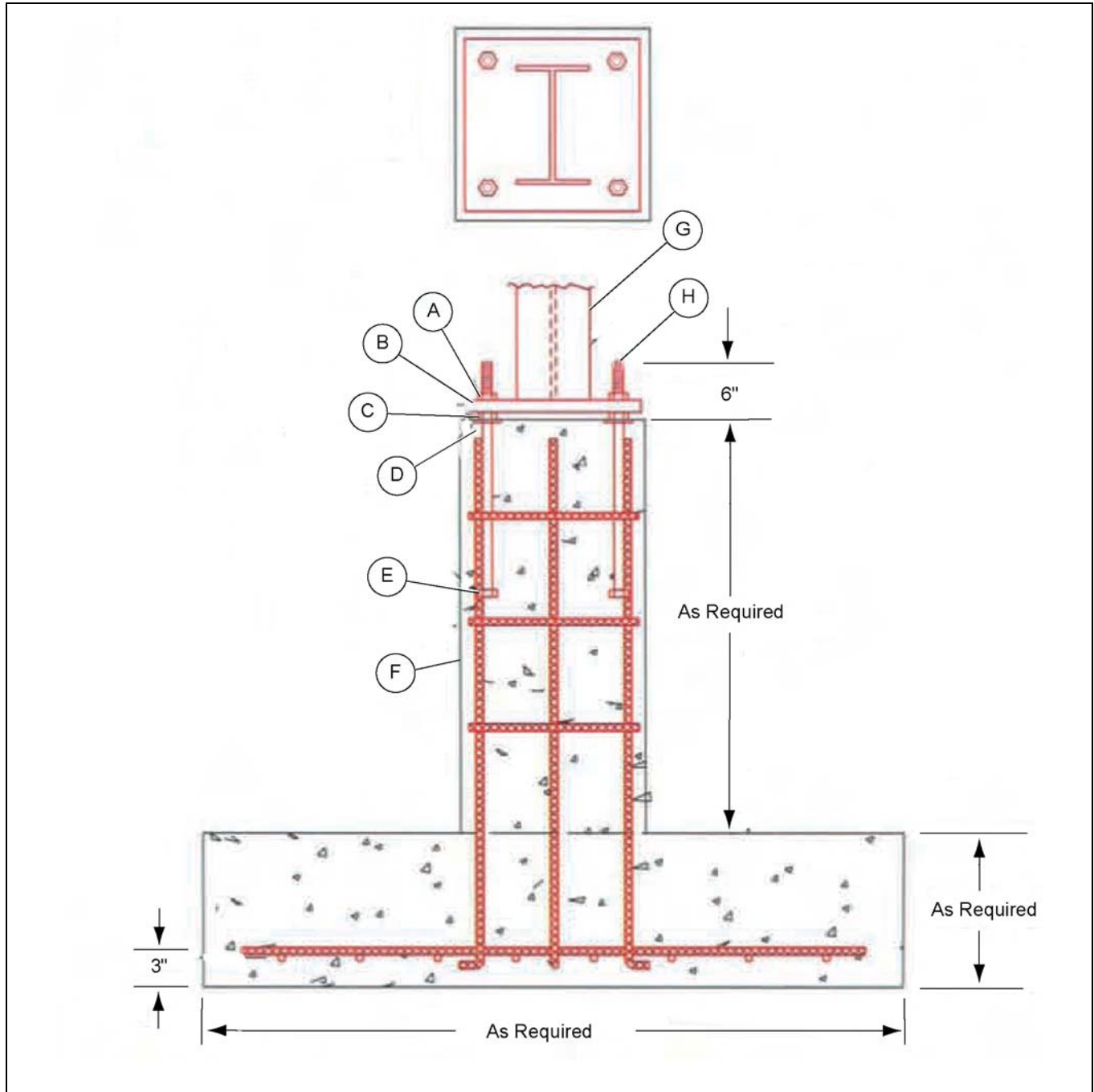


Figure 2AL

Ref #	Description
A	Lock Nut
B	Bearing Plate
C	Leveling Nut
D	Welded Washer

Ref #	Description
E	Welded Nut
F	20" x 20" Support Column
G	Structural Column
H	Anchor Bolt

Step 4: Structural Columns Leveling Nuts

After removing the plywood anchor boll template, clean the threads of the anchor bolts with a wire brush and mount the leveling nuts onto the anchor bolts. The top of the leveling nuts should be at the finish grade elevation as shown on the foundation drawings. It is very important that the height of each leveling nut be leveled within +/- 1/16" in order to assure proper positioning of the columns. After the structural steel has been firmly bolted in place, you may then put grout between the top of the concrete pier and the bottom of the structural base plate. (See [Figure 2AM.](#))

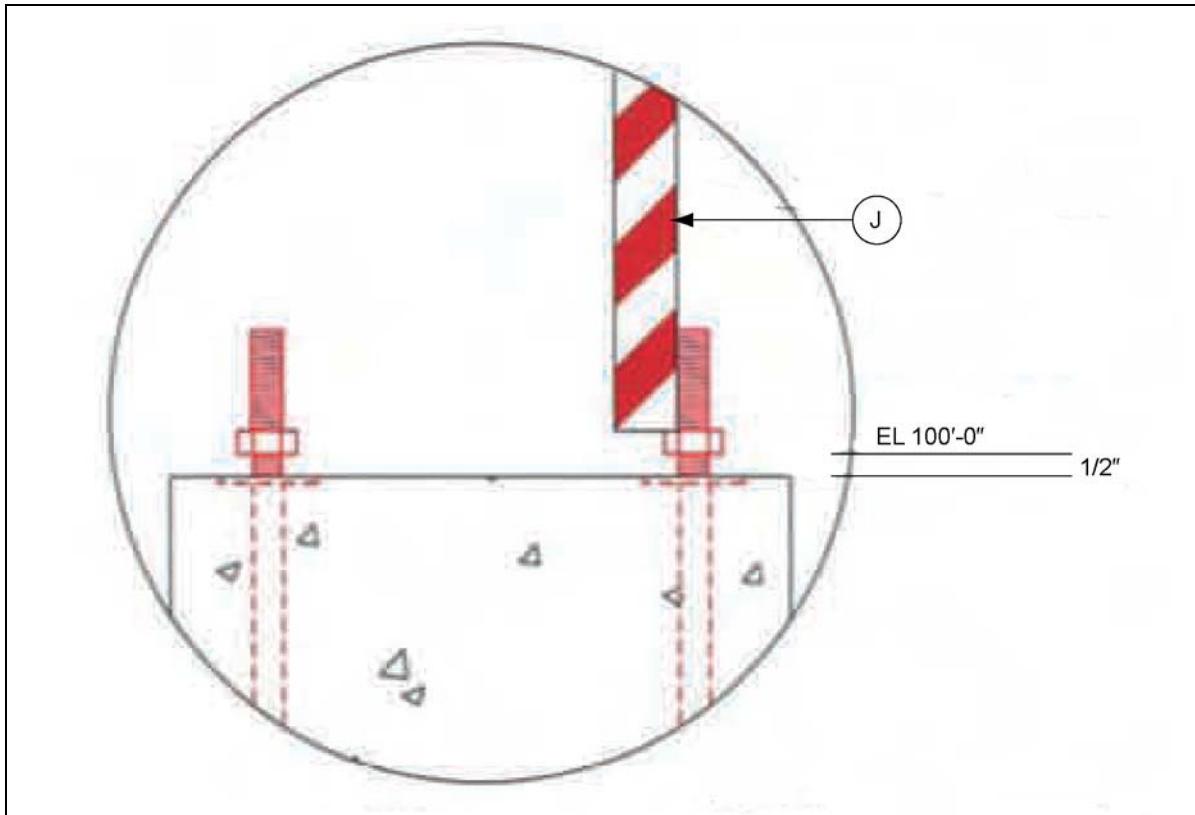


Figure 2AM

Ref #	Description
J	Leveling Rule

2. Assembly Instructions

Bin Erection Platforms

Installing Erection Platform

This four (4) point lifting sling is used to position work platform inside of the bin. *(See Figure 2AN.)*



Figure 2AN

Installed Erection Platform

Before work begins, firmly anchor the platform as shown. *(See Figure 2AO.)*



Figure 2AO

Connection Close-Ups

Each erection platform is supported with four (4) metal clips which are attached to the tops of the wall panels. These erection clips can be permanently left inside of the bins.

Each of the four (4) corners of the erection platform must have an eye bolt which is large enough to accept the lifting strap connector and the connector that attaches the erection platform to the erection clips on the bin walls.

The size of the erection platform should be approximately one foot smaller than the size of each individual bin. (See *Figure 2AP.*)

NOTICE

These installation procedures and devices are provided only as possible methods to assemble these Bin Systems. It is the contractor's sole responsibility to verify the suitability of these devices, to verify their safety, and to make sure that all devices and procedures comply with all applicable safety codes and regulations. InterSystems makes no claim as to the safety or for suitability of purpose of these procedures or devices.

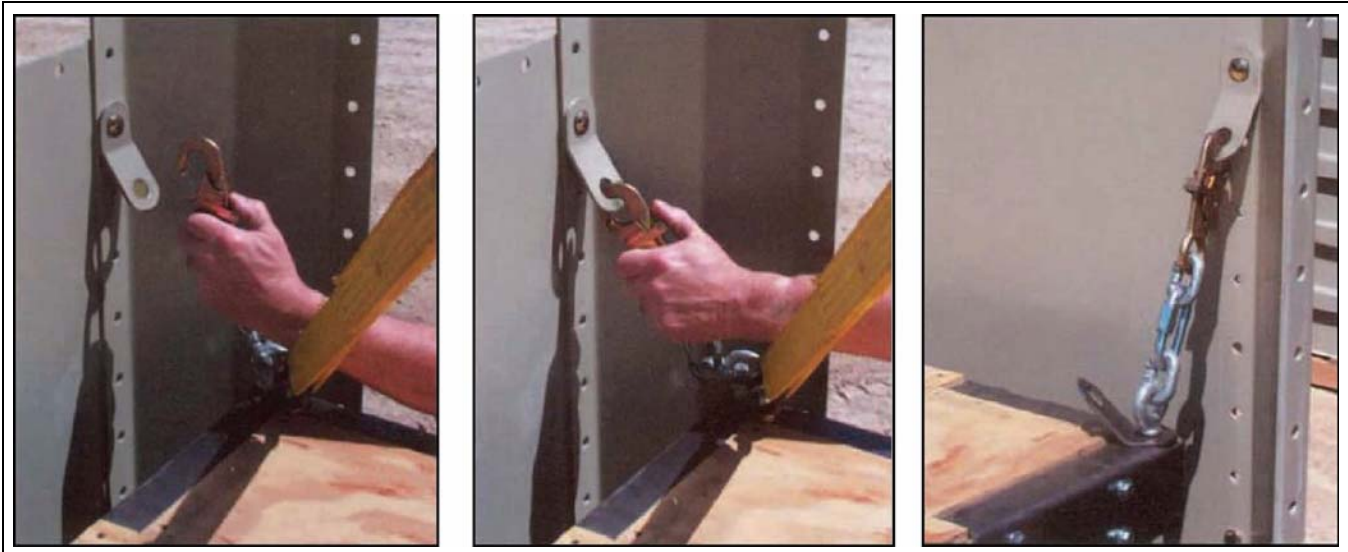
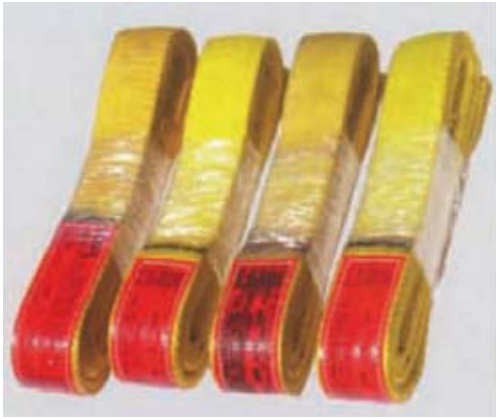


Figure 2AP

3. Erection Tools and Platform Accessories

Optional Erection Platform Accessories



Lifting slings
Straps for lifting erection platforms.



Erection platform and support hardware



Lifting clevises
Four (4) lifting clevises with a minimum inner eye diameter of 2".



Erection clips



Self locking snap hooks



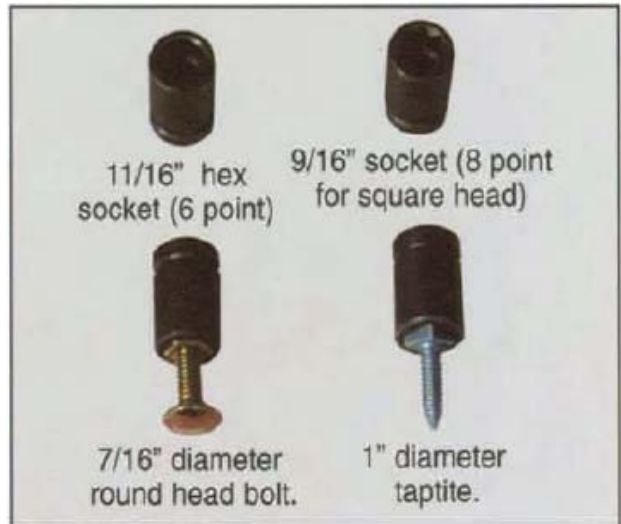
Installing erection platforms (supplied by contractor)

Figure 3A

Recommended Erection Tools and Equipment



Heavy duty electric impacted wrench



Bin fasteners and sockets



Hole alignment pins
Top diameter 5/8",
Point diameter 5/16"
Length 11"

Structural broad headed
bull pin
Top diameter 1-1/4",
Point diameter 5/16"
Length 13"

8" Adjustable
wrench

Adjustable head
construction wrench
Size 1-1/2"
Length 15"

Figure 3B

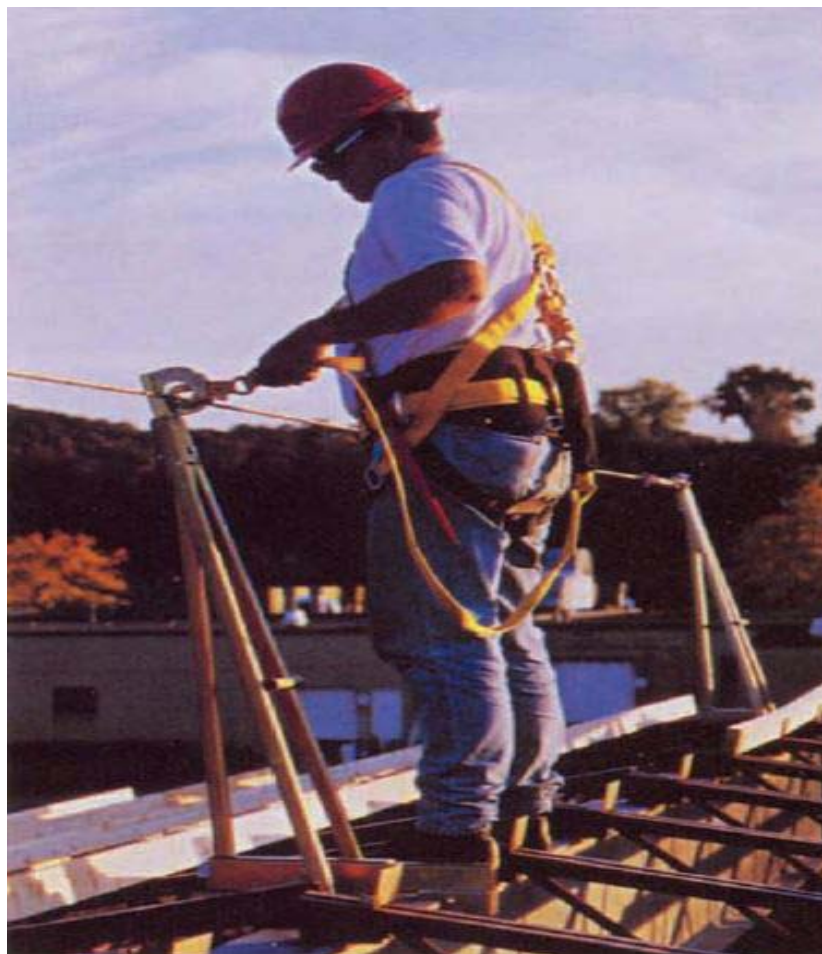
Other Recommended Safety and Construction Equipment



Hard hat



Fastener and tool pouch



Safety harness

Figure 3C

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