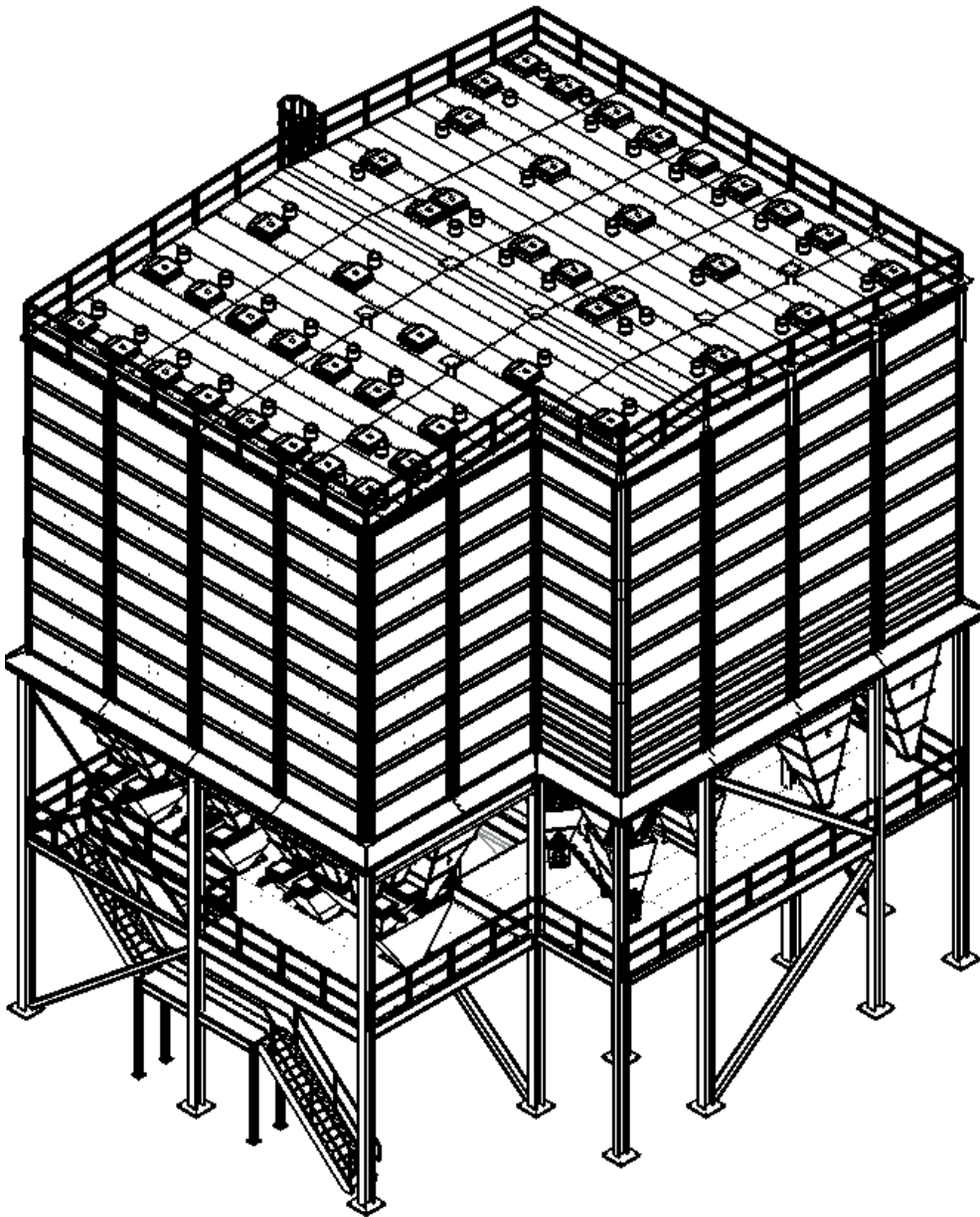


LEMANCO BIN SYSTEMS



INSTALLATION MANUAL

P/N 650000



Trusted. Tested. True

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Manual Revisions

- 8-31-2015
 - Updated warranty information
- 10-1-2016
 - General formatting update
- 1-1-2017
 - General formatting update
- 10-15-2025
 - General formatting updates.
 - General image updates
 - Updated to include new design standards and correct existing information.
 - Removed redundant information.

STANDARD LIMITED WARRANTY

Lemanco Product

- **Definitions.** The following terms, when they appear in the body of this Standard Limited Warranty for Lemanco Products in initial capital letters shall have the meaning set forth below:
 - A. Accepted Purchase Order shall mean the Purchase Order identified below.
 - B. Chief shall mean Chief Agri, a division of Chief
 - C. Original Owner shall mean the original owner identified below.
 - D. Product shall mean the Agri Equipment as described in the Accepted Purchase Order.
 - E. Reseller shall mean the authorized Chief Agri Equipment dealer identified below.
- 2. **Limited Product Warranty.** Upon and subject to the terms and conditions set forth below, Chief hereby warrants to the Reseller, and, if different, the Original Owner as follows:
 - A. All new Products delivered to the Reseller or the Original Owner by Chief pursuant to the Accepted Purchase Order will, when delivered, conform to the specifications set forth in the Accepted Purchase Order;
 - B. All new Products delivered pursuant to the Accepted Purchase Order will, in normal use and service, be free from defects in materials or workmanship; and
 - C. Upon delivery, Chief will convey good and marketable title to the Products, free and clear of any liens or encumbrances except for, where applicable, a purchase money security interest in favor of Chief.
- 3. **Duration of Warranty and Notice Requirements.** Subject to the **Exceptions, Exclusions and Limitations** set forth below, the warranties set forth in Section 2 above shall apply to all covered non-conforming conditions that are discovered within the first twenty-four (24) months following delivery of the Product to the carrier designated by the Reseller and/or the Original Owner at Chief's manufacturing facility in Kearney, Nebraska (the "Warranty Period") and are reported to the Chief as provided in Section 4 below within thirty (30) days following discovery (a "Notice Period").
- 4. **Notice Procedure.** In order to make a valid warranty claim, the Reseller and/or the Original Owner must provide Chief with a written notice of any nonconforming condition discovered during the Warranty Period within the applicable Notice Period specified in Section 3 above. Said notice must be in writing; be addressed to Chief, Agri, Customer Service Department, P.O. Box 848, Kearney, NE 68848; and contain the following information: (a) the Customer's name and address; (b) the Reseller's name and address; (c) the make and model of the Product in question; (d) the current location of the Product; (e) a brief description of the problem with respect to which warranty coverage is claimed; and (f) the date on which the Product was purchased.
- 5. **Exceptions and Exclusions.** Anything herein to the contrary notwithstanding, the warranties set forth in Section 2 above do **not** cover any of the following, each of which are hereby expressly excluded:
 - A. Defects that are not discovered during the applicable Warranty Period;
 - B. Defects that are not reported to the Chief Agri Customer Service Department in conformity with the notice procedure set forth in Section 4 above within the applicable Notice Period specified in Section 3;
 - C. Any used or pre-owned Products;
 - D. Any Chief manufactured parts that are not furnished as a part of the Accepted Purchase Order;

- E. Any fixtures, equipment, materials, supplies, accessories, parts or components that have been furnished by Chief but are manufactured by a third party;
- F. Any Products which have been removed from the location at which they were originally installed;
- G. Any defect, loss, damage, cost or expense incurred by the Reseller or the Original Owner to the extent the same arise out of, relate to or result, in whole or in part, from any one or more of the following:
 - (i) Usual and customary deterioration, wear or tear resulting from normal use, service and exposure;
 - (ii) Theft, vandalism, accident, war, insurrection, fire or other casualty;
 - (iii) Any damage, shortages or missing parts which result during shipping or are otherwise caused by the Reseller, the Original Owner and/or any third party;
 - (iv) Exposure to marine environments, including frequent or sustained salt or fresh water spray;
 - (v) Exposure to corrosive, chemical, ash, smoke, fumes, or the like generated or released either within or outside of the structure on which the Product is installed, regardless of whether or not such facilities are owned or operated by the Reseller, the Original Owner or an unrelated third party;
 - (vi) Exposure to or contact with animals, animal waste and/or decomposition;
 - (vii) The effect or influence the Product may have on surrounding structures, including, without limitation, any loss, damage or expense caused by drifting snow;
 - (viii) Any Product or portion thereof that has been altered, modified or repaired by the Reseller, the Original Owner or any third party without Chief's prior written consent;
 - (ix) Any Product or portion thereof that has been attached to any adjacent structure without Chief's prior written approval;
 - (x) Any Product to which any fixtures, equipment, accessories, materials, parts or components which were not provided as a part of the original Accepted Purchase Order have been attached without Chief's prior written approval;
 - (xi) The failure on the part of the Reseller, the Original Owner or its or their third party contractors to satisfy the requirements of all applicable statutes, laws, ordinances rules, regulations and codes, (including zoning laws and/or building codes);
 - (xii) The use of the Product for any purpose other than the purpose for which it was designed; and/or
 - (xiii) The failure of the Reseller, the Original Owner and/or any third party to:
 - (a) properly handle, transport and/or store the Product or any component part thereof;
 - (b) properly select and prepare a site that is adequate for the installation and/or operation of the Product or any component part thereof;
 - (c) properly design and construct a foundation that is adequate for the installation and/or operation of the Product or any component part thereof;
 - (d) properly set up, erect, construct or install the Product and/or any component part thereof; and/or
 - (e) properly operate, use, service and/or maintain the Product and each component part thereof.

6. **Resolution of Warranty Claims.** In the event any nonconforming condition is discovered within the Warranty Period and Chief is notified of a warranty claim as required by Section 4 prior to the end of the applicable Notice Period set forth in Section 3 above, Chief shall, with the full cooperation of the Reseller and the Original Owner, immediately undertake an investigation of such claim. To the extent Chief shall determine, in its reasonable discretion, that the warranty claim is covered by the foregoing Limited Product Warranty, the following shall apply:

- A. Warranty Claims With Respect to Covered Non-Conforming Conditions Discovered Within the First Three Hundred Sixty Five (365) Days and Reported to Chief Within Thirty (30) Days of Discovery. In the case of a warranty claim which relates to a covered non-conforming condition that is discovered during the first three hundred sixty five (365) days of the Warranty Period and is reported to Chief as required by Section 4 within thirty (30) days of discovery as required by Section 3, Chief will, as Chief's sole and exclusive obligation to the Reseller and the Original Owner, and as their sole and exclusive remedy, work in cooperation with the Reseller and the Original Owner to correct such non-conforming condition, and in connection therewith, Chief will ship any required replacement parts to the "ship to address" set forth in the Accepted Purchase Order FOB Chief's facilities in Kearney, Nebraska, and will either provide the labor or reimburse the Reseller or the Original Owner, as may be appropriate in the circumstances, for any out of pocket expense the Original Owner may reasonably and necessarily incur for the labor that is required to correct such non-conforming condition, provided that if work is to be performed by the Reseller or a third party contractor, Chief may require at least two competitive bids to perform the labor required to repair or correct the defect and reserves the right to reject all bids and obtain additional bids. Upon acceptance of a bid by Chief, Chief will authorize the necessary repairs.
 - B. All Other Warranty Claims. Except as is otherwise provided in subsection 6A above, in the case of all other warranty claims which relate to covered non-conforming conditions that are discovered during the Warranty Period and are reported to Chief as required by Section 4 within thirty (30) days following discovery, Chief will, as Chief's sole and exclusive obligation to the Reseller and the Original Owner, and as the Reseller's and the Original Owner's sole and exclusive remedy, ship any required replacement parts to the Original Owner at the "ship to address" specified in the Accepted Purchase Order FOB Chief's facilities in Kearney, Nebraska; and **in such event, Chief shall have no responsibility or liability to either the Reseller or the Original Owner for the cost of any labor required to repair or correct the defect.**
7. Warranty Not Transferable. This Warranty applies only to the Reseller and the Original Owner and is **not transferable**. As such, this Warranty does **not** cover any Product that is sold or otherwise transferred to any third party following its delivery to the Original Owner.
 8. Limitation on Warranties, Liabilities and Damages. The Reseller and the Original Owner expressly agree that the allocation of the risk, liability, loss, damage, cost and expense arising from any Product that does not conform to the limited warranty given in Section 2 above are fair and reasonable and acknowledge that such allocation was expressly negotiated by the parties and was reflected in the Purchase Price of the Product. Accordingly the Reseller and the Original Owner expressly agree as follows:
 - A. Disclaimer of Implied Warranties. **EXCEPT AS IS OTHERWISE EXPRESSLY SET FORTH HEREIN, CHIEF MAKES NO OTHER REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER, WHETHER EXPRESS OR IMPLIED, BY OPERATION OF LAW, COURSE OF DEALING OR OTHERWISE WITH RESPECT TO THE PRODUCT, ANY COMPONENT PART THEREOF OR ANY OTHER GOODS OR SERVICES THAT CHIEF MANUFACTURES, FABRICATES, PRODUCES, SELLS OR PROVIDES TO THE DEALER OR THE ORIGINAL OWNER PURSUANT TO THE TERMS OF ANY ACCEPTED PURCHASE ORDER, INCLUDING WITHOUT LIMITATION ANY REPRESENTATION OR WARRANTY WITH RESPECT TO DESIGN, CONDITION, MERCHANTABILITY OR FITNESS OF THE PRODUCT OR ANY OTHER GOODS OR SERVICES FOR ANY PARTICULAR PURPOSE OR USE.**
 - B. Limitation on Liability. **EXCEPT AS IS OTHERWISE EXPRESSLY SET FORTH IN SECTION 6 ABOVE, CHIEF'S LIABILITY TO THE DEALER AND/OR THE**

ORIGINAL OWNER WITH RESPECT TO ANY DEFECTS IN ANY PRODUCTS OR FOR ANY OTHER GOODS OR SERVICES WHICH DO NOT CONFORM TO THE WARRANTIES SET FORTH ABOVE SHALL NOT, IN ANY EVENT, EXCEED THE ACTUAL COST OF SUCH NON-CONFORMING PRODUCT, GOODS OR SERVICES AS DETERMINED PURSUANT TO THE ACCEPTED PURCHASE ORDER; AND

- C. **Limitation on the Nature of Damages.** EXCEPT AS EXPRESSLY PROVIDED IN SECTION 6 ABOVE, CHIEF SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO THE DEALER, THE ORIGINAL OWNER OR ANY THIRD PARTY FOR ATTORNEY FEES COURT COSTS OR ANY OTHER SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LIQUIDATED OR PUNITIVE DAMAGES OF ANY NAME, NATURE OR DESCRIPTION AS A RESULT OF THE FAILURE OF ANY PRODUCT OR ANY OTHER GOODS OR SERVICES PURCHASED BY THE DEALER OR THE ORIGINAL OWNER FROM CHIEF PURSUANT TO THE ACCEPTED PURCHASE ORDER TO CONFORM TO THE LIMITED WARRANTIES SET FORTH IN SECTION 2 ABOVE.

8. **Applicable Law.** This Limited Product Warranty has been issued, accepted and entered into by the Reseller, the Original Owner and Chief in the State of Nebraska and shall be governed by, and construed in accordance with, the internal laws of the State of Nebraska. Any legal action or proceeding with respect to any goods or services furnished to the Original Owner by Chief in connection herewith, or any document related hereto shall be brought only in the district courts of Nebraska, or the United States District Court for the District of Nebraska, and, by execution and delivery of this Limited Product Warranty, the undersigned Original Owner hereby accept for themselves and with respect to their property, generally and unconditionally, the jurisdiction of the aforesaid courts. Further, the undersigned Original Owner hereby irrevocably waives any objection, including, without limitation, any forum non conveniens, which it may now or hereafter have to the bringing of such action or proceeding in such respective jurisdictions.

ACKNOWLEDGMENT OF RECEIPT

By its signature hereto, the undersigned Reseller represents and warrants to Chief that the Reseller has provided a true, correct and complete copy of this Standard Limited Warranty to the Original Owner at the time the product was purchased.

Reseller Name and Address:

Original Owner Name and Address:

Accepted Purchase Order No.

Original Jobsite Address:

RESELLER:

By: _____
Date

Print name and title

4831-5139-8433, v. 1

Warning

Water Sensitive Materials - Read this notice carefully.

Items must be inspected, and the carrier advised immediately if damage is noted. White rust is a corrosion attack of the zinc coating resulting from the presence of water. Anywhere rust is found will result in a reduction of the life of the galvanized steel.

If water has entered a bundle or if condensation has formed between items, the bundle must be opened, the items separated and all surfaces dried.

If items are to be installed within 10 days:

Store bundled items off the ground high enough to allow air circulation beneath bundle and to prevent water from entering. Store one end at least 8" (20.32cm) higher than the opposite end. Support long bundles in the center. Prevent rain from entering the bundle by covering it with a tarpaulin, making provision for air circulation between the draped edges and the ground.

Do not wrap in plastic.

If items are not to be installed within 10 days:

Provide inside dry storage. Storage beyond 6 months is not recommended. If white rust is apparent upon receipt of shipment, notify Chief immediately. Damage to items resulting from improper storage is the responsibility of the receiver.

Before You Begin



Before starting the installation of the Lemanco Bin System, take time to thoroughly study the construction methods in this manual and the assembly drawing package, this will save you time and money.

Chief makes no warranty concerning components, accessories or equipment not manufactured by Chief.

When using a cutting torch or welding galvanized material, the possibility of developing toxic fumes will exist. Provide adequate ventilation and respiratory protection when using this type of equipment during installation.

Introduction

Thank you for purchasing a Lemanco Bin System. Proper installation and operation will ensure the best overall experience with your equipment.

This proprietary information is loaned with the expressed agreement that the drawings and information herein contained are the property of Chief and will not be reproduced, copied, or otherwise disposed of, directly or indirectly, and will not be used in whole or in part to assist in making or to furnish any information for the making of drawings, prints or other reproduction hereof, or for the making of additional products or equipment except upon written permission of Chief first obtained and specific as to each case. The acceptance of this material will be construed as an acceptance of the foregoing agreement.

The technical data contained herein is the most recent available at the time of publication and is subject to modification without notice. Chief reserves the right to modify the construction and method of operation of their products at any time without any obligation on their part to modify any equipment previously sold and delivered.

Important Note: If you are unable to remedy any service problem after thoroughly studying this manual, contact the dealer from whom you purchased the unit. Your dealer is your first line of service. The following information is required for service:

1. Lemanco Bin System identification number: _____
2. Type of grain and capacity: _____
3. Dealer purchased from: _____
4. Dealer address and phone number: _____
5. Date purchased: _____
6. Service contractor:
 - a. Name: _____
 - b. Address: _____
 - c. Phone: _____

Accessory Equipment

All accessory equipment should be installed and maintained in accordance with each individual supplier's installation and operation instructions. However, if any modifications to the Chief standard design are required, contact Chief for special recommendations. In view of this, at a minimum, we suggest you do the following:

1. Obtain, read and understand the instructions and cautions of the accessory equipment manufacturer. Be certain that all equipment is installed in agreement with those instructions.
2. Check with Chief to make sure that your bin system is designed to support any additional loads applied by the accessory equipment.
3. Obtain any applicable safety decals from the manufacturer and make certain they are displayed in a visible location.
4. Make certain that all electrical equipment is properly installed and grounded by a qualified electrician.
5. Check availability and operation of electrical lock out and emergency stop systems.
6. Be certain that all guards and shields are securely in place.
7. Store all operation / maintenance manuals in a safe place for future use.

Important Note: Do not modify the Lemanco Bin System design without Chief approval. It is the responsibility of the general contractor to verify that all equipment is properly installed, and that the equipment is compatible with the intended use. A qualified electrician should be contracted to complete all electrical wiring and servicing.

General Contractor Responsibilities

It is the responsibility of the general contractor to verify that the complete system (Lemanco Bins, and other accessory equipment) is constructed with quality workmanship and that all equipment is installed per the respective manufacturer's instructions.

In addition, the general contractor is responsible for the fitness of use of any system which he constructs. All accessory equipment incorporated into the system should be approved for the intended use by each respective equipment manufacturer.

Field Modifications and Installation Defects

Chief assumes no responsibility for field modifications or installation defects which result in damage or operational problems. If any field modifications are necessary which are not specifically covered by the contents of this installation manual or project specific installation drawings supplied by Chief, contact Chief for approval. Any unauthorized modification or installation defect will void the warranty.

Field modifications without the authorization of the manufacturer may present unknown dangers to the operator and must be avoided.

To ensure the safety of all individuals in the work area, only authorized and trained persons shall install, maintain and use the Lemanco Bin System. Under no circumstances should unauthorized individuals be allowed to trespass or be present in the work area.

It shall be the duty of all operators to verify that the work area is clean, organized and kept free of all debris and tools that might cause accidental tripping or falling hazards.

Special care should be taken when working from unsafe heights. Common sense dictates that when conditions such as rain or wind prohibit the safe use of equipment, the installation should be discontinued.

Chief strongly recommends that equipment meeting the current OSHA / ANSI specifications be used, whether the individual operator is required by law to do so or not. Proper personal protective equipment should be used at all times when performing operations work, installation or maintenance.

Checking Shipment

For your convenience individual items will be labeled with an appropriate part number and packages labeled. Hardware, including bolts, nuts, screws, and other small clips or brackets may be divided into smaller packages for ease of use and identification.

- Building Enclosure (sheeting, girts, trim, doors, ect.)
- Exterior Vertical Corner Stiffeners and Splice Plates
- Exterior Vertical Stiffeners and Splice Plates
- Hardware (bolts, nuts, screws, caulking, platform clips, ect.) (optional)
- Hoppers
- Hopper Flashing
- Horizontal Stiffeners and Horizontal Stiffener End Clips
- Interior Vertical Stiffeners
- Interior Vertical Stiffener Starters
- Manways and Spout Inlets
- Roof Components
- Safety Equipment (handrails, ladders, platforms, ect.)
- Side Sheets
- Steel Support Structure

Check your shipment at the time of delivery against the packing list provided with the shipment. If any items are missing or any damaged material is evident, note such shortage or damage on the freight bill before you sign the shipment paperwork.

Claims of shortages will not be honored after 30 days from receipt of shipment. Parts that are missing or damaged are the responsibility of the delivering carrier, not the manufacturer or dealer.

It is advisable to reorder damaged or missing parts immediately so that there will be no delay in the installation. After receiving the invoice for the reordered material, file a claim with the delivering carrier immediately.

Suggested Workforce

Please note that the size of crew will vary depending upon the size of the bin group and familiarity with Lemanco installation procedures. When appropriate, your crew should consist of the following to ensure the project is completed efficiently.

- 1 worker familiar with components and drawings, Ground Level
- 1 worker to unload and stage parts, Top Level
- 2 workers installing parts
- 2 workers setting fasteners
- 1 supervisor in the bin group

Suggested Equipment

Chief recommends the following equipment and tools needed for installation. Individual installations may vary.

- Electric Hoist (minimum 2 tons)
- Spud Wrenches, Hammers
- Impact Wrenches with Sockets
- Transit (Surveyors Level)
- Caulking Guns
- Ladder Sections with Top Hooks
- Welding Equipment with Long Leads
- Standard Drift Pins, 9/16" Tapered Shank
- Working Platforms
- Acetylene Rig

Hardware Torque

The following table contains recommended torque values for installation.

When installing hardware, the torque values shown below must be followed. All hardware must seat tight against the corresponding bin component.

Bolt Diameter	Torque
5/16" (.79cm)	16 ft.-lbs.
3/8" (.95cm)	29 ft.-lbs.
7/16" (1.11cm)	46 ft.-lbs.
1/2" (1.27cm)	70 ft.-lbs.
5/8" (1.59cm)	140 ft.-lbs.
3/4" (1.91cm)	250 ft.-lbs.
7/8" (2.22cm)	400 ft.-lbs.
1" (2.54cm)	600 ft.-lbs.
1 1/8" (2.86cm)	750 ft.-lbs.
1 1/4" (3.18cm)	1100 ft.-lbs.

General Safety Statement

Your safety and the safety of others is a primary concern to Chief. This manual was written to assist in the safe installation of the Lemanco Bin System.

It is your responsibility as the owner, builder, operator, or supervisor to know what specific requirements, precautions and hazards exist and to make these known to all personnel working with equipment or on the jobsite so that they can take any necessary safety precautions.

All personnel, including the installation crew, must read and understand the information contained in this manual before starting construction. Chief is not responsible or liable for the misuse of equipment or operation of personnel or equipment in an unsafe manner.

Chief assumes no liability with respect to proper construction and inspection, assembly, or use of its products established under applicable laws, all of which is the sole responsibility of the purchaser and those authorized for the installation.

Follow all local and federal safety laws and regulations. Make certain that all equipment and personnel conform to any applicable OSHA regulations.

Pre-Installation Planning Information

Lemanco Bin Systems should be preplanned to meet the project requirements. Dealer/customer planning drawings will simplify the installation and should include the following:

- Site Layout
- Location and Orientation of Lemanco Bin System
- Location of Accessories

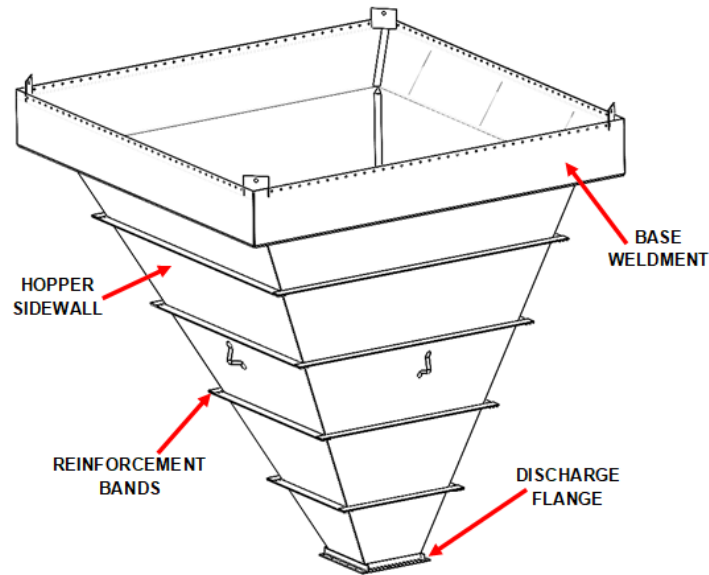
The bin parts are packaged to reduce costs. For the most efficient construction of the complete project please consider the following:

1. Chief ships three (3) sets of assembly drawings with each project. It is very important to read and study these drawings. If you follow these assembly drawings the bin system will go together correctly.
2. Unbundle and sort all components.
3. Stack all vertical starter components together near the bin group, these will be assembled first.
4. Stack all vertical top and roof components together away from the bin group. These will be installed last.
5. Sort the remaining components into stacks of similar parts. These will be the intermediate set of items and will account for the majority.
6. The sorting and stacking can be completed during the construction of the structural steel and hoppers. The ground crew should start loading the compartment on the opposite end from the point where the parts are being staged. Only send the components required to complete one tier at a time. This is important to reduce confusion and not overload the work platforms.
7. Chief ships an additional 10% hardware and fasteners. Collect all dropped fasteners to ensure you have enough to complete the project.
8. Make special note of fastener lengths on the assembly drawings.
9. After the structural steel and hoppers are set in place the correct assembly sequence is as follows:
 - a. Install side sheets.
 - b. Apply sealant per instructions.
 - c. Install vertical stiffeners.
 - d. Install horizontal stiffeners.
10. The first tier is very important. If possible, you should start the installation in the center compartment and work your way to the outside.
11. **Assemble the entire second tier before tightening the bolts in the first tier.** Tighten the bolts starting in the center and then work your way to the outside.
12. Verify that you use the correct components in each tier before proceeding to the next.
13. **Make sure that the bin compartments remain level and square at least every (3) three tiers.**

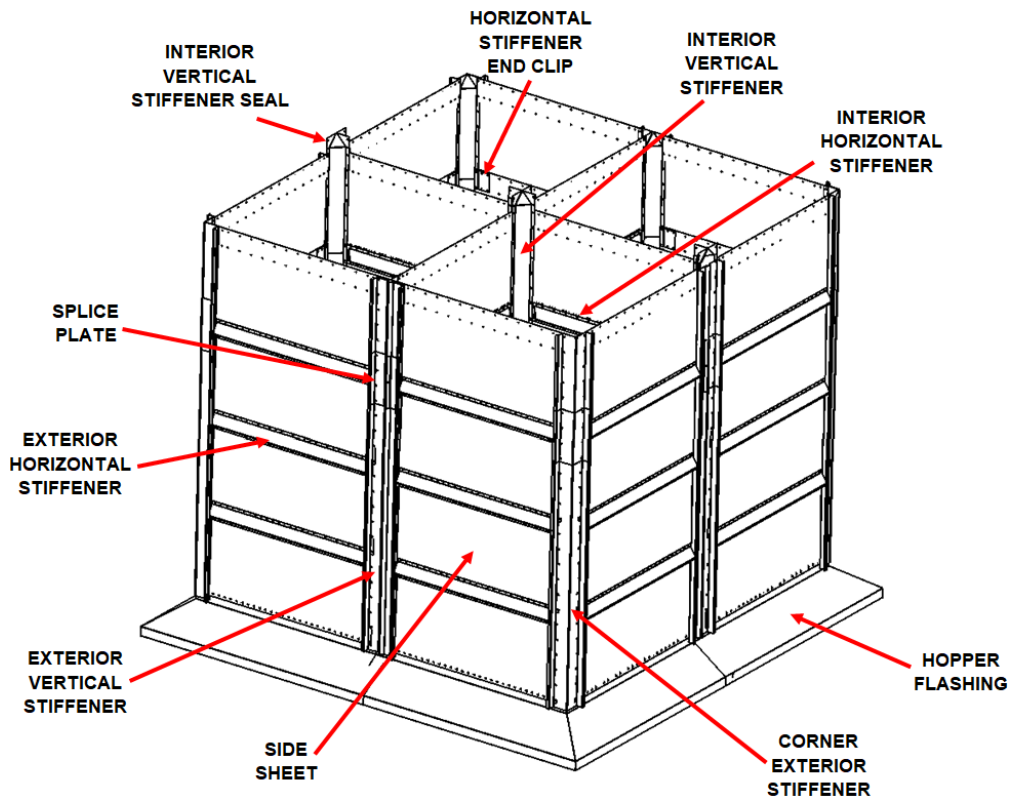
Component Identification

This section is a quick reference guide for the main component parts and assemblies. Take note of the orientation of these parts in the assemblies for the installation process. Chief does not assume any responsibility for parts damaged due to faulty or improper installation procedures.

Hopper Components



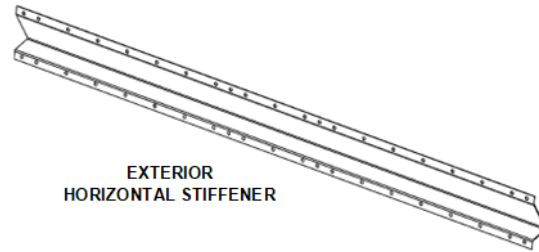
Bin Components



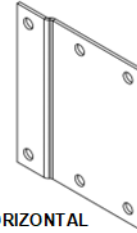
Individual Bin Components



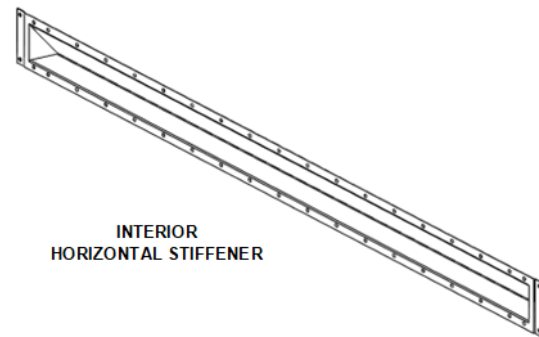
BIN SIDE SHEET



EXTERIOR
HORIZONTAL STIFFENER



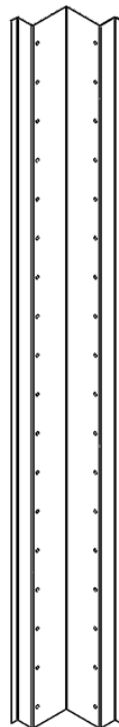
HORIZONTAL
STIFFENER
END CLIP



INTERIOR
HORIZONTAL STIFFENER



HOPPER STARTER
FLASHING



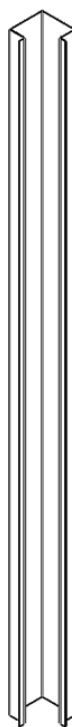
VERTICAL EXTERIOR
CORNER STIFFENER



VERTICAL EXTERIOR
CORNER STIFFENER
SPLICE



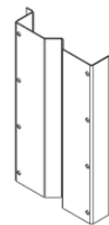
VERTICAL EXTERIOR
INSIDE CORNER
STIFFENER SPlice



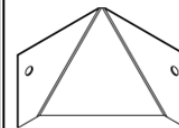
VERTICAL EXTERIOR
INSIDE CORNER
STIFFENER



VERTICAL EXTERIOR
STIFFENER



VERTICAL EXTERIOR
STIFFENER SPlice

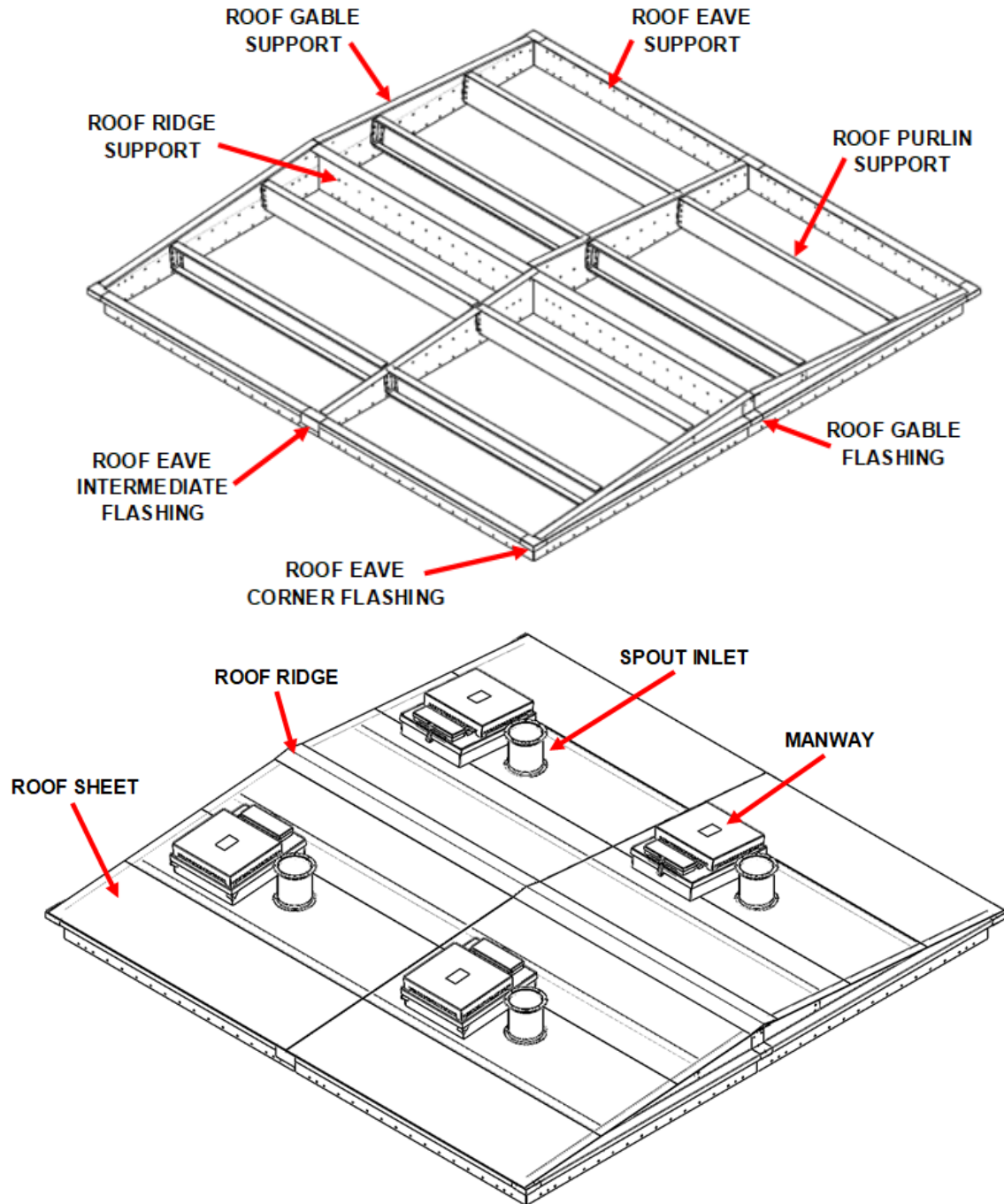


VERTICAL INTERIOR
STIFFENER SEAL

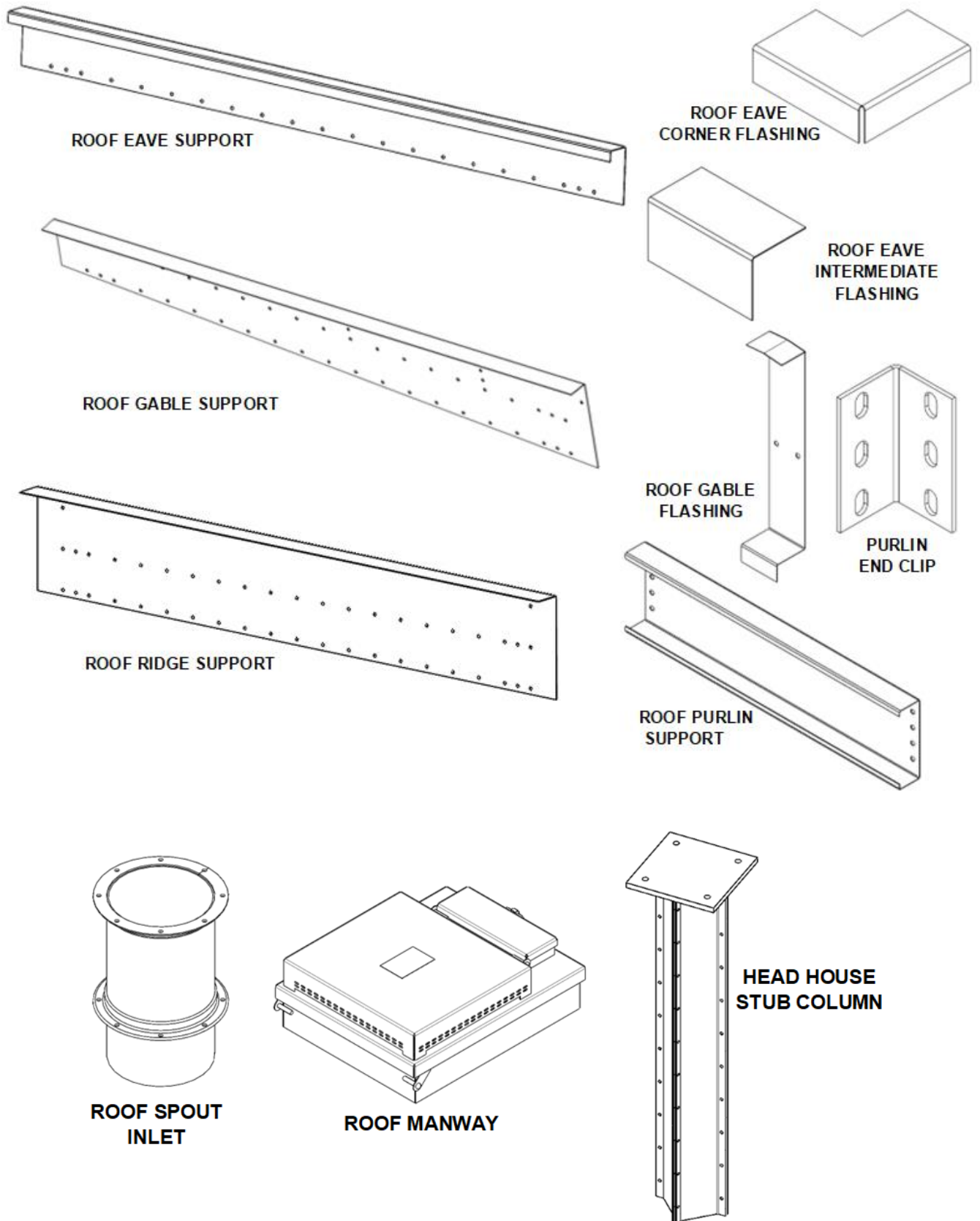


VERTICAL INTERIOR
STIFFENER

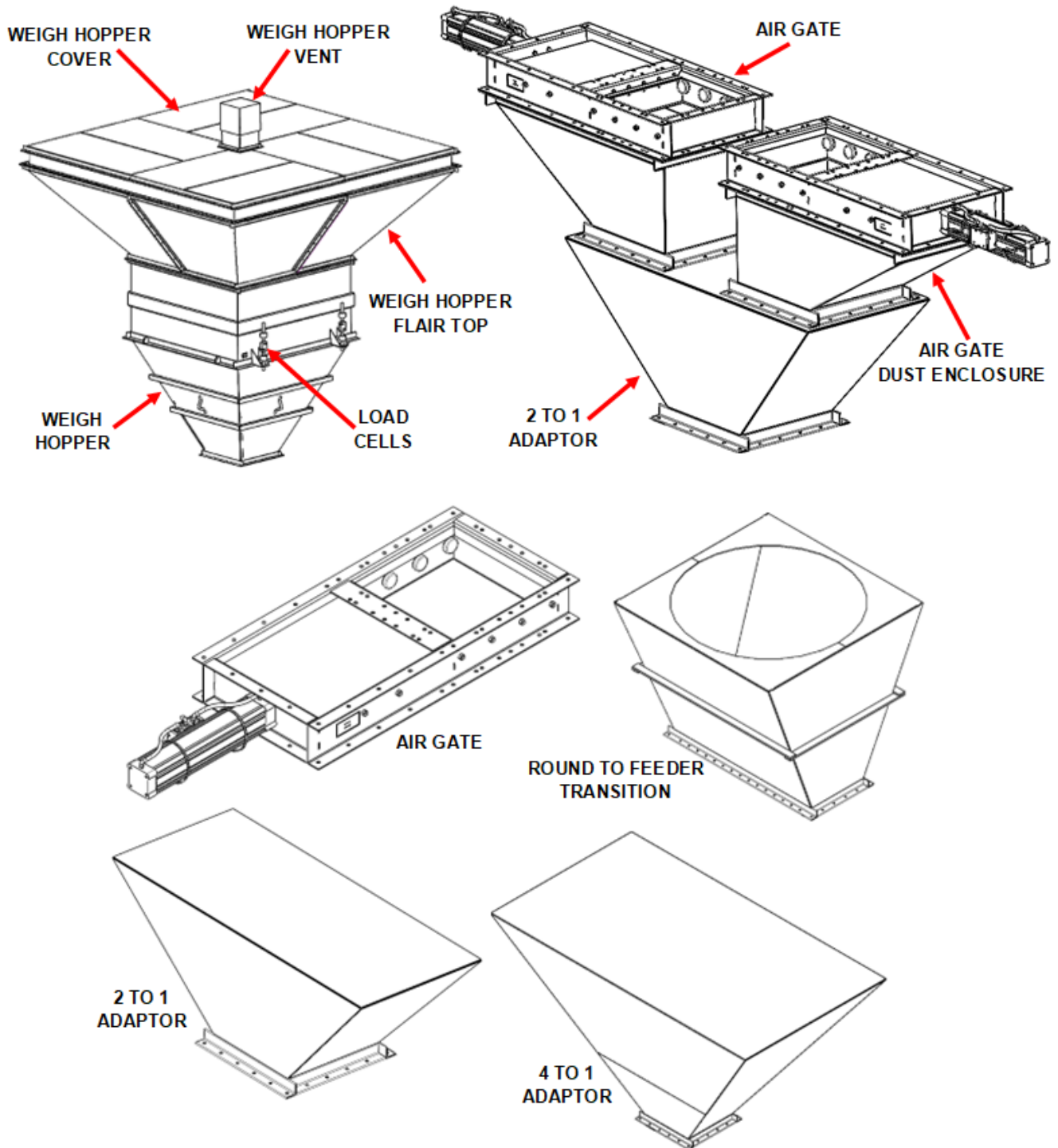
Roof Components



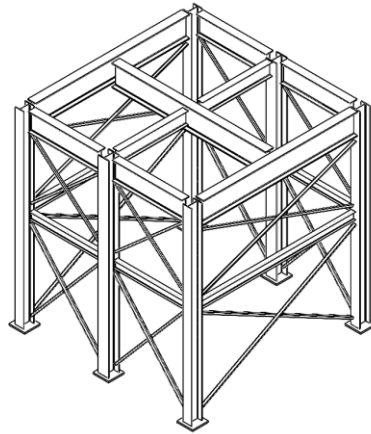
Individual Roof Components



Accessory Components



Structural Steel Support Frame Assembly



Before starting make sure you have structural assembly drawings and a copy of the packing list for this order. In addition, the AISC Code of Structural Practice for Steel Buildings and Bridges may be consulted for additional information.

All local state and federal safety regulations and requirements must be strictly observed and enforced.

Note: Foundations and footing are not the responsibility of Chief. A licensed engineering firm should be employed to take soil borings, determine the max allowable soil pressure and design the bin system foundations accordingly.

Foundation drawings should be consulted to verify the allowance for grouting under columns. Before installing the structural steel support frame all anchor bolts should be verified for correct location and square as shown in the engineering drawings.

Installation of structural steel components is largely a matter of individual choice and experience. Chief recommends consulting ANSI/AISC 303 Section 7 for erection details.

If field modifications are required, it is required to contact Chief before proceeding. If there are fabrication errors, or shortages occur, do not substitute similar components. Chief will not be responsible for unauthorized modifications.

Structural steel components are shipped to the jobsite with a finished coat of protective paint. Care should be taken by the installation crew to protect this coating. If damage occurs during shipment or field modifications are required these should be touched up with the paint supplied immediately after installation.

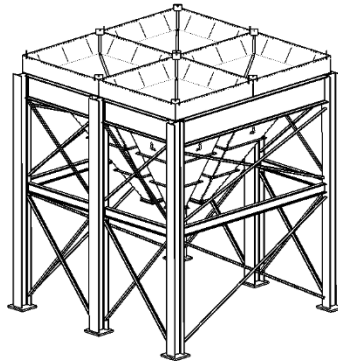
Chief is not responsible for damages incurred during shipment, staging or installation.

Weigh Hopper / Lorry Assembly and Installation

The weigh hopper or weigh lorry should be assembled directly after the structural components they rest on are assembled and verified as correct. Always refer to the installation drawings for the proper location and part number.

The weigh hopper and weigh lorry are assembled in a similar manner to the standard hoppers described below. Additional information and assembly instructions will be provided with shipment as required for your project.

Hopper Assembly and Installation



Standard hoppers are assembled after installation of the structural steel. Additional information and assembly instructions will be provided with shipment as required for your project. Note of the following steps to install the hoppers:

1. The support frame steel must be square, level, and on the same plane.
2. Hoppers are usually fabricated in one piece. If hoppers are fabricated in sections they should be assembled prior to beginning the installation process.
3. Installation platforms should be placed inside the hoppers at ground level and lifted with the hoppers. One platform is required for each compartment. Small bin parts may also be lifted with the hopper.
4. Hoppers must be lifted over the structure and lowered into place through the space between the beams. Use the lifting lugs which are located in the hopper corners for lifting. The upper portion of the Hopper has a base angle which rests on the center line of the structural beams.
5. The center hoppers of the bin group should be placed first, then proceed toward the outside.
6. Hoppers should be set on center line of beam web, with a space of approximately 1/8" between all hoppers.

Note: A chalk line should be used to line up the hoppers on the beam grid to ensure proper location. Square and level all hoppers with alignment according to the holes in the hopper base angles. Do not weld hoppers to hopper grid beams at this time.

7. Installation of screw feeders, discharge gates and adaptors should not be done until four (4) tiers have been erected and hoppers welded to structure. Adaptors will require the connecting flanges to be field located and installed for proper alignment. Clean-up and touch-up painting as required.

Bin Assembly and Installation

Before starting bin installation, you must check the structural steel support for the hoppers. The bin cluster support must be in a single plane, level, square, and plumb. Set hoppers, one at a time, starting near center of cluster, check the drawing for orientation of hopper outlets. Make sure that all hoppers and hopper flanges clear all structural steel members.

The sequence of assembly of the bin wall components must be such as to allow assembly of all parts without re-drilling or reaming of the bolt holes. Reference the project specific and standard detail drawings for the orientation of all components.

The bin assembly supervisor should study the bin cluster compartment layout and plan the installation of the wall sheets in a manner starting near the center and working outward. This will reduce the possible misalignment of bolt holes, due to addition of tolerances.

Note: The bin walls should be installed one (1) tier at a time, not tightening bolts until all bolts in the tier above have been set in place.

Care should be taken in the assembly of the first tier as it serves as the base for all tiers above. The first step in the assembly of the first tier is the installation of the wall sheets. The first row of bolts serves a second purpose as a clamp for the hopper flashing. To complete the first tier and start the bin corner columns, mount the interior vertical stiffener starter into the corner of each hopper starter plate.

Install the interior vertical stiffener and vertical corner stiffener or exterior vertical stiffeners as specified. See the installation drawings for identification of all required components.

Insert the second tier wall sheets between the interior vertical stiffeners. Align the sheets by using holes at the end and mid-point where there are only three thicknesses of material. Install the horizontal stiffeners and leave all bolts in the upper tier loose. You can tighten the bolts in the lower tier at this time. Check installation drawings for any additions or accessories to the bin cluster. Attachments for cage ladders and platforms should be attached to the bins as they are assembled.

Chief has provided an ample quantity of silicone sealant and recommends its use in certain joints and connections to prevent the possibility of leakage or cross-contamination of material. Add sealant only as shown on the installation drawings. It is recommended to use a 3/16" bead of sealant unless otherwise specified.

General sequence of assembly:

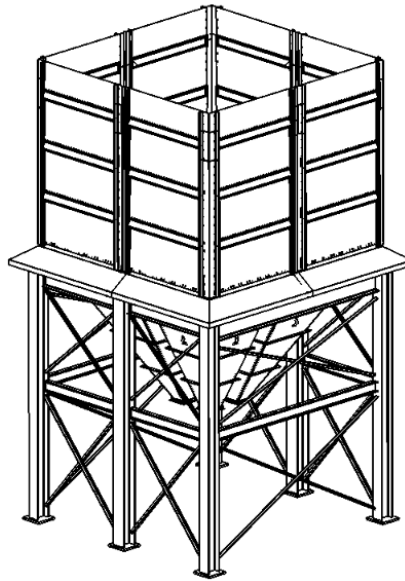
1. Level hopper structural steel support.
2. Set hoppers.
3. Check hoppers for level, square, and plumb.
4. Install side sheets.
5. Leave all first tier bolts loose.
6. Mount interior vertical stiffener starter.
7. Erect vertical column components.
8. Set interior vertical stiffeners.
9. Install exterior horizontal stiffeners.
10. Check again that cluster is square and level.
11. Check for exterior bin attachments, ladders, or platforms.
12. Start second tier side sheets.
13. When all second tier bolts are in place, tighten all bolts in lower tier.

Check engineering drawings and manual for any special instructions, details, or layouts. Installation drawings for a specific project take precedence over any drawings shown in the manual.

Project specific engineering drawings will be designated as follows:

- 100 Series- Presentation / Approval Drawings
- 200 Series- Structural Steel / Anchor Bolt Layout
- 300 Series- Installation - Bin Set
- 400 Series- Installation – Roof
- 500 Series- Hopper / Adaptor Layout
- 600 Series- Screw Feeder Layout
- 700 Series- Enclosure
- 800 Series- Safety Equipment
- 900 Series- Flooring Layout

Sidewall Installation



1. Refer to the side sheet schematics and nomenclature drawing, to locate mark numbers for the side sheets and horizontal stiffeners.
2. All remaining bin parts, such as vertical and horizontal stiffeners, should be lifted to the assembly area.
3. At this point, installation platforms are supported by the hopper walls. Platform load limits must be observed.

Note: Installation platforms can be constructed with hooks that utilize optional platform clips that are bolted in each bin corner. Safety chains should also be used to attach to these optional platform clips in each bin corner. Platform clips are not supplied with shipment unless specifically ordered.

4. Place first tier partition sheets at the center of the group, leaving bolt joints loose. Work toward the outside until the first tier is in place.

Note: Refer to the standard details drawing for bolt size and sealant location. Place sealant at all corners at the top of the hoppers.

5. Install hopper flashing with the exterior side sheets on the first tier; tighten joints between first tier side sheets and hoppers. Refer to the standard details drawing for additional information.
6. Install the bin gates and/or screw feeders and scale hopper cover, if provided.

Note: Cover the hopper discharge if no gates are included to prevent a falling objects hazard for workers below.

7. Install the first run of vertical outside columns at all joints.

Note: All vertical columns lap over the hopper flashing that is located to the outside of the hopper base angle.

8. Install interior vertical stiffener starters at all interior bin corners.

Note: Optional platform clips are installed as interior vertical stiffeners are bolted together. If optional platform clips are used, install one clip, one platform hook and one safety chain in each corner of every compartment at each tier level. Clips should be installed in all corners of the bin compartment on both sides of the interior vertical stiffener. Make sure all the bolts holding the platform clips are tight before raising the platform.

9. Raise all platforms from the hopper level so that the platform hooks (at each corner of the platform) fit into the clips installed at the top of the first tier. Safety chains should also be attached to the platform clips in each corner.

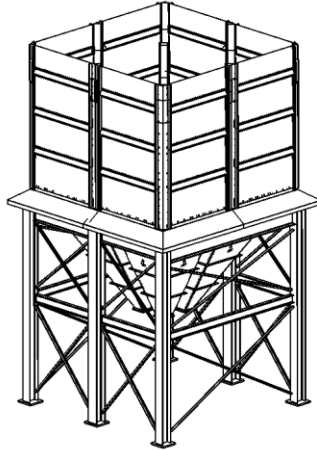
Note: Installation platforms should be raised by using manual rods with one worker at each corner lifting the platform so that the hooks fit into the appropriate clips.

10. Distribute parts for the second tier. Platform load limits must be observed. Install the second tier from the center of the group outward.
11. Place side sheets between the vertical corner stiffeners and exterior corner stiffeners. Install horizontal stiffeners and next run of interior vertical stiffeners for each succeeding tier.

Note: Optional clips to support the installation platforms at the next level are installed at this time. This procedure is repeated upward, with the installation platforms moving up with each tier up to the top of the bin group.

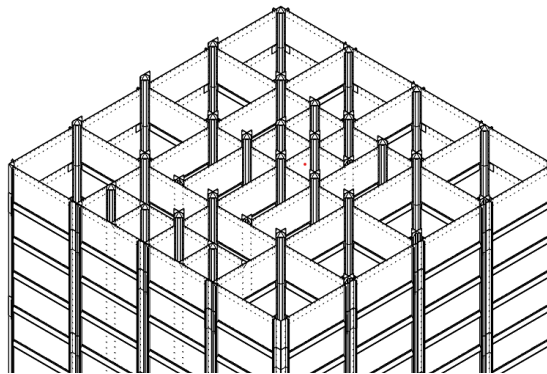
Note: Care should be taken to equalize tolerances at the horizontal joints so that vertical holes remain on correct centers. This is necessary to keep all tiers level and walls plumb, and prevents loss of dimension due to accumulated tolerances in one direction. Before tightening the lower horizontal sequence of bolts, make sure you have placed a drift pin in the top corner holes to maintain the correct tolerance. Take up any hole tolerances that develop with each tier to prevent curves from developing in the side sheet.

Vertical Column Installation



1. Vertical columns are constructed from vertical corner stiffeners and exterior vertical stiffeners. These members should always be installed before the side and partition wall sheets. (After the first tier of side sheets are installed, proceed to install the first run of vertical corner stiffeners and exterior vertical stiffeners are attached to this first tier.)
2. A bead of caulking must be applied vertically to the vertical corner stiffeners and exterior vertical stiffeners to form a seal against the side sheets. Be sure that all joints are caulked continuously.
3. Succeeding runs of vertical corner stiffeners and exterior vertical stiffeners are butted end to end as the columns extend upward. These butt joints are covered with corner stiffener splice plates or stiffener splice plates, using vertical bolt joints in the vertical corner stiffeners and exterior vertical stiffeners. Caulk well before applying splice plates.

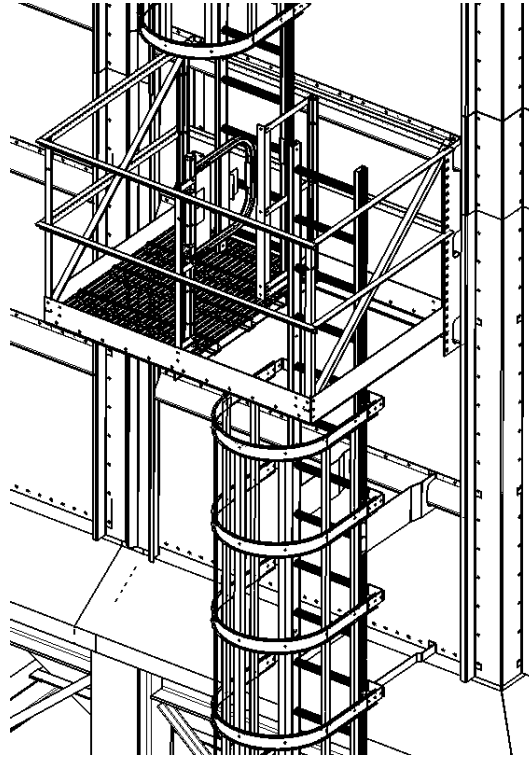
Split Compartment Installation



1. When a full size compartment is split into half or quarter size bins, the resulting compartments are fabricated and erected much the same as full size compartments. (See Bin Assembly Drawings for location of split compartments.)
2. Half and quarter size hoppers are used to begin the compartments, just as in full size compartments.
3. When half or quarter size compartments adjoin full sized partition or side sheets, vertical rows of holes are required up the center of the full size sheets.

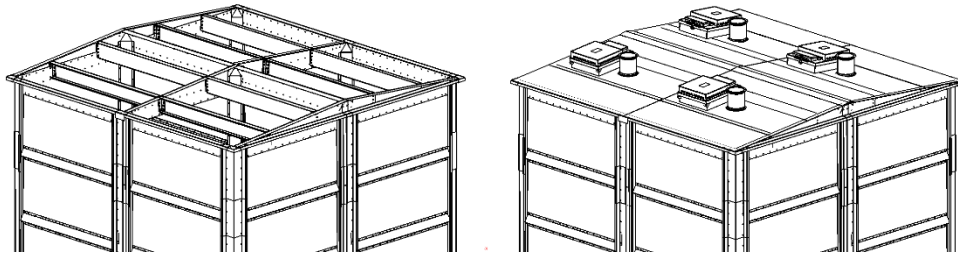
4. These are specially marked sheets. Full length horizontal reinforcing beams (exterior horizontal stiffeners and interior horizontal stiffeners) are used on the outside of these full lengths adjoining split compartments.
5. Interior vertical stiffeners are to be used in all corners of all compartments regardless of compartment size. (Refer to bin assembly drawings for proper location and part numbers.)

Ladder Bracket and Platform Installation



1. Bolt the ladder brackets over the horizontal stiffeners as you assemble the bins.
2. Ladders, safety cages and safety platforms can be preassembled at ground level prior to installation on the bin system.
3. After the bins are assembled use a crane or hoist to lift the ladders into place. Bolt the ladder to the brackets by using the ladder straps. Make sure safety precautions are taken when you mount the ladder.
4. If girts are used on the structural steel, weld the ladder bracket to the girts: Refer to the installation drawings for the proper placement of the ladder brackets.
5. Refer to installation drawings for the proper placement of the ladder brackets and orientation of safety platforms. Additional information and assembly instructions will be provided with shipment as required for your project.

Roof Assembly and Installation

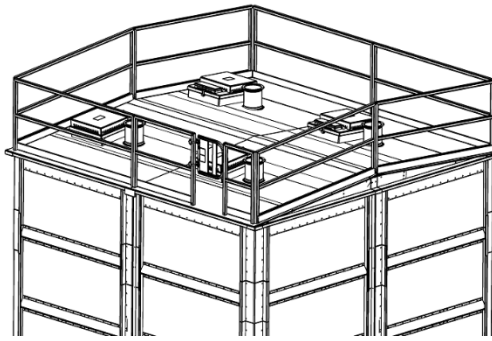


1. With installation platforms located one tier below the top of the last tier of the bin cluster, the roof support members are installed.
2. Eave supports, gable end supports, gable intermediate supports, gable partition supports, and roof ridge supports, should be bolted to the top of the uppermost tier.
3. In some cases, the interior vertical stiffeners extend up beyond the top tier to join the roof support members. The exterior vertical columns do not extend past the top of the top tier.
4. Install the roof purlin bracing. Reference engineering drawings for correct locations.
5. If a head house is required, the head house stub columns should be installed at the locations specified in the engineering drawings.
6. All roof eave support, roof gable support, and roof ridge support members form flat surfaces at the proper slopes to which the roof deck is welded and/or fastened. (NOTE: It is possible to remove installation platforms with these supports in place, leaving a space to withdraw the platform.) Remove installation platforms before roof purlin bracing and roof sheets are installed.
7. Weld roof sheeting as shown in the engineering drawings. Weld the sheeting at the bottom of the eave first and then work up towards the roof ridge. Roof sheets are to be lapped in such a manner to shed water from the roof ridge and prevent moisture from leaking into the bin compartments.

Concrete Roof Installation

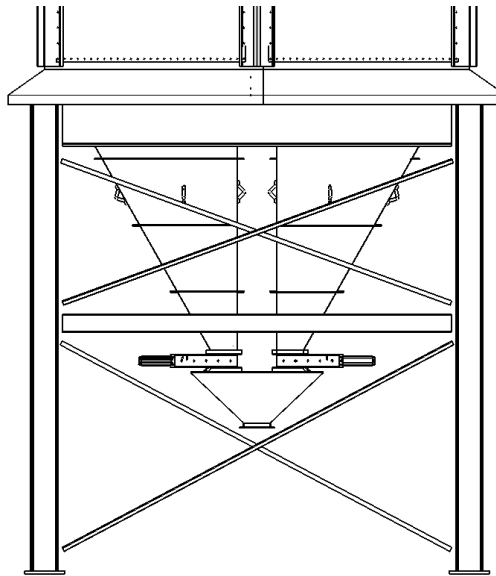
1. Connect the flat roof supports to the top tier of the bin side sheets.
2. Bolt the curb form between the side sheets and the vertical stiffeners.
3. Mount the head house stub columns, if included.
4. Lay the decking on the roof framing and weld the decking together.
5. If handrails are being used, verify that handrails are square and plumb before welding the handrail to the decking or curb form.
6. Locate spout inlets, manways and other roof accessories.
7. Pour and finish the concrete slab.
8. After concrete has cured as specified in the engineering drawings, install all other components such as siding, doors and windows to the head house as specified.

Roof Handrail Installation



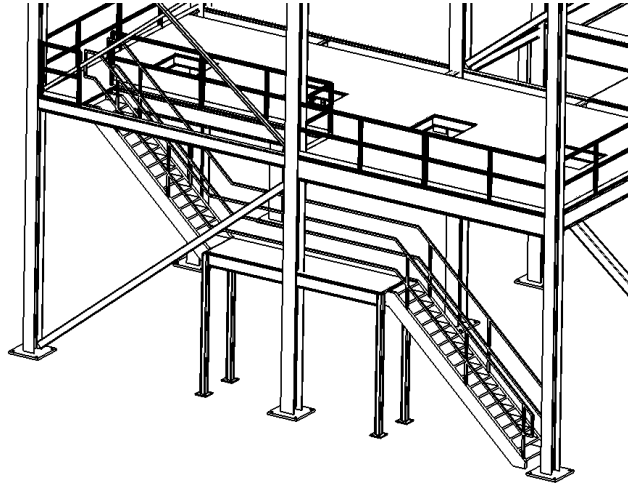
1. Refer to the installation drawing for the proper layout of the handrails. Use a chalk line to layout the handrails. Tack weld the gable handrails first and then weld the side handrails to the gable handrails.
2. Fully weld the base of the handrail stanchions to the roof sheeting.
3. Locate the entry of the safety gate. Trim handrail where required and mount the safety gate. Weld ladder brackets as required to the top rail.
4. Additional information and assembly instructions will be provided with shipment as required for your project.

Gates and Adaptors Installation



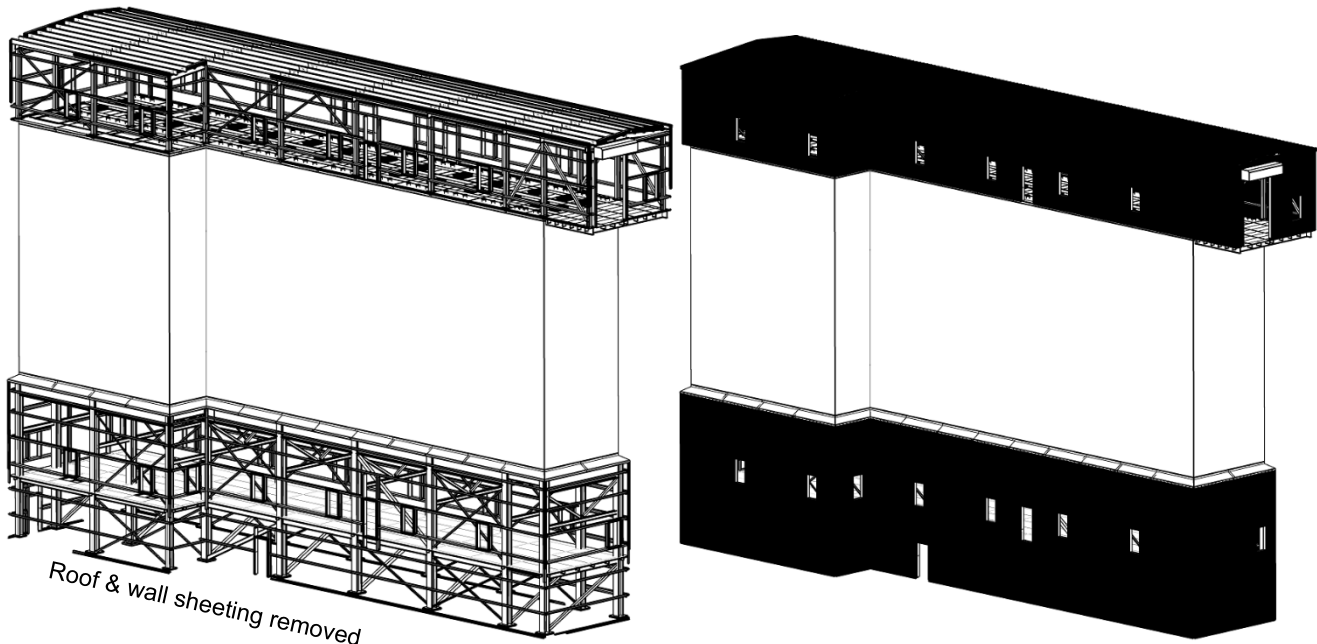
1. Refer to the installation drawing for the proper layout of all adaptors and gates.
2. Verify that all gates, adaptors and screw feeders are aligned correctly before field welding mounting flanges.
3. Additional information and assembly instructions will be provided with shipment as required for your project.

Mezzanine Floor and Catwalk Installation



1. Refer to the installation drawing for the proper layout of all mezzanine floors and catwalks.
2. Installation will be similar to the installation of the structural steel support frame.
3. Verify the proper layout of all flooring materials before welding / fastening to structural steel framing.
4. Additional information and assembly instructions will be provided with shipment as required for your project.

Head House Installation

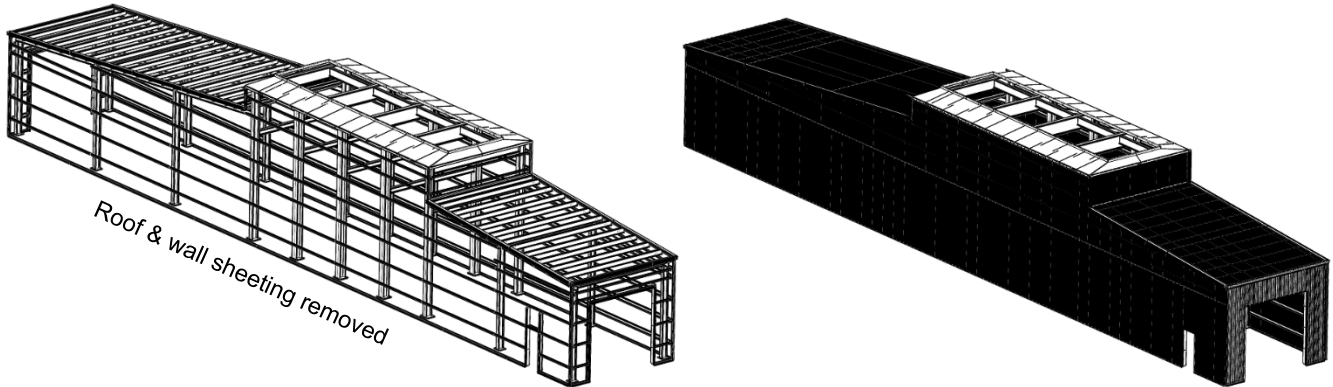


1. Mount the columns for the head house to the head house stub columns. Level and square up the columns. You may need to use temporary bracing to hold the columns in place until the rest of the framing for the head house is installed.
2. Additional information and assembly instructions will be provided with shipment as required for your project.

Safety Equipment Installation

1. Refer to the installation drawing for the proper layout of all safety equipment.
2. Additional information and assembly instructions will be provided with shipment as required for your project.

Enclosure Assembly and Installation



Installation of structural steel components and building enclosures is largely a matter of individual choice and experience. The following general outline is provided for reference only.

1. Bolt on all required clips and flange braces. Verify elevations of all framing members
2. Bolt on all girts to sidewall and end wall locations.
3. Install all framing for doors and windows.
4. Install sheeting and trim. Make special note of location of all lap joints before fastening sheeting.
5. Refer to the installation drawing for the proper layout of all enclosures. Separate assembly instructions and information is provided due to custom requirements for bin system enclosures.