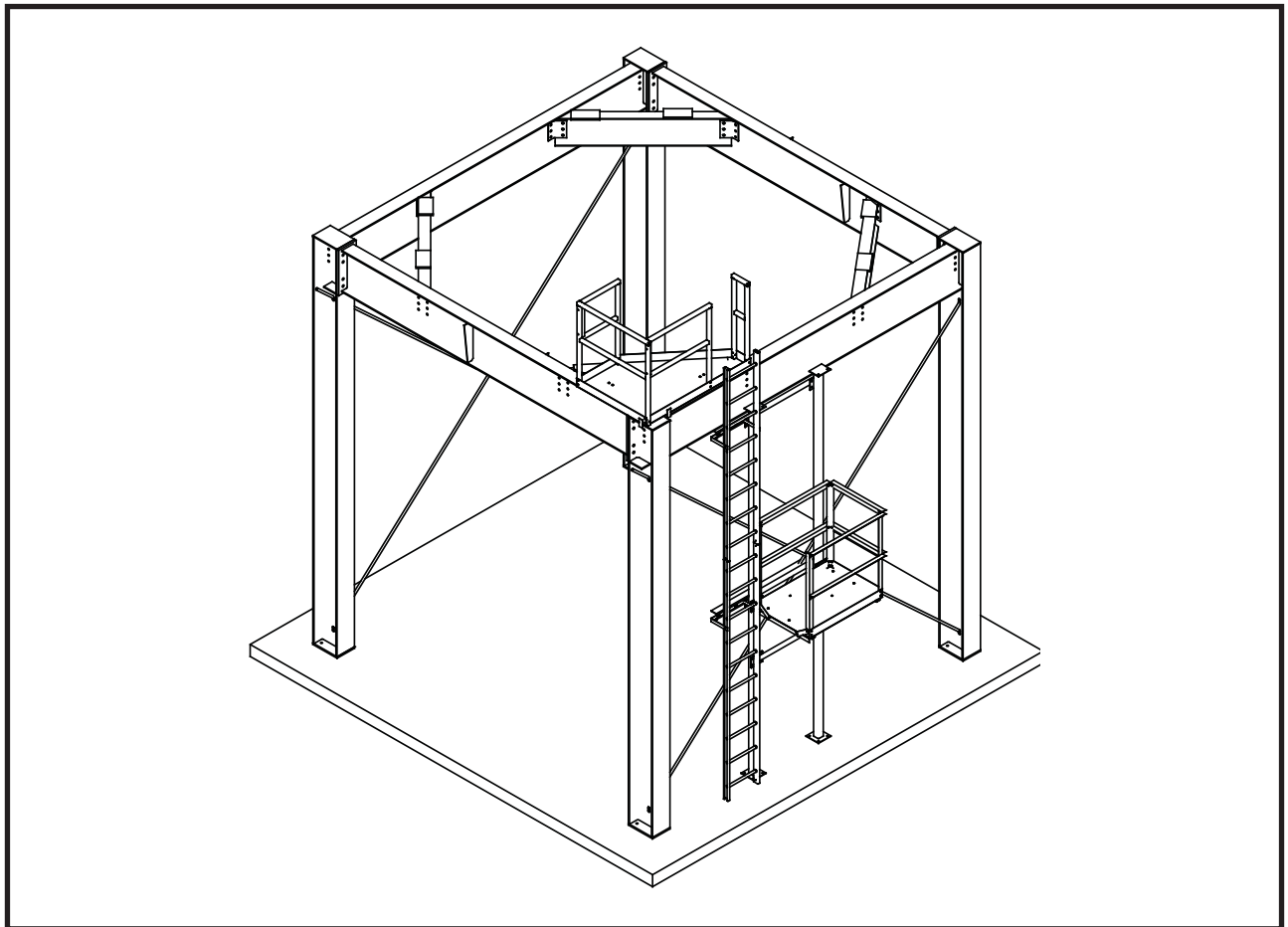




A Unit of **GLOBAL** Industries, Inc.

HOPPER BIN SUBSTRUCTURE 15' [4.57 m] - 18' [5.49 m] DIAMETERS

Construction, Owner's, and Operator's Manual



Effective Date
2011-08-02



Publication Number
400036 Rev 01
(English Version)

The Symbol shown below is used to call your attention to instructions concerning your personal safety. Watch this symbol - it points out important safety precautions. It means “ATTENTION” - Become Alert! Your Personal Safety Is Involved! Read the message that follows and be alert to the possibility of personal injury or death.



Be Alert! Your Personal Safety Is Involved

A copy of this manual should be available at all times to the owner/operator. Additional copies may be requested from the company at the address shown on the back cover. Please reference manual part number 4000036 when requesting additional copies.

Please Contact BROWNIE SYSTEMS or Your Dealer
If You Have Any Questions Concerning This Manual

Keep This Manual In A Safe Place Available For Future Reference.



PREFACE

You have purchased the finest Hopper Bin Substructure manufactured today. The following information is intended as a guide for: Hopper Bin Substructure pre-assembly, proper construction of your Hopper Bin Substructure, and safe and proper use of your Hopper Bin Substructure after construction.



General Safety Statement

Your safety and the safety of others associated with grain system equipment, is of prime concern to us at Brownie Systems. This manual was written with the safety of the operator and/or others who come into contact with the equipment as our prime concern. We wrote this manual to help you to better understand how to safely build and use your Hopper Bin Substructure.

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 the equipment or in the area, so that they too may take any necessary safety precautions that may be required!


Failure to read this Manual and its Safety Instructions by all operators and all personnel is a misuse of the equipment. We want you as our partner in safety!

All personnel, including construction personnel, must read and understand all equipment Operator's Manuals before starting Hopper Bin Substructure construction!



NOTE: Although Global Industries, Inc. language translations of this manual are made as accurately as possible, if there is a conflict or difference between the English and the other translations of this manual, the English text will prevail.

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Warranty

Global Industries Inc. (the **Company**) makes the following warranty to the initial retail purchaser of its products (the **Customer**).

MATERIALS and WORKMANSHIP:

The Company warrants products manufactured by it to be free from defects in materials and workmanship in normal use and service for a period of one (1) year after date of delivery to the Customer.

COMPANY'S OBLIGATION and CUSTOMER'S EXCLUSIVE REMEDY:

The Company's sole obligation and the Customer's exclusive remedy under this warranty is as follows:

If within one (1) year after delivery to the customer the product fails to function properly due to a defect in either materials or workmanship, the Company will at its option, either repair the defective part or replace the defective part with a new or reconditioned part. Labor charges for removing defective parts and installing replacement parts, shipping charges with respect to such parts, and applicable sales and other taxes, if any, shall not be covered by this warranty.

CONDITIONS, LIMITATIONS, AND EXCLUSIONS:

There are no warranties or merchantability or fitness for a particular purpose with respect to any product manufactured or sold by the Company. Motors provided by the Company are in most instances warranted by the manufacturer thereof and are not warranted by the Company. The Company shall not be responsible under this warranty or otherwise for personal injury or for **Incidental or Consequential Damages**, including, without limitation, loss of use and lost profits. This warranty does not apply to defects or damages caused by misuse, improper maintenance, or improper installation of the Company's product or any equipment attached to or used in connection with the Company's product. The Company reserves the right to make changes or improvements to its products without incurring any obligation with respect to previously manufactured products. Field modification of this product without the expressed written permission of the Company constitutes a misuse of the product. The Company shall have no liability under this warranty until payment in full for the product in question has been made by the customer. The foregoing is the sole warranty made by the Company. No one is authorized to make other warranties on behalf of the Company.

<1> Safety



General Safety Requirements



WARNING!

ALL INFORMATION ON THIS PAGE IS WARNING INFORMATION!

This Brownie Systems Construction/Safety manual is written to assist and instruct those who are responsible for the complete Hopper Bin Substructure assembly, and for anyone using the completed Hopper Bin Substructure.

Global Industries Inc. assumes no liability with respect to proper construction and inspection, or use of its products established under applicable laws, all of which is the sole responsibility of the purchaser and those doing the assembly work.

Appurtenances and the accessories manufactured by us for use with our products conform only to applicable Federal or Safety Standards in effect at such time.

SAFETY COMPLIANCE

It is your responsibility as an owner or operator or supervisor, to know what specific requirements, precautions, and work hazards exist and to make these known to all other personnel working with the equipment or in the area, so that they too may take any necessary safety precautions that may be required.



WARNING!

Watch For This Symbol:  !

It Points Out Important Safety Precautions.

It Means “ATTENTION” - Become Alert!
Your Safety Is Involved.

WORK AREA SAFETY STATEMENT

Under no circumstances should persons not involved in the operation be allowed to **trespass** into or be present in the work area.

It shall be the duty of all operators to see that children and/or other persons stay out of the work area! Trespass into the work area by anyone not involved in the actual operations, or trespass into a hazard area by anyone, shall result in an immediate shut down by the operator.

It shall be the responsibility of all operators to see that the work area has secure footing and is clean and free of all debris and tools which might cause accidental tripping and/or falling. It shall also be their responsibility to keep the work area clean and orderly during the operation. It shall also be the responsibility of the operator to have damaged equipment repaired and to be made free of sharp edges.

**WARNING!**

**ALL INFORMATION ON THIS PAGE IS
WARNING INFORMATION!**

PROPER PERSONNEL

To insure safe use of your Hopper Bin Substructure(s), Ladders, Platforms, Hopper Bins, or Auxiliary Equipment, be certain that only trained persons install, maintain, and use your Hopper Bin Substructure(s), Ladders, Platforms, Hopper Bins, or Auxiliary Equipment.

**OSHA
OCCUPATIONAL SAFETY AND HEALTH
ACT OF 1970**

Certain purchasers of our products may be subject to the requirements and standards of the William-Steiger Occupational Safety and Health Act of 1970, which prescribes standards for use of appurtenances of our manufacture, such as handrails, platforms, stairways, fixed ladders, ladder cages, and guard rails. (Occupational Safety and Health Standards Section 1910.21 through 1910.32). Before installing these devices, familiarize yourself with the above Federal Standards.

At the time of manufacture, these optional items conform to applicable standards

Global Industries, Inc. assumes no liability with respect to proper construction, assembly, inspection, or use of its products under applicable laws, all of which is the sole responsibility of the purchaser and those doing the assembly work.

AUXILIARY EQUIPMENT SAFETY

You may decide to buy and install “auxiliary equipment” made by other manufacturers. Global Industries, Inc. has no control over the design and manufacture of this equipment. If you buy and install auxiliary equipment then at a minimum **we suggest that you do the following:**

- 1** Obtain, read, and understand the instructions and cautions of the auxiliary equipment manufacturer. Be certain all equipment is installed according to the manufacturer’s instructions.
- 2** Check with Global Industries, Inc. or your dealer to make certain that your Hopper Bin Substructure(s), Ladders, Platforms, and Hopper Bins Equipment is designed to support any additional loads supplied by the auxiliary equipment.
- 3** Obtain any applicable safety decals from the manufacturer of the auxiliary equipment and display each safety decal in a visible location.
- 4** Make certain 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 all guards and shields are securely in place.
- 7** Store all operations/maintenance manuals in a safe place available for future use.

**WARNING!**

**ALL INFORMATION ON THIS PAGE IS
WARNING INFORMATION!**

OPERATOR QUALIFICATIONS

Operation of this unit shall be limited to competent and experienced persons. In order to be qualified, they must also know and meet all other requirements, such as, but not limited to, the following:

- 1** Some laws and regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these requirements are in your own area or situation.
- 2** Current OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved.**"
- 3** Unqualified persons are to **STAY OUT** of the work area.
- 4** A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.

* Federal Occupational Safety and Health Standards for Agriculture, Subpart D. Section 9128.57 (a) (6)

SAFETY QUESTIONS OR CONCERNS

Please contact Brownie Systems with any specific Hopper Bin Substructure(s), Ladders, Platforms, Hopper Bins, or Auxiliary Equipment use safety needs!

In the USA -

Phone: 1-800-228-4285

Fax: 1-308-382-6954

WORK AREA AND EQUIPMENT SAFETY

Do not operate your equipment without shields and guards in place. Failure to heed this warning may result in serious personal injury or death!

Follow all climbing safety laws and regulations. Take care not to fall when climbing Hopper Bin Substructure(s), Ladders, Platforms, Hopper Bins, and/or Auxiliary Equipment. Common sense dictates that such appurtenances should not be used when conditions such as rain, wind, or ice preclude their safe use. Global Industries, Inc. strongly recommends that optional climbing equipment be purchased to meet the current specifications set forth by OSHA whether the individual operator is required by law to do so or not. A properly secured safety belt should be used at all times when performing operations work or maintenance on Hopper Bin Substructure(s), Ladders, Platforms, Hopper Bins, and/or Auxiliary Equipment.

Care must be taken to avoid entanglement in equipment installed in or on Hopper Bin Substructure(s), Ladders, Platforms, Hopper Bins, and/or Auxiliary Equipment. Securely lock-out all power, be it electrical or PTO prior to working on or near such equipment.

Field modification of the Hopper Bin Substructure(s), Ladders, Platforms, Hopper Bins, and/or Auxiliary Equipment without the authorization of the manufacturer may present unknown dangers to the operator and must be avoided.

**WARNING!**

Owners and Contractors: Before starting construction of your Hopper Bin Substructure, Ladder, Platform, or Hopper Bin, 1) **READ AND UNDERSTAND THIS MANUAL!** 2) Read and understand the instructions for all equipment, auxiliary equipment structures, other products, and the like within or connected to this Hopper Bin Substructure, Ladder, Platform, or Hopper Bin. 3) View all illustrations in this manual. 4) Read and understand any applicable OSHA Regulations, Building Codes, and Electric Codes.

**WARNING!**

Make certain that all persons within the work area on ladders, lifts, crane lifts, scaffolds, or the like are secure and not in danger of falling! Also make certain that the work surfaces are clean and free of clutter.

**WARNING!**

Any alterations to Hopper Bin Substructures, Ladders, or Platforms, without the authorization of the Brownie Systems Engineering department is prohibited!

**WARNING!**

Make certain all persons on Hopper Bin Substructures, Ladders, Platforms, or Hopper Bins during construction are properly fastened to safety cables to prevent injury or death due to falling!

**WARNING!**

Local codes supersede the instructions provided in this manual and should be strictly adhered to. Contact the manufacturer if you have questions.

**WARNING!**

Installation of Accessories or equipment in or on the Hopper Bin Substructure, Ladder, Platform, or Hopper Bin that would over stress the structure in any manner will void the Warranty. If you do not have specific recommendations from Brownie Systems, where additional loading is involved, please contact Brownie Systems before installing any such appurtenances or equipment.

**WARNING!**

Avoid injury or death! Use extreme caution when working from heights. Use the proper equipment when working from heights. Take the proper precautions to prevent persons or objects from falling!

**WARNING!**

DO NOT substitute parts or hardware for those supplied by Global Industries, Inc.



WARNING!

It is your responsibility as the owner, operator, builder, and/or supervisor to obtain and follow the necessary relevant OSHA ladders, safety cages, and platform safety regulations, rules, guidelines, and information applicable to your ladders, safety cages, and platforms installation and use!



WARNING!

Do not let ladders come into contact with live electrical wires or electrical equipment!



WARNING!

Inspect ladders before climbing. Never use a damaged, bent, or broken ladder. Never climb a ladder that is wet, icy, greasy, or slippery.



WARNING!

Brownie System ladders are designed to support one person plus materials and tools, not more than the OSHA working load at the date of manufacture.



WARNING!

Do not use any damaged Brownie Systems / Global Industries, Inc. Parts. Do not use any damaged parts from another manufacturer. It may not be safe.



WARNING!

Foundation and anchoring are of critical importance to Brownie structures such as Hopper Bin Substructures. Contact a consulting engineer to design an adequate foundation for site soil conditions to support your structures. Brownie Systems will supply the loading calculations to your engineer to aid in designing the foundation.

<2> Specifications

Any alterations to the product or deviation from instructed assembly and installation procedures, without the authorization of Brownie Systems is prohibited.

The tools required for assembly and installation are:

- 1-1/2" open-end wrench and socket
- 1-1/4" open-end wrench and socket
- 1-1/8" open-end wrench and socket
- 7/8" open-end wrench and socket
- 3/4" open-end wrench and socket
- 9/16" open-end wrench and socket
- 1/2" open-end wrench and socket
- Torque Wrench

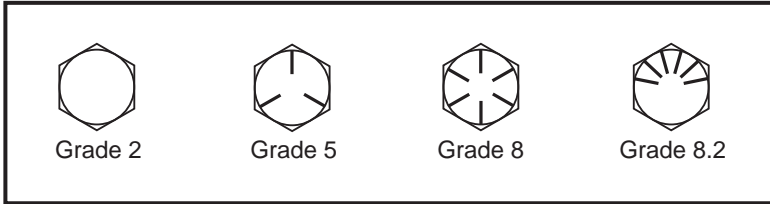


WARNING!

UNDER NO CIRCUMSTANCES SHALL ANY OTHER BOLT BE SUBSTITUTED FOR THOSE SUPPLIED BY BROWNIE SYSTEMS / GLOBAL INDUSTRIES INC.!

Bolt Torque

Bolt Head Identification




Bolt Torque Values

coarse thread bolts

T = Tightening Torque P = Bolt Tensile Load in lbs

Bolt Diameter Threads/Inch	Grade 2				Grade 5				Grade 8 and 8.2			
	P	T			P	T			P	T		
		ft-lbs	Nm	kgf-m		ft-lbs	Nm	kgf-m		ft-lbs	Nm	kgf-m
1/4" - 20	1313	6	8.1	0.83	2000	9	12	1.2	2850	13	18	1.8
5/16" - 18	2176	12	16	1.7	3350	19	26	2.6	4700	27	37	3.7
3/8" - 16	3188	22	30	3.0	4950	34	46	4.7	6950	48	65	6.6
7/16" - 14	4388	35	47	4.8	6800	55	75	7.6	9600	77	104	11
1/2" - 13	6850	63	85	8.7	9050	83	110	11	12800	120	163	17
5/8" - 11	9300	110	150	15	14500	170	230	24	20300	230	312	32
3/4" - 10	11400	160	217	22	21300	290	390	40	30100	410	556	57
7/8" - 9	13800	220	298	30	29500	470	640	65	41600	670	910	93
1" - 8	15000	280	380	39	38700	710	960	98	54600	1000	1400	138

Use the torque values listed in the table above for all Tower, Tower Stairway, Tower Ladder, and Tower Platform hardware connections!

 **WARNING!**

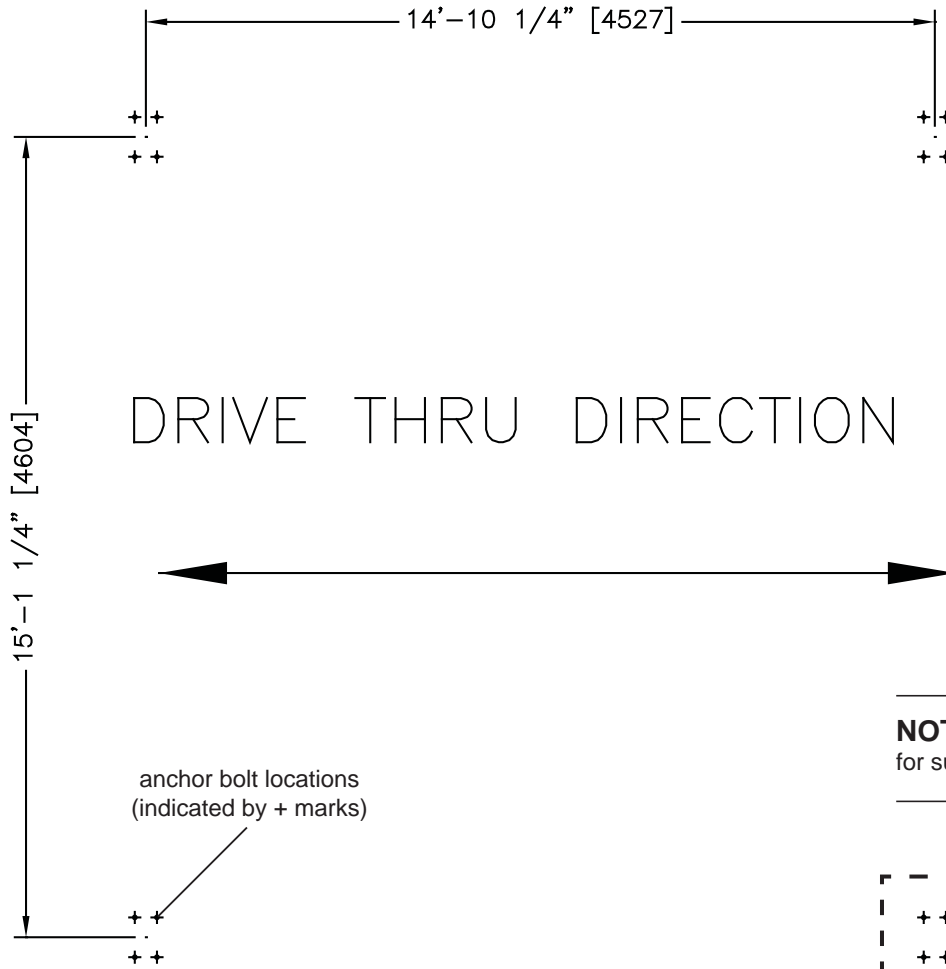
CRITICAL: You must use the correct bolts as designated and provided by Brownie Systems / Global Industries, Inc. throughout the complete assembly of Brownie Hopper Bin Substructures, Ladders, or Platforms! And, you must achieve the correct bolt torques as indicated in the table on this page throughout the complete assembly! Using the wrong bolts or not achieving the correct torque values could result in the structural damage or failure of your Brownie Systems Hopper Bin Substructure, Ladders, or Platforms.

Contact the factory with any Hopper Bin Substructure or Hopper Bin Substructure Component construction or assembly problems.

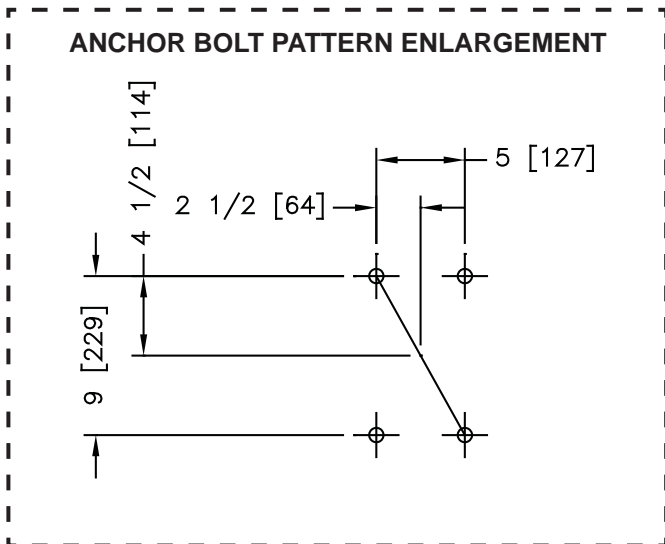
Phone: 1-800-228-4285

Fax: 1-308-382-6954

15' [3.57 m] Structure Anchor Bolt Layout



NOTE: The anchor bolt diameter for substructure columns is 3/4".

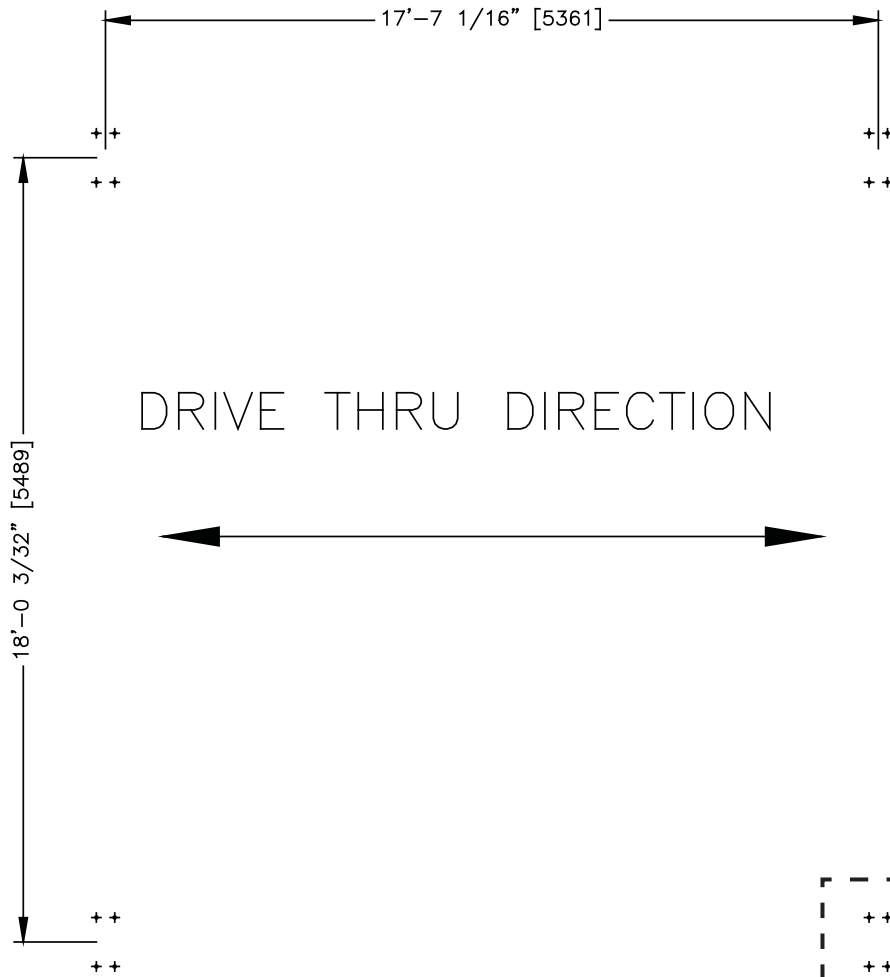


NOTE: The metric dimensions are shown in mm inside the brackets [].

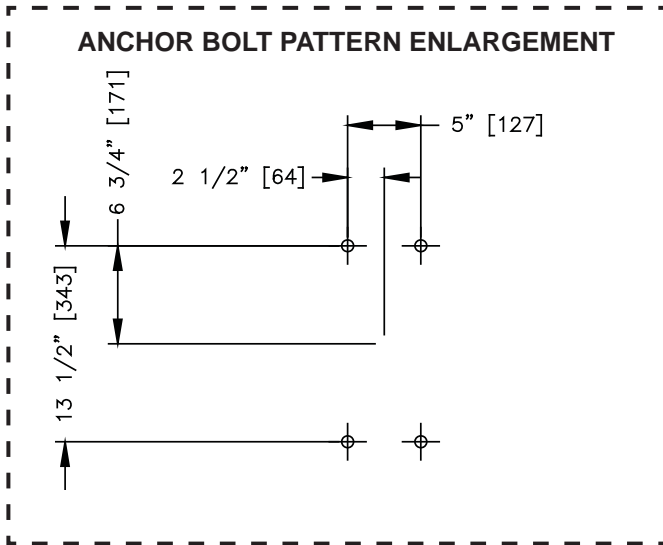


IMPORTANT NOTE: Read the manual before constructing the foundation. It will be important to determine the layout of the substructure and the location of the ladder and platforms before the construction of the foundation is started!

18' [5.49 m] Structure Anchor Bolt Layout



NOTE: The anchor bolt diameter for substructure columns is 3/4".



NOTE: The metric dimensions are shown in mm inside the brackets [].



IMPORTANT NOTE: Read the manual before constructing the foundation. It will be important to determine the layout of the substructure and the location of the ladder and platforms before the construction of the foundation is started!

Part Weights

18' [5.49 m] Structure Main Parts

Part Number	Description	Weight in lbs	Weight in kg
3497700	(18') column	1376.6	624.4
3497701	(18') main beam assembly	1185.3	537.6
3497702	(18') side beam	1083.1	491.3
3497704	(18') diagonal beam, LH	185.2	84.0
3497705	(18') diagonal beam, RH	185.2	84.0
3497718	(18') tension bar	63.0	28.6
4508200	18' hopper bin substructure, complete assembly	11,323.4	5136.2

15' [3.57 m] Structure Main Parts

Part Number	Description	Weight in lbs	Weight in kg
3497723	(15') column	1095.0	496.7
3497724	(15') main beam, LH	839.3	380.7
3497725	(15') main beam, RH	839.3	380.7
3497726	(15') side beam A	737.0	334.3
3497727	(15') side beam B	737.0	334.3
3497728	(15') 40°-50° diagonal beam, LH	166.7	75.6
3497729	(15') 40°-50° diagonal beam, RH	166.7	75.6
3497730	(15') 45° diagonal beam, LH	161.2	73.1
3497731	(15') 45° diagonal beam, RH	161.2	73.1
3497744	(15') tension bar	57.7	26.17
4508201	15' hopper bin substructure, complete assembly	8,629.4	3914.2

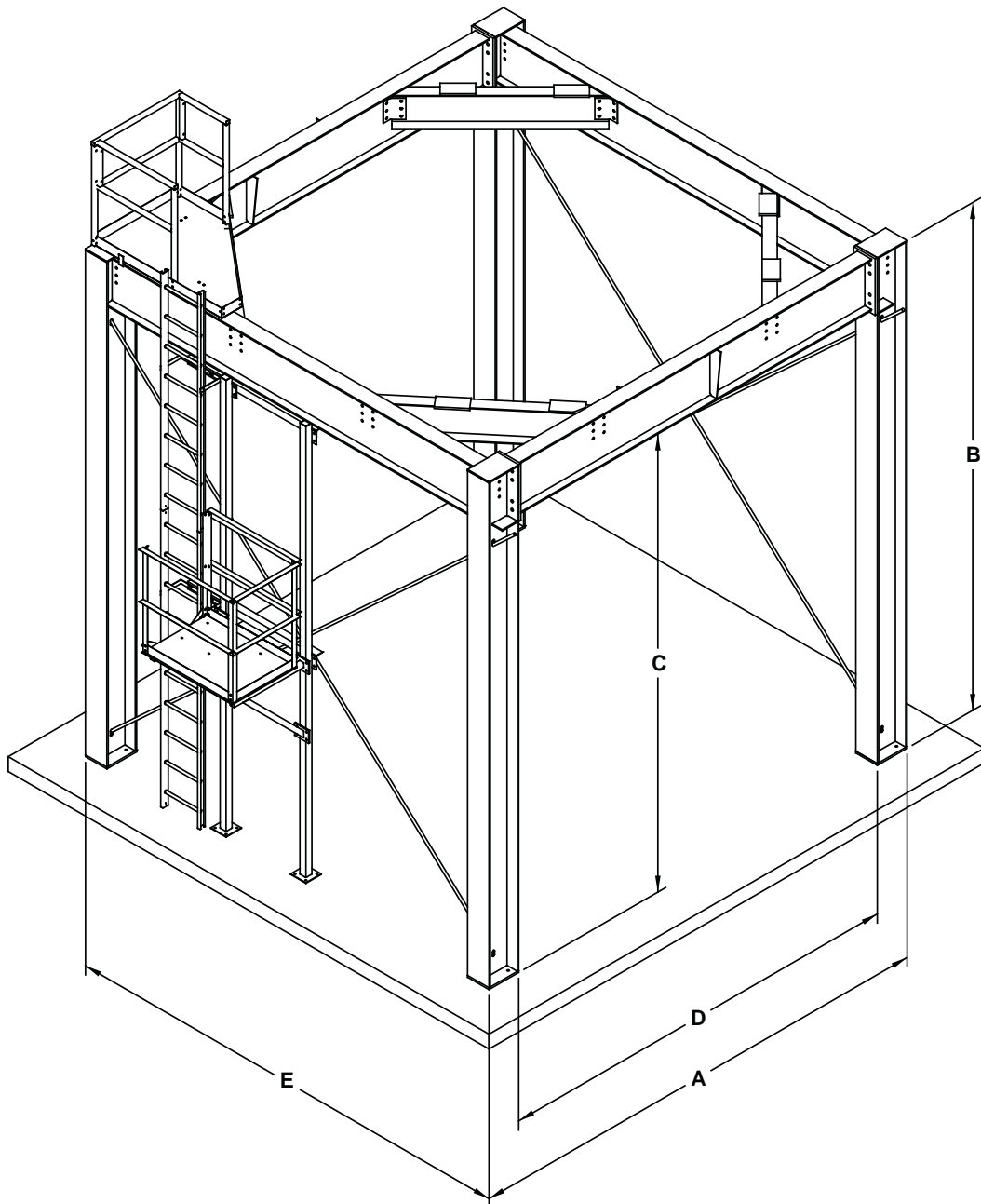
Ladders and Platforms Main Parts

Part Number	Description	Weight in lbs	Weight in kg
080075	landing platform (without handrails)	55.3	25.1
3497758	substructure platform (without handrails)	82.5	37.4
088027	8' [2,438 mm] ladder section	24.8	11.2
10021887	10' [3,048 mm] ladder section	30.9	14.0
3497746	platform upright	125.7	57.01

Substructure Dimensions

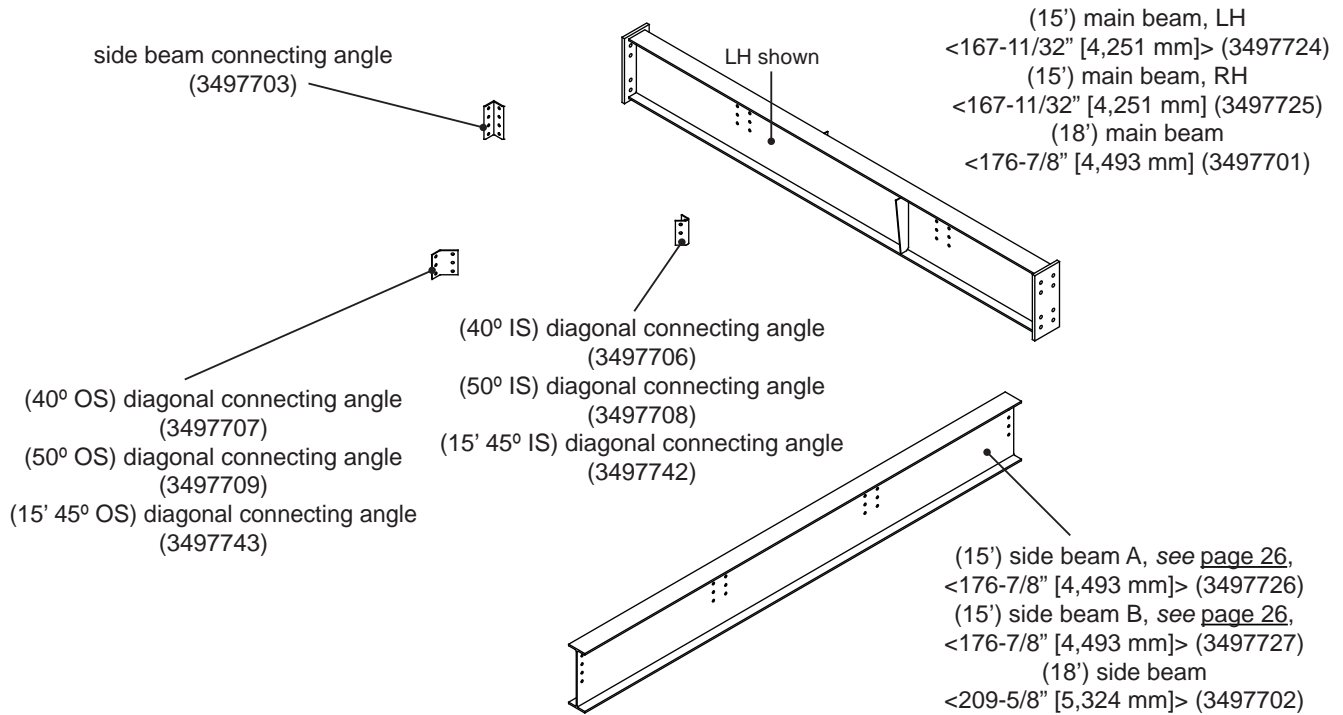
Hopper Bin Substructure Dimensions

Part Number	Dia.	A	B	C	D	E	Units
4508201	15'	16' - 3"	17' - 1"	15' - 5"	13' - 11"	15' - 8"	feet - inches
		4,953	5,207	4,699	4,242	4,775	mm
4508200	18'	19' - 6"	17' - 1"	15' - 3"	16' - 5"	18' - 6"	feet - inches
		5,944	5,207	4,648	5,004	5,639	mm



<3> Parts

Substructure Parts



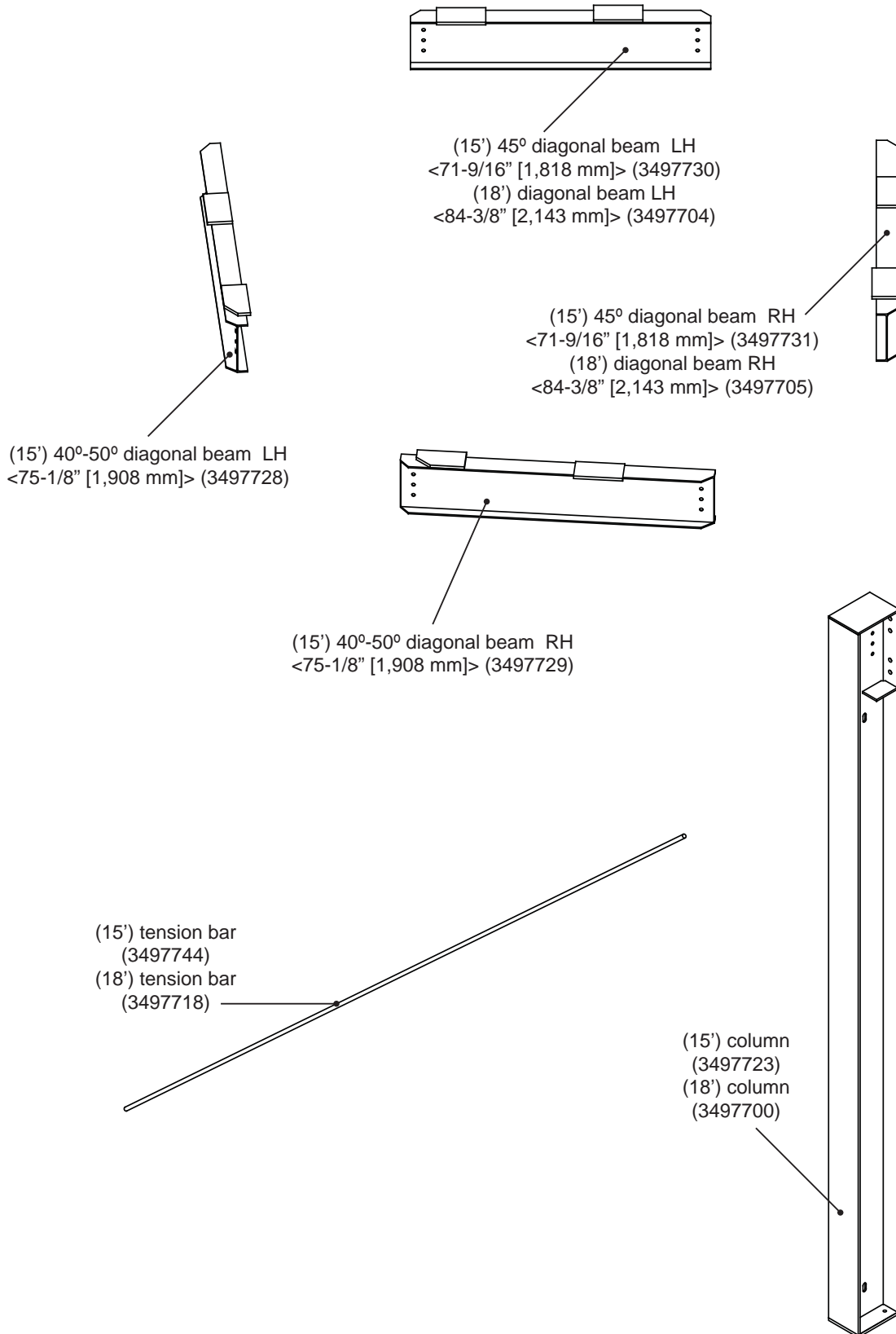
15' [3.57 m] Substructure (4508201) Parts

Part Number	Description	Quantity
3497703	side beam connecting angle	8
3497706	(40° IS) diagonal connecting angle	2
3497707	(40° OS) diagonal connecting angle	2
3497708	(50° IS) diagonal connecting angle	2
3497709	(50° OS) diagonal connecting angle	2
3497723	(15') column	4
3497724	(15') main beam, LH	1
3497725	(15') main beam, RH	1
3497726	(15') side beam A	1
3497727	(15') side beam B	1
3497728	(15') 40°-50° diagonal beam, LH	1
3497729	(15') 40°-50° diagonal beam, RH	1
3497730	(15') 45° diagonal beam, LH	1
3497731	(15') 45° diagonal beam, RH	1
3497742	(15' 45° IS) diagonal connecting angle	4
3497743	(15' 45° OS) diagonal connecting angle	4
3497744	(15') tension bar	4
4508221	15' substructure hardware package	1

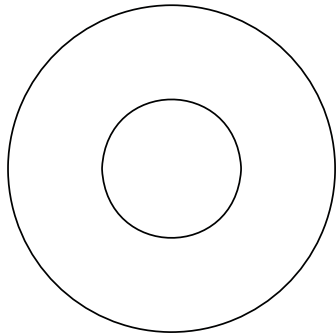
18' [5.49 m] Substructure (4508200) Parts

Part Number	Description	Quantity
3497700	(18') column	4
3497701	(18') main beam	2
3497702	(18') side beam	2
3497703	side beam connecting angle	8
3497704	(18') diagonal beam LH	2
3497705	(18') diagonal beam RH	2
3497706	(40° IS) diagonal connecting angle	4
3497707	(40° OS) diagonal connecting angle	4
3497708	(50° IS) diagonal connecting angle	4
3497709	(50° OS) diagonal connecting angle	4
3497718	(18') tension bar	4
4508220	18' substructure hardware package	1

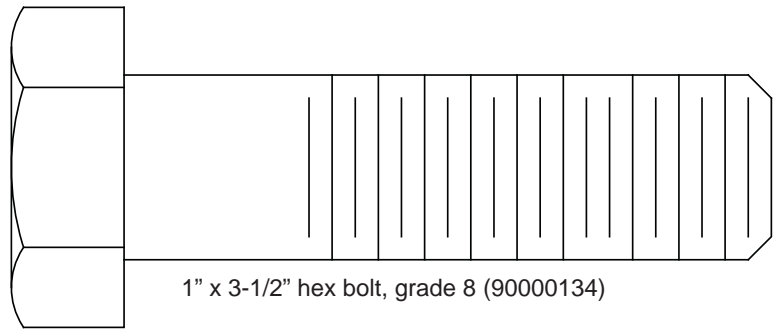
Substructure Parts *Continued*



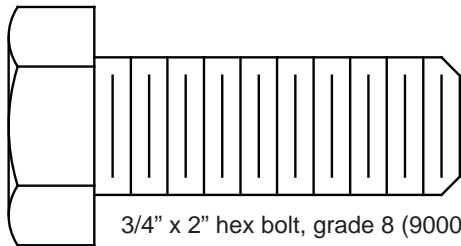
Substructure Hardware



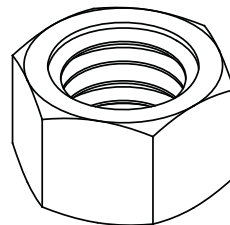
3/4" flat washer (068950)



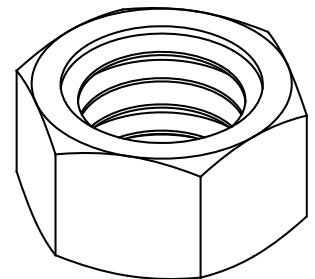
1" x 3-1/2" hex bolt, grade 8 (90000134)



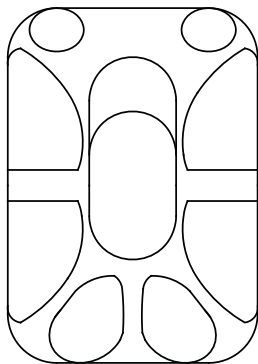
3/4" x 2" hex bolt, grade 8 (90000237)



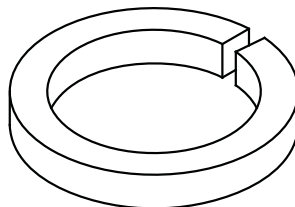
3/4" hex nut, grade 8 (90005049)



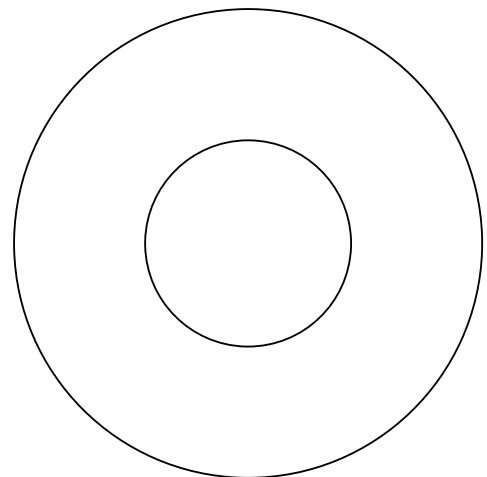
1" hex nut (90005056)



1" hillside washer (90010065)
(not to scale)



1" lock washer (90010057)

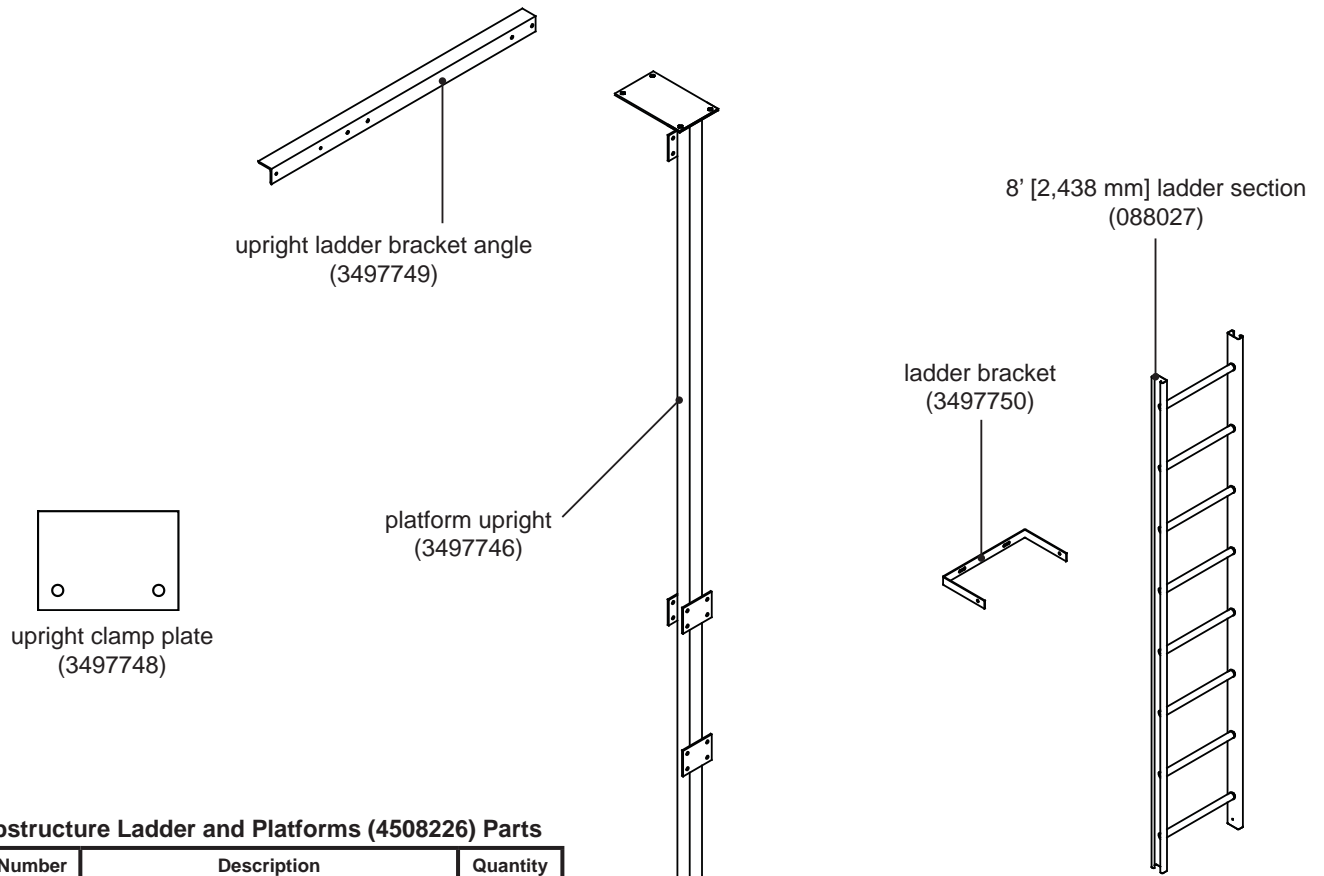


1" flat washer (90010056)

Substructure Hardware (4508221)

Part Number	Description	Quantity
068950	3/4" flat washer	125
4000030	Hopper Bin Substructure Manual	1
90000134	1" x 3-1/2" hex bolt, grade 8	35
90000237	3/4" x 2" hex bolt, grade 8	125
90005049	3/4" hex nut, grade 8	125
90005056	1" hex nut	45
90010056	1" flat washer	20
90010057	1" lock washer	45
90010065	1" hillside washer	8

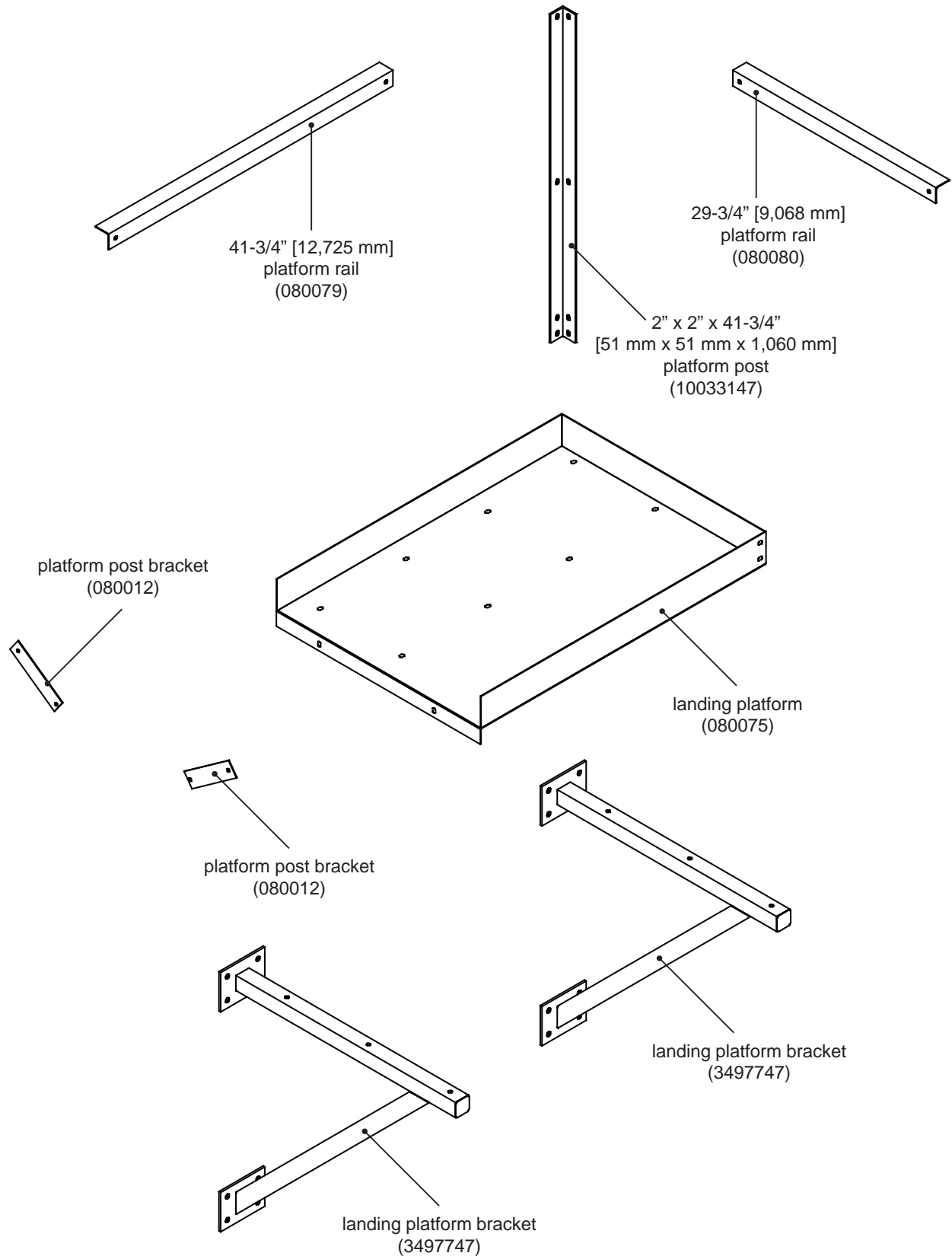
Ladders / Platforms Parts



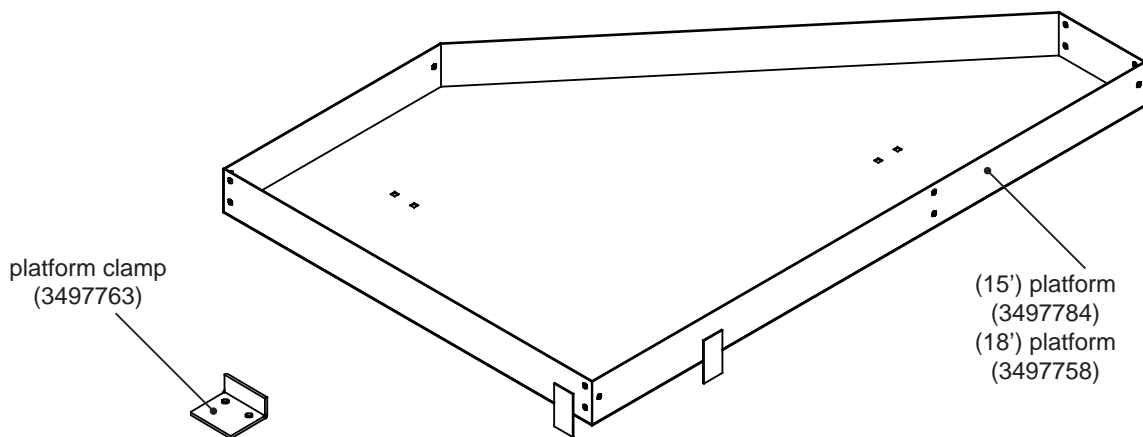
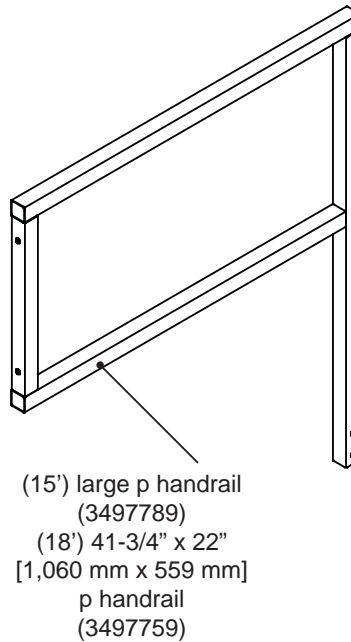
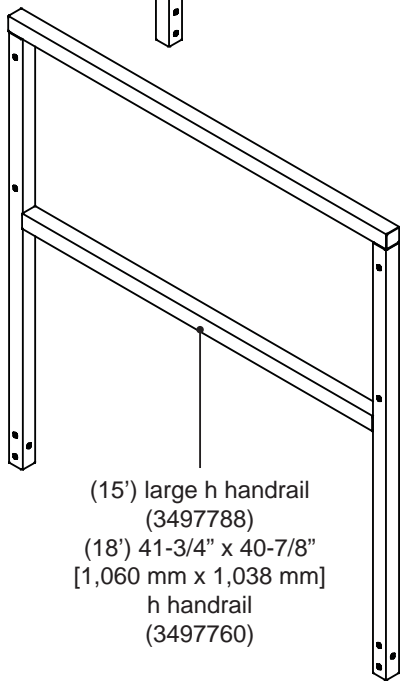
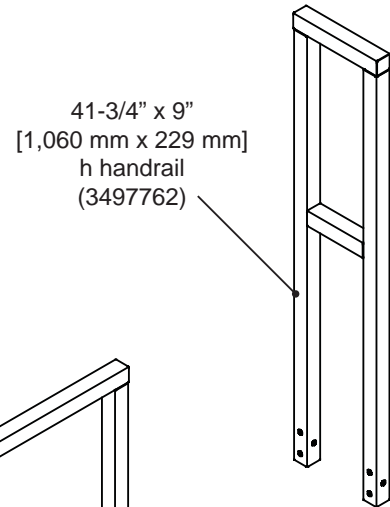
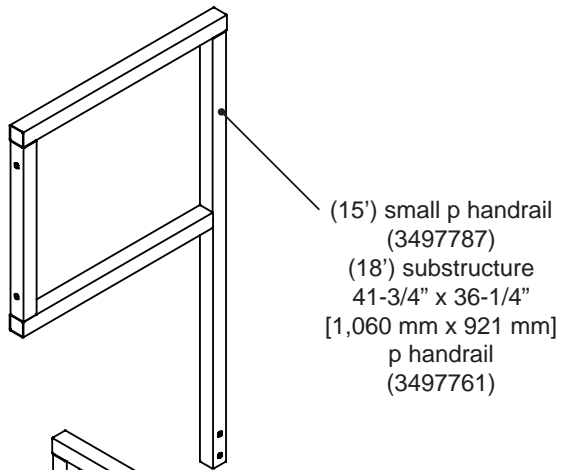
Substructure Ladder and Platforms (4508226) Parts

Part Number	Description	Quantity
080012	platform post bracket	2
080075	landing platform	1
080079	41-3/4" platform rail	4
080080	29-3/4" platform rail	2
088027	8' ladder section	1
10021887	10' ladder section	1
10033147	2" x 2" x 41-3/4" platform post	4
3497746	platform upright	2
3497747	landing platform bracket	2
3497748	upright clamp plate	4
3497749	upright ladder bracket angle	2
3497750	ladder bracket	2
3497784	(15') substructure platform	1
3497758	(18') substructure platform	1
3497789	(15') large p handrail	1
3497788	(15') large h handrail	1
3497787	(15') small p handrail	1
3497759	(18') 41-3/4" x 22" p handrail	1
3497760	(18') 41-3/4" x 40-7/8" h handrail	1
3497761	(18') 41-3/4" x 36-1/4" p handrail	1
3497762	41-3/4" x 9" h handrail	1
3497763	platform clamp	2
4508227	substructure platforms hardware package	1

Ladders / Platforms Parts *Continued*

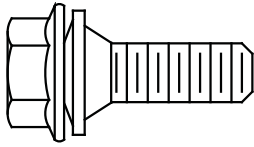


Ladders / Platforms Parts *Continued*

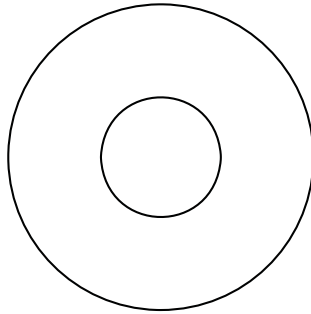


15' = 3.57 m
 18' = 5.49 m

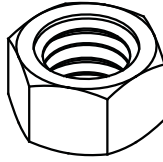
Ladders / Platforms Hardware



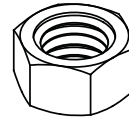
5/16" x 1" hex bolt,
grade 8
(with seal washer)
(018905)



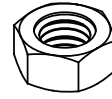
1/2" flat washer
(018908)



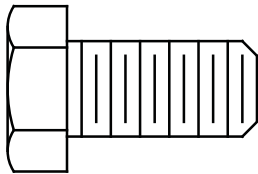
1/2" hex nut
(018912)



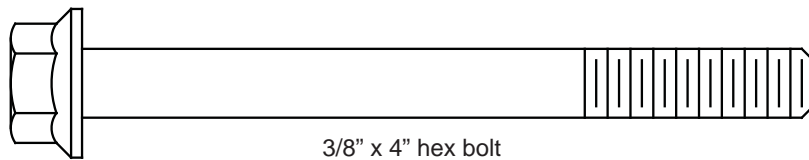
3/8" hex nut
(90005021)



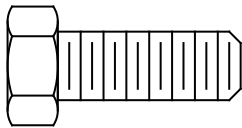
5/16"
hex nut
(018913)



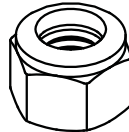
1/2" x 1" hex bolt
(018917)



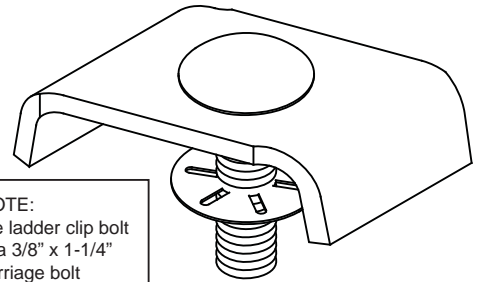
3/8" x 4" hex bolt
(068812)



3/8" x 1" hex bolt
(90000031)



3/8" nylock nut
(90005024)

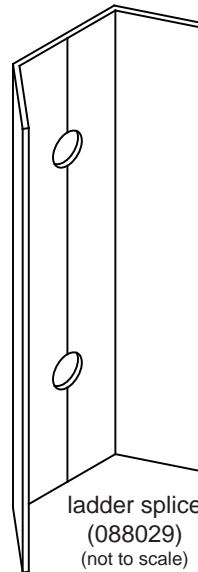


NOTE:
the ladder clip bolt
is a 3/8" x 1-1/4"
carriage bolt

ladder clip and bolt
(088028)
(not to scale)

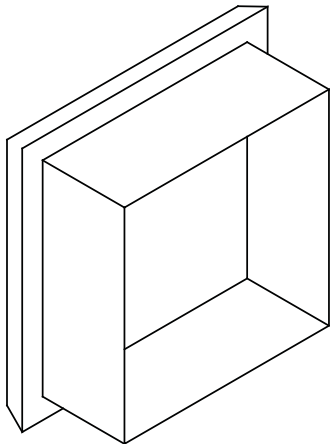
Platforms Hardware

Part Number	Description	Quantity
018905	5/16" x 1" hex bolt, grade 8	25
018908	1/2" flat washer	53
018912	1/2" hex nut	53
018913	5/16" hex nut	25
018917	1/2" x 1" hex bolt	45
068812	3/8" x 4" hex bolt	4
088028	ladder clip and bolt	6
088029	ladder splice	2
1929023	1-1/2" x 1/2" square cap	10
90000031	3/8" x 1" hex bolt	6
90000034	3/8" x 2" hex bolt	12
90000035	3/8" x 3-1/2" carriage bolt	10
90000052	1/2" x 1-3/4" hex bolt	8
90005021	3/8" hex nut	40
90010020	3/8" flat washer	40
90005024	3/8" nylock nut	6

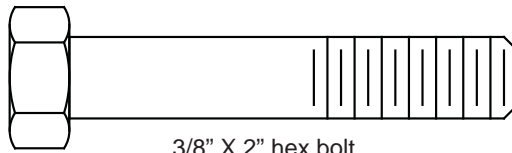


ladder splice
(088029)
(not to scale)

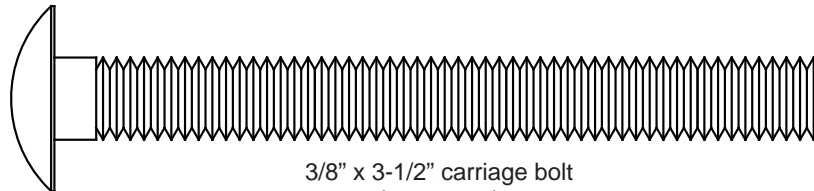
Ladders / Platforms Hardware *Continued*



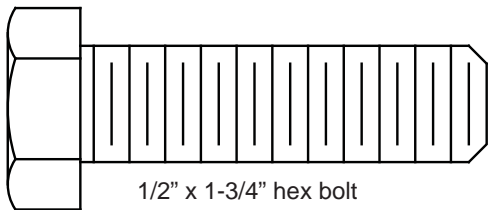
1-1/2" x 1/2" square cap
(1929023)



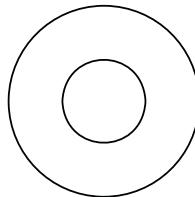
3/8" X 2" hex bolt
(90000034)



3/8" x 3-1/2" carriage bolt
(90000035)



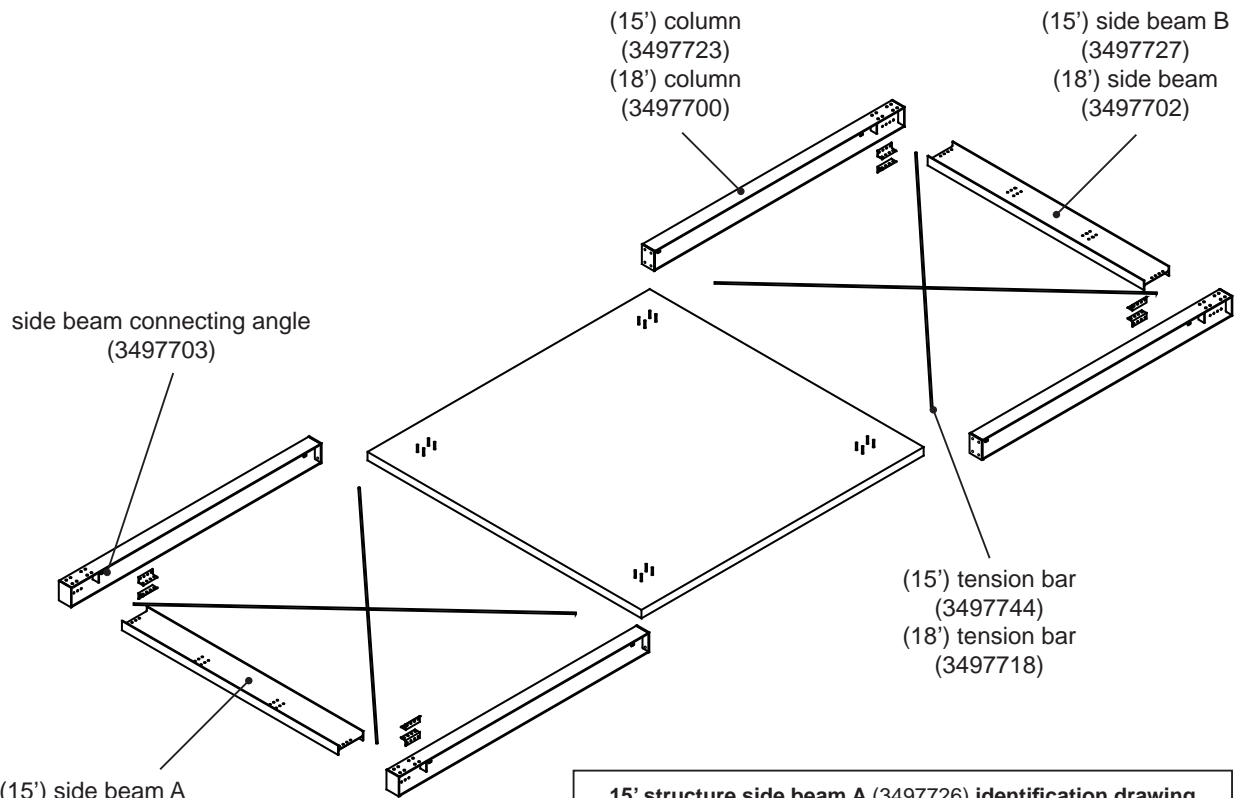
1/2" x 1-3/4" hex bolt
(90000052)



3/8" flat washer
(90010020)

<4> Assembly

1



(15') side beam A
(3497726)
(18') side beam
(3497702)

15' = 3.57 m
18' = 5.49 m

15' structure side beam A (3497726) identification drawing

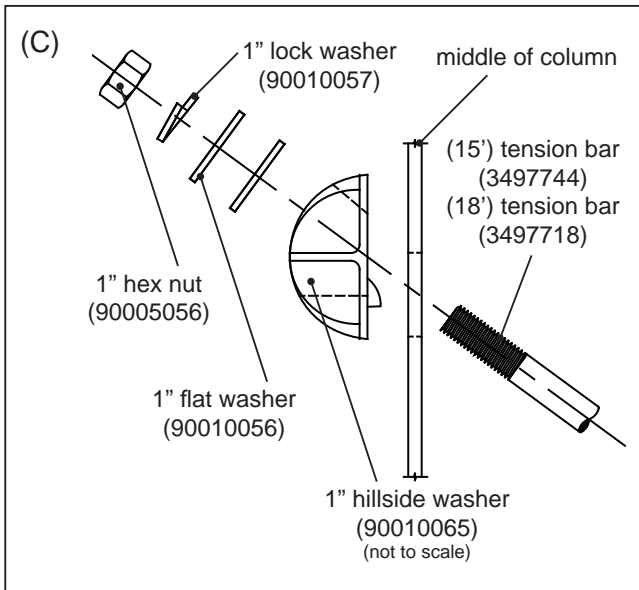
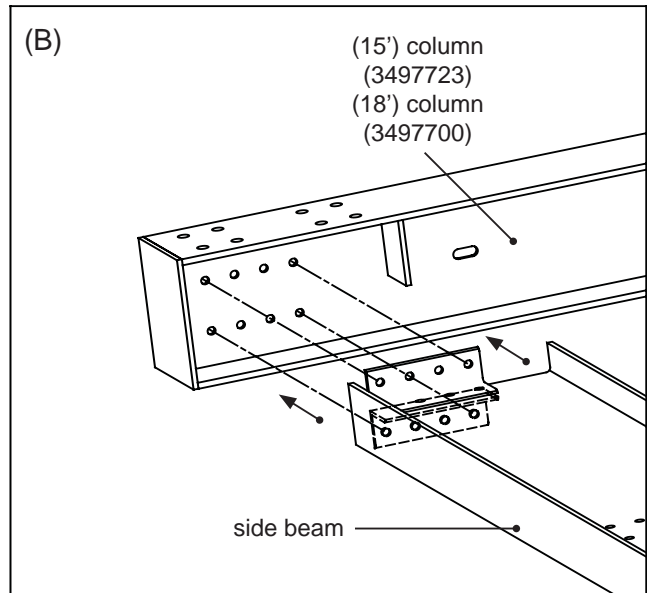
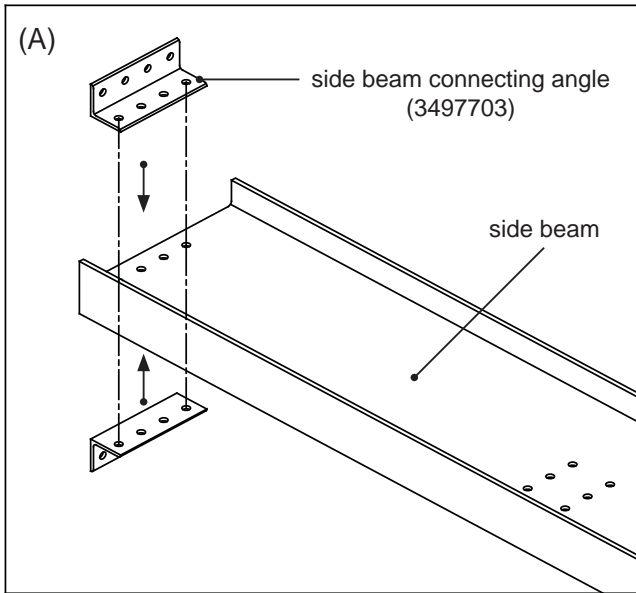


15' structure side beam B (3497727) identification drawing



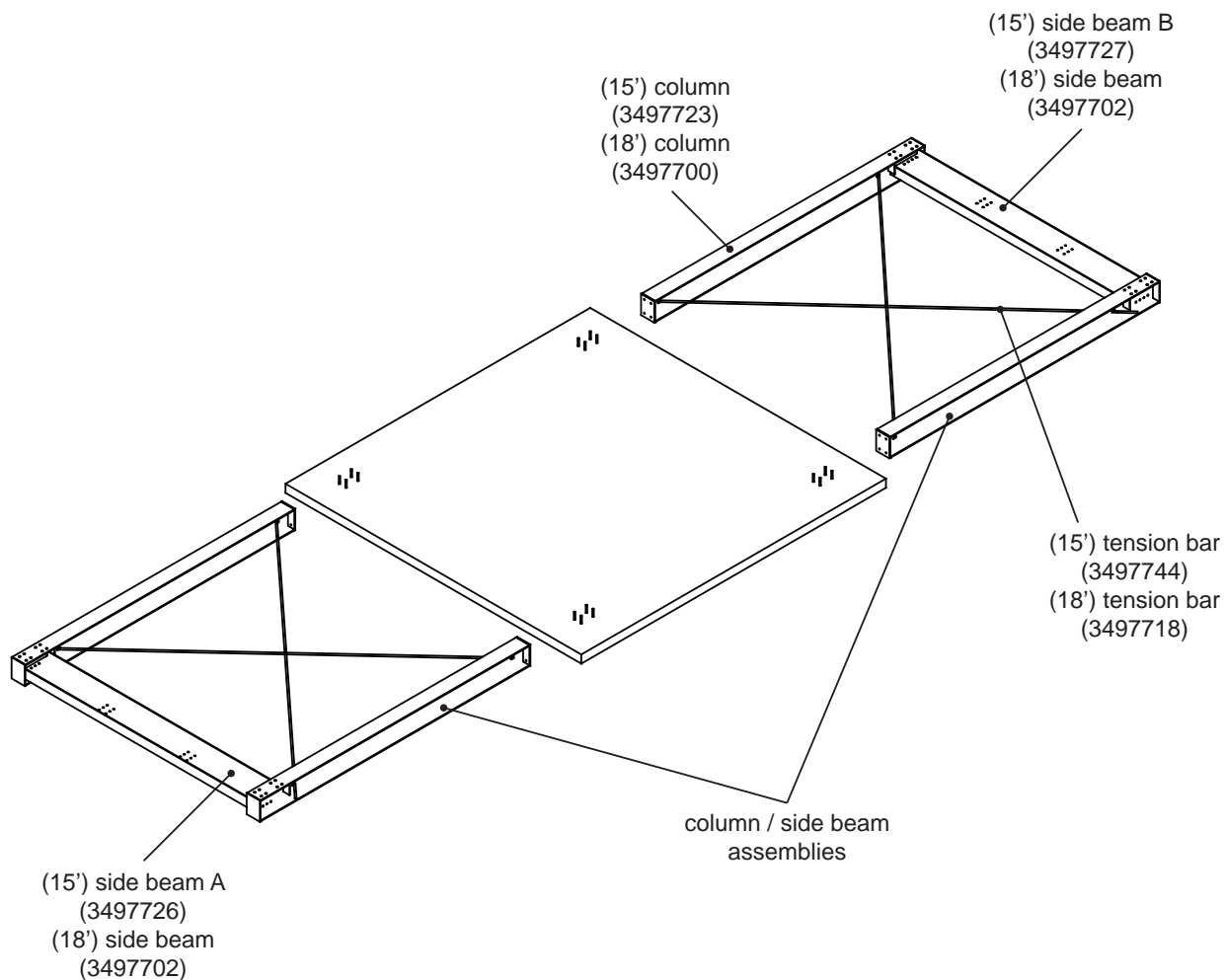
Pre-read this manual before starting construction of the hopper bin substructure. Decide on the bin layout and the location for the ladder and platforms before starting construction! Complete the foundation first. Then start construction. Place the columns, side beams, and tension bars near the substructure anchor bolt locations.

2

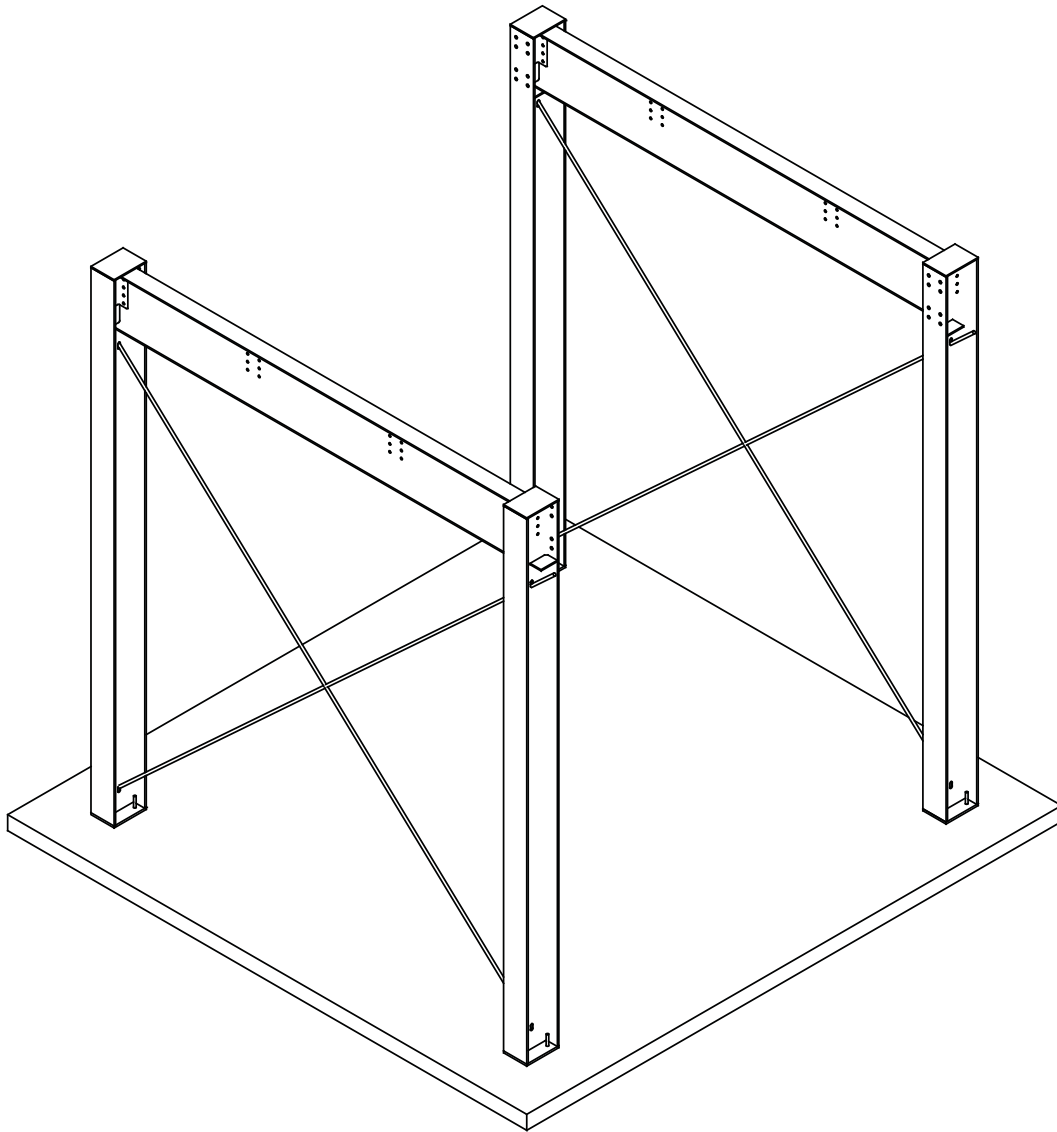


(A) Bolt the side beam connecting angles to the side beams using 3/4" x 2" hex bolts (90000237) and nuts (90005049). (B) Connect the side beams to the columns using 3/4" x 2" hex bolts (90000237), washers (068950), and nuts (90005049). (C) Connect each tension bar to a column using (1) hillside washer (90010065), (2) 1" flat washers (90010056), (1) 1" lock washer (90010057), and (1) 1" hex nut (90005056) as shown. (See the drawing on the next page.) Finger tighten all bolts and nuts for now.

3



Complete the column / side beam assemblies as shown. Next, prepare them for hoisting.

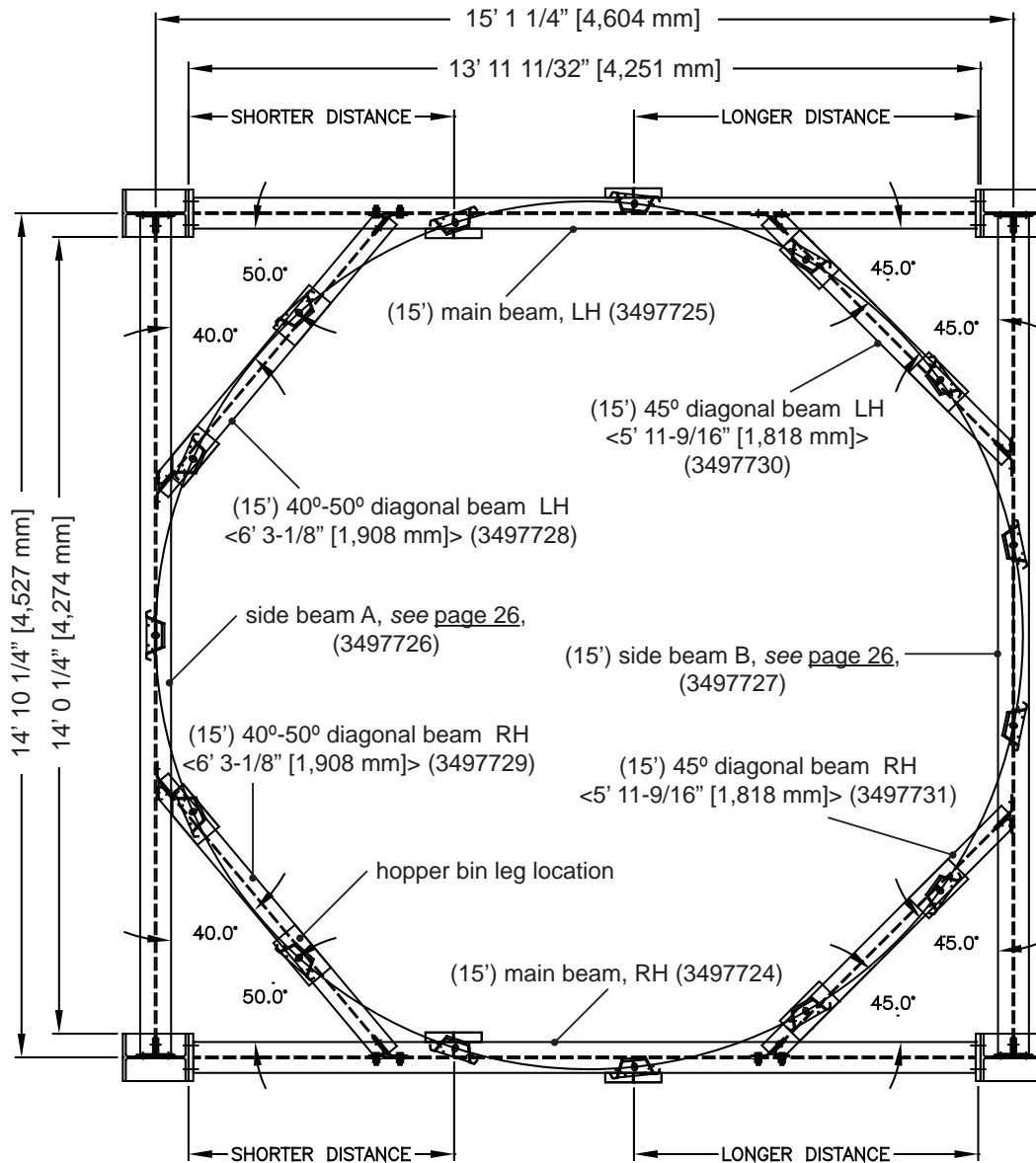
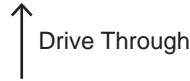
4

Hoist the column / side beam assemblies into location and onto the anchor bolts. Use a safe and appropriate structure or crane to adequately support the column / side beam assemblies in an upright position. Continue providing adequate support to the column / side beam assemblies until all anchor bolts and all substructure beams are completely installed and all bolts are tightened to the correct torque value. Install anchor bolt nuts onto the anchor bolts now.

15' Substructure only

NOTE: This hopper bin substructure is not symmetrical.

Layout Drawing - top view

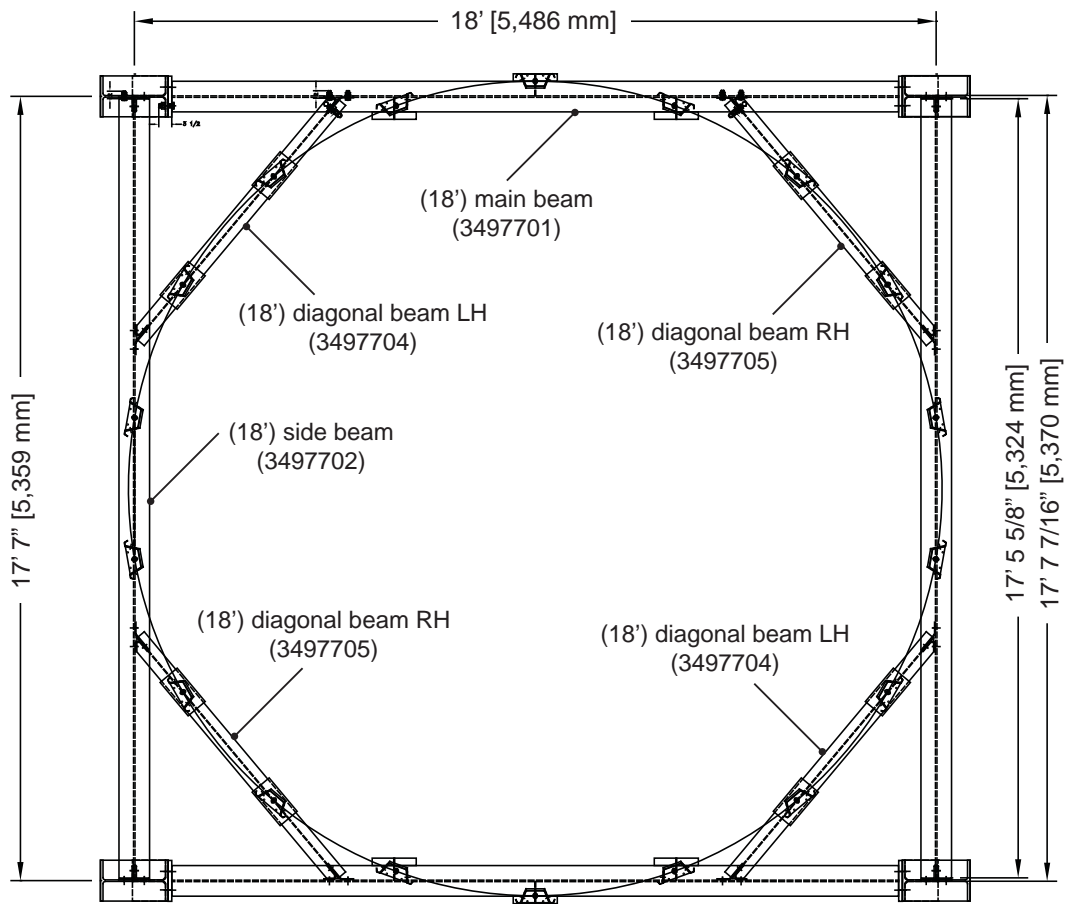
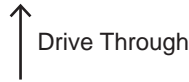


See the note on [page 36](#) before installing diagonals. Prepare to install the main beams and diagonal beams to the column / side beam assemblies. Before installing the main beams and diagonal beams, note the layout drawing on [this page](#) to determine the correct position for the LH and RH main beams and each diagonal beam with respect to the rest of the structure.

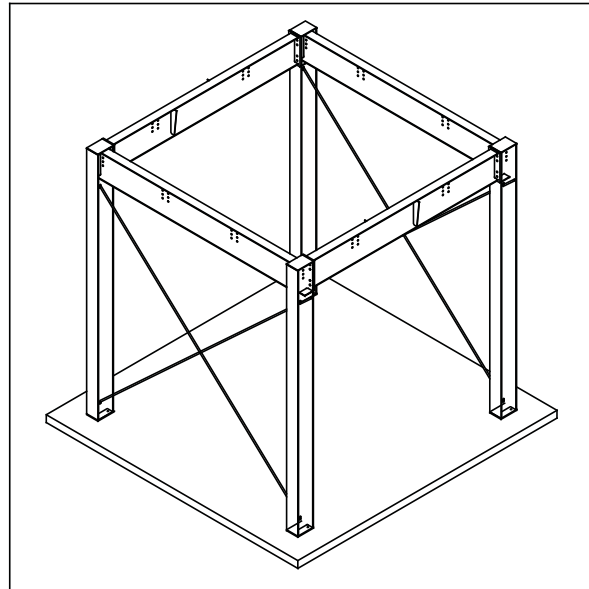
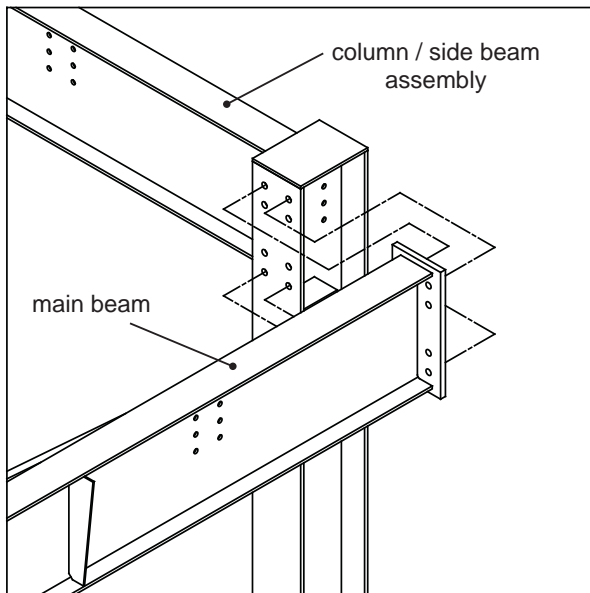
18' Substructure only

NOTE: This hopper bin substructure is not symmetrical.

Layout Drawing - top view



See the note on [page 36](#) before installing diagonals. Prepare to install the main beams and diagonal beams to the column / side beam assemblies. Before installing the main beams and diagonal beams, note the layout drawing on [this page](#) to determine the correct position for the LH and RH main beams and each diagonal beam with respect to the rest of the structure.

5

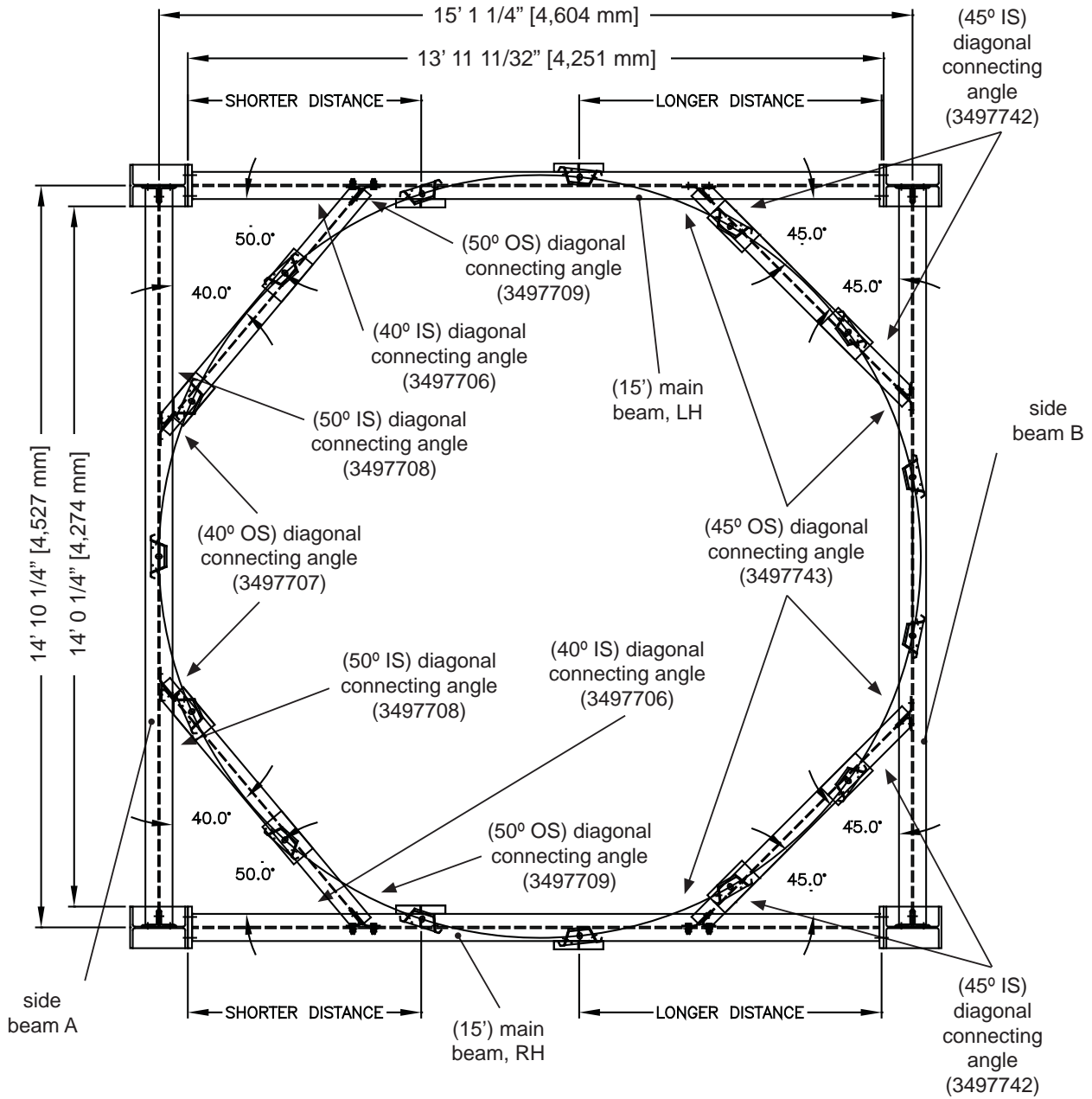
Determine the correct position for each main beam. (Use the correct substructure layout drawing on (1) of the (2) previous pages.) Bolt the main beams to the column / side beam assemblies using 1" x 3-1/2" hex bolts (90000134), flat washers (90010056), lock washers (90010057), and nuts (90005056). Be certain that the main beams are correctly positioned.

15' Substructure only

NOTE: This hopper bin substructure is not symmetrical.

↑ Drive Through

Connecting Angles Locations Drawing - top view



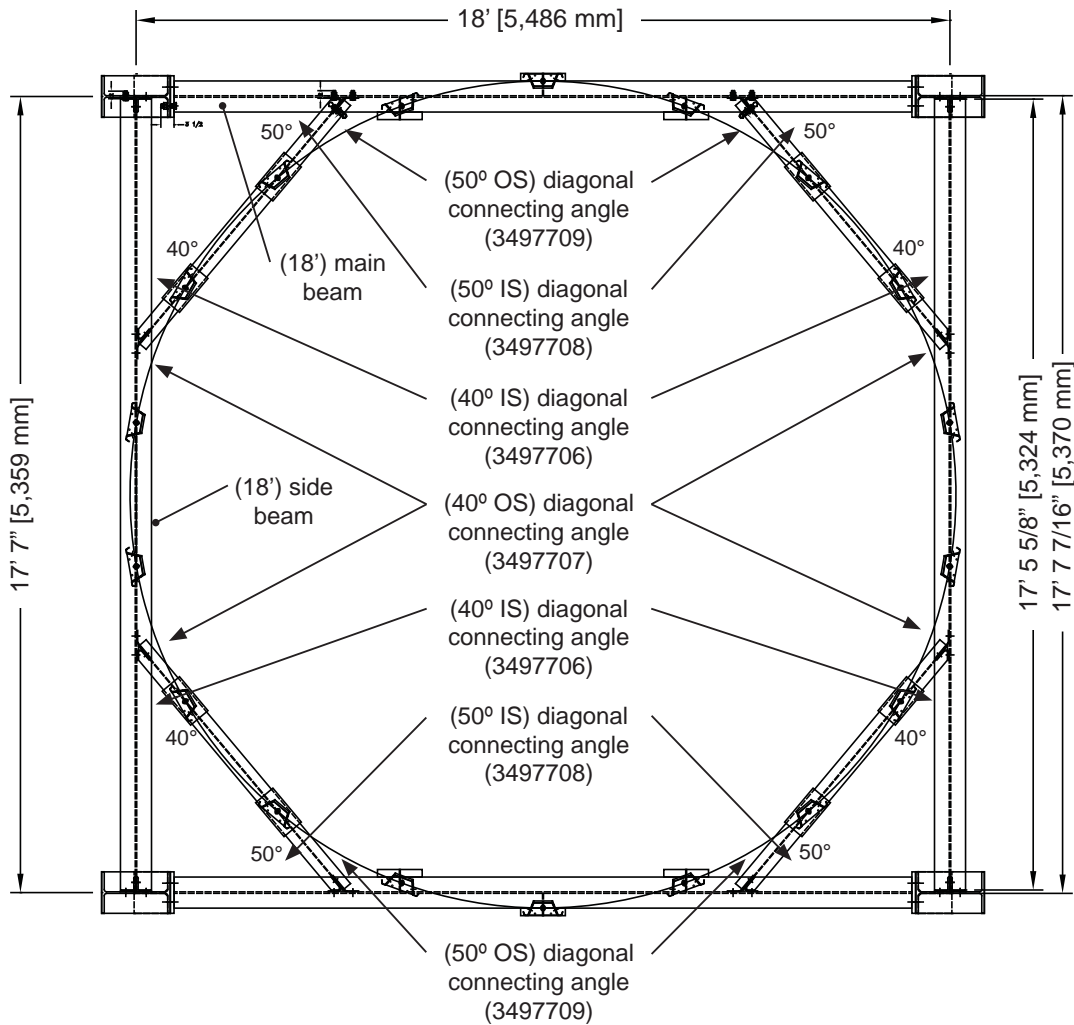
See the note on [page 36](#) before installing diagonals. The connecting angles locations drawing on [this page](#) shows the correct location for each diagonal connecting angle. Use this drawing to select the correct location to place each diagonal connecting angle. See the next step.

18' Substructure only

NOTE: This hopper bin substructure is not symmetrical.

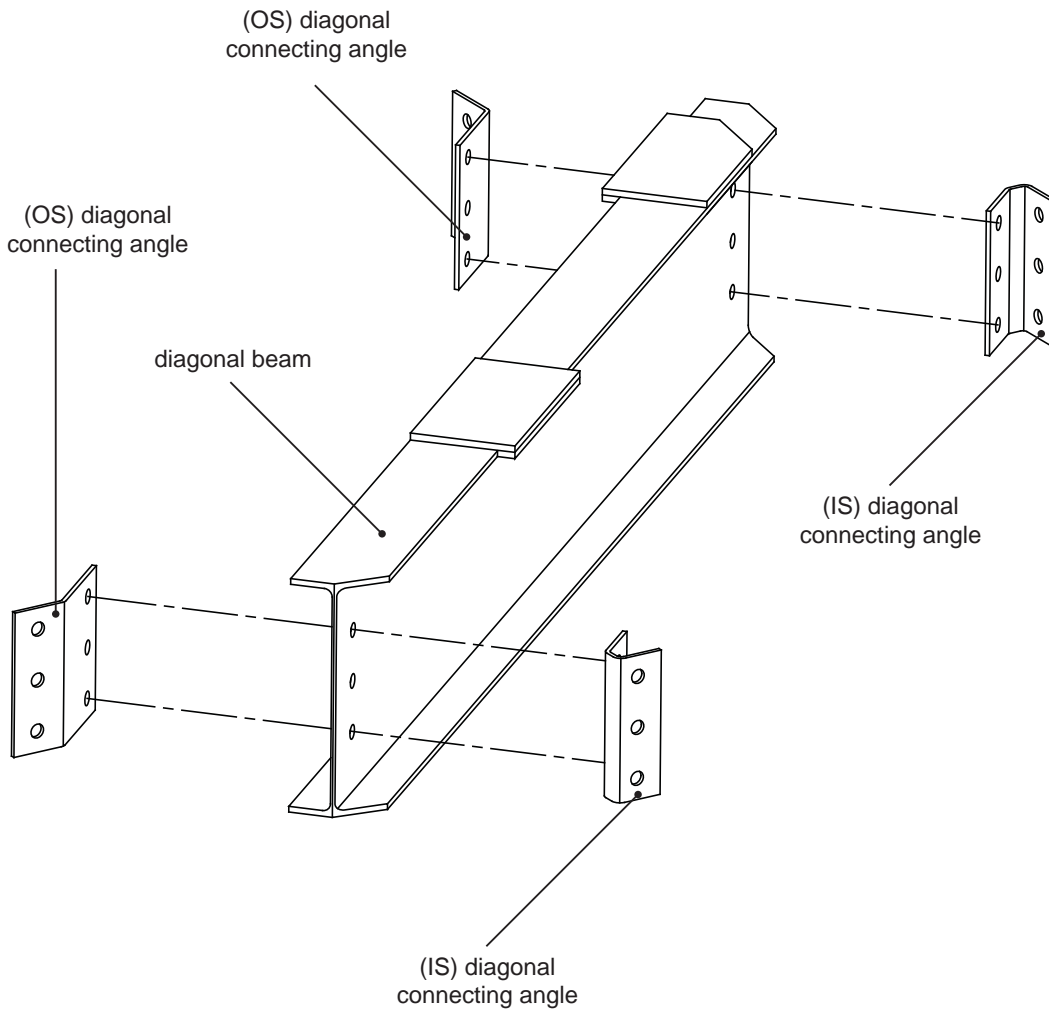
↑ Drive Through

Connecting Angles Locations Drawing - top view



See the note on [page 36](#) before installing diagonals. The connecting angles locations drawing on [this page](#) shows the correct location for each diagonal connecting angle. Use this drawing to select the correct location to place each diagonal connecting angle. See the next step.

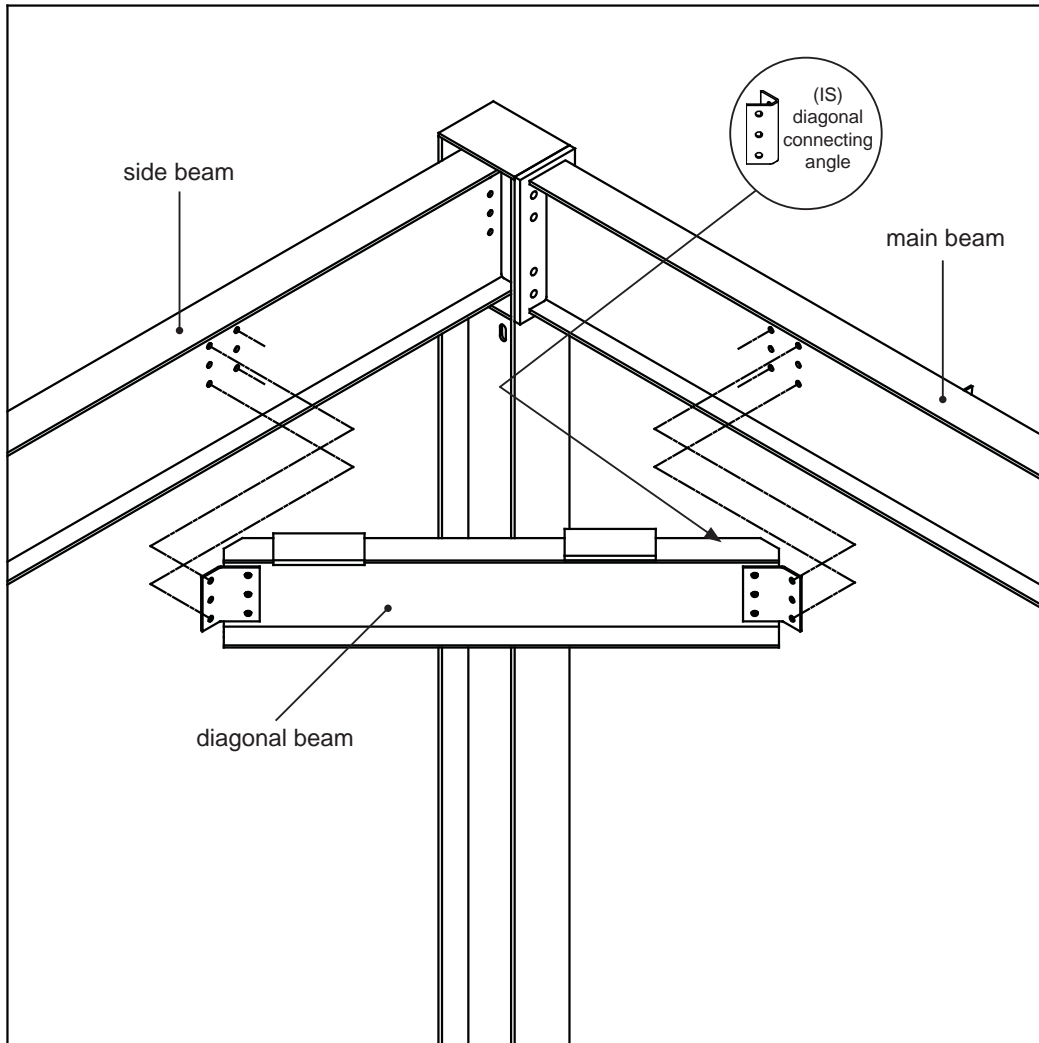
6



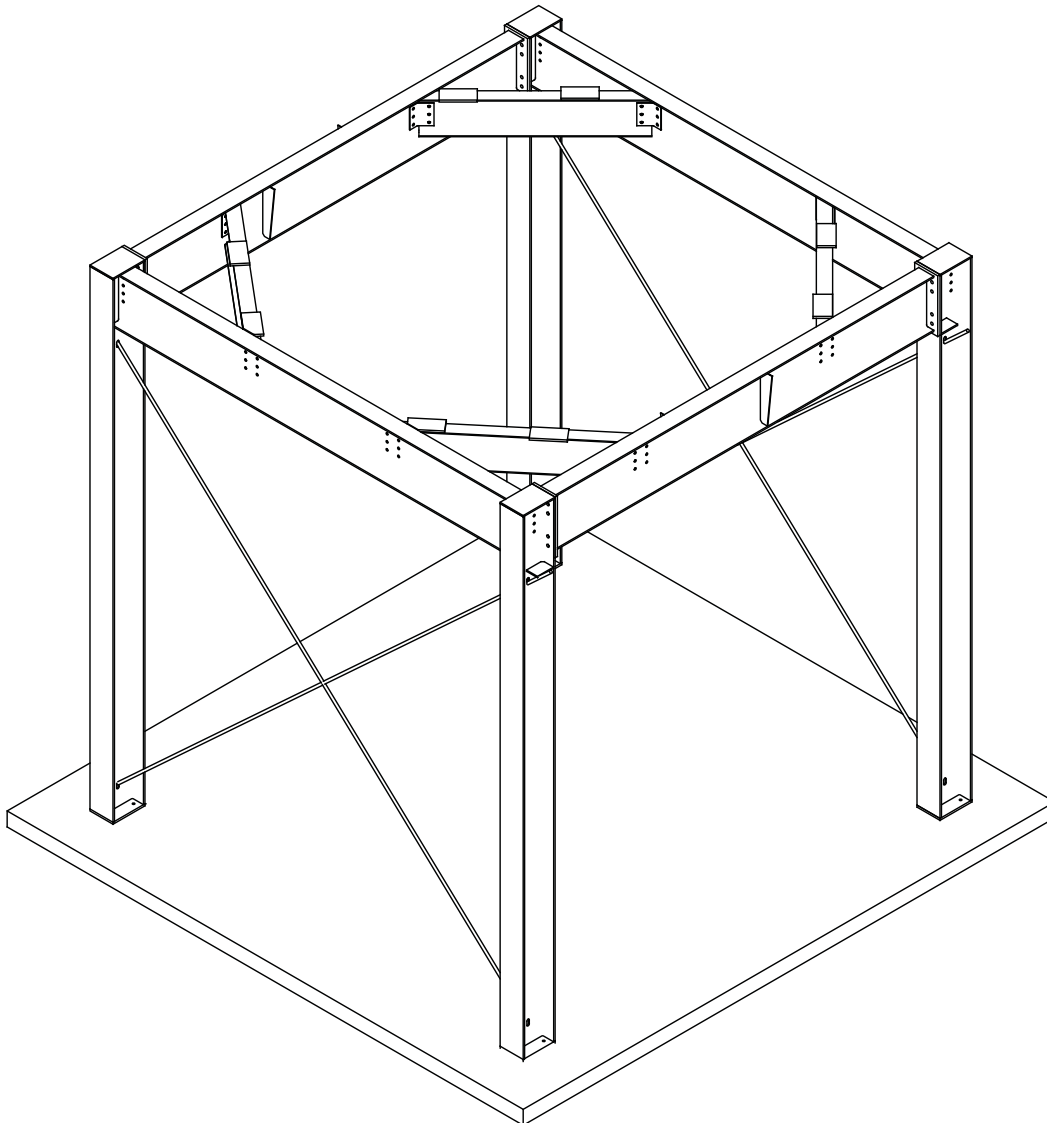
See the Connecting Angles Locations Drawing and the Layout Drawing that is specific to the substructure being assembled. Bolt the correct diagonal connecting angles to the appropriate diagonal beams. Use 3/4" x 2" hex bolts (90000237), washers (068950), and nuts (90005049). Be certain each connecting angle is installed in the correct location with the proper position.

7

NOTE: Before Installing Diagonal Beams, make certain (main beam) and (side beam) connecting bolts are snug (with no gaps between end of beams and column) AND make certain columns are plumb! If not, diagonal beams will not align correctly with main beams and side beams.



See the Layout Drawing and Connecting angles locations drawing for the substructure being assembled. Install each diagonal beam to the appropriate side beam and main beam. Use 3/4" x 2" hex bolts (90000237), washers (068950), and nuts (90005049). Each diagonal beam must be installed in the correct location and position!

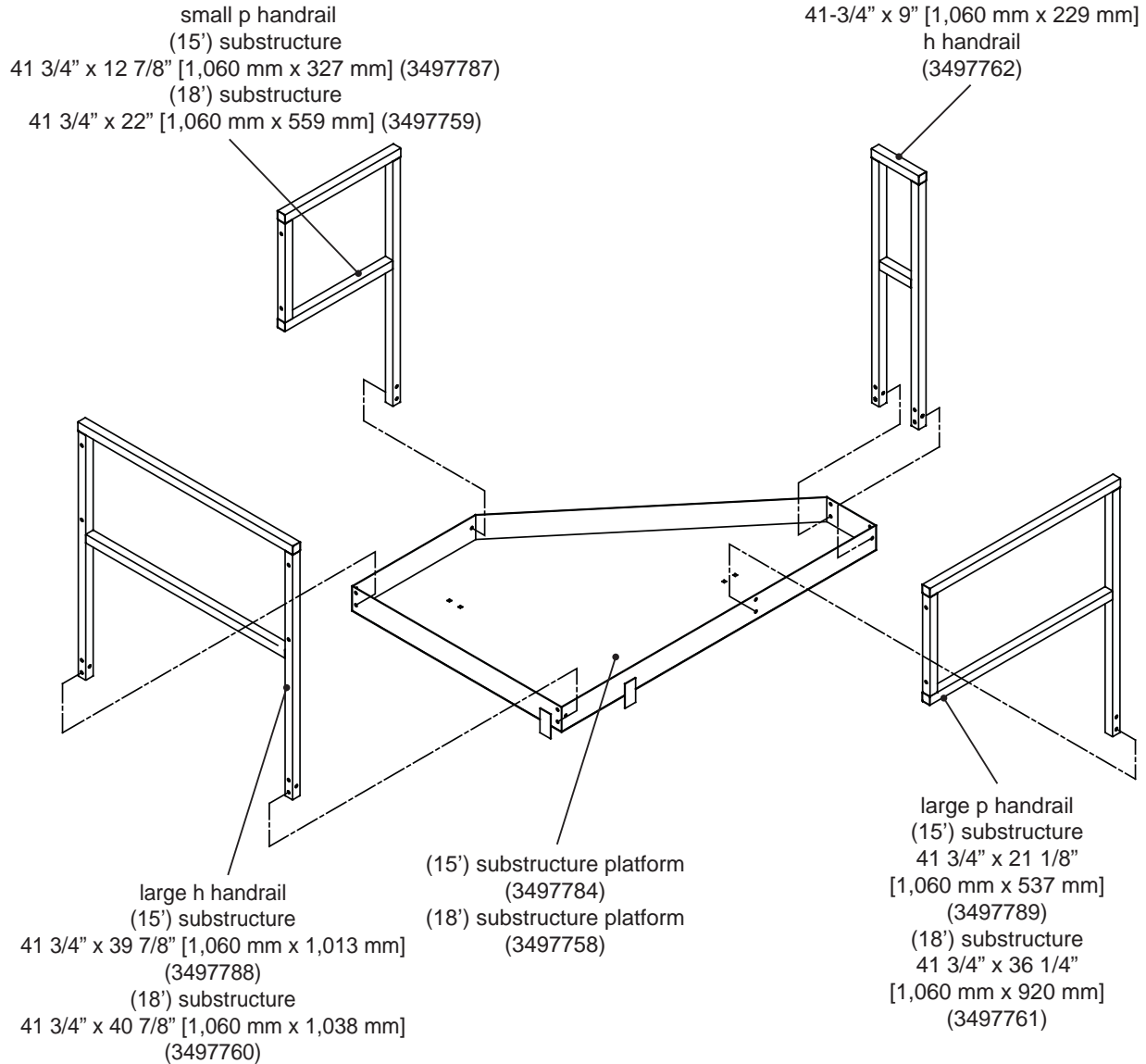
8

Finish installing the diagonal beams to the other substructure beams that are currently in place. Make certain that the structure is level and plumb. Tighten all bolts in the assembly to the correct torque values. Apply touch-up paint to any of the areas on the substructure that need it including any welds. The substructure is now complete. All cranes and supporting structures that were used to construct the substructure may now be removed.

<5> Ladders / Platforms

1

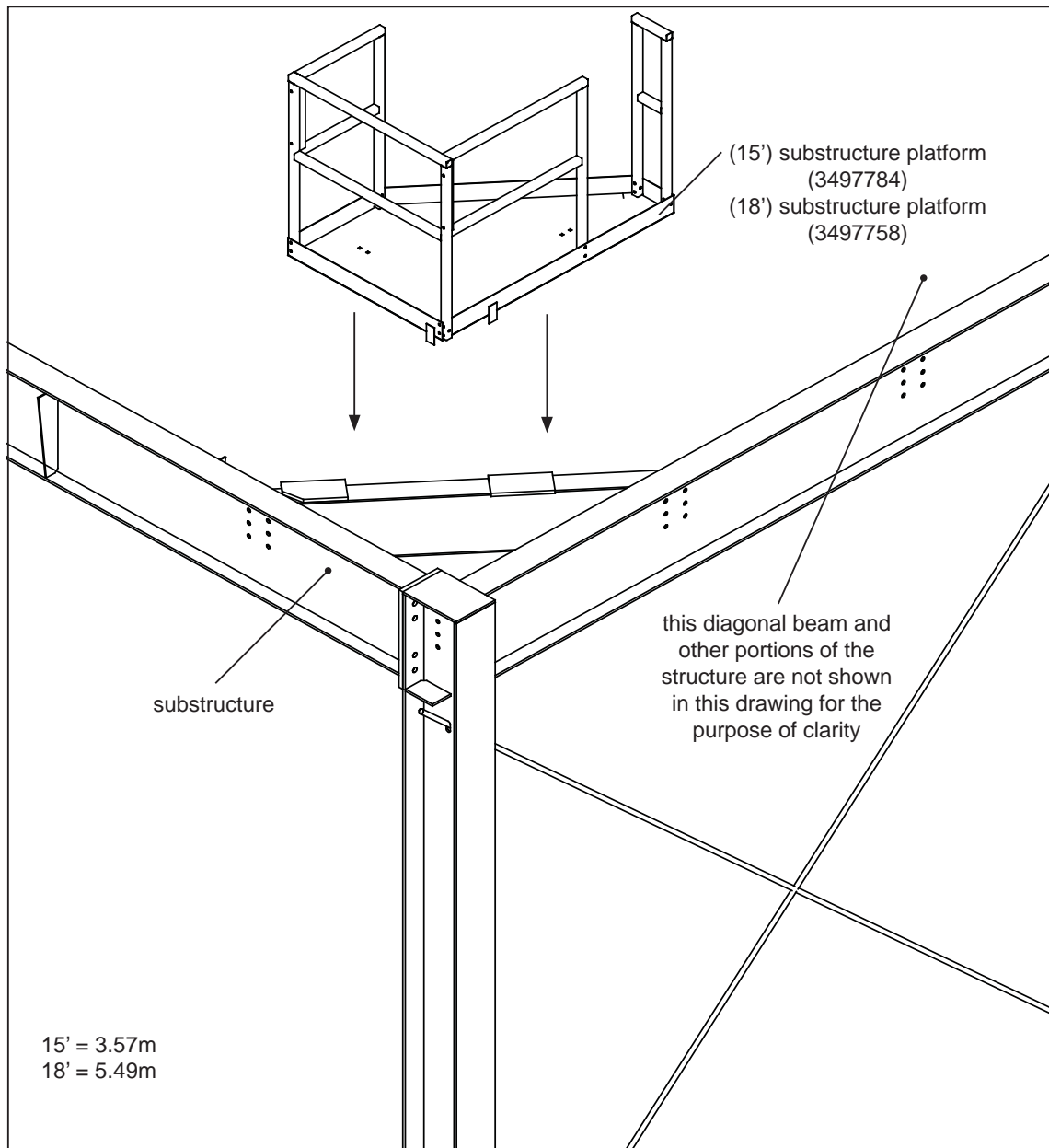
Substructure Platform



Install the substructure platform handrails to the substructure platform as shown above. At the same time, bolt together the handrails that come with holes for handrail to handrail connections. Use 3/8" hex bolts (90000031), flat washers (90010020), and nuts (90005021) for all connections. (Use 3/8" x 4" hex bolts for handrail to handrail connections and 3/8" x 2 1/2" for handrail to platform connections.) Securely tighten all platform bolts and nuts.

2

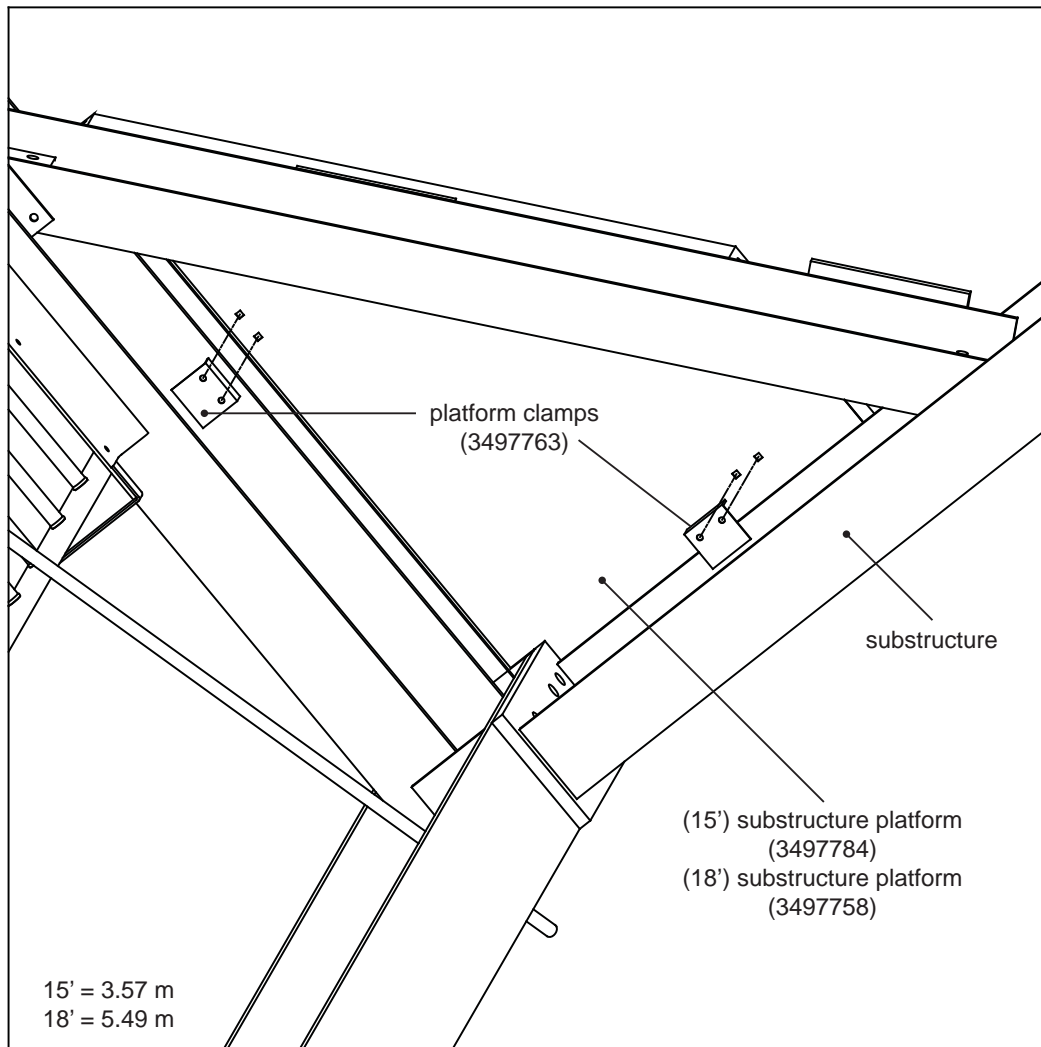
Substructure Platform



Set the substructure platform into its proper location on top of the substructure.

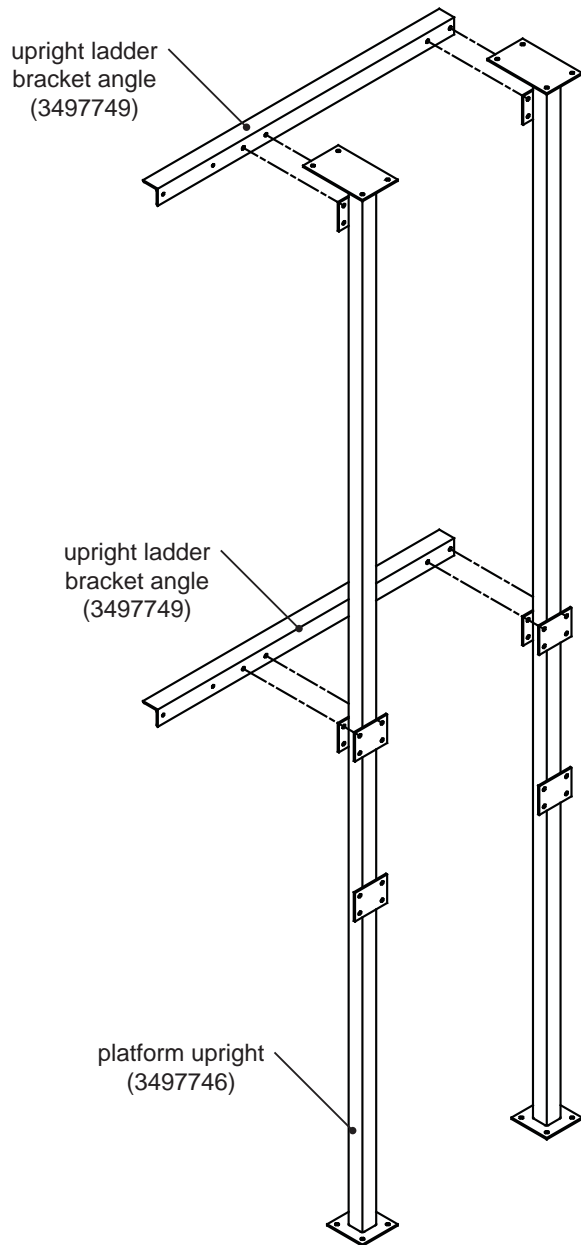
3

Substructure Platform



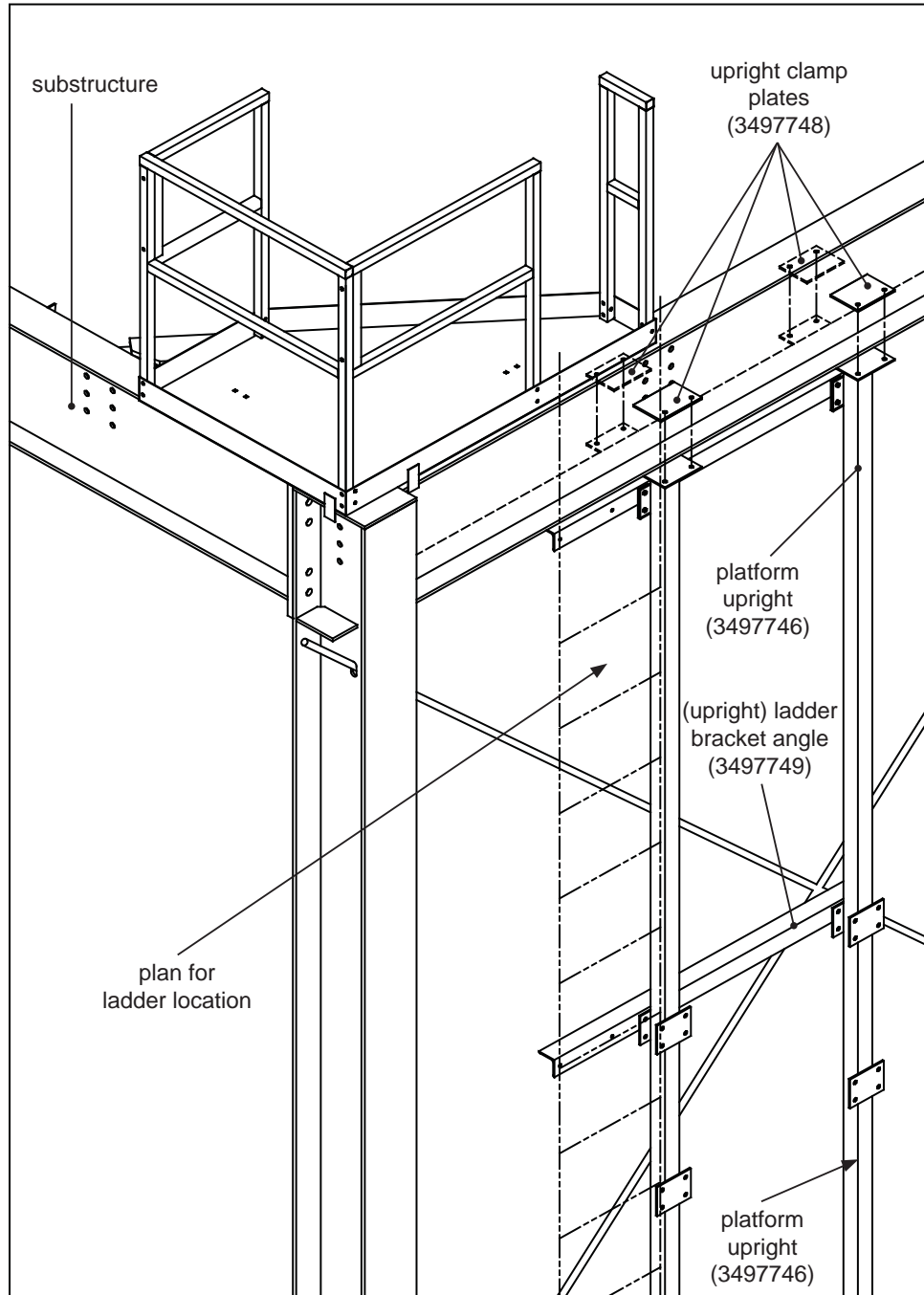
Place the substructure platform into its proper location on top of the substructure. Bolt platform to substructure using platform clamps. Use 3/8" x 1 1/2" bolts, flat washers, and nuts.

4



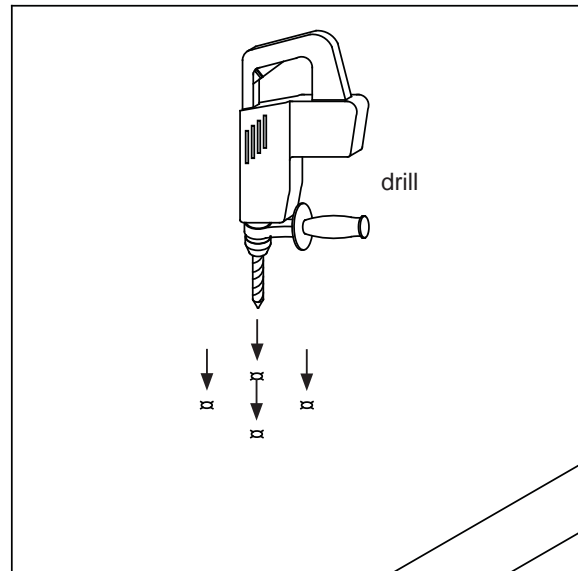
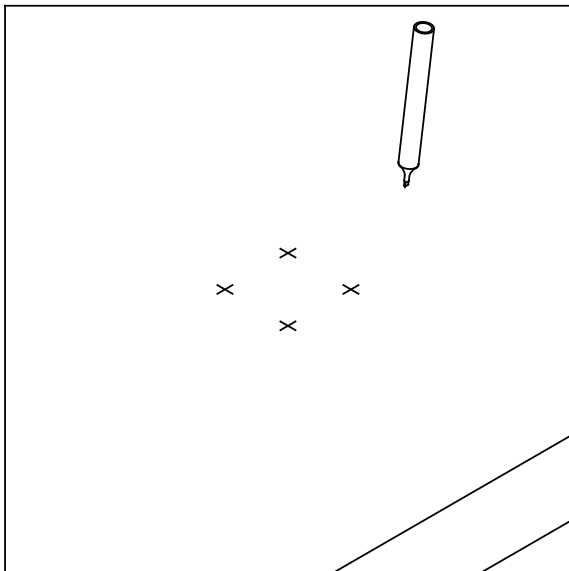
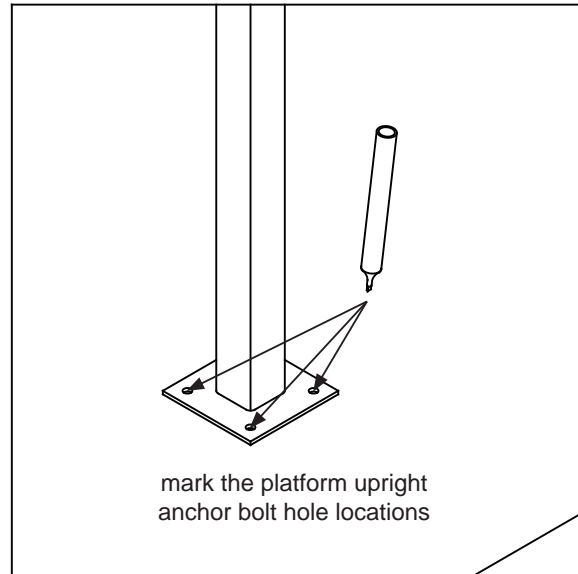
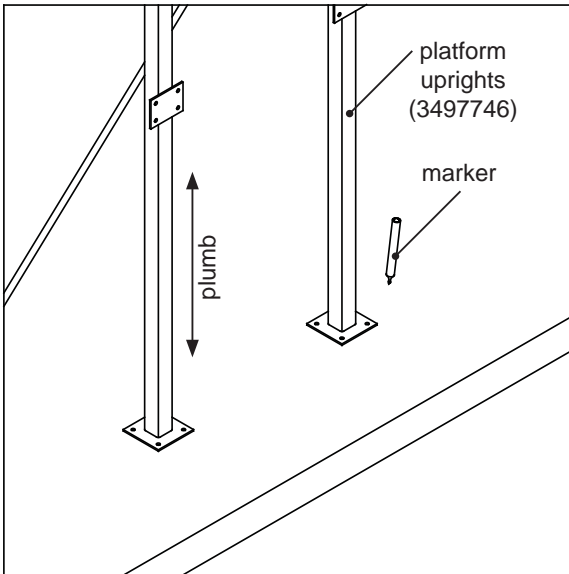
Connect the upright ladder bracket angles to the platform uprights as shown above. Use 3/8" x 1" hex bolts (90000031), flat washers (90010020), and nuts (90005021).

5



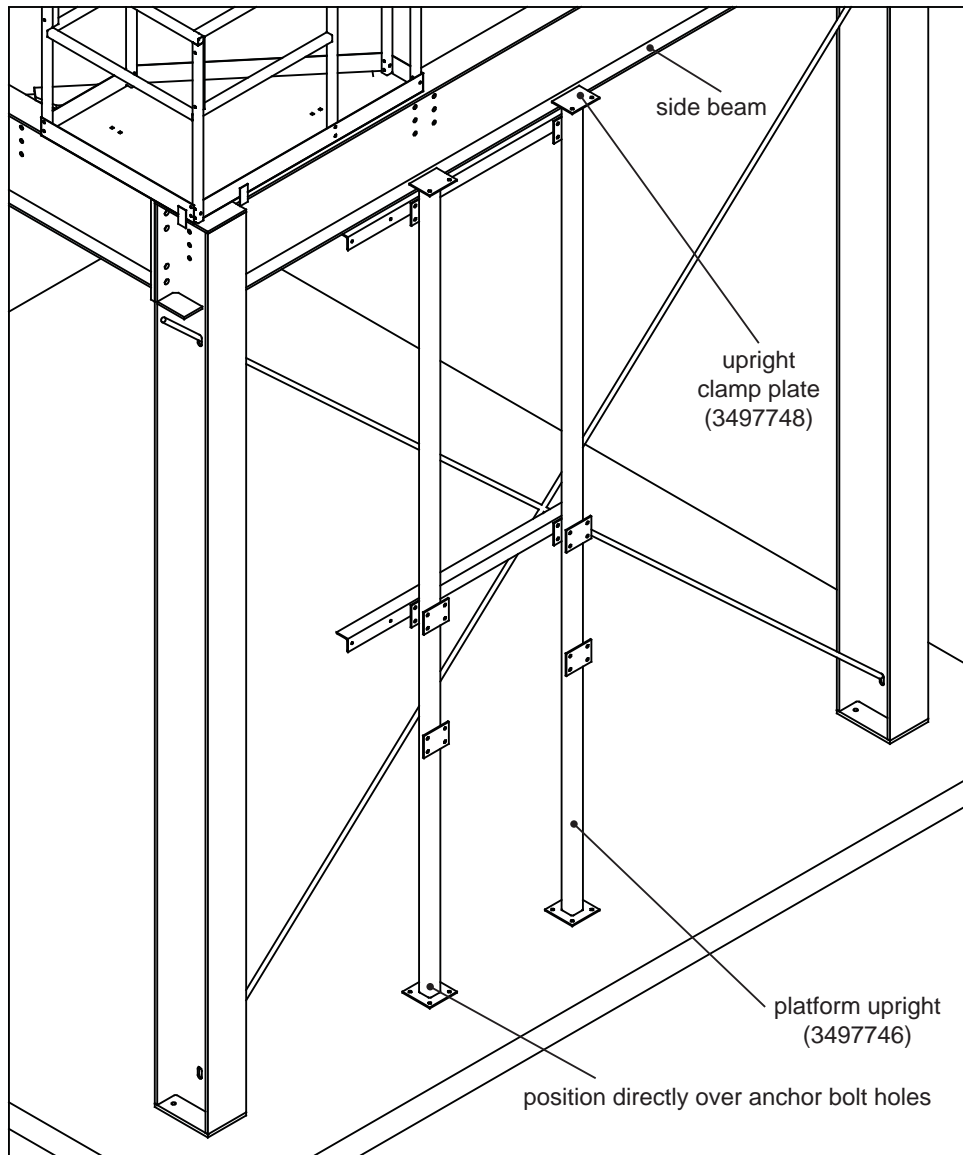
Loosely bolt ladder bracket uprights to the substructure as shown. Use 1/2" x 1 3/4" hex bolts (90000052), flat washers (018908), and nuts (018912). Plan for the ladder location. Move the platform uprights and ladder bracket angles into the best position for connecting a ladder to the ladder bracket angles. Be certain the platform upright and ladder bracket angle are situated so that when the ladder is installed it meets properly with the substructure platform.

6



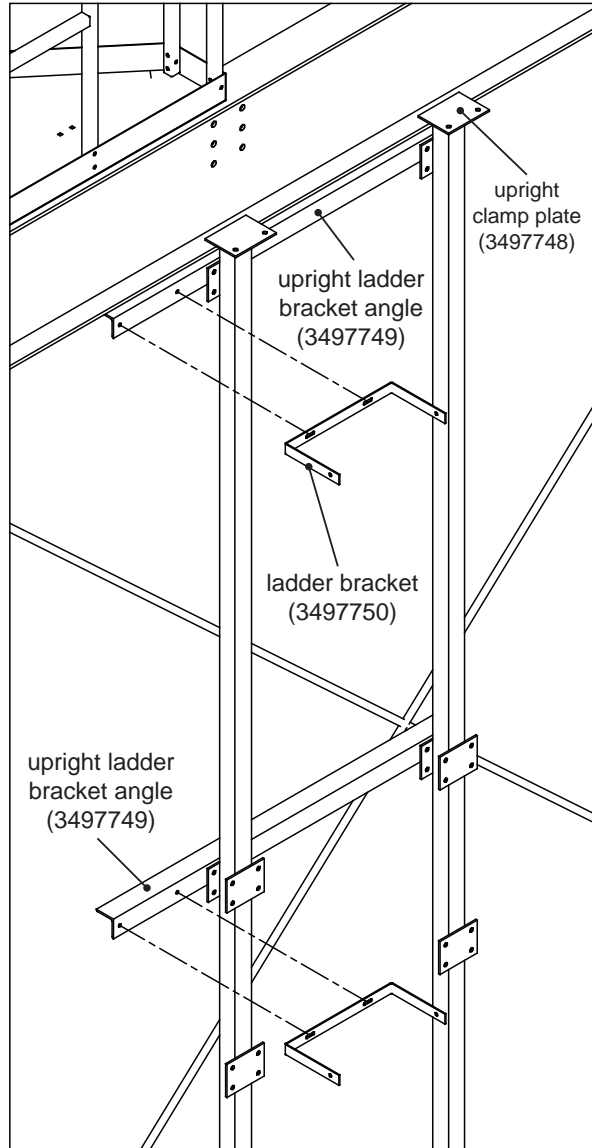
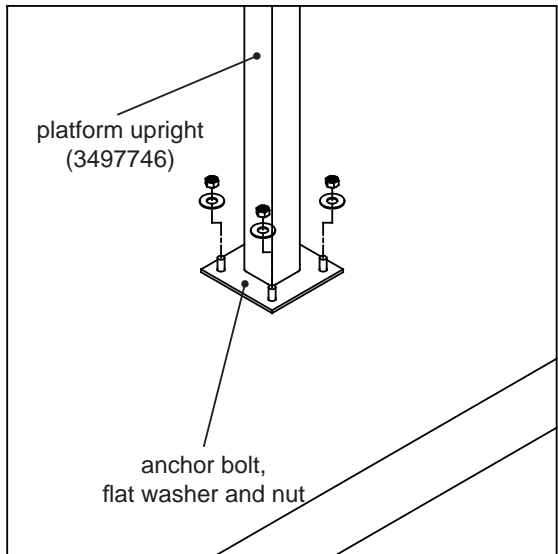
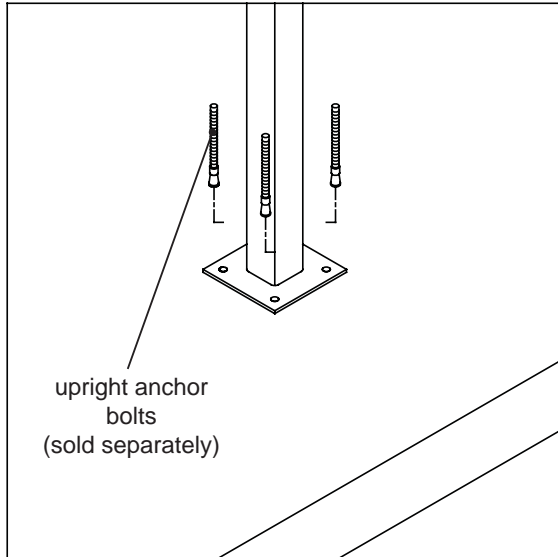
When the platform uprights are loosely bolted into place, hold the platform uprights so that they are plumb. Then, mark the locations for the platform upright anchor bolt holes. Unscrew the bolts that are holding the platform uprights in place and remove the platform uprights from the hopper bin substructure. Place the platform uprights somewhere out of the way. Drill the platform upright anchor bolt holes. Drill the holes deep enough to accept the anchors.

7



After installing the ladder bracket uprights into location. Place the ladder bracket uprights so that they will rest directly over the upright anchor bolt holes. Use the upright clamp plates to connect the ladder bracket uprights to the side beam and upright clamp plates. Use 1/2" x 1 3/4" hex bolts (90000052), flat washers (018908), and nuts (018912) to bolt together this connection.

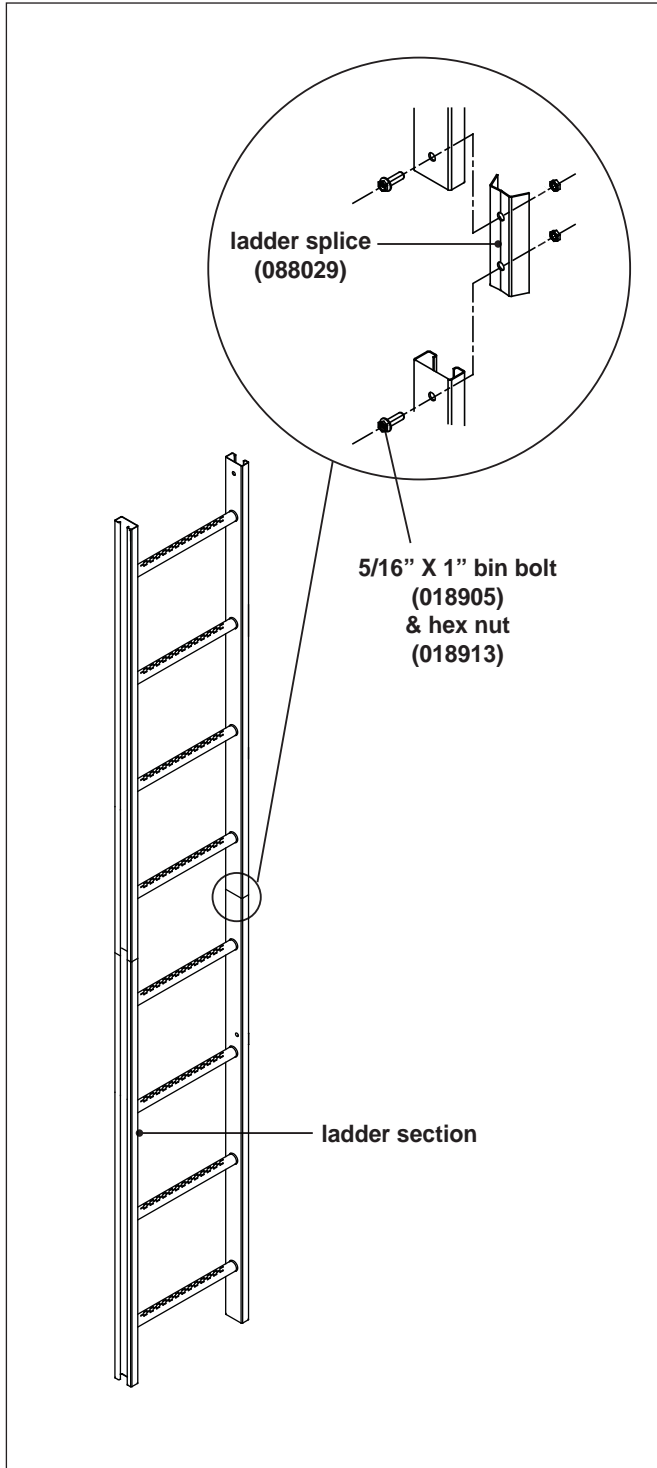
8



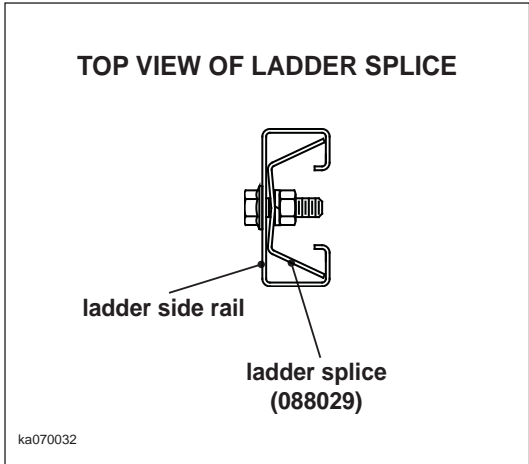
Select anchor bolts that are more than adequate for use in this installation. Install the anchor bolts into the upright anchor bolt hole locations. Upright anchor bolts are sold separately from the hopper bin substructure. After the anchor bolts are securely installed, securely connect the ladder brackets to the upright ladder bracket angles. Use the 3/8" x 1" hex bolts (90000031), 3/8" flat washers (90010020), and nuts (90005021).

9

Ladders



a LADDER CONNECTION ASSEMBLY

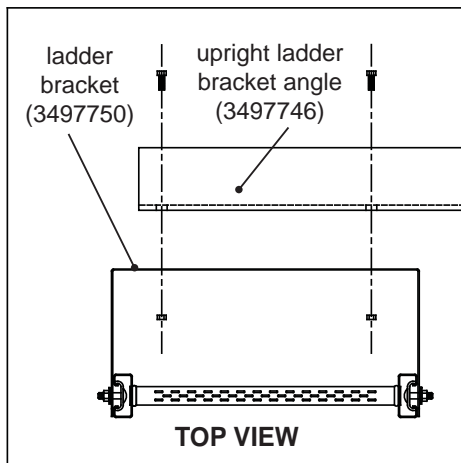


b

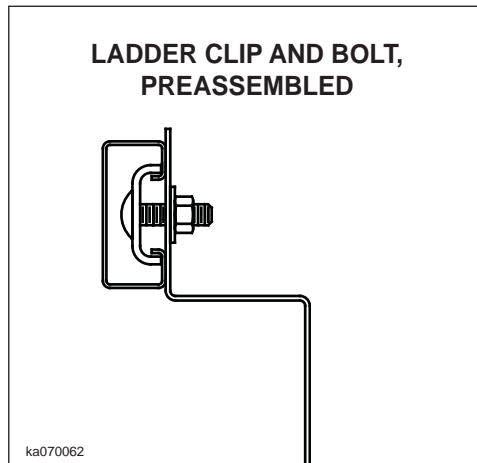
See the ladders, safety cages, and platforms manual for more specific ladder installation instructions. See examples a - e. Use ladder splices to join the ladder sections as shown. Install the ladder to the ladder brackets using ladder clips and bolts (088028) and 3/8" nylock nuts (90005024). **Securely tighten all bolts.**

10

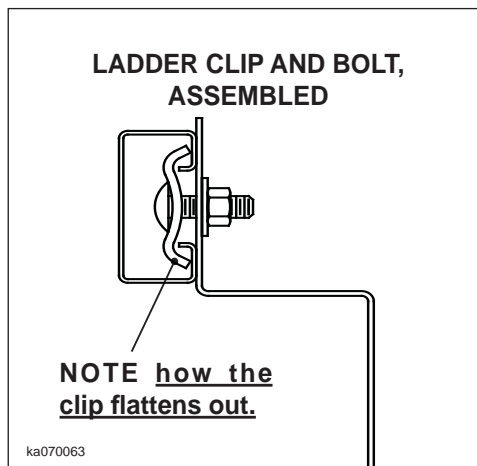
Ladders



c INSTALL LADDER BRACKETS



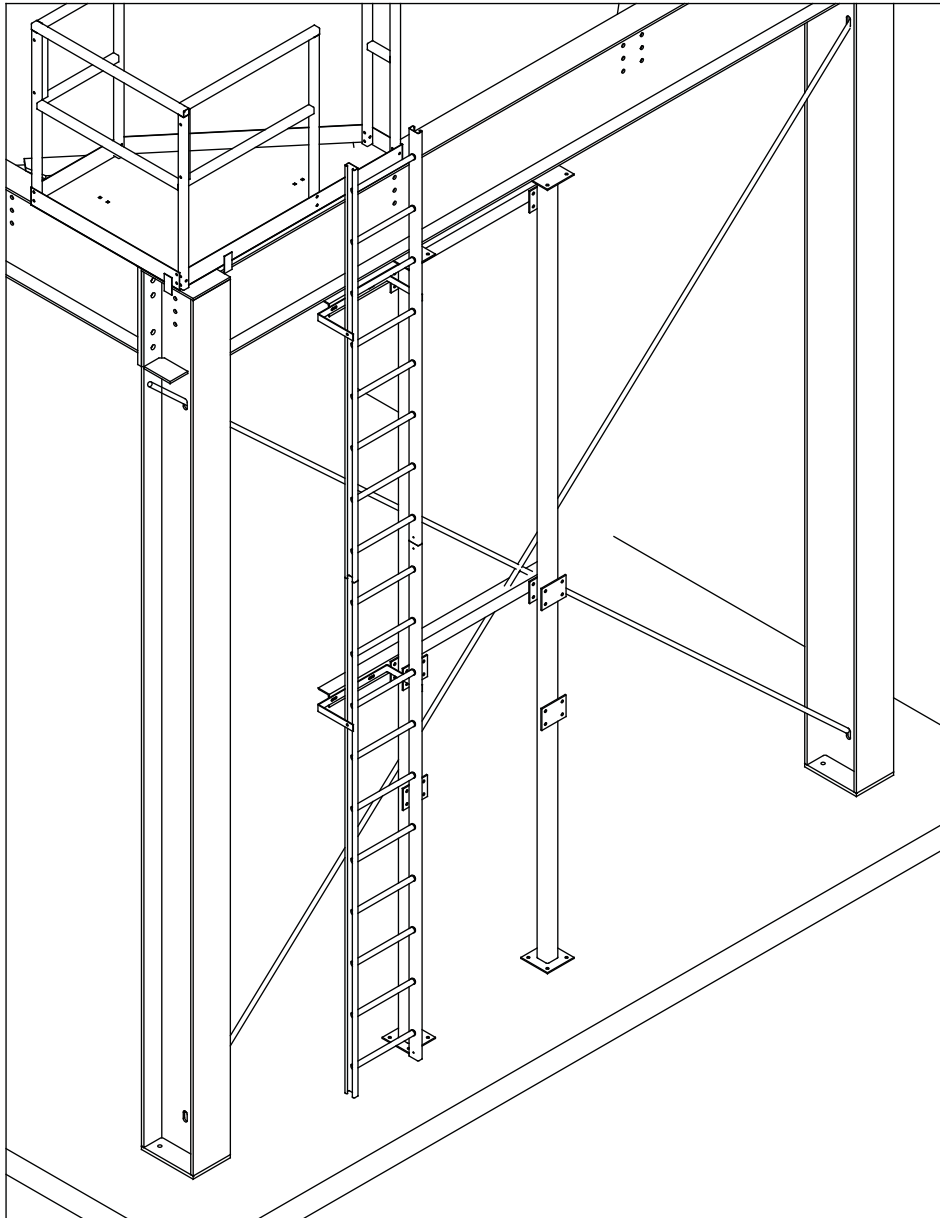
d TOP VIEW OF LADDER CLIP AND BOLT



e TOP VIEW OF LADDER CLIP AND BOLT

11

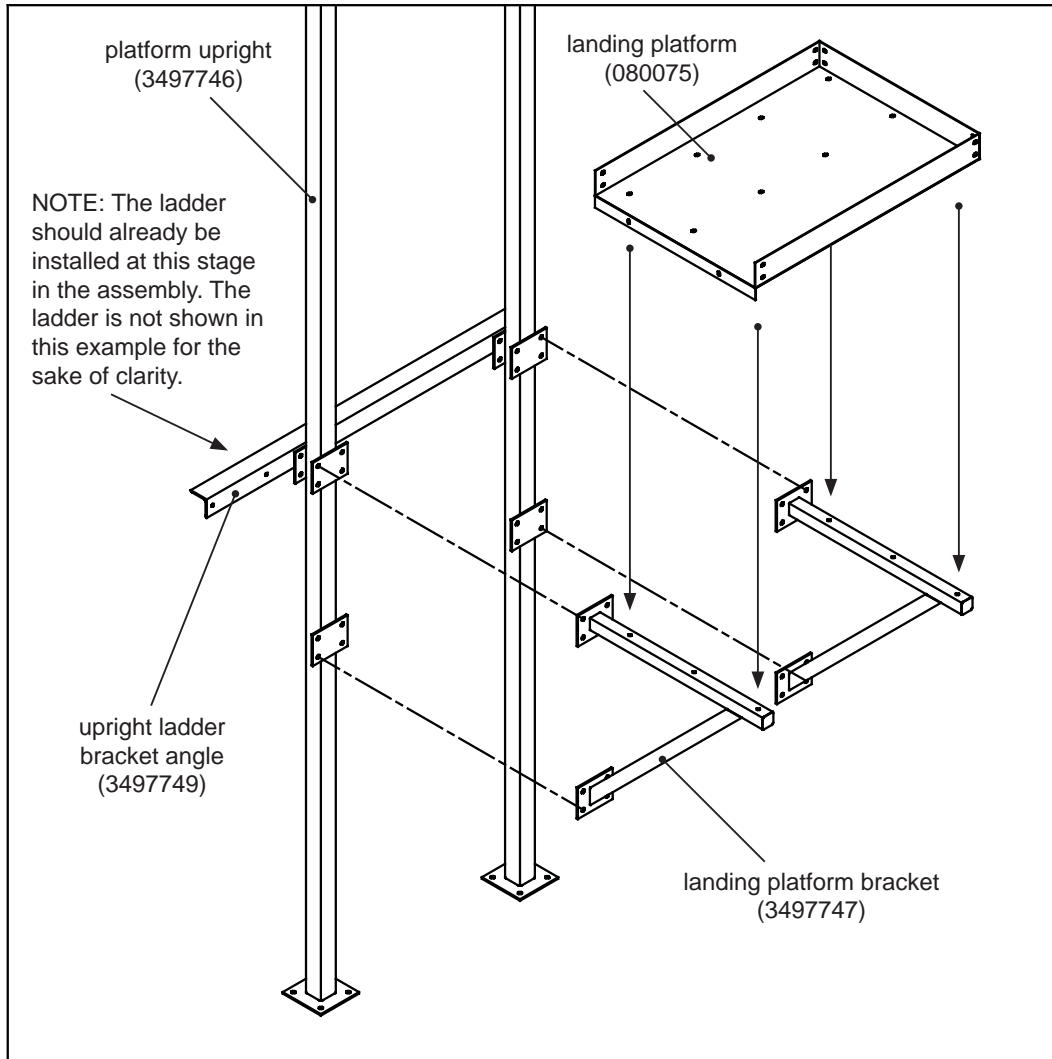
Ladders



Complete the ladder installation so that the ladder being installed appears as shown in the example above. Correctly tighten all ladder bolts.

12

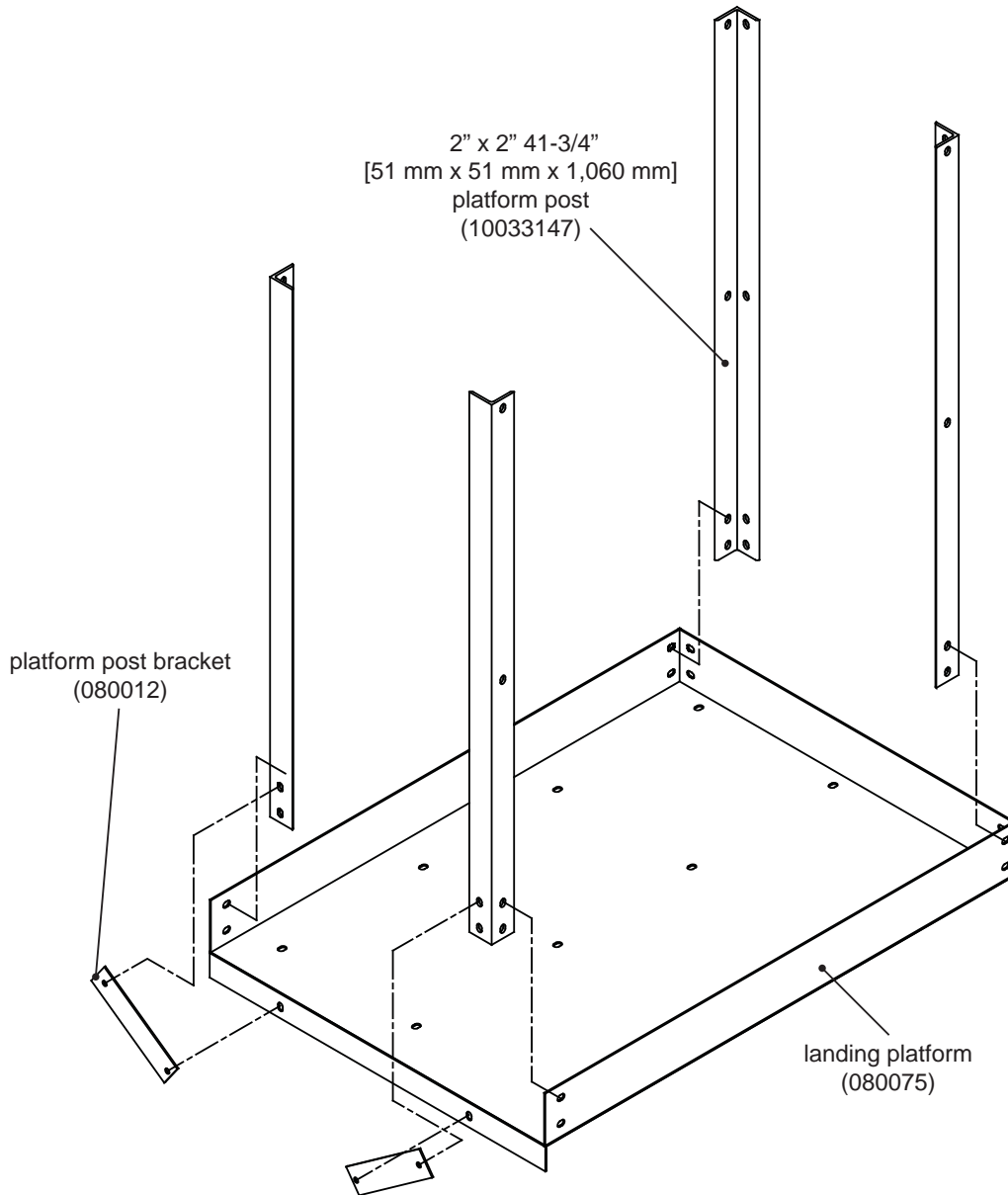
Landing Platform



Install the landing platform brackets to the upright ladder bracket angles as shown. Use 1/2" x 1" hex bolts (018917), flat washers (018908), and nuts (018912). Install the landing platform to the landing platform brackets. Place bolts in (4) holes. Use 3/8" x 3-1/2" carriage bolts (90000035), flat washers (90010020), and nuts (90005021). Securely tighten all bolts.

13

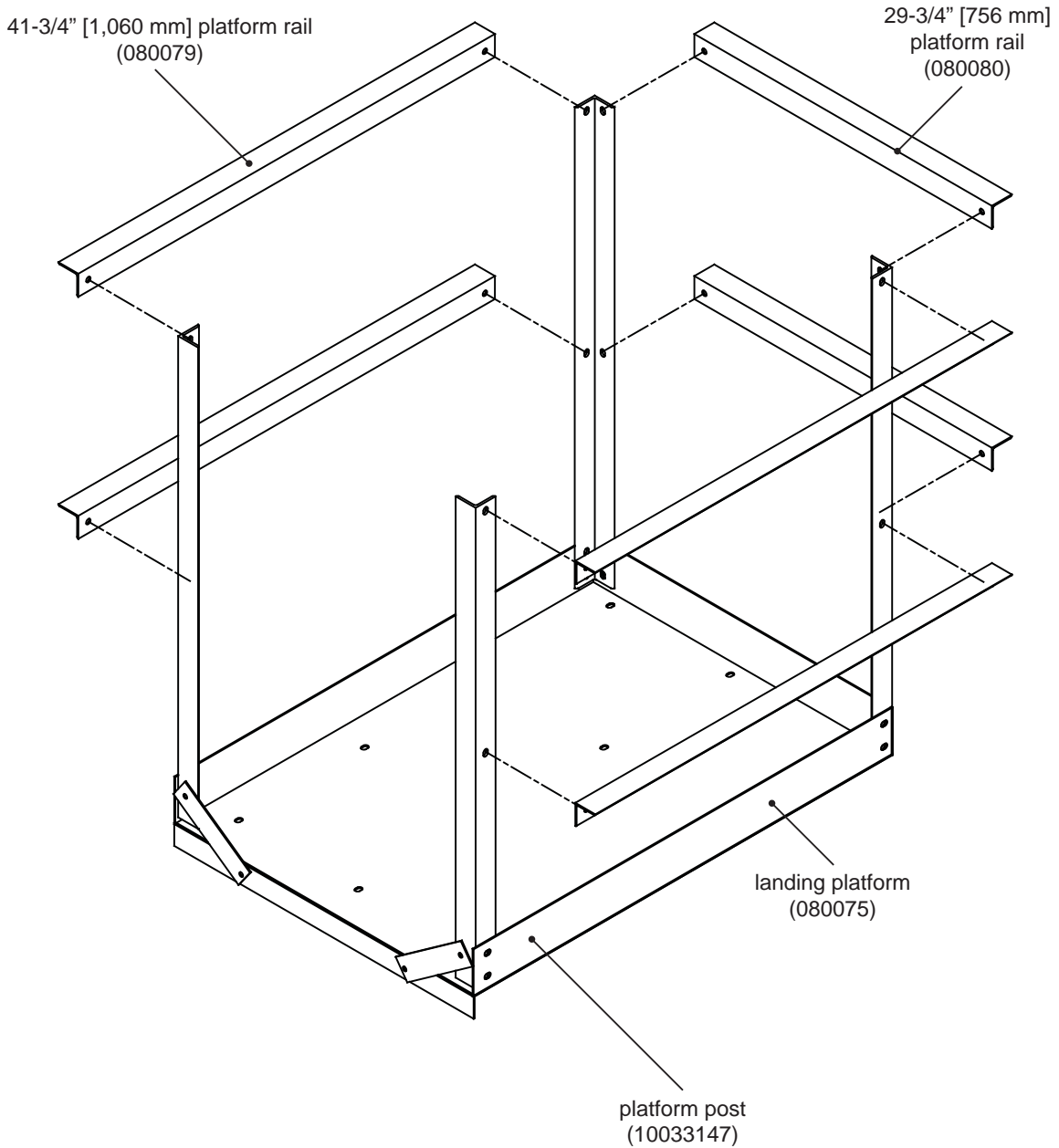
Landing Platform



Connect the platform posts to the landing platform. Use 3/8" x 1" hex bolts (90000031), flat washers (90010020), and nuts (90005021). Connect the platform post brackets to the platform posts using 3/8" x 1" hex bolts (90000031), flat washers (90010020), and nuts (90005021).

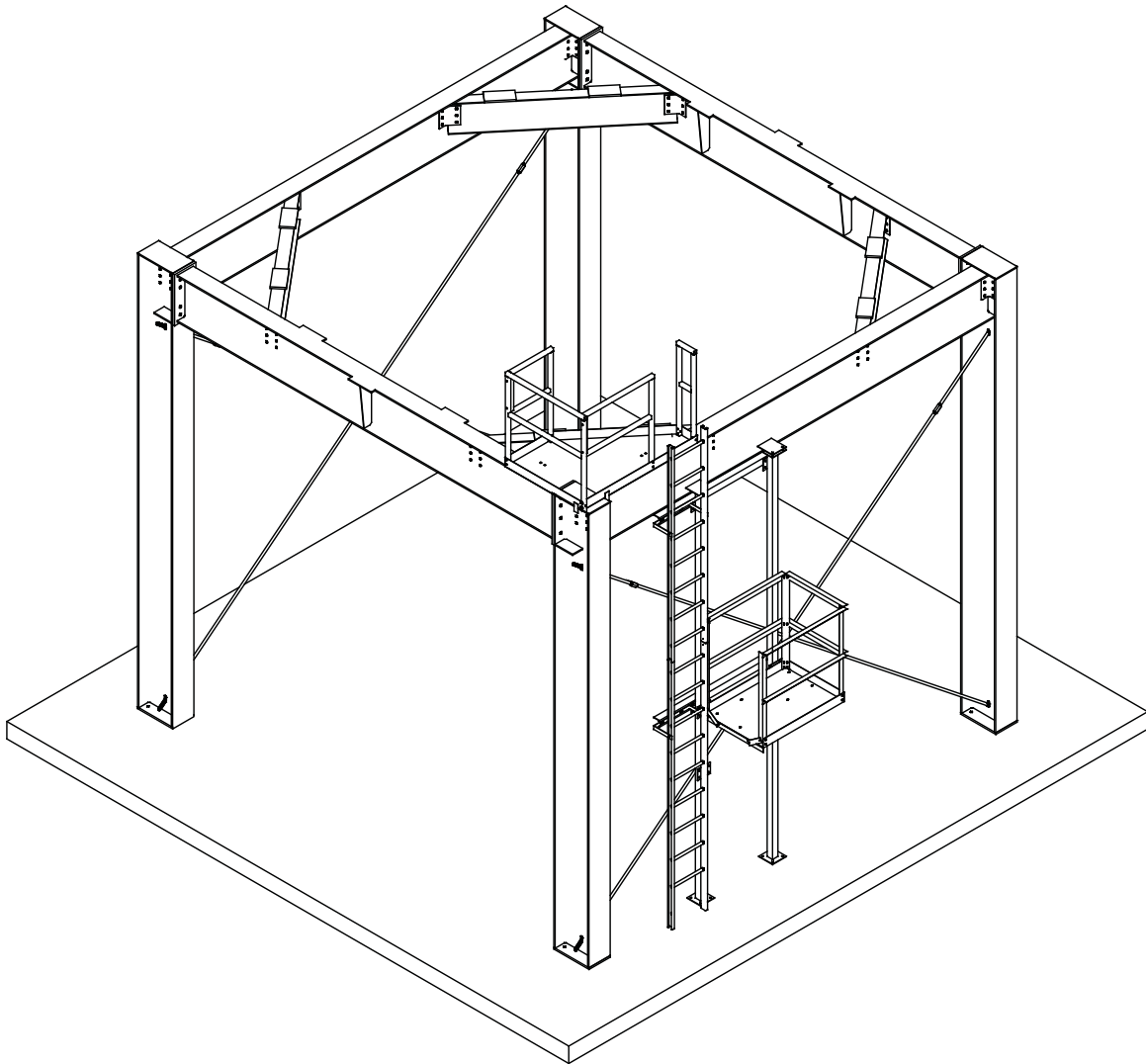
14

Landing Platform



Connect the platform rails to the platform posts. Use 3/8" x 1" hex bolts (90000031), flat washers (90010020), and nuts (90005021). Securely tighten all platform bolts and nuts.

15



Tighten all bolts in the assembly to the correct torque values. Apply touch-up paint to any of the areas on the substructure that need it including any welds. The substructure ladders and platforms are now complete.

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Recent Significant Manual Changes:

2011-08-02 Rev. 01 Changes

- 1** Pages 1 and 56. A new manual cover replaced the old manual cover.
- 2** Page 3. The read the manual graphic and the english text note were added.
- 3** Page 4. The table of contents was regenerated.
- 4** Page 13. A new bolt torque values table replaced the old torque values table.
- 5** Pages 30 - 34, 36, 38, 40 - 42, 44. Text corrections and improvements were made.
- 6** Pages 8 and 49. Text corrections were made.
- 7** Pages 53 - 55. The index was regenerated.
- 8** Other minor changes were made throughout the manual.

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