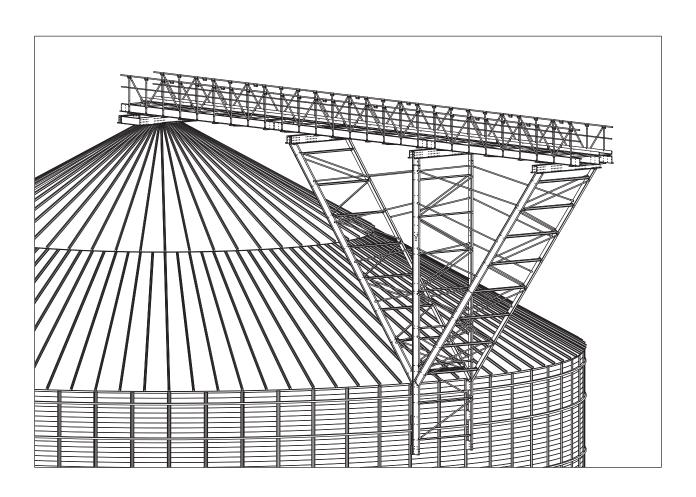


Catwalk

Grain Bin Installation and Storage Instructions





Part Number: 213440 R16 Revised: January 2025

Original Instructions

New in this Manual

The following changes have been made in this revision of the manual:

Description	Section
Updated	Section 5.11 – Peak Ring Support Module on page 59

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CATWALK – GRAIN BIN 1. INTRODUCTION

1. Introduction

Before assembling, please read this manual. Familiarize yourself with the process and the necessary precautions for efficient and safe assembly of this AGI Catwalk.

Everyone present at the assembly site is required to be familiar with all safety precautions.

Keep this manual available for frequent reference and review it with new personnel. Call your local distributor or dealer if you need assistance or additional information.

2. SAFETY CATWALK – GRAIN BIN

2. Safety

2.1. Safety Alert Symbol and Signal Words



This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

Signal Words: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.

⚠ WARNING

Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

⚠ CAUTION

Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

2.2. General Safety Information

Read and understand all safety instructions, safety decals, and manuals and follow them when assembling the equipment.

 Only experienced personnel who are familiar with this type of assembly and installation should perform this work. Untrained assemblers/installers expose themselves and bystanders to possible serious injury or death.



- Do not modify the catwalk in any way or deviate from the instructions in this manual without written
 permission from the manufacturer. Unauthorized modification or methods may impair the function and/or
 safety. Any unauthorized modification will void the warranty.
- Follow a health and safety program for your worksite. Contact your local occupational health and safety organization for information.
- Contact your local representative or AGI if you need assistance or additional information.
- Always follow applicable local codes and regulations.

CATWALK – GRAIN BIN 2. SAFETY

2.3. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn when installing the equipment.

Safety Glasses



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

Coveralls



Wear coveralls to protect skin.

Hard Hat



Wear a hard hat to help protect your head.

Steel-Toe Boots



Wear steel-toe boots to protect feet from falling debris.

Work Gloves



Wear work gloves to protect your hands from sharp and rough edges.

2.4. Safety Equipment

The following safety equipment should be kept on site.

First-Aid Kit



Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.

2.5. Auxiliary Equipment Safety

Unapproved auxiliary equipment could cause performance issues or structural failure, and is not covered by warranty.

- Do not install auxiliary equipment if the catwalk is not designed for use with it. Refer to the specific information provided in this manual for auxiliary equipment or check with AGI or your dealer for written approval, if necessary.
- Obtain, read, and understand the instructions and safety warnings of the auxiliary equipment manufacturer.
- Attach auxiliary safety decals to the catwalk as applicable.
- Store auxiliary operations/maintenance manuals in a safe place available for future use.

2. SAFETY CATWALK – GRAIN BIN

2.6. Working At Height Safety

- Ensure that all work at height is properly planned, organized and carried out by a competent person.
- Use appropriate work equipment and make sure that they are inspected to ensure safety.
- Select collective measures to prevent falls (such as guard rails and working platforms) before other measures which may only reduce the distance and consequences of a fall (such as nets or air bags) or may only provide fall-arrest through personal protection equipment.
- Ensure that those persons working at height are trained in how to avoid falling and how to avoid or minimise any injuries should they fall.
- Check the weather condition. Postpone any work at height until there is no risk to the health and safety of any person working at height.
- Ensure that nothing is thrown or tipped from height if it is likely to injure a person.

CATWALK – GRAIN BIN 2. SAFETY

2.7. Safety Decals

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available free of charge from your distributor, dealer, or factory as applicable.

2.8. Decal Installation/Replacement

- 1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
- 2. Decide on the exact position before you remove the backing paper.
- 3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- 4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- 5. Small air pockets can be pierced with a pin and smoothed out using the decal backing paper.

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3. BEFORE YOU BEGIN CATWALK – GRAIN BIN

3. Before You Begin

3.1. Guidelines for Supporting Catwalks and other External Loads on AGI

Frequently catwalk and related equipment loads are supported on grain bins. Such connections are commonly made into the grain bin stiffeners and across the peak. A grain bin is a thin shell structure primarily designed to withstand the internal uniformly distributed loads inherent with the stored bulk material inside of the bin. Special considerations must be given to the manner in which external loads are supported. AGI has developed products which are compatible with these requirements and considerations. If a third party solution is provided, the provider assumes full responsibility of the structure, its load distribution, and the manner in which it is connected to the grain bin. The following guidelines must form part of the third party design considerations.

Connection to Stiffeners

- 1. The available catwalk support stiffeners in AGI stiffened bins are for 10,000 lb incremental catwalk loads and 20,000 lb incremental catwalk loads per upgraded stiffener. The actual loads subjected to a single stiffener by the mating catwalk support shall not exceed these maximum capacities.
- 2. AGI recommends that the vertical load transfer between the catwalk supports and the stiffener occur over a minimum distance of 66" for 10,000 lb loads and 120" for 20,000 lb loads. Adequate connection strength must be provided.
- 3. The catwalk support stiffener in AGI bins are designed to provide vertical load support only. Any lateral loads subjected to the grain bin must be negligible.
- 4. There is a restriction of 2 upgraded catwalk support stiffeners per bin location. Therefore, the maximum supported load at the grain bin eave is 20,000 lbs (for two 10,000 lb upgrades) and 40,000 lbs (for two 20,000 lb upgrades). This can be repeated on the opposing side of the bin at a second location. Deviation from this must be approved by AGI Engineering.

Connection to Peak Rings

- 1. The allowable vertical peak load to any AGI bin roof is restricted to its published rated capacity. The load must be centered and evenly distributed into the peak ring. Any off-centre load and/or improper load distribution may cause roof failure.
- 2. A AGI structural roof requires the peak support loads to be transferred directly into the compression ring/roof rafter system. This is accomplished with peak load support brackets that are included with the structural roof. They must be installed as shown in the structural roof manual, connecting the peak support structure to the compression ring. They are required even if a non-AGI peak support structure is used. A non-AGI peak support structure needs to be designed to be able to connect with the brackets. The required bolt pattern is shown in the structured roof manual.
- 3. A AGI non-structural roof that is supporting a catwalk requires six clips to be installed in order to attach the flat cap to the peak ring. These clips are available from AGI.

CATWALK – GRAIN BIN 3. BEFORE YOU BEGIN

3.2. Site and Assembly

Unless otherwise specifically provided in writing, AGI does not take responsibility for any defects or damages to any property, or injury to any persons, arising from or related to any site or assembly considerations, including but not limited to:

- · Bin location and bin siting
- Soil conditions and corresponding foundation requirements
 (Note that the examples provided in manuals are for specifically stated soil conditions.)
- Bin assembly (AGI recommends the use of qualified bin installers. Contact AGI for information on installers in your area.)
- Field modifications or equipment additions that affect the bin structure
- Interconnections with neighboring structures
- Have the builder make all non-bin equipment in excess of AGI's recommendations. All such equipment including: LEGS, WALKWAYS, SPOUTING, and CONVEYORS must be self supporting.
- Compliance with all applicable safety standards, including but not limited to fall restraint systems (ladders or other systems). Contact local safety authorities as the standards vary between jurisdictions.

3.3. Methods of Installation

The recommendations for assembling and installing AGI grain bins must be closely followed to achieve the full strength of the bin and to achieve adequate weather sealing. The product warranty is void if:

- 1. Wall sheets and/or uprights not specified for a given tier are used.
- 2. Foundations are found to be inadequate or out-of-level.
- 3. Anchor bolts (cast-in-place, drill-in, chemical type or other) are found to be inadequate.
- 4. Off-center loading or unloading is used. (This does not apply to the use of approved side unloading systems).
- 5. Materials stored are not free-flowing or have a compacted bulk density greater than 52 lbs/ft³ (833 kg/m³).

If using bin jacks during assembly, always lift on an upright. Choose a hoist with an adequate capacity for the expected empty bin deadload. Make sure the rated capacity of the hoist is not exceeded.

3.4. Critical Assembly Requirements

To ensure a successful, safe and reliable outcome you must comply with the following assembly techniques and practices:

- 1. Comply with all local code and jurisdictional requirements applicable to your catwalk installation.
- 2. Design and build foundations with the necessary strength for the loads they must support, and for local soil conditions. AGI foundation guidelines are based on specific stated conditions and may not be applicable to local conditions.
- 3. Your foundation must provide uniform and level support to the structure being supported. Surface imperfections causing gapping must be remedied. This may involve, but not be limited to a) grouting under

3. BEFORE YOU BEGIN CATWALK – GRAIN BIN

the bottom ring of a non-stiffened bin or tank, and b) shimming under the uprights of a stiffened bin or tank, or under the legs of a hopper.

- 4. Make sure that the proper hardware is utilized for all bolted connections. If a shortage occurs, do not substitute. Take the necessary steps to obtain the proper hardware. Make sure nuts are tightened to the required torque values as specified in the appropriate assembly manual.
- 5. Comply with all assembly instructions provided in the appropriate assembly manual to make sure your whole catwalk is constructed safely. Important: Do not deviate from the wall sheet and upright layouts provided.
- 6. Before anchoring your structure to its foundation, make sure the structure is round. The maximum variation from perfect roundness is 3/4" on the radius. Locate anchor bolts toward the outside of the anchor bolt holes (away from the circle) to permit the incremental expansion that can occur with the initial filling.
- 7. When installing roof stiffening rings, if it is necessary to shorten the stiffening ring tubes, shorten them as little as possible. Initially the nuts on the expanders should be centered and as close together as possible. When tightening, share the amount of take-up between expanders such that the nuts remain centered, and the amount of engagement between all expanders on the same ring is equalized.
- 8. If extending an existing bin or tank, ensure that the foundation is adequate for the increased loads it must support.
- 9. If installing an existing bin on a hopper, make sure the bin is designed for a hopper application, and that the foundation is capable of withstanding the substantial point loads that the hopper legs apply. If uprights are present, make sure that they are supported.
- 10. Make sure that an integral end-to-end connection exists between all mating uprights. Successive uprights must not overlap.
- 11. Vertical tolerances between uprights and wall sheets are tight. This can be affected by "jacking" techniques, which can allow the tolerance to grow or shrink depending on the technique used. The gapping between successive uprights must be monitored to ensure that upright holes align with wall sheet holes.
- 12. If catwalks are being installed on the structure, upright catwalk upgrades are likely required. The upgraded stiffeners must be installed in the correct locations to support the intended catwalk loads. Also, the structure must be properly oriented to ensure the eventual correct alignment between the catwalks and the supporting uprights. Finally, the connectors that tie into the uprights and support the catwalks are best installed during assembly of the structure. See the catwalk assembly manual for additional details.

3.5. Product Storage

If you won't be assembling the bin right away, store the bundles and boxes inside a building with good ventilation to prevent white or red rust from forming.

Note

White rust can be removed and does not cause permanent damage.



Red rust causes permanent structural damage.

Do not assemble any part containing red rust.

If you can't store the bundles and boxes inside, follow the instructions below for outdoor storage.

Storing Bin Bundles and Boxes Outdoors

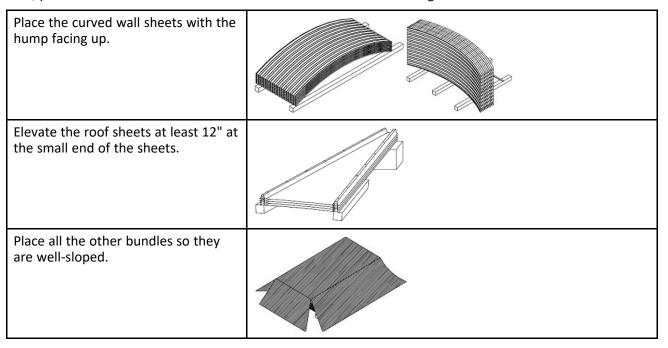
Required Materials:

- Wood blocks
- Waterproof tarp

CATWALK - GRAIN BIN 3. BEFORE YOU BEGIN

Storage Procedure:

1. First, place the bundles and boxes on wood blocks about 6"-8" off the ground.



2. For the bin boxes, ladder boxes, and hardware boxes: build a simple framework to support, cover with a waterproof tarp, and secure.

Note

The boxes are not waterproof and will deteriorate in normal weather conditions, allowing moisture to contact the parts inside.

If Parts Become Wet

- 1. Open the bundles as soon as possible.
- 2. Separate and dry the bin sheets or parts. Keep the parts separated until assembly.

⚠ WARNING Risk of injury or damage.

Brace parts securely to avoid damage or injury from material falling when in storage.

- 3. Dry any boxed parts that are wet and store them in a new, dry box.
- 4. After drying the wall sheets, apply a food-grade oil with a clean, lint-free cloth.

Note

Applying oil will help prevent moisture to contact with the dried wall sheets.

MARNING Risk of slipping.

Do not use oil on roof sheets, ladders, or other parts where a person may walk or stand after the bin is assembled.

213440 R16 13 3. BEFORE YOU BEGIN CATWALK – GRAIN BIN

3.6. Important Notes

• AGI does not provide a foundation design for this product, and is not liable for any damages or injuries related to inadequately designed or constructed foundations. Customers must contract professional services for all foundation design and construction work.

- In order to maintain your wall sheets in good condition separate sheets and allow air circulation between them. Store sheets in a dry place. Do not store sheets with sheet ends pointing upwards.
- To keep an even pressure on walls, the bin must always be unloaded from the center.
- Contact local power officials for minimum power line clearance.
- See Section 3.4 Critical Assembly Requirements on page 11 for mandatory siting and assembly requirements.
- Store only non-corrosive, free-flowing materials up to 55 lbs/ft³ (880 kg/m³) average compacted density in AGI .
- Tighten all bolts to the recommended torque settings.
- Do not locate grain bins close to high buildings, which might cause snow to fall onto or build up on the roof
 of the grain bin. Consider future expansion and allow space for loading and unloading of the bin. Your dealer
 and local government agricultural consultants can help you plan your storage system for maximum
 efficiency.

CATWALK – GRAIN BIN 4. PREPARATION

4. Preparation

4.1. Check the Shipment

Unload the parts at the assembly site and compare the packing slip to the shipment. Ensure that all items have arrived and that none are damaged.

Report damaged parts or shortages immediately to your dealer. Your dealer will order replacement parts immediately to ensure that assembly will not be held up by missing parts. All parts will be charged for and credit will be issued by party at fault. No credit will be issued if freight bills are signed as received in good condition.

4.2. List of Tools and Equipment

Use quality tools and equipment. Use them safely, and correctly, for their intended use. Tools for this application should include:

Tools

- Electric or pneumatic (air) impact tools
- Power drill and drill bits
- Sockets (multiple 9/16" and 1/2" sockets recommended)
- Large-pocket carpenter pouch
- 8" (20 cm) metal punches (for aligning bolt holes)
- Step and extension ladders, construction grade
- 6-point wrenches (Imperial, box end)
- Metal-cutting saw suitable for cutting roof rings and wind rings
- Scaffolding
- Centre-post bin stand
- Crane and/or bin jacks

Minimum Recommended Safety Equipment

- · A properly-stocked first-aid kit
- Eye, foot, head, and hand protection (safety glasses, steel-toed boots, hard hat, work gloves)
- Cable, chain, or rope to tie-off bin or jacks in case of wind
- Body harness and lifeline (for use where falling hazard exists)
- Ground fault interrupt protected electrical hook-ups

4.3. Order Optional Equipment

Optional equipment such as unloading augers, aeration equipment, anchor bolts, foundation sealant, external ladders, safety cage and platforms, etc., should all be on site and checked before assembly starts. Plan your installation in advance. For details, see assembly instruction supplied with optional equipment.

5. Assembly

5.1. Assembly Safety

MARNING • Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, rated lifting equipment, and lifting points for the job.

- Do not stand on, under, or near any component that is not secured.
- Carry out assembly in a large open area with a level surface.
- Always have two or more people assembling the catwalk.
- Make sure you have sufficient lighting for the work area.
- Tighten all fasteners according to their specifications. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the
- Stay away from overhead power lines and other obstructions during assembly. Contact with power lines can cause electrocution.
- Do not work in high winds.
- The equipment shall be installed in accordance with applicable local codes and regulations.

5.2. Structure of this Manual

The following sections of this manual provide information, guidelines, and instructions necessary to successfully assemble AGI's Catwalk Systems. The Introduction provides a general description of catwalk modules, supports and accessories, followed by information on planning the assembly process. Each section thereafter begins with information about Standard Duty Catwalks with bar grating walkways, followed by information related to punched walkway models. Information on Heavy Duty Catwalks is included at the end of each section.

5.3. Introduction to AGI's Catwalk Systems

The AGI Catwalk System is a modular based system that utilizes a variety of modular components that can be mixed and matched to achieve most applications. Solutions have been developed for common applications to ensure that on-site modifications are kept to a minimum. Non-common applications may require some on site modifications, normally limited to shortening components and drilling holes.

5.3.1 Versions of the AGI Catwalk System

Versions include:

- Two strength classifications standard duty (SD) and heavy duty (HD). The SD version satisfies most typical installations. The HD version employs an integral trussed railing system and is reserved for those applications requiring greater loads and longer spans.
- Two walkway systems Modules are available with a punched walkway or bar grating walkway. The punched walkway is a cost effective solution for many applications. The standard bar grating option features a serrated top walking surface and a galvanized finish. Other bar grating styles can be accommodated.

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• Two conveyor widths – Base modules employ a 650 mm (25.6") wide walkway and a conveyor support section. The latter are available in a 700 mm (27.6") or 1 m (39.4") width.

5.3.2 Catwalk Modules

- Base catwalk sections are available in 3 m (≈10′), 6 m (≈20′), and 9 m (≈30′) long sections that can be joined together in any combination to provide a continuous catwalk
- Joiner modules are used to join adjacent sections together. A special joiner module is recommended when any length of catwalk exceeds 40 m (≈130′).
- End modules provide the means to close off the end of a catwalk.
- Variations alternative systems are also being developed in response to demand
 - Walkway only modules in 3 m (≈10'), 6 m (≈20'), and 9 m (≈30') long sections are 650 mm (25.6") wide
 - Double walkway modules in 3 m (≈10'), 6 m (≈20'), and 9 m (≈30') long sections are 1300 mm (51.2") wide
 - A walkway + 1 m conveyor + walkway (WCW) module in 3 m (≈10'), 6 m (≈20'), and 9 m (≈30') long sections (bar grating only)

5.3.3 Catwalk Supports

Catwalks are supported at the grain bin peaks, at the eaves of bins by goal posts and knee braces, by separate independent towers, or by tying into some other supporting structure.

- Peak Support modules are mounted integrally into the commercial flat grain bin caps, as well as into the underlying compression rings (structural roofs only). Standard duty peak supports are compatible with most loading scenarios; upgraded HD peak supports are used for heavier loads.
- Goal Post modules tie into the grain bin upright structure and span upwards from the eaves of the bin to support overhead catwalks. There are 44.5 kN (10,000 lb) versions and 89 kN (20,000 lb) versions. They can also be installed on adjacent uprights (single spacing) or on uprights spaced two apart (double spacing).
- When required, Knee Braces modules tie into the goal posts to reduce the unsupported span of overhead catwalks. There are two types:
 - 1. "A" knee brace modules, which bolt onto the bin side of the goal post and span up over the grain bin roof.
 - 2. "B" knee brace modules which bolt onto the non-grain bin side of the goal post and span up and away from the grain bin.

The timing (i.e. orientation) of the primary "Z" channel is an important consideration. Special attention should be given to these considerations when reviewing the manual. The knee braces are also tied to the goal posts utilizing tubes of different lengths.

Finally there are various inter-bin brace options to support goal posts on adjacent bins.

5.3.4 Catwalk Accessories

Various accessories complete the catwalk system.

- Service Platforms a 3 m (≈ 10') of walkway service platform provides an additional 650 mm (25.6") of walkway at strategic locations along the catwalk
- Service Platform Add On (bar grating only) a separate 3 m (≈ 10') walkway extension plugs in at almost any location along a catwalk providing an additional 650 mm (25.6") of walkway width

• Cross Catwalk Module – a 3 m (≈ 10') catwalk module that intersects another catwalk at 90° permits the initiation of a cross catwalk. Once started the regular catwalk modules add on to complete the catwalk run

- Ladder Access (Peak) Module Provides an access point to the catwalk at a grain bin peak location and includes a self-closing access door. This ties into existing roof stairs or roof ladder packages.
- Ladder Access (Goal Post) Module TBD

5.3.5 Planning

The various catwalk modules and accessories can be mixed and matched to provide a cost effective catwalk system to meet a number of needs. The following should be kept in mind when planning a catwalk system:

- Catwalk designs are dependent on load versus span considerations, which are in turn dependent on a number of other factors. Consult AGI's Application Engineering personnel for specific design support.
- Catwalks are routinely supported by goal post systems that tie into the upright structure of the bin, which
 are specially upgraded. This must be considered in the design of the bin, and the bin must be subsequently
 constructed to align the upgraded stiffeners with the goal post locations. The use of single upright spacing
 goal posts, versus double upright spacing goal posts, also affects the timing with respect to various
 elements. Be sure to consult specific site layouts.
- The connection of the goal posts to the bin uprights is made utilizing upright connectors, which are specific to bin diameter. They are available under a separate part number. Ideally these are installed as the bin is being constructed and therefore should be delivered with the bin.
- Grain bin roof upgrades may be required in order to support the increased peak loads inherent with an
 overhead catwalk.
- The end of a catwalk run may extend out over a peak or goal post location. This may be acceptable for a given application. However if a fixed length is required, any catwalk standard module can be cut to provide this length. Some field modifications are required. See detail provided in Section 5.8 End Modules on page 38.
- A thermal break is recommended for any catwalk length exceeding 40 m (130'). See detail provided in Section 5.7 Catwalk Joiner Module Assembly on page 31.
- The handrail system is an integral structural component of the HD system. Any break in the handrail to accommodate an accessory such as a service platform, a cross conveyor, a cross walk, an entry point, etc. should only occur at a point of vertical support (such as at a peak location, or over a goal post).
- A cross catwalk will intersect at the midpoint of a 3 m (≈ 10') base catwalk section without the need to drill
 holes. The cross catwalk can also intersect any base catwalk section at any other location. However, some
 minor field modifications will be required. See detail provided in Section 5.10 Cross Catwalk Modules on
 page 54.
- A cross catwalk (or walkway) requires the 3 m (≈ 10') cross catwalk module (or walkway module) at the intersection point with the primary catwalk. These intersections should be made at right angles.
- Catwalk modules can be assembled on the ground and craned into place. Insure the first catwalk section is long enough to bridge between two points of support. Installing the "Z" splice connectors on the receiving end of the first section creates a "pocket" to receive the next section, and so on. Subsequent sections must be long enough to reach subsequent points of vertical support.

5.4. Standard Duty Catwalk Section Assembly

Catwalks sections are available in 3 m (\approx 10'), 6 m (\approx 20') and 9 m (\approx 30') sections. The assembly of each is basically identical. The following illustrates the 3 m section. The assembly of the 6 m and 9 m sections follow the same assembly techniques with exceptions noted.

Note

All bolted connections are made using 3/8" x 1" bolts with adhesive strip applied and flanged nuts unless indicated or otherwise illustrated. See Section 6.2 – Hardware Usage on page 97 for detail on connection hardware.

1. Support "Z" beams on a level surface as necessary along their length such that they are at least 150 mm (6") off of the ground to facilitate ease of assembly.

Note the orientation of the three beams varies from side to side. One must be flipped end to end with respect to the others. The opposing "Z" sections are on either side of the walkway section Figure 1 on page 19. Also the top and bottom flange of the "Z" beams are not the same width. The wider flange is towards the top on all "Z" support beams.

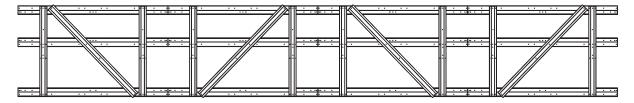
HAT SECTION WHENESTON HAS SECTION **CROSS MEMBERS** CONVEYOR SECTION (TOP) VARIES WALKWAY SECTION (650 mm) **Z-SUPPORT BEAM** NOTE: WIDER FLANGE IS AT TOP OF ALL Z-SUPPORT CLEARANCE SUPPORT (NOT SUPPLIED) **BEAMS** LATERAL BRACE (BOTH SIDES) HAT SECTION CROSS MEMBER **DIAGONAL CROSS** (BOTTOM) MEMBER LATERAL BRACE (BOTH SIDES) 3/8" X 1" HEX BOLT 3/8" X 1" HEX BOLT (TOP DOWN) (BOTTOM UP)

Figure 1. Hat Section Cross Members & Diagonal Cross Members

2. Bolt on the bottom hat section cross members and diagonal cross members as illustrated.

Do not tighten the nuts until the complete module has been assembled and squared with itself (see Figure 1 on page 19. Note that on 6 m and 9 m sections the pattern repeats 2 and 3 times respectively. If possible, alternate the positioning of the diagonal hat section cross members so they are not all angled in the same direction (see Figure 2 on page 20.

Figure 2. Hat Section Bottom View



VIEW FROM BOTTOM - RECOMMEND STAGGERING SLOPE OF DIAGONAL CROSS MEMBERS AS SHOWN

3. Bolt on the top hat section cross members as illustrated in Figure 1 on page 19

Be aware that when mating catwalk modules there is a top cross member that forms part of the joint connection (see Section 5.7 – Catwalk Joiner Module Assembly on page 31). This supports the ends of the punched walkways and bar grating, which are provided in 3 m sections. Therefore in 6 m and 9 m top catwalk sections, hat section cross members should also be positioned at 3 m increments to support the eventual joints between walkway sections.

Note

When final positioning of the catwalks occurs there may be interference between a top or bottom hat section, and some other feature on the installation such as a downspout. At these locations it is acceptable to cut the interfering hat section member between "Z" beams to facilitate fit-up.

4. Bolt on lateral braces between the "Z" beams and the bottom cross members (see Figure 1 on page 19)

Note

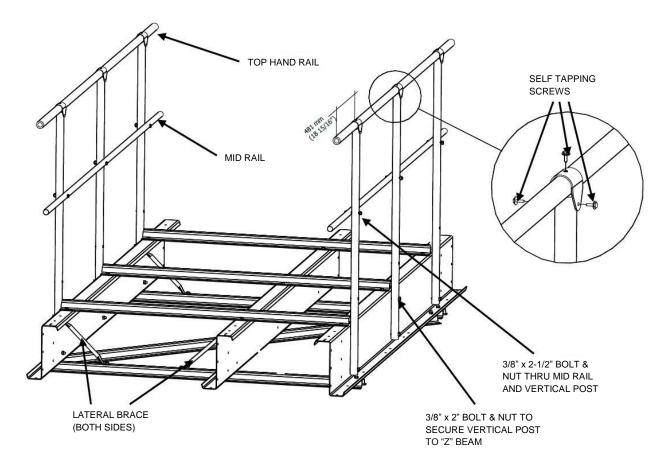
For Heavy Duty Catwalk railing system see instructions at the end of this section.

5. For Standard Duty sections, bolt the vertical posts to the outside of the "Z" beams using 3/8" x 2" bolts and nuts at both bolt hole locations.

Vertical posts are spaced at 1 meter intervals Figure 1 on page 19.

6. Assemble the top and mid rails as shown in Figure 3 on page 21.

Figure 3. Assembling top hand rail and mid rails



- a. Bolt the mid-rail to the vertical posts using 3/8" x 2-½" bolts and nuts.
- b. Secure the hand rails to the top of the vertical posts using connector clips at all post locations.
- c. Secure with 3 self-drilling screws at all connector locations as illustrated.
- d. Center both rails within the catwalk section.
- e. Make sure the ends of the rails protrude to the same extent between catwalk sections so repositioning at a later time is not required.
 - The top handrail should protrude 481 mm (18 15/16") beyond the edges of the handrail connection brackets.
- f. For 6 m and 9 m sections, connect together the top and mid rail tubes within the section in the same manner as they are connected when mating sections meet.
- g. Use the short 150 mm (6") splice tubes to splice between mating handrails and mid rails.
- h. Insert one half of the splice tube into the end of one of the rail tubes and secure with a self-drilling screw.
- i. Position the second tube and secure.
 - Since the mating catwalk section fits onto this splice, try to be consistent in applying these splices (see Section 5.7 Catwalk Joiner Module Assembly on page 31)
- 7. Ensure the section is square with itself by measuring corner to corner at opposing corners. Make necessary adjustments and tighten all nuts and bolts.

8. Bolt on the grating option supplied with the catwalk. Leave the assembly of these components until all mating catwalk sections have been joined together and then lay the grating along the entire span. Note that there should be a top hat section cross member under all grating joints which occurs at 3 m increments. This naturally occurs between mating catwalk sections, but also incurs within the 6m and 9 m sections at 3 m increments. Make sure the grating supports are properly supported with top hat section cross members.

a. <u>Bar Grating and Toe Board Option</u> (See Figure 4 on page 22 and Figure 5 on page 23): The grating should be centered within the catwalk area and each end should rest on a hat section cross member. The toe boards are positioned on top of the grating along each side. The holes in the bottom toe board flange align with holes in the hat section cross members – use 3/8" x 2" standard hex bolts (w/o adhesive) and flanged nuts to secure. There are also holes in the toe board side flange that align with holes in the vertical posts – use 3/8" x 2" bolts and flanged nuts to secure. Toe boards are joined using toe board splices.

Figure 4. Bar Grating Walkway

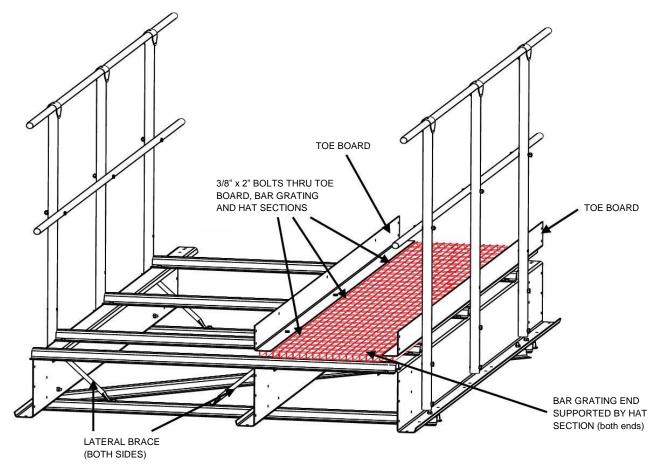
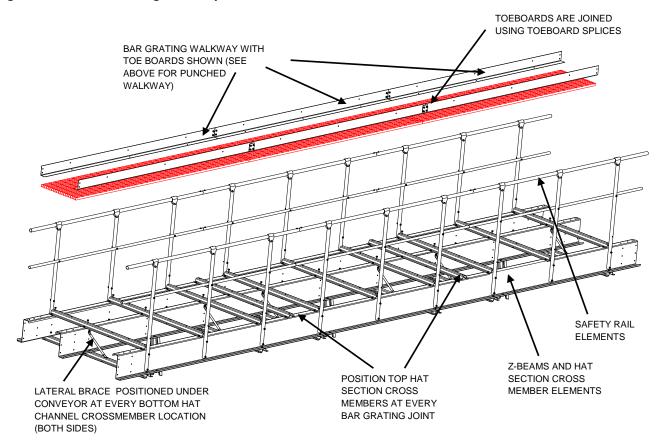


Figure 5. 9 m Bar Grating Walkway



b. <u>Punched Walkway Option</u> (Figure 6 on page 24 and Figure 7 on page 24): The punched walkway includes the toe boards as part of the walkway configuration. The walkway should be centered within the catwalk area and each end should rest on a hat section cross member. The bolt holes in the bottom section of the walkway align with holes in the hat section cross members – use 3/8" x 1" standard hex bolts (w/o adhesive) and flanged nuts to secure. The holes in the toe board flanges align with holes in the vertical posts – use 3/8" x 2" bolts and flanged nuts to secure. Toe boards are joined using toe board splices.

Figure 6. Punched Walkway

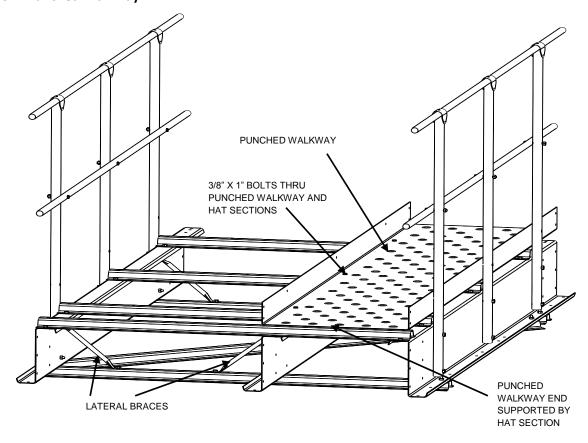
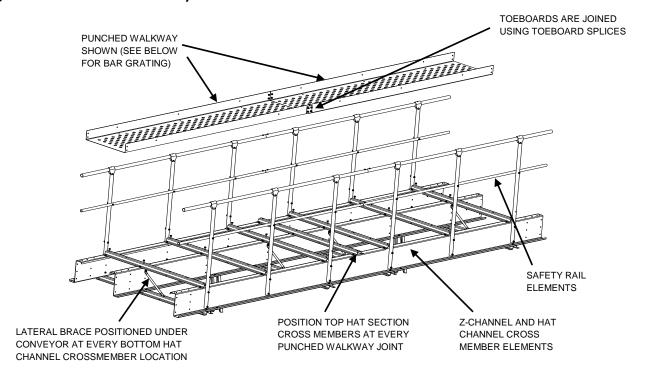


Figure 7. 6 m Punched Walkway

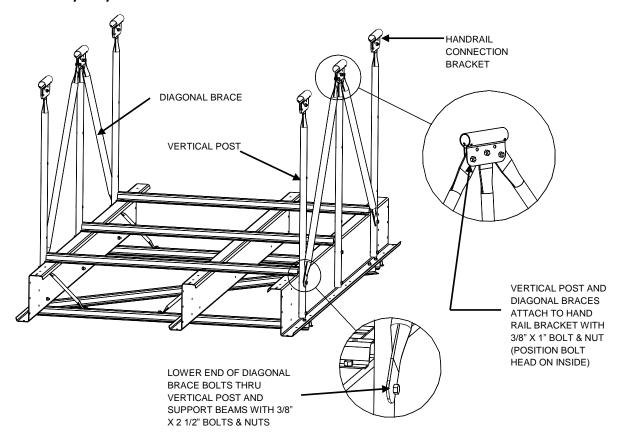


5.5. Heavy Duty Catwalk Section Assembly

1. Bolt the vertical posts to the outside of the Z-beams using 3/8" x 2" bolts and nuts.

There are 2 holes at the bottom of the vertical post tubes (see Figure 8 on page 25). The upper hole of these two is also used to secure the lower end of the diagonal tube brace.

Figure 8. Heavy Duty Catwalk Braces and Posts



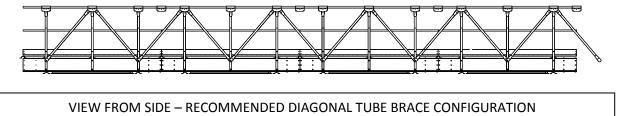
2. Make the connection at the lower bolt hole first, then position the diagonal tube brace over the second hole and make that connection.

Note that the diagonal braces are positioned on the outside surface of the vertical posts. The upper connections occur at the handrail connection brackets, which have holes punched to accommodate the flattened ends of both the vertical posts and the diagonal tube brace. Also, when mating catwalk sections are bolted together, there is a diagonal tube brace that forms part of the joint connection (see Section on Section 5.7 – Catwalk Joiner Module Assembly on page 31).

Note

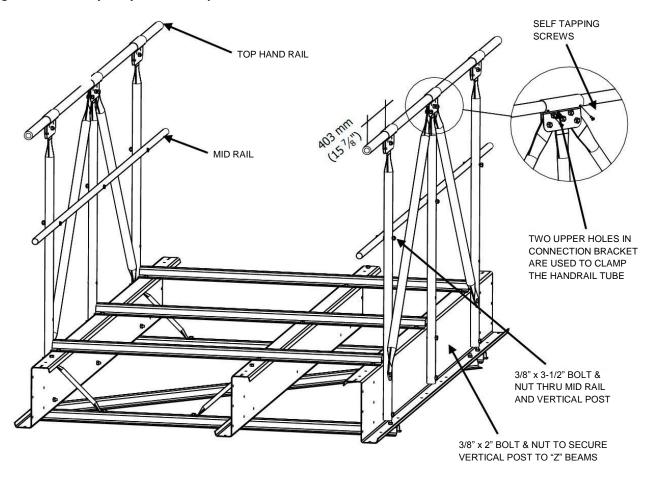
The diagonal tube braces can be angled in either direction and still maintain structural strength. However, it is best practice to angle the diagonal tube braces in a consistent manner, as illustrated in Section 5.5 – Heavy Duty Catwalk Section Assembly on page 25. Do not tighten the handrail connection bracket bolts until after the handrails are inserted and positioned.

Figure 9. Heavy Duty Catwalk Section Side View



3. Assemble the top and mid rails as shown in Figure 10 on page 26.

Figure 10. Heavy Duty Catwalk Top Hand Rail and Mid-Rails



- a. Center both rails within the catwalk section.
- b. Make sure the ends of the rails protrude to the same extent between catwalk sections so repositioning at a later time is not required.

The top handrail protrudes 403 mm (15 7/8") beyond the edges of the handrail connection brackets.

4. Use two additional bolts within the handrail connection bracket to clamp the tube in place.

All bolt heads should be positioned to the inside with nuts positioned to the outside.

- 5. Bolt the mid rails onto the vertical posts as illustrated using 3/8" x 3 %"" bolts.
 - For 6 m and 9 m sections the top and mid rail tubes are connected together within the section in the same manner as they are connected when mating sections meet.
- 6. Use the short 152 mm (6") splice tubes to splice between mating mid rails.
- 7. Insert one half of the splice tube into the end of one of the mid rail tubes and secure with a self-drilling screw.

Since the mating catwalk section fits onto this splice, be consistent in applying these splices (see Section 5.7 – Catwalk Joiner Module Assembly on page 31). It may be advisable to leave the mid rails until after the mating catwalk sections have been connected.

Note

The mid rails can be bolted on after the sections have been joined together.

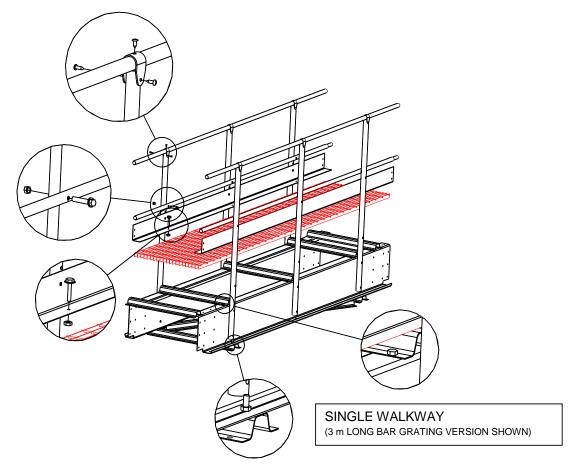
5.6. Base Module Variations

The following are variations to the base modules. The assembly procedure remains consistent with the information provided earlier. Exceptions are noted on the following exploded assemblies. Not all variations are available with all of the standard features.

5.6.1 Single Walkway

The walkways feature a 650 mm (25.6") wide walkway only. They are available in 3 m (\approx 10`), 6 m (\approx 20`) and 9 m (\approx 30`) sections in either a punched walkway or bar grating format. If utilized with standard catwalk sections as a cross walkway, the intersection with the regular catwalk should be made with 3 m walkway sections. Intersection with a Heavy Duty Catwalk should occur at or near a location providing vertical support such as at the peak supports or goal post support

Figure 11. Single Walkway



Note

Assembly procedures are consistent with those contained in the Section 5.4 – Standard Duty Catwalk Section Assembly on page 19.

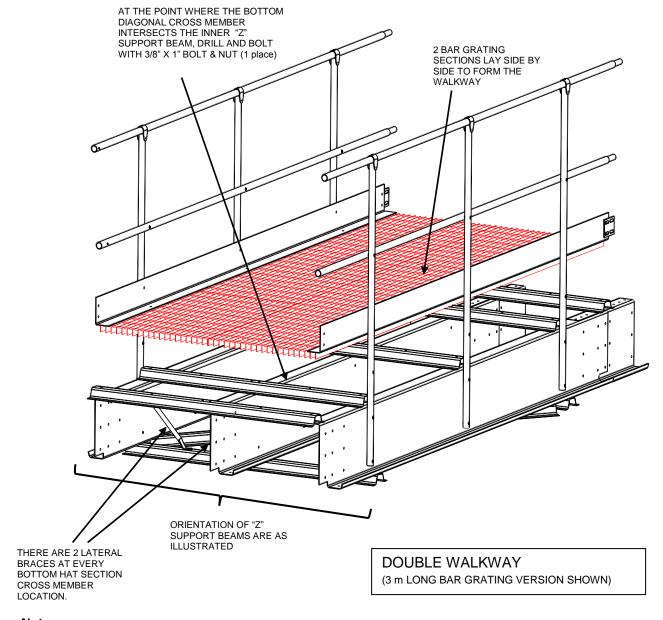
Note

For the Trussed Handrail version of the Single Walkway, assemble handrails as per information provided in the Section 5.5 – Heavy Duty Catwalk Section Assembly on page 25.

5.6.2 Double Walkway

The double walkway features a 1300 mm (51.2") wide walkway. They are available in the same lengths as the single walkway and bar grating format only. Installation considerations remain consistent with the single walkway.

Figure 12.



Note

Assembly procedures are consistent with those contained in the Section 5.4 – Standard Duty Catwalk Section Assembly on page 19.

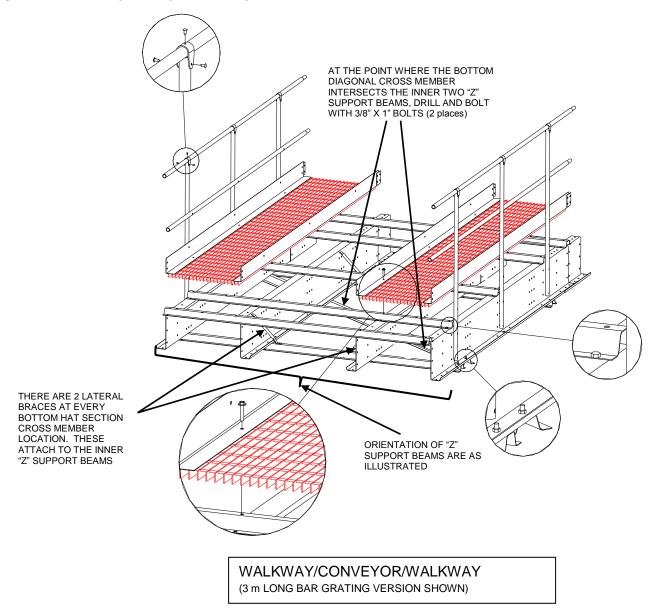
Note

For the Trussed Handrail version of the Double Walkway, assemble handrails as per information provided in the Section 5.5 – Heavy Duty Catwalk Section Assembly on page 25.

5.6.3 Walkway/Conveyor/Walkway (WCW)

The WCW features two 650 mm (25.6") wide walkways on either side of a 1 m (39.4") wide conveyor support section. They are available in 3 m (\approx 10'), 6 m (\approx 20') and 9 m (\approx 30') sections in bar grating format only.

Figure 13. Walkway/Conveyor/Walkway



Note

Assembly procedures are consistent with those contained in the Section 5.4 – Standard Duty Catwalk Section Assembly on page 19.

Note

For the Trussed Handrail version of the Walkway-Conveyor-Walkway, assemble handrails as per information provided in the Section 5.5 – Heavy Duty Catwalk Section Assembly on page 25.

5.7. Catwalk Joiner Module Assembly

Once the individual modules are assembled, they are joined together. There is a Catwalk Joiner Module provided for every catwalk joint. Many of the connector pieces can be installed during the assembly of the base modules, however care must be taken to avoid placing connector pieces on both ends of mating modules, otherwise interference of similar parts will occur. Instruction is provided for both the normal joints and the special thermal joint. Special considerations for the Heavy Duty Catwalk are included at the end of each respective section.

5.7.1 Standard Duty Joiner Modules

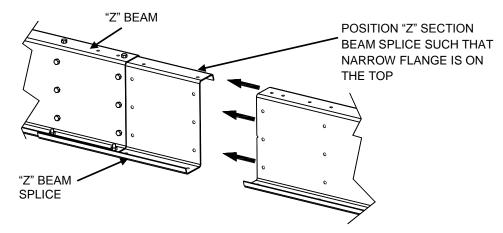
The principle structural connection between mating catwalk modules is facilitated with the use of Z-section beam splices at every Z-beam connection location.

- 1. Invert the beam splices such that the narrow flange of the section is on top and insert into the ends of the Z-beams on one of the mating catwalk modules.
- 2. Bolt in place at every Z- beam location using 3/8" x 1" bolts.
- 3. Position the second catwalk module on the protruding beam splices and bolt into place.

Note

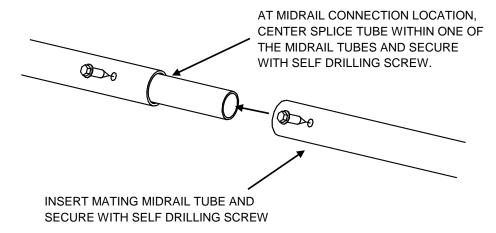
This arrangement is particularly useful when slinging mating modules together in elevated locations as the splice forms a pocket that the mating modules drops down onto.

Figure 14. Splicing a "Z" beam



- 4. Join the mating top handrail and mid rail tubes together using short 152 mm (6") splice tubes.
- 5. Insert one half of the short mid-rail splice tube into the end of one of the mid-rail tubes and secure with a self-drilling screw.
- 6. Position the mating mid-rail tube over the splice tube and secure this end as well.

Figure 15. Joining top and mid rail tubes



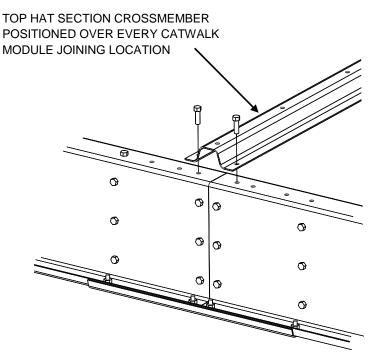
Note

For Heavy Duty Catwalk railing systems see instructions at the end of this section.

7. Every joint location has a top hat section cross member. Bolt on the top hat section cross member as described in Standard Duty Catwalk Section Assembly, Step 3 on page 20.

The ends of the punched walkway or bar grating walkway will eventually be supported at this location.

Figure 16. Top Hat Section Cross Member

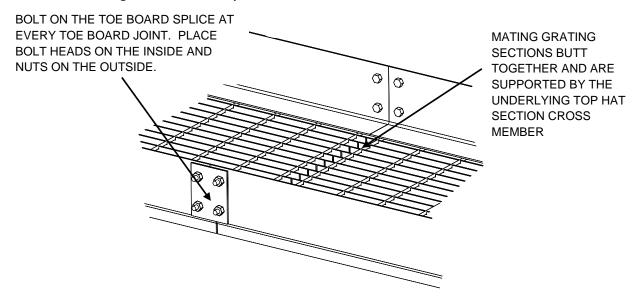


8. Options:

a. <u>Bar Grating and Toe Board Option:</u> Bolt on toe boards and grating if not completed earlier as described in Standard Duty Catwalk Section Assembly, Step 8 on page 22.

All grating joints should rest on an underlying hat section cross member. There is a toe board splice to join mating toe boards. Position bolt heads to the inside. The bar grating option is illustrated below.

Figure 17. Bar Grating and Toe Board Option

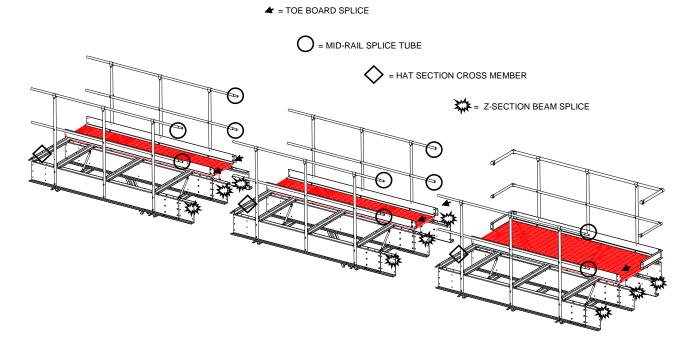


- b. Punched Walkway Option: The punched walkway is joined in a similar fashion to the bar grating.
- 9. Make sure all nuts and bolts are tightened.

Note

Figure 18 on page 33 shows all the parts required for joining two modules together that are not part of the individual catwalk module. They are all part of a joining kit supplied with the order. Also included in the kit are all the screws, bolts and nuts necessary to make the connection.

Figure 18. Joiner Module Parts Locations



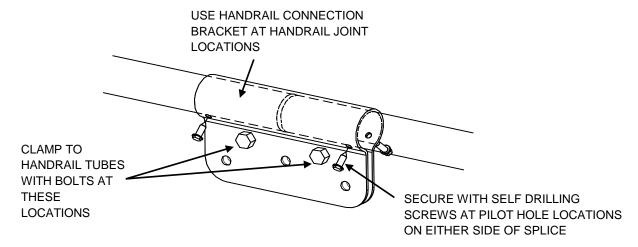
5.7.2 Heavy Duty Joiner Modules

Assembly of Heavy Duty Joiner Modules is similar to the Standard Duty Joiner Modules, except for Hand Rail Assembly.

1. Join the mating top hand rail tubes together using a handrail connection bracket as illustrated in Figure 19 on page 34.

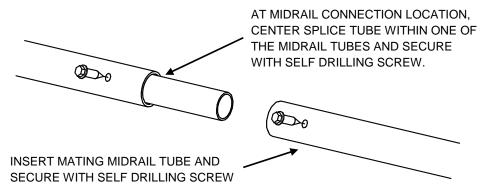
The orientation of the bracket should be the same as at other locations even though there are no posts or bracing tubes at this location.

Figure 19. Handrail Connection



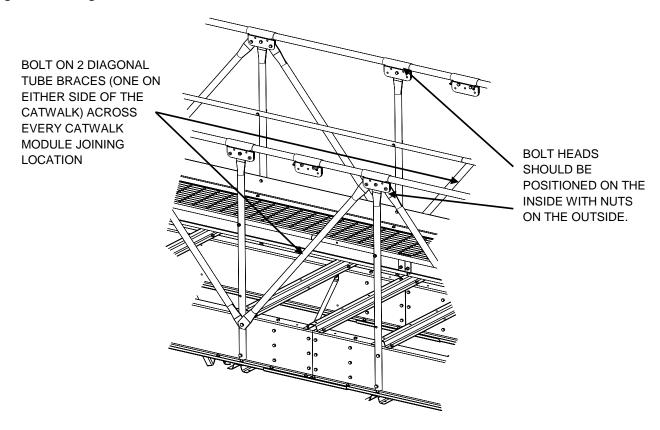
- 2. Use the two clamping bolt hole locations to secure the joint using 3/8" x 1" bolts.
- 3. Position bolt heads to the inside with nuts to the outside.
- 4. Install at least two self-drilling screws through the pilot holes, as illustrated, one on either side of the splice connection.
- 5. Use the short 152 mm (6") splice tubes to splice between mating mid rails. Insert one half of the short midrail splice tube into the end of one of the midrail tubes and secure with a self-drilling screw. Position the mating midrail tube over the splice tube and secure this end as well. It may prove beneficial to install the mid rails once the rest of the catwalk connection is made.

Figure 20. Mid Rail Connection



6. Diagonal tube braces bridge across every joint location. Bolt the diagonal tube braces on both sides as described in Heavy Duty Catwalk Section Assembly, Step 2 on page 25. Position bolt heads to the inside.

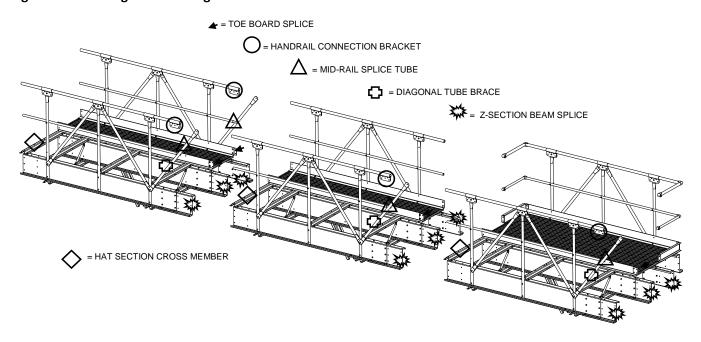
Figure 21. Diagonal Tube Braces



Note

Figure 22 on page 35 shows all the parts required for joining two modules together that are not part of the individual catwalk module. They are all part of a joining kit supplied with the order. Also included in the kit are all the screws, bolts and nuts necessary to make the connection.

Figure 22. Joining Modules Together



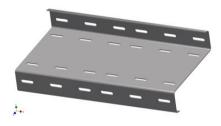
5.7.3 Thermal Joint

A thermal joint alleviates expansion and contraction concerns in extended catwalk runs. Some jurisdictions require a thermal joint at least every 40 m (130')

The optimum location for a thermal joint is between (but not directly above) neighboring goal posts on two adjacent bins. If this is not feasible, consult with AGI Applications Engineering

The only unique part in a thermal joint is a Z-section beam splice that has slotted holes to permit relative movement between mating sections of Z-beams. At the thermal joint, every connection should utilize the slotted Z-section beam splice.

Figure 23. Z-Section Beam Splice



The assembly of the thermal joint is made as provided above with the following additional considerations. For Heavy Duty Catwalk railing systems see Heavy Duty Catwalk Thermal Joint on page 37.

Standard Duty Catwalk Thermal Joint

- 1. When applying the hand rail and mid-rail splice only apply one self-drilling screws on one side of each joint. Do not secure the opposing side.
- 2. The slots on the Z-section beam should originally be centered on the mating holes in the catwalk Z-beams. Insure to use the 3/8" x 1" bolts with the adhesive strip applied. Snug the nuts to permit relative movement. **Do not over tighten**.
- 3. There will also be a gap between mating walkways. This cannot be avoided.
- 4. Slotted toe board thermal splices are used to span between the toe boards on mating modules.
- 5. Because of the gap that is created between mating walkways there is an additional top brace provided so that there are two for every thermal joint location. Move the top cross braces back from the thermal joint on either side one bolt hole location on the supporting Z-beams so the ends of the grating remain supported as illustrated in Figure 25 on page 37.

Note

At the thermal joint leave a 40 mm (1 ½") gap between mating handrails, mid-rails and Z-beams.

Figure 24. Standard Duty Layout

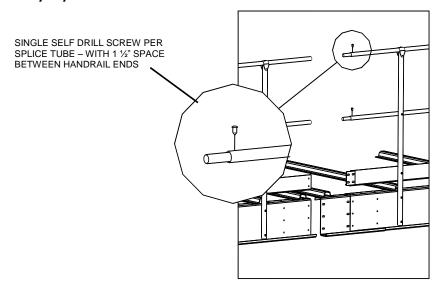
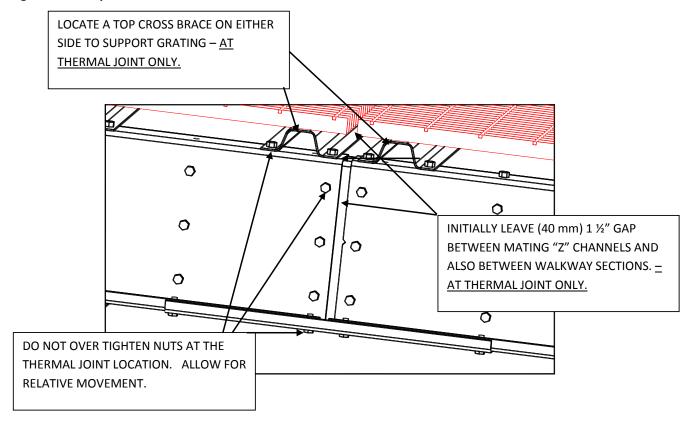


Figure 25. Top Braces

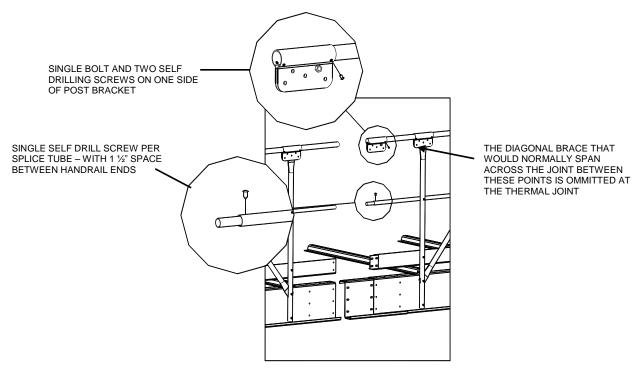


Heavy Duty Catwalk Thermal Joint

- 1. When applying the handrail brackets at a thermal joint do not tighten the nuts to the point where the bracket is squeezing the handrail tube. Leave enough slack to permit expansion and contraction. Also, use the self-drilling screws on only one side of the joint.
- 2. When applying the mid-rail splice only apply one self-drilling screw on one side of the joint.

3. For the heavy duty catwalks, the diagonal brace that would normally span across a regular joint is not present as this would prevent relative movement across the thermal joint.

Figure 26. Heavy Duty Catwalk Layout



5.8. End Modules

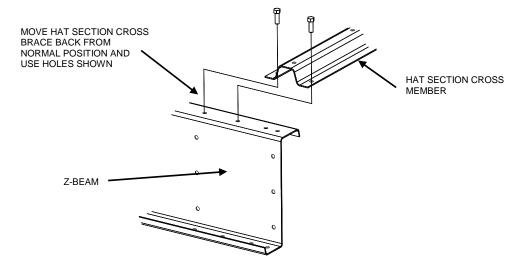
The End Module closes the end of the catwalk. The End Module can be positioned on the end of any of the complete Catwalk Modules, or if desired the Catwalk Modules can be shortened to fit. However, if shortened some drilling of holes may be required depending on the location of the cut. Note that the bar grating option is illustrated. Options for the punched walkway options are illustrated at the end of the section. Special considerations for the Heavy Duty Catwalk are included at the end of each respective section.

5.8.1 Standard Duty End Modules

The procedure for installation of the End Module without cutting the Catwalk Module is as follows.

1. Build the Catwalk Module as normal. The one exception is to relocate the top hat section cross member on the end back 187 mm (7.25") from its normal position and bolt in place as illustrated.

Figure 27. Relocate the top hat section cross member

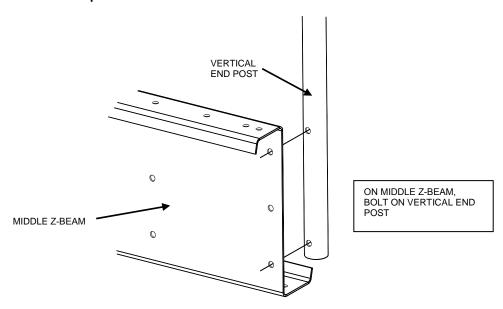


Note

For Heavy Duty Catwalk railing system see instructions at the end of this section.

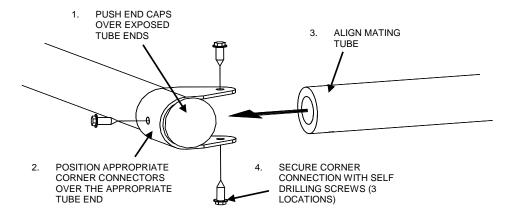
2. Bolt on the end post (213049) onto the middle Z-beam using the vertical holes at the end. Use 3/8" x 2" bolts. The hole in the middle for attaching the mid rail will not align properly. Drill in a new hole at 90° to the existing hole.

Figure 28. Bolt on the end post



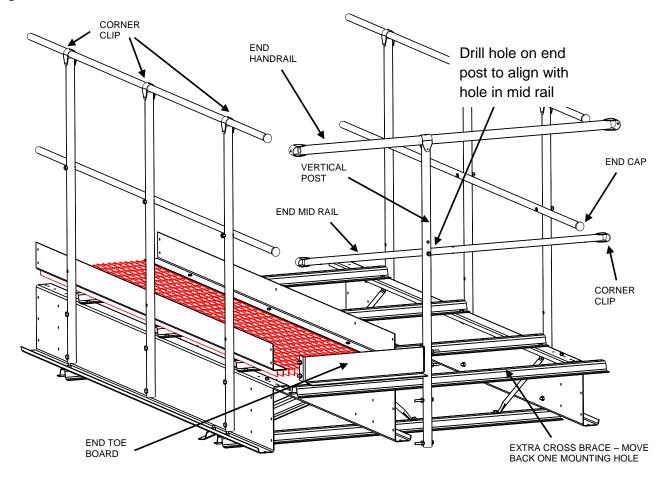
3. Bolt on the mid rail and secure handrail to top of post using the connector bracket in the same manner as illustrated in Section 5.4 – Standard Duty Catwalk Section Assembly on page 19. Note that it may be necessary to shorten the horizontal rails to match the width of the catwalk in question. Place plastic end caps over exposed tube ends. Connect the end rails to the side rails with the corner connectors as illustrated.

Figure 29. Bolt on the mid rail and secure handrail



4. Bolt on the end toe board section to the base catwalk module as illustrated in Figure 30 on page 40.

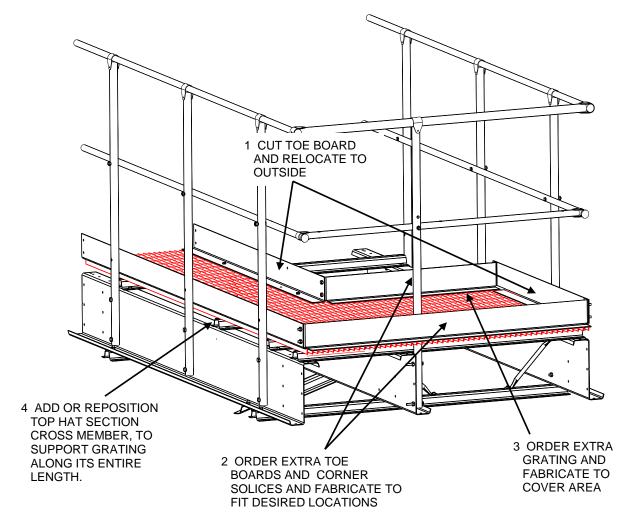
Figure 30. Bolt on the end toe board



Note

If the catwalk extends beyond the conveyor, and if it is desirable to cover the end of the conveyor section with grating, extra grating can be laid over the top hat section cross members and secured to them. It may need to be cut to fit the opening. Extra grating, toe board sections and toe board corner splices will need to be ordered. A hat section cross member should be positioned under the grating edge to support it. (See Figure 31 on page 41).

Figure 31. Catwalk extending beyond the conveyor



Note

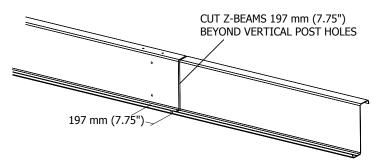
Extra grating must be cut and placed with the same orientation as the full section in order to be properly supported from underneath.

5.8.2 Shortened End Modules

The procedure for installation of the End Module if it is desirable to shorten the Catwalk Modules as follows.

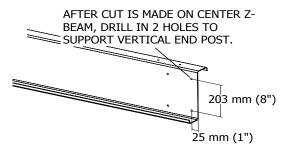
1. The best location to shorten the Catwalk Module is just beyond any vertical post location as illustrated. Cut the Z-beams 197 mm (7.75") beyond the holes used to bolt on the vertical posts as illustrated in Figure 32 on page 42.

Figure 32. Cut the "Z" beams



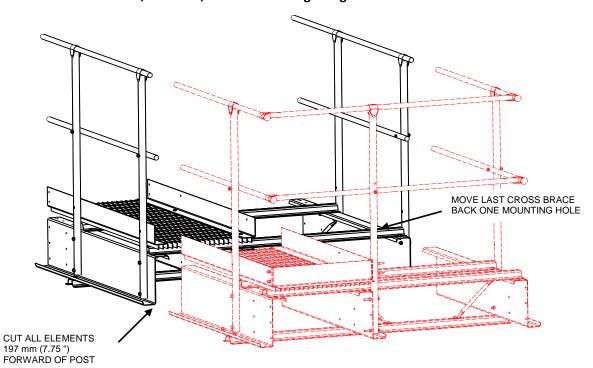
2. In the center Z-beam drill two holes as illustrated in Figure 33 on page 42. These holes will be used to bolt on the end module vertical post. Bolt on the post.

Figure 33. Drill holes for end module vertical post



3. The rest of the installation follows the procedure describe above. It will be necessary to shorten the Catwalk Module hand rails, mid rails, toe board and grating to fit the installation.

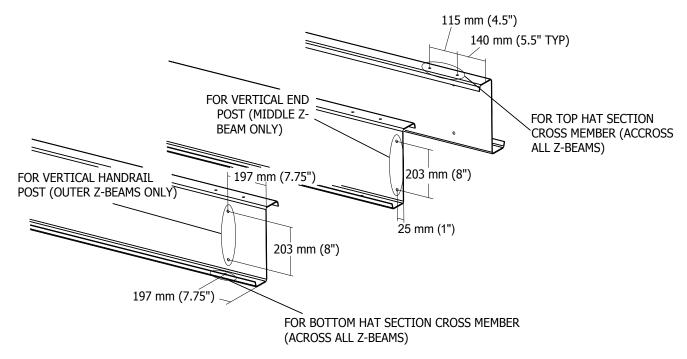
Figure 34. Shorten hand rails, mid rails, toe boards and grating to fit



Note

It is possible to cut the Z-beams at other locations as well. However additional holes will be required to be drilled into the ends of the Z-beams to accommodate the other components. The template for hole location is provided in Figure 35 on page 43. The installation of other components is essentially the same as provided above. Adjustments may be necessary to accommodate the actual installation.

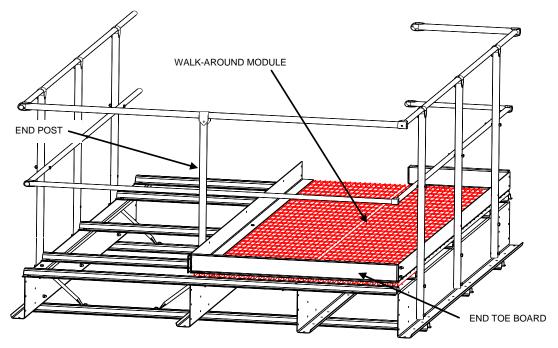
Figure 35. Drilling Template



5.8.3 End Module in Combination with a Service Platform

The combination of an end module paired with a service platform module (shown in Figure 36 on page 44) may be desirable for some installations. In this case the handrails, mid rails and toe boards will not be long enough to cover the complete end. However the parts supplied within each module will be long enough if joined together. For this purpose extra parts have been provided within the service platform module to facilitate this possibility. This includes a handrail splice, a mid-rail splice and a toe board splice.

Figure 36. End Module in Combination with a Service Platform

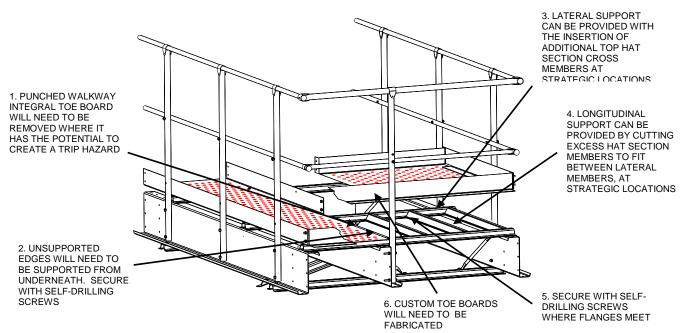


5.8.4 Punched Walkway Options

The information provided in the previous section features the bar grating option for the catwalk walkway. The punched walkway option, with respect to catwalk end treatments, employs similar features. A straight run of catwalk without the need of additional walkway area at the end, is a straight forward application and employs similar installation procedures to those already provided elsewhere.

However if additional punched walkway area is desirable, such as to close off the conveyor section of the catwalk beyond the end of a conveyor, then a custom solution will be required (see Figure 37 on page 45). This will also require additional parts. Consult AGI Applications Engineering for information and a specific solution. In general, keep in mind that the integral toe board will need to be removed in some locations to permit access. Since the punched walkway will be weakened by this action, any punched walkway edge, without the structural benefit of the integral attached toe board, will need to be supported from below. The most likely scenario is to position extra hat section cross members under these locations to provide support. This can be done laterally by insertion of an extra top hat section cross member, or longitudinally by cutting a hat section member to span between existing lateral spanning hat section members. Use self-drilling screws to secure members where no bolt holes are present. Also secure the mating punched walkway edges to the underlying supporting hat section member with self-drilling screws.

Figure 37. Punched Walkway Option



Additional consideration (if the end of the catwalk coincides with a service platform):

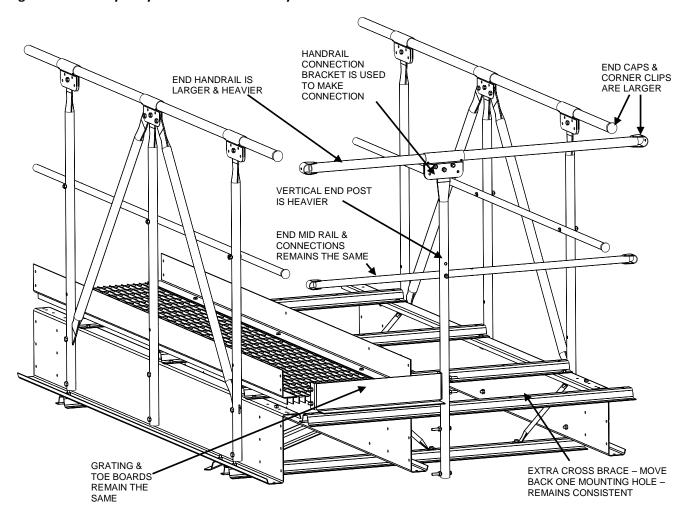
For punched walkways the service platform modules employs two punched walkways where the center section is folded down and is supported along the underlying Z-beams (See Service Platform Insert Assembly on page 52). The folded down section is notched to allow the punched walkway to lay flat. If the service platform area coincides with the end of the catwalk, and because the end hat section cross member is moved back 187 mm (7.25"), the position of this end cross member will not align with the notches in the punched walkways. Cut a new notch into the folded down flange to coincide with the relocated cross member.

5.8.5 Heavy Duty End Module

The assembly of the Heavy Duty End Module is similar to the Standard Duty with the following differences as illustrated in Figure 38.

- 1. The end post is heavier and flattened on the upper end (PN 213024).
- 2. The handrail is heavier.
- 3. The connection between the end post and the handrail is made using a handrail connection bracket.
- 4. The handrail corner clips and end caps are larger as required by the larger hand rail tube.

Figure 38. Heavy Duty End Module Assembly



5.9. Service Platform Module Assembly

The catwalk service platform modules are preferably located at peak ring locations (if desired) in order to create an additional 610 mm (24") of working space width. The modules are 3 m (118") long. If a longer space is required then 2 walk-around modules can be connected end to end. On Heavy Duty catwalks, the service platform should only be located at peak ring locations since the structural benefit of the trussed handrails gets discontinued at service platform locations.

5.9.1 Standard Duty Service Platform Module

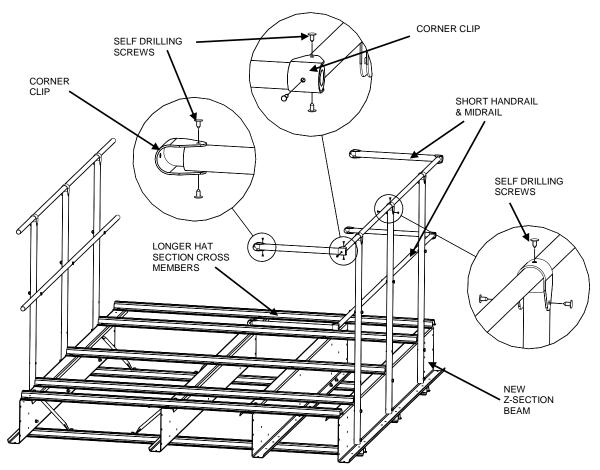
The assembly of the Service Platform Module is very similar to the assembly of the base modules with the following differences.

- 1. There is one additional primary Z-beam. The extra Z-beam is located beside the outside beam on the walkway side and is in the same orientation as its neighbour as illustrated in Figure 39 on page 48. Remember that the wider flange on the Z-beam is towards the top.
- 2. The hat section cross members (both top and bottom) are longer to accommodate the extra 610 mm (24") of catwalk width. However the installation procedure remains the same. The diagonal cross member that bolts on the bottom is not used at service platform locations. Rather there is an additional bottom hat section cross member, making 3 in total. There are also five top hat section cross members:
 - 3 positioned in the center
 - 1 at each end

(See Figure 39 on page 48)

3. The installation of the vertical posts remains the same. However on the extended side there are short handrail and mid-rail components with corner connectors to enclose the area and to reconnect to the mating handrails and mid-rails on the catwalk. Plastic end caps are provided to fit over the tubes. The installation of the corner connectors are as illustrated Figure 39 on page 48 and as provided in greater detail in the End Assembly Module.

Figure 39. Installing posts, rails, and corner connectors



- 4. There are also short toe board connectors at each end of the extended walkway section. The installation is as illustrated in Figure 40 on page 49 and as provided elsewhere.
- 5. Extra grating section that covers the extended region is included.

Figure 40. Installing toe board connectors and grating

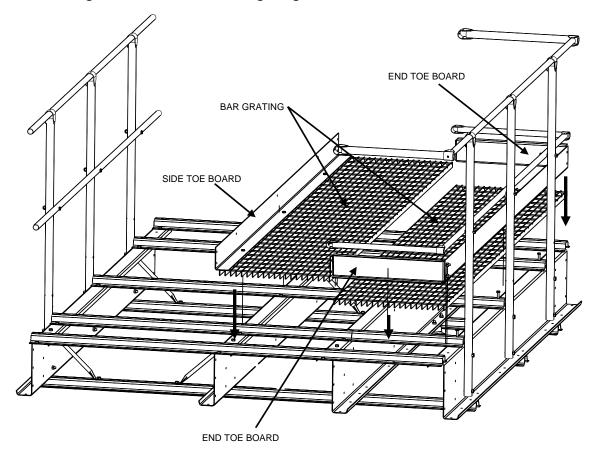
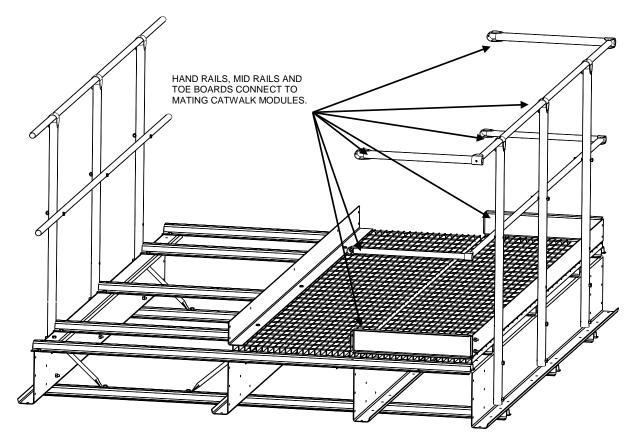


Figure 41. Completed 3M Standard Duty Service Platform Module



Note

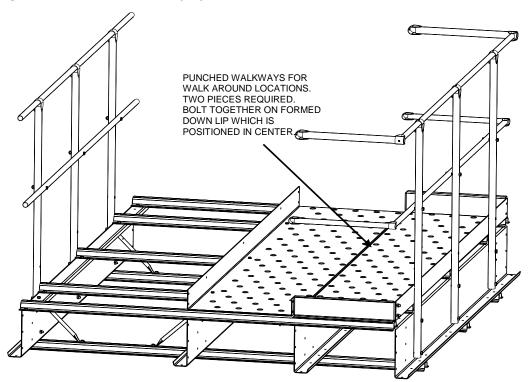
The service platform modules should be centered on the peak rings. For service platform modules with the bar grating option (as illustrated above), the outer additional 3 m walkway section [610 mm (24") wide] can be relocated and mounted farther up or down the catwalk, providing the five longer top hat section cross members and the three longer bottom hat section cross members are relocated along with the outer additional Z-beam and other necessary unique parts (i.e. hand rail, mid rail and toe board elements). However the parts that are removed at the insertion point (i.e. standard top and bottom hat section cross members) must be relocated and installed at the original location to complete the assembly.

Punched Walkway Option

The 3 m service platform module with the punched walkway option (see Figure 42 on page 51), must be inserted as a complete module at the appropriate location since the punched walkways are uniquely manufactured for this location. They feature a formed-down lip at the mating connection point which has material removed so as not to interfere with hat section cross members beneath, and which bears against the underlying Z-beam for support.

Most of the module is assembled as indicated above. The punched walkway is assembled as illustrated below. The two components bolt together along the formed-down lip. The walkway is then bolted to the underlying top hat section cross members.

Figure 42. Punched Walkway Option

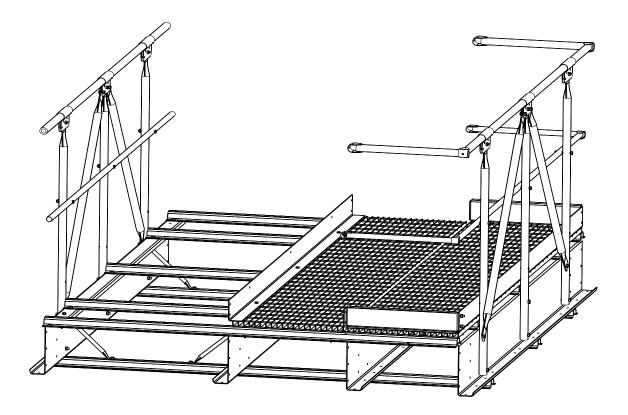


If the punched walkway location coincides with an end location, additional material must be removed on the formed down lip to avoid interference with the end top hat section cross member. See the End Module for a more detailed explanation.

5.9.2 Heavy Duty Service Platforms

Assembly of the Heavy Duty 3M Service Platform is the same as the Standard Duty Service Platform, except for the treatment of the handrails. As illustrated in Figure 43, the handrail components are assembled on the outside of the service platform in a manner consistent with the instructions provided for standard duty assemblies. Handrail and toe board to catwalk connections are as described in the Standard Duty section, but Heavy Duty Service Platforms have heavier top rails. They also utilize large corner clips and plastic end caps.

Figure 43. Completed 3M Heavy Duty Service Platform Module



5.9.3 Service Platform Insert Module

The service platform insert is a 3 m section that can be bolted onto the walkway side of a regular catwalk at almost any location. It is restricted to standard duty, bar grating walkway options only.

The hand and mid rails, vertical posts, toe boards and rail corner clips are provided with the primary catwalk. They are relocated to the outside of the service platform insert. Additional railing, toe board and corner clips are provided to reconnect to the primary catwalk.

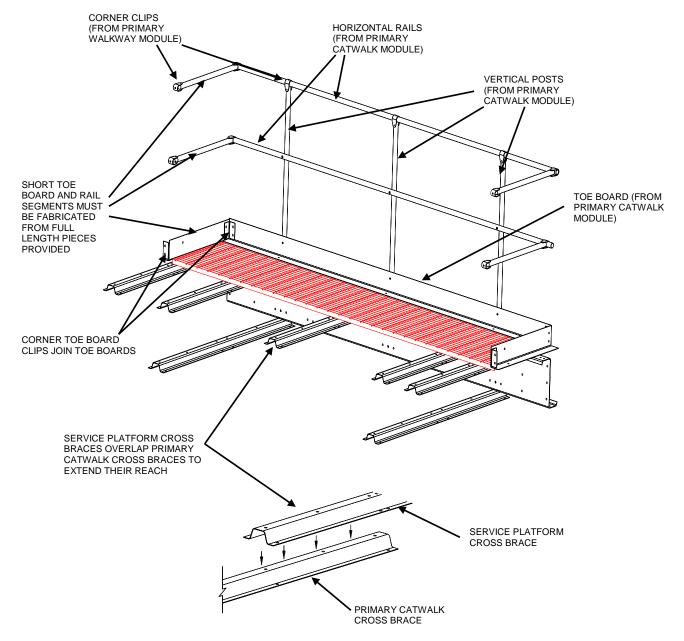
Catwalks are subject to load/span limitations and must be adequately supported. Check specific site drawings for required support locations

Service Platform Insert Assembly

The service platform insert comes with one additional Z-support beam, five top cross braces, and two bottom cross braces. (See Figure 44 on page 53) The cross section of the cross braces allows them to fit over the corresponding cross braces on the primary catwalk to extend their reach to accommodate the additional 650 mm (25.6') of walkway. The holes in the service platform cross braces align with existing holes in the primary catwalk cross braces. Once the cross braces have been extended, the rest of the assembly is consistent with the

information provided for the Standard Duty Service Platform with bar grating option. Note that the hand rails and toe boards provided with the service platform will need to be cut to accommodate the transition back to the primary catwalk. Corner toe board clips are provided to connect the toe boards.

Figure 44. Service Platform Detail



5.10. Cross Catwalk Modules

Cross Catwalk Modules allow for a 90° intersection of a primary catwalk and cross catwalk. Typically the connection is made to the walkway side of the primary catwalk. The intersection should only occur at a point of vertical support, such as at the peak ring, or at a tower, or grain bin goal posts. The combined load of the primary catwalk and of the intersecting catwalk needs to be taken into consideration when determining the suitability of the vertical support. Consult AGI Application Engineering for specific installation requirements.

Note

90° crossover sections can only be attached at a point of vertical support, such as at the bin peak ring, or at a tower, or grain bin goal posts. The first and last sections of the crossover must be the specially notched 3 meter ``Z`` sections. Standard sections can be used to complete the span but may need to be cut to fit.

The cross catwalk module can be arranged such that the conveyor support section is on the right or left side of the walkway by rotating it end for end. Both ends of the mating "Z" beams on the Cross Catwalk Module are notched to avoid interference with the lower "Z" beam flange on the primary catwalk.

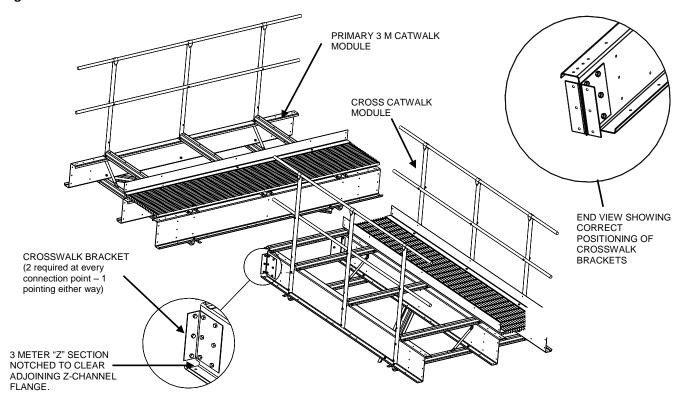
5.10.1 Standard Duty Cross Catwalk Module Assembly

The Cross Catwalk Module is initially assembled in the same manner as the primary catwalk modules. The notched ends of the Z-beams are positioned on the bottom. The primary structural connection between the primary catwalk and the mating Cross Catwalk Module is made with the use of the Crosswalk Bracket angles as illustrated below. There are two Crosswalk Brackets at every Z-beam connection point: one pointing in each direction.

When mating a Cross Catwalk Module with a 3m Catwalk Module, the Cross Catwalk Module center Z-beam aligns with the Catwalk Module center vertical post bolt holes. Once this connection is made, the rest of the holes should align, eliminating the need to drill holes.

Figure 45 on page 55 illustrates the structural connection between a standard 3 m Catwalk Module and the mating Cross Catwalk Module. Use 3/8" x 1" bolts and flanged nuts to make the connections.

Figure 45. Cross Catwalk Module Connection



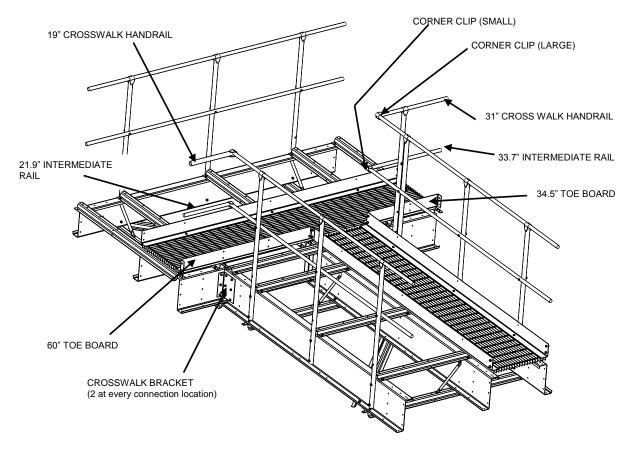
The Cross Catwalk module can also be located at other locations on the standard 3 m Catwalk Modules and on the standard 6 m and 9 m modules. However the mating holes at the Z-beam connection points will need to be field drilled.

Some handrail and toe board components on the primary catwalk sections will become redundant once the connection is made. These can be set aside for use elsewhere if required. If the point of installation does not coincide with the center of a 3 m standard catwalk module, these parts can be cut as required to make up the gaps between the point of cross walk insertion and the primary catwalk components

Once the structural connection is completed, the balance of the parts can be added to complete the assembly. This includes handrail, mid-rail and toe board components as illustrated below. The corner connections on the rails are made as illustrated elsewhere. Toe boards also bolt together at corners using 3/8" x 1 bolts (with adhesive strip) and flanged nuts. Bolt heads go towards the inside with nuts on the outside.

Figure 46 on page 56 shows the added components needed to connect modules together to create a completed cross-over assembly.

Figure 46. Components Needed to Connect Modules



Note

- Every exposed handrail end needs to fitted with the appropriate end plug
- Every corner clip needs to be secured with self-tapping screws (3 per clip)

The Cross Catwalk Module can also be attached to the Walk-Around Module as illustrated below. The Walk-Around Module is typically assembled as part of the primary catwalk. The Cross Catwalk Module is then added as per the instructions provided above. Note the additional parts to complete handrails, mid-rails and toe boards. These are provided as part of the Walk Around Module.

Figure 47 on page 57 illustrates a completed Cross Catwalk connection to a Walk Around Module.

SECONDARY SHORT
HANDRAIL

PRIMARY SHORT
HANDRAIL

SELF TAPPING
SCREWS

Figure 47. Completed Cross Catwalk Connection to a Walk Around Module

CORNER CLIP

END PLUG

Once the cross connection is established, the center section of the cross catwalk can be any combination of standard 3 m, 6 m and 9 m catwalk modules. It may be necessary to shorten a module in order to fit the space between primary catwalks. If this is required it is recommended that the end of a standard module be shortened as required. Holes in the Z-section will need to be drilled to match the standard ends. Other components will need to be shortened as required.

Punched Walkway Version

The punched walkway version of the Standard Duty Cross Catwalk Module (see Figure 48 on page 58) is assembled in the same manner as above, except that the integral toe board on the primary punched walkway must be removed (i.e. cut out) at the point where the intersecting punched walkway meets it. Corner toe board splices are provided to connect the intersecting toe board locations. Since the cut edge is weakened with the removal of the integral toe board, this section must be supported underneath. This can be achieved by utilizing a surplus hat section. Cut the hat section to fit and bridge between existing laterally positioned top hat section cross members to provide longitudinal support at the punched walkway intersection point. Secure with self-drilling screws.

CUT AWAY THE INTEGRAL TOE BOARD ON BASE CATWALK MODULE AT CONNECTION POINT. SUPPORT THE INTERSECTION LOCATION BY BRIDGING UNDERNEATH.

PUNCHED WALKWAY

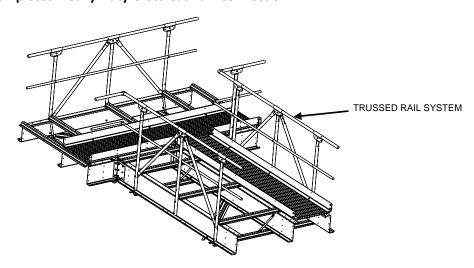
INSTALL CORNER TOE BOARD SPLICES

Figure 48. Punched Walkway Version of the Standard Duty Catwalk Module

5.10.2 Heavy Duty Cross Catwalk Module Assembly

The assembly of the heavy duty version is identical to the standard duty version except for the treatment of handrails, which feature the trussed handrail concept and a heavier handrail. The installation of these elements remains consistent with the information provided for the Heavy Duty Standard Catwalk Modules. The heavier handrail connections are made utilizing larger corner clips and plastic end caps. A completed Heavy Duty Cross Catwalk connection is illustrated in Figure 49 on page 58.





5.10.3 Cross Catwalk Variations

There are walkway only modules featuring a single walkway (650 mm (25.6")) wide or a double walkway (1300 mm (51.2")) wide which can be utilized in a cross configuration. The assembly of these modules is provided elsewhere. The cross walkway connections are essentially the same as provided above. Cut the set aside handrails and toe boards from the primary catwalk to fill in necessary gaps as provided above.

5.11. Peak Ring Support Module

When supporting a catwalk at the peak ring location on a grain bin, one of five Catwalk Peak Ring Support Modules must be specified. The different sizes correlate with the three different peak ring diameters, whether the roof is non-structural or structural and the maximum loads capable of being supported by the peak ring support module as indicated below.

Table 1. Peak Ring Maximum Loads — Non-Structural Roofs

Part Number	Bin Diameter	Peak Ring Diameter	Maximum Load
213140	15' to 27'	840 mm (33")	15' to 24' – 3,600 kg (8,000 lbs) 27' — 4,500 kg (10,000 lbs)
213392	15' to 27'	840 mm (33")	15' to 24' - 3,600 kg (8,000 lbs) 27' — 4,500 kg (10,000 lbs)
213141	30' to 48'	1320 mm (52")	4,500 kg (10,000 lbs)
213142	51' & 54'	1525 mm (60")	5,400 kg (12,000 lbs)

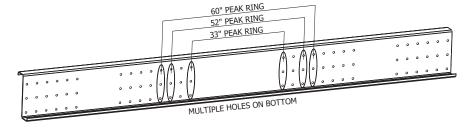
Table 2. Peak Ring Maximum Loads — Structural Roofs

Part Number	Bin Diameter	Peak Ring Diameter	Maximum Load
213143	48', 60' to 96'	1320 mm (52")	27,200 kg (60,000 lbs)
213144	51, 54, 102 to 108'	1525 mm (60")	27,200 kg (60,000 lbs)
213145	60' to 96'	1320 mm (52")	13607 kg (30000 lbs)
213146	102' to 108'	1525 mm (60")	13607 kg (30000 lbs)

Standard Catwalk Peak Support Modules consist of two Z-beams, four support beams and associated hardware. The Z-beams are common to all sizes. The support beams are unique to each peak ring diameter.

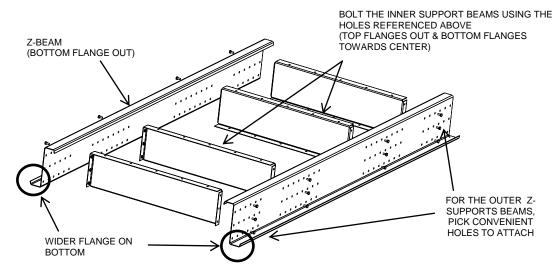
The same Z-beams are also used at the top of catwalk eave support posts and corresponding knee braces so there are a number of holes punched for different applications. The following provides a guide as to which holes are utilized for the assembly of the seven Catwalk Peak Ring Support Modules.

Figure 50. Z-Beam indicating holes for assembly



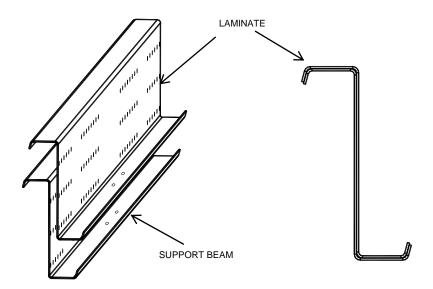
When assembling the Catwalk Peak Support Modules, the wider Z-flange on the beam is located on the bottom and pointing outwards. Conversely the mating support beams flanges are pointing outwards at the top and inwards at the bottom. Bolt the parts together as illustrated utilizing $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " bolts and flanged nuts.

Figure 51. Orientation of the Z-beams



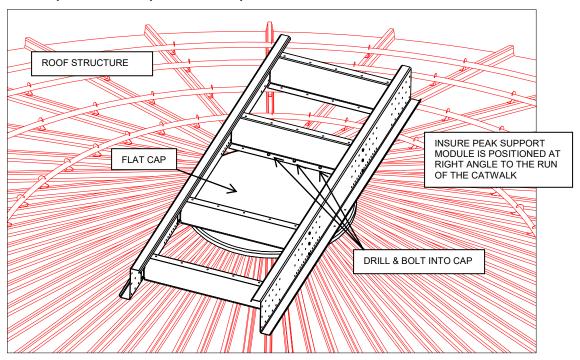
For the structural roofs involving large vertical load transfers (213143 & 213144) of greater than 13600 kg (30,000 lbs), the Z-beams will be required to be a double section. For these applications a Z-laminate is provided. Two mating Z-sections will nest together as illustrated. The balance of the assembly is as indicated above.

Figure 52. Doubling the Z-beams



Next, center the completed assembly on top of the flat cap and mark all of the hole locations. Field drill holes and bolt the channel assembly onto the flat cap using $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " bolts and nuts. Secure the flat cap to the peak ring as provided in the corresponding grain bin manual such that the supporting Z-channels are perpendicular to the direction of the catwalk. Additional support is also required as provided below.

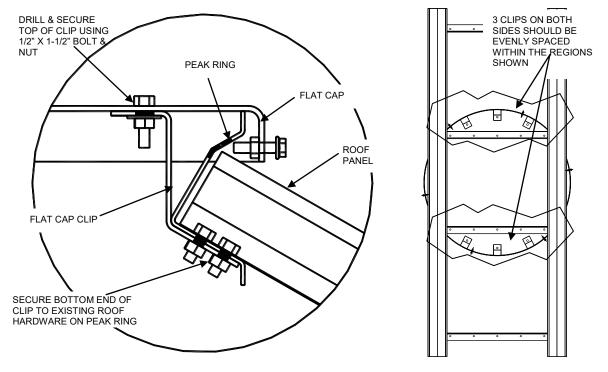
Figure 53. Completed assembly on the flat cap



5.11.1 Non-Structural Roofs

Flat Cap Clips (213437) are provided to aid in the securing of the flat cap to the peak ring. The clips are oriented as illustrated in Figure 54 on page 62. The bottom two holes pick up on the existing 5/16" hardware used to secure the roof panels to the peak ring. The upper hole must be drilled into the flat cap and secured with a ½" x 1½" bolt and nut. The location of the clips is flexible. However they should be distributed such that they provide lateral support to the catwalk as shown. Place three clips on either side of the flat cap.

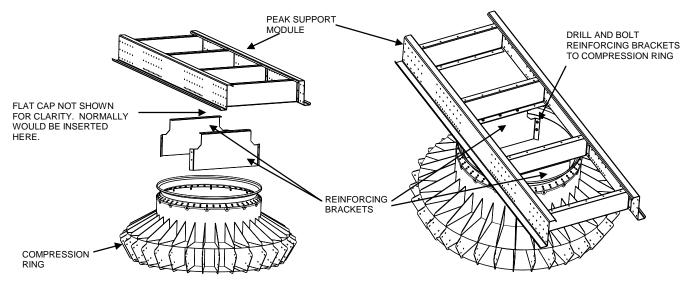
Figure 54. Connecting flat cap clips to peak ring



5.11.2 Structural Roofs

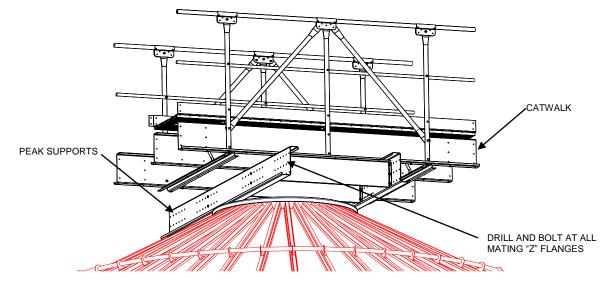
Two reinforcing brackets (provided) are installed underneath the flat cap. They utilize the same bolts that secure the peak support to the flat cap. The reinforcing brackets provide vertical and lateral support across the peak ring. They must be drilled into the compression ring as illustrated (flat cap not shown for clarity). Secure with $\frac{1}{2}$ " hardware.

Figure 55. Peak support to peak ring connection



When positioning the catwalk onto the Peak Supports the catwalk Z-support beams should be sitting squarely on, and at right angles to, the Z-beams of the Catwalk Peak Support Module. Field drill $\frac{1}{2}$ " holes through the mating Z-flanges at all mating locations and secure with $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " bolts and nuts.

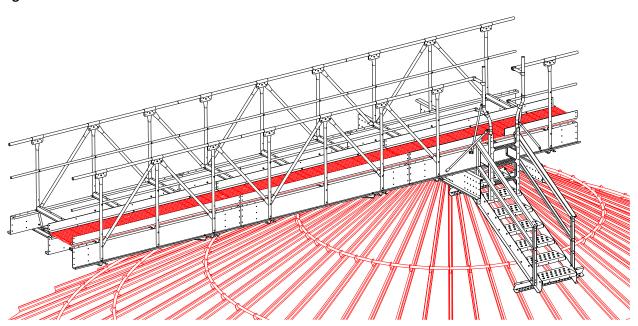
Figure 56. Positioning the catwalk on the peak supports



A hole can be cut through the flat cap top to accommodate spouting. If the spouting interferes with top or bottom catwalk hat sections at this location then they can be removed or cut to accommodate.

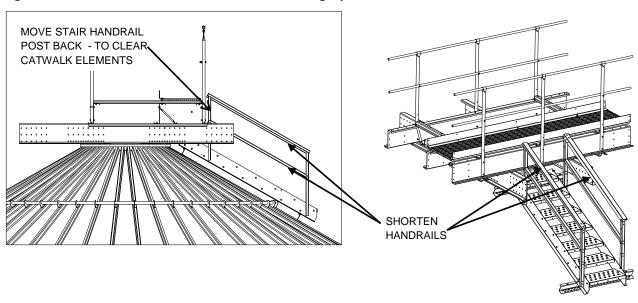
5.12. Catwalk Access

Figure 57. Catwalk Peak Access Module



Accessing the catwalk at the peak of the grain bin involves reaching the location utilizing roof cleats on the grain bin roof, or a roof stair system (shown), which are provided separately. Given the variety of components and options that could be present at this location, and the variety in the positioning of these components relative to each other, some field modifications and fitting will be necessary. Different options are explored below. Also, the components of the walkway may interfere with the hand rail components of the stair system. Local modification of interfering stair system handrail components may be required. This may entail repositioning the upper handrail posts to a lower position along the stair stringers and shortening the handrail and mid-rails to accommodate. The stair stringer itself may also require shortening.

Figure 58. Catwalk Peak Access Module Positioning Options



5.12.1 Ladder Positioning

At the peak location, the best catwalk access is likely from the side, on the walkway side of the catwalk. However access through the end of the catwalk is possible if the catwalk is terminating at the grain bin peak. A single 44" ladder section (234500) is provided to span from the roof cleats, or stair system to the catwalk walkway. In most cases the single ladder section is all that will be required. However an extra section may be required (must be ordered separately) if for example access is being made through the catwalk end and the catwalk is extending beyond the peak location by a significant amount. If more than one ladder section is required, additional support of the ladder rails may be required with the use of angles or tubes bolted along the ladder rails. An unsupported ladder rail segment should not exceed 60".

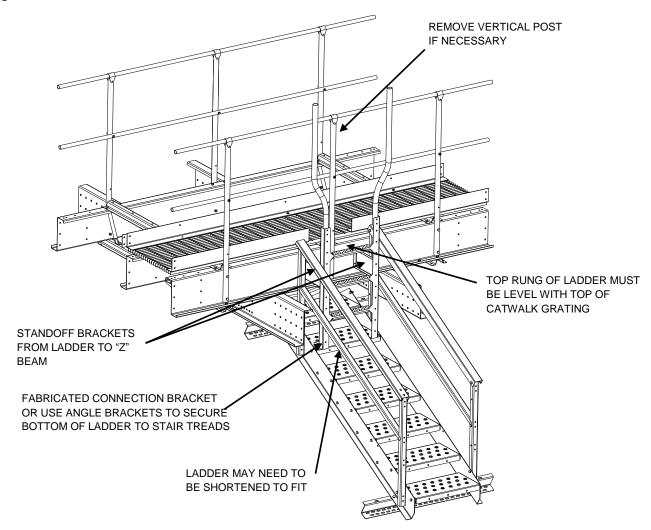
5.12.2 Securing the Top of the Ladder

The ladder section needs to be in a vertical position, or very close to it, and the back of the ladder rungs must clear any points of potential interference (such as the outward formed flanges of the catwalk Z-beams) by at least 7".

Access from the Side of the Catwalk

Standoff brackets (213065) are provided which can be attached to the Z-beams if accessing from the side, and which will provide the necessary clearance. The top ladder rung should also be positioned level with the catwalk walkway surface, which means that the bottom of the ladder section will likely need to be cut to fit. Some vertical positioning to accommodate the rung spacing at the top and the bottom may be necessary. Field drilling will be required to secure the standoff brackets to the Z-beams and to the ladder rails.

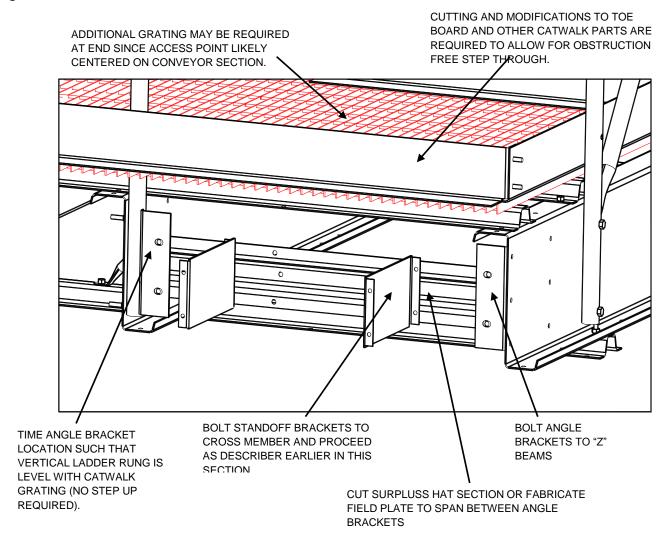
Figure 59. Access from the side of the catwalk



Access from the End of the Catwalk

Two angle brackets (213409) have been provided that can be used to bolt into the ends of the two Z-beams on either side of the entry point, as illustrated. A surplus hat section can then be cut to fit between these same Z-beams. If a surplus hat section is not available a field manufactured section spanning between the Z-beams will be required. Drill and bolt the hat section to the angle brackets (hat section pointing inwards). The standoff brackets can now be bolted to the flanges of the hat section and support the upper end of the ladder. The timing should be such that the ladder is positioned at least 7" away from any interference behind and the top ladder rung is level with the catwalk grating.

Figure 60. Access from the end of the catwalk



5.12.3 Securing the Bottom of the Ladder

The bottom of the ladder also must be secured. If utilizing roof cleats, the ladder can be secured to the flat side of the appropriate mating roof cleat utilizing a field fabricated connection plate as shown. The roof cleat will need to be field drilled to bolt to the connection plate. If the roof cleat is not positioned conveniently, it can be relocated down the roof rib to the correct location. If repositioned, field drilling of the cleat into the roof ribs will be required.

Figure 61. Mating to roof using fabricated connection plate

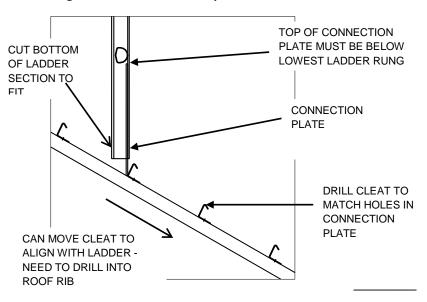
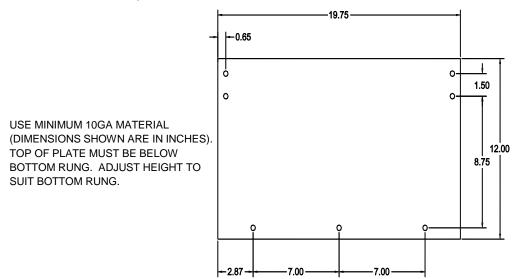
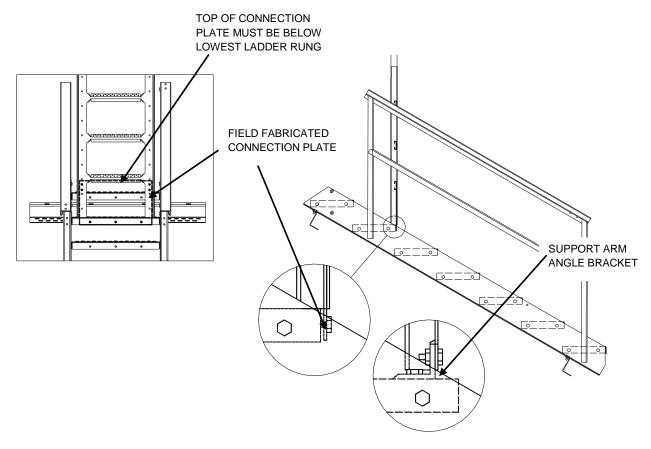


Figure 62. Fabricated connection plate



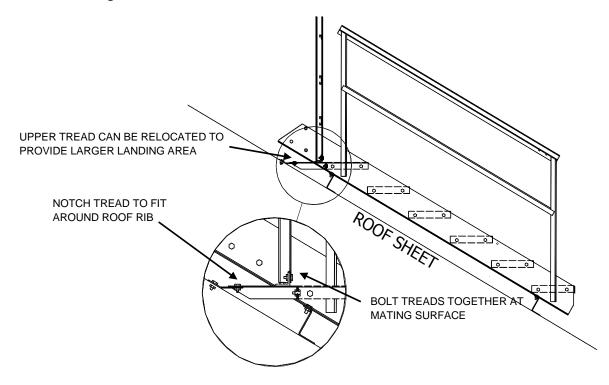
If mating to a AGI roof stair system, the same field fabricated plate can be used to bolt to the front or back of stair treads to secure the bottom of the ladder. If the treads are not positioned ideally then field modification may be necessary to lengthen the standoff clip (by shimming), and/or reposition the connection plate relative to the stair tread (by shimming). Another option is use the small ladder support arm angle brackets (234518) or field fabricated bracket, to secure the ladder rails directly to the top surface of the a stair tread. Field drilling of the ladder section rails to accommodate the hole positioning of the angle brackets or connection plate may be required.

Figure 63. Mating to roof stair using connection plate or support arm angle bracket



There are timing factors that affect the relative positioning of the access ladder to the roof stair (roof diameter, type, width and positioning of catwalk, roof ladder starting point, roof ladder package). If desirable, a roof stair tread can be lowered and bolted onto the next lower tread to create a larger landing area at the bottom of the vertical ladder. The front edge of the relocated tread will likely interfere with the roof ribs. The tread can be notched to accommodate the ribs. Once assembled the two treads should sit level with each other. The ladder can then be extended to mate with the combined treads.

Figure 64. Positioning the access ladder



5.12.4 Access Step

An access step is provided to bridge between the catwalk grating and the access ladder.

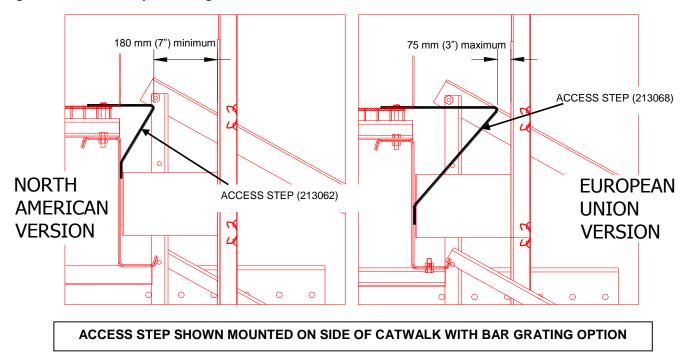
The distance between the top ladder rung and the grating is governed by codes that vary between jurisdictions. In North America the distance is 180 mm (7") minimum to provide toe clearance. In Europe the distance must be no greater than 75 mm (3"). The top rung of the ladder should be installed such that it is timed with the grating level. This is particularly important for the European version as the access step could be a point of interference if it is out of sequence. For this reason there are two different access step part numbers: one for North America (213062) and one for Europe (213068).

The access step can be used with both grating styles, and whether the point of access is through the side of the catwalk or the end of the catwalk.

When utilized with bar grating the upper portion of the access step sits on top of the grating and the side rests against the Z-beams when accessing the catwalk from the side. Along the top edge secure to the grating with 3/8" bolts and nuts (pilot holes will need to be drilled larger to accommodate). Use flat washers (235372) under the grating to bridge between grating bars. The lower end of the access step can be secured with self-drilling screws into the Z-beam. When accessing from the end of the catwalk the lower end of the access step may need to be supported between the ends of the Z-beams with a field fabricated support which can be timed with the support of the standoff brackets (as described earlier).

When utilized with a punched walkway and entering from the side, the walkway toe boards are cut away to permit access, thereby weakening the entrance point. The access step strengthens this area. Secure with self-drilling screws through the pilot holes along the top edge. The same applies when accessing the end of the punched walkway. The lower portion is attached in the same manner as described above for the bar grating.

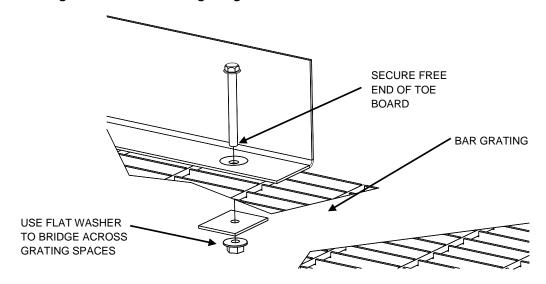
Figure 65. Access step mounting



5.12.5 Bar Grating Walkway Considerations

The toe board will need to be trimmed at the point of access. Both of the free ends of the toe board on either side of the point of access must be secured to the bar grating. Drill holes at the free end and secure to the bar grating. Flat washers (235372) are provided to bridge across the grating openings underneath the grating to permit bolting. An optional access step (213062) is also provided. Enlarge the top 3 holes of access step (from \emptyset 0.25" to \emptyset 0.406") for 3/8" bolts and flanged nuts. The top end of the access step is secured to the entrance portion of the bar grating by bolting through the grating as just described above (field drill holes where appropriate). The lower end rests against the Z-beam. Secure into the Z-beam with self-drilling screws.

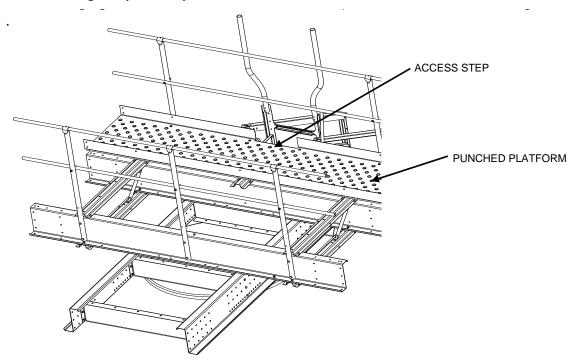
Figure 66. Securing the toe board to bar grating



5.12.6 Punched Platform Walkway Considerations

The integral toe board on the side of the punched walkway must be cut way to permit access. Use the access step (213062) to reinforce the opening. Lay the access step on top of the punched platform at the opening such that the lower end is resting against the Z-beam. Secure at the top and bottom with self-drilling screws.

Figure 67. Connecting to a punched platform



5.12.7 Ladder Pass-Through Rails

The ladder pass through rails (234505) bolt to the top second and third holes of the ladder side rails as illustrated. They are also secured with the use of ladder support arms (234504) and long braces (234176), which are attached to the pass through rails with ladder support arm clips (234517) as illustrated. The other end of the support arms need to be tied into structural elements on the catwalk such as Z-beams, toe boards, vertical posts, handrails, etc. This is usually facilitated with the use of support arm brackets (234518) which are secured to the structural elements. The positioning and securing of the above elements is a field requirement. Insure the pass through rails are secure.

Figure 68. Ladder to pass-through rails connection

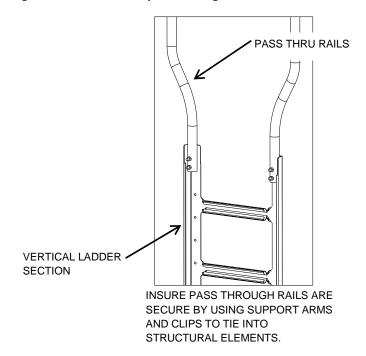
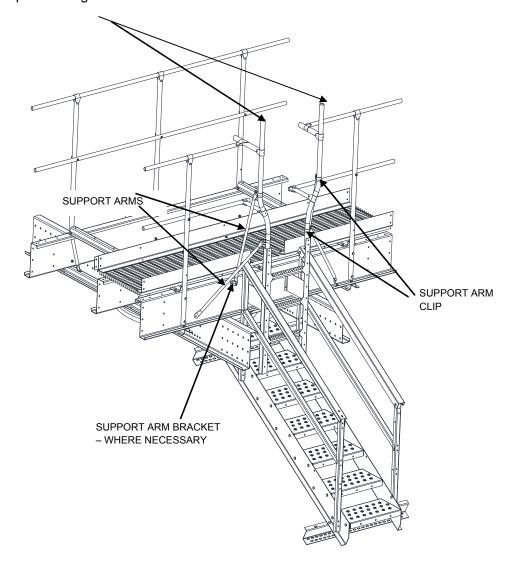


Figure 69. Positioning and securing ladder pass-through rails

Place plastic end caps (234559) on the tops of the pass through rails.



5.12.8 Catwalk Handrail Considerations

Ideally the point of access to the catwalk does not occur at a location where there is a vertical handrail post, but if it does, the post will need to be removed.

5.12.9 Catwalk Self-Closing Gate Installation

- 1. Cut a 27.5—inch opening in the midrail.
- 2. Cut an opening in the handrail with the following width:
 - 31" for heavy duty catwalk
 - 30.25" for standard duty catwalk

Note

The cut away sections of handrail and midrail will be used later to fabricate new short rail to post elements.

- 3. Position two angle sections (213063) to span between the handrail and midrail at the corner locations on both sides of the opening. The one side surface of the angle section faces the catwalk, the other faces the cut opening.
- 4. From the midrail cut away section, cut short piece to span between the midrail and the pass-through rail (234505). Make sure that the new short midrail butts into the midrail at a right angle. Secure the short piece to the midrail and pass-through rail using midrail corners (213031) and 0.25" self-tapping screws (157042).

Note

Do not fasten 0.25" self-tapping screws (157042) into the center hole of the two midrail corners before the angle sections are applied.

5. From the handrail cut away section, cut short piece to span between the angle section and the pass-through rail (234505). Make sure that the angle section is vertical. Secure the short piece to the handrail and pass-through rail using handrail/midrail corners (213029/213031) and 0.25" self-tapping screws (157042).

Note

Do not fasten 0.25" self-tapping screws (157042) into the center hole of the two handrail/midrail corners before the angle sections are applied.

- 6. Secure the top edge of the angle section to the handrail, see Figure 70 on page 76:
 - a. For the side of the angle section facing the catwalk (213063): use a support arm bracket (234518) and 0.25" self-tapping screws (157042) to secure the angle section to the new short handrail piece.
 - b. For the side of the angle section facing the pass-through opening: fasten 0.25" self-tapping screws (157042) through the surface of the angle section, the handrail corner and the new short handrail piece.
- 7. Secure the lower portion of the angle section to the midrail using 0.25" self-tapping screws (157042) through the surface of the angle section, the midrail corner and the midrail.

Note

The connection at the handrail and midrail corners are made by 0.25" self tapping screws (157042).

Figure 70. Attaching the Angle Sections and Short Rails

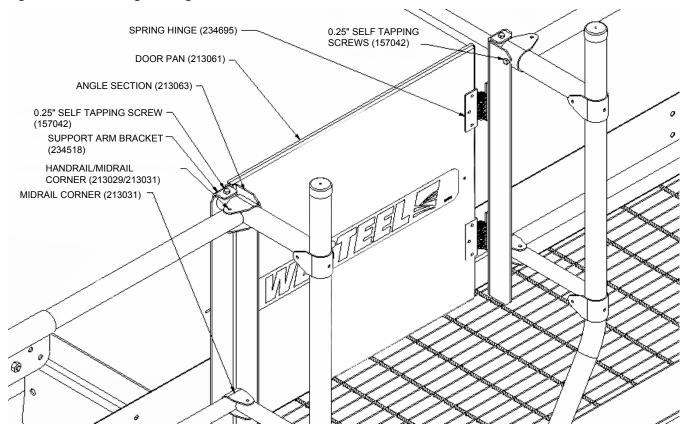
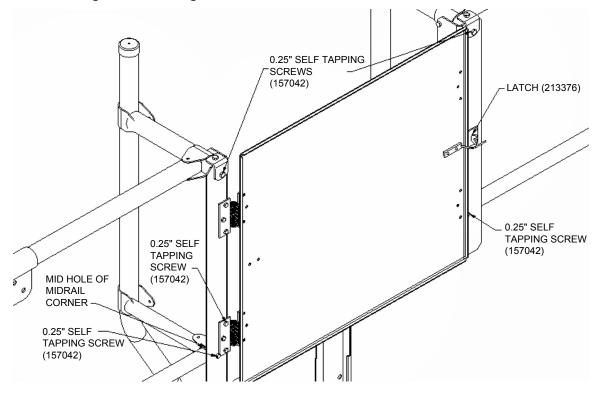


Figure 71. Mounting the Self-Closing Gate



8. Bolt the spring hinges (234695) and latch handle (213376, part 1 of latch) on the door pan (213061) using the 0.25" hardware (bolt PN: 235901 & nut PN: 154156) and #10-24 hardware (bolts PN: 154005 and nuts PN: 150008) provided, respectively, and make the door pan flange inside toward the catwalk.

- 9. Position door pan so that the bottom edge is not more than 19" (483 mm) from the walking surface of the catwalk. Mount the spring hinges (234695) on the other angle section using the six 0.25" self tapping screws (157042).
- 10. Put one or two spacer washers (193775) between the angle section and the latch lock for each of the four #10-24 hardware (154005 and 150008). Mount the latch lock (213376, part 2 of latch) on the angle section using the four #10-24 hardware (154005 and 150008) and make sure that the latch lock best matches the latch handle.
- 11. Make sure that the overlap between door pan and the angle section surface is not less than 0.5".
- 12. Adjust the spring hinge strength to your requirement.

5.12.10 Heavy Duty Catwalk Access Variations

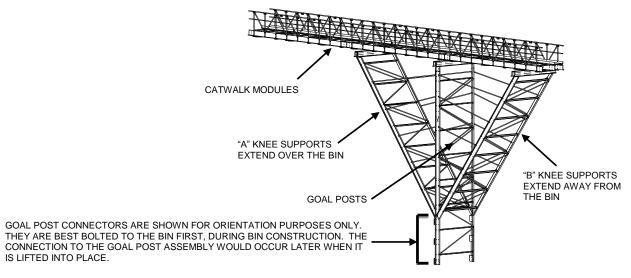
The insertion of a peak access point in a heavy duty catwalk system remains essentially the same as described above. The diagonal brace tube(s) at the point of insertion will need to be removed. Heavier corner clips will need to be used to accommodate the heavier handrail tube.

5.13. Goal Post and Knee Brace Modules

Goal posts are the vertical structural supports that span from the eaves of the grain bins to the overhead catwalks. Knee supports are angled supports that are used to minimize the free spans of the catwalks.

The lower end of knee supports tie into the goal posts at a point just above the grain bin eaves and then angle upwards to tie into the catwalks. There are different configurations and combinations of goal posts, knee supports, and related bracing. Each configuration is dependent on the loads being carried, the allowable catwalk free spans, site specific requirements, etc. Consult specific site layouts to determine the appropriate layout.

Figure 72. Goal post and knee brace modules



Two important variables are capacity and spacing. There are 44.5 kN (10,000 lb) and 89 kN (20,000 lb) capacity systems. The two vertical goal post supports can be located on adjacent uprights (single spacing), or spaced two uprights apart (double spacing). The bin layouts and their angular positioning must match the selected spacing. Check the site specific layouts. The following are the goal post options presently available.

- 44.5 kN (10,000 lb) capacity on adjacent uprights from 4.6 m (15') through 33m (108')
- 44.5 kN (10,000 lb) capacity spaced 2 uprights apart from 16.5 m (54') through 33m (108')
- 89 kN (20,000 lb) capacity on adjacent uprights from 9.1 m (30') through 20.1 m (66')
- 89 kN (20,000 lb) capacity spaced 2 uprights apart from 16.5 m (54') through 33 m (108')

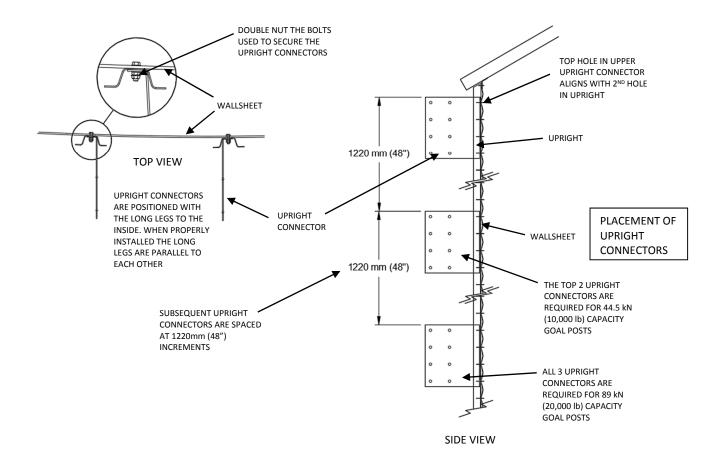
5.13.1 Connection to the Grain Bin

Goal posts connect into the grain bin uprights using upright connectors which bolt into the center section of the upright hat sections utilizing the same hardware that connects the uprights to the grain bin walls (3/8" x 1 ½" hex bolts). For this reason *the best time to attach the upright connectors is at the same time the uprights are bolted to the bin*. If retrofitting an existing bin, the appropriate connection points will need to be disassembled to facilitate the addition of the upright connectors. Ensure the bin structure is capable of supporting the loads.

Upright connectors are angled to match the curvature of the bin so there are unique connectors for every bin diameter. Make sure the connector part numbers match the bin diameter in question.

The timing and location of upright connectors is also important. Since the upright connectors are potentially being installed well in advance of any subsequent catwalk considerations, consult the site layouts to insure that later repositioning of the connectors is averted.

Figure 73. Placement of upright connectors



For 44.5 kN (10,000 lb) capacity connections there are two upright connectors per upright (See Figure 73 on page 78). For 89 kN (20,000 lb) capacity connections there are three upright connectors per upright. In both cases the top hole in the upper upright connector aligns with the second bolted hole in the mating upright as illustrated. The next lower upright connector is then positioned 1220 mm (48") lower (measured from top of connector to top of connector) on the upright and bolted in. The third upright connector (for 89 kN (20,000 lb) capacity connections only) is positioned another 1220 mm (48") lower (again measured from top to top) and bolted in.

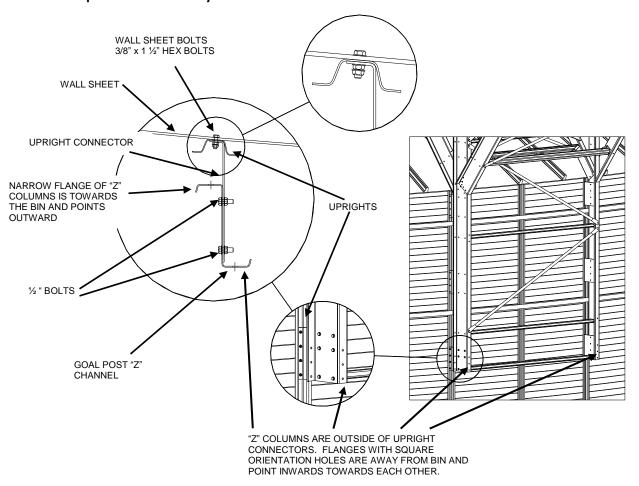
Note

All bolts used to make the upright connector connections should be double nutted such that the outer nut serves as a jam nut.

5.13.2 Goal Post Assembly

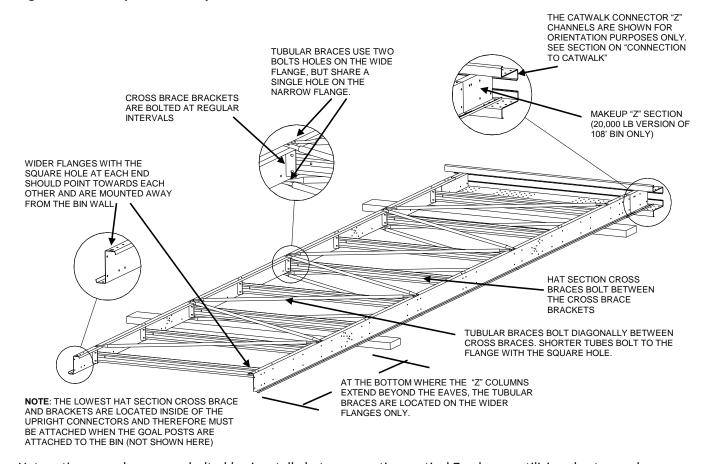
The goal posts are best assembled separately and then hoisted into position as an assembled unit. Therefore attention to the orientation and timing of mating components is essential to prevent assembly errors. When the goal posts are eventually attached to the upright connectors the flanges on the vertical Z-columns are positioned on the outside of the upright connectors (see Figure 74 on page 79). Therefore the flanges on the Z-sections that are closest to the bin must point away from each other (this is also the narrower flange). This means that one of the pair of vertical columns that make up a goal post assembly must be flipped end to end. To facilitate assembly a square orientation hole is punched on each end of the vertical Z-columns, on the wider flange. When properly assembled, the flange on the vertical Z-columns with the square holes should be furthest away from the bin and pointing towards each other.

Figure 74. Goal post to bin assembly



Therefore, when assembling the goal posts, first position the vertical Z-columns in a flat area with the correct orientation to each other. Use the square orientation holes to aid in this process. It is recommended that the wider flanges with the square holes are pointing upwards and with the flanges pointing towards each other (see Figure 75 on page 80). The balance of the goal post assembly consists of bolting on horizontal hat sections at regular intervals and tubular cross braces along the length of the goal post.

Figure 75. Goal post assembly



Hat section cross braces are bolted horizontally between mating vertical Z-columns utilizing short cross brace brackets. The brackets are bolted to the inside surface of the Z-columns first and then the hat section cross braces are bolted on as illustrated. The hat sections are located at regular 60" intervals along the length of the Z-columns. There is a pair of holes at these locations. These holes should not be confused with the tubular brace holes which are also located in the center web portion of the Z-columns. The lowest hat section will interfere with the eventual connection to the upright brackets and must be attached after the goal posts are assembled to the bin. Consult specific site layouts for clarity on the positioning of parts.

Tubular braces span diagonally along the length of the Z-columns as illustrated. There are two lengths. The shorter braces span between the wider flanges that are pointing inwards. The longer braces are on the narrower flanges. On the wider flanges pointing inwards the tubular braces have a separate bolt hole location at every connection. On the narrow flange pointing outwards the tubular braces share a single bolt hole where they meet. On the lower end of the assembly where the goal posts would extend below the eave of the bin, the tubular braces are only located on the wider flanges that are away from the bin.

Note

The Z-columns for the 89 kN (20,000 lb) version of the 108' diameter bin only consists of two pieces due to the excessive length. To extend the column insert the short makeup Z-section into the long Z-column as indicated in Figure 75 on page 80 and bolt together.

5.13.3 Knee Support Assembly

As shown in Figure 76 on page 81, Knee Supports come as "A" (bin side) or "B" (away from bin) and both attach to the goal post at their bottoms ends near the eave. Their assembly is similar to the goal posts except that the square orientation holes are in the narrower flanges.

Figure 76. A and B Knee Supports

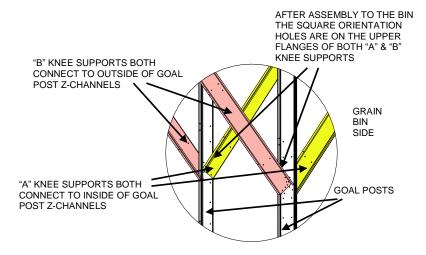
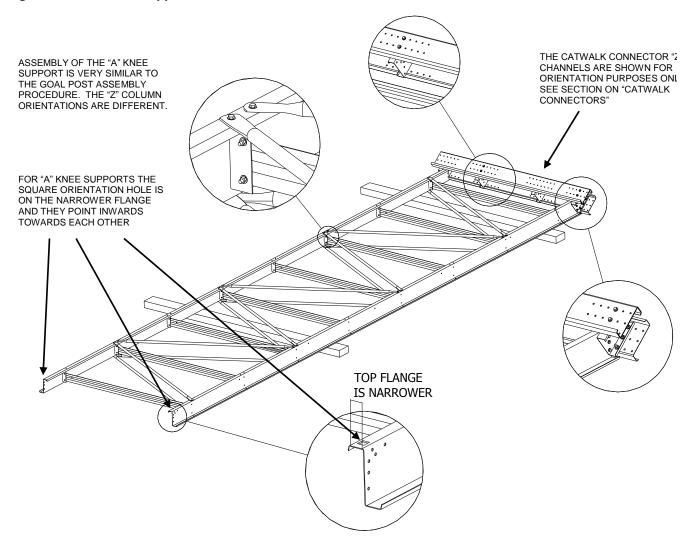


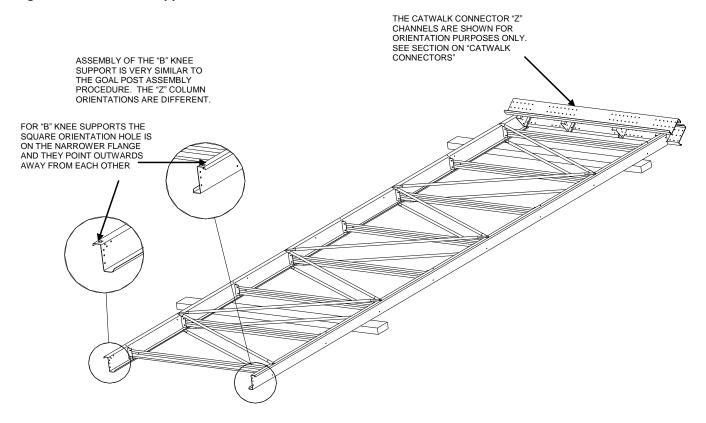
Figure 77. "A" Knee Support



Note

All Z-Channels are identified with part numbers either etched or on a printed label to identify them. See the charts at the back of this manual for a list of parts.

Figure 78. "B" Knee Support



5.13.4 Catwalk Connectors

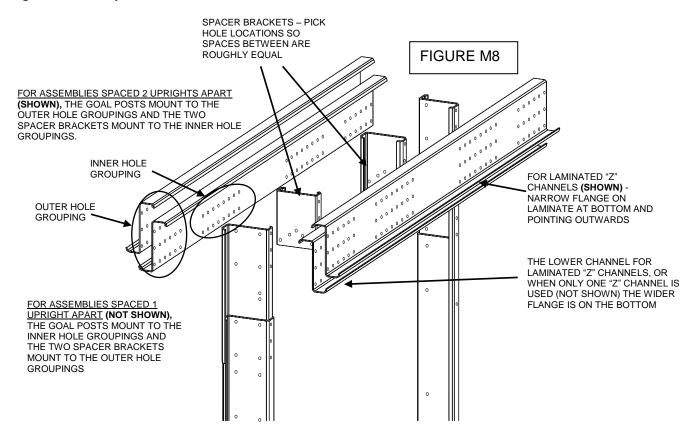
The connection to the catwalk is made using the same Z-channels that are used at the peak ring support location except that they are attached to the top of the goal post and knee supports. The orientation of the Z-channels and upgrade methods are similar. A review of the Peak Ring Support Module is recommended.

When making a standard connection at the upper end of a goal post (Figure 79 on page 84), position the Z-channels (213401) such that the wider Z-flange is located at the bottom and pointing outwards. There are multiple hole locations within the Z-channels to accommodate site specific positioning requirements. Bolt the Z-channels to the goal post columns using a suitable set of holes. When mating to a goal post assembly that is attached to adjacent uprights (i.e. single spaced uprights), the inner hole groupings should be utilized. When mating to a goal post assembly attached to uprights spaced 2 apart then the outer hole groupings should be used.

In some cases involving large vertical load transfers the Z-channels will be required to be a double section. Two mating "Z channels, (the original Z-from above and the corresponding laminate (213402)) will nest together to increase the strength as illustrated in the Peak Ring Support Module and as illustrated in Figure M8.

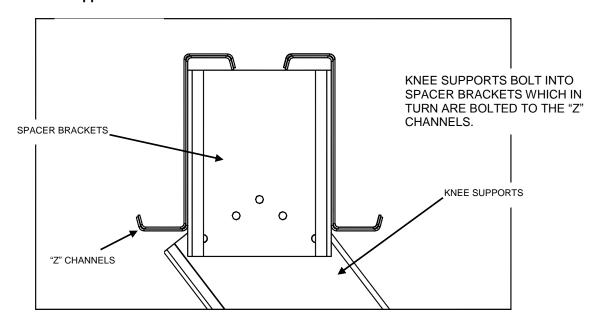
The mating Z-channels are then further strengthened by inserting and bolting a spacer bracket in between. When mating to a goal post assembly attached to adjacent uprights, the spacer brackets should be attached at the outer hole groupings, one at either end. When mating to a goal post assembly attached to uprights spaced 2 apart then the spacer brackets should be attached to the inner hole groupings, one within each grouping (as illustrated in Figure M8). Choose the holes so the spacer brackets are roughly equally spaced with goal posts.

Figure 79. Goalpost to catwalk connection



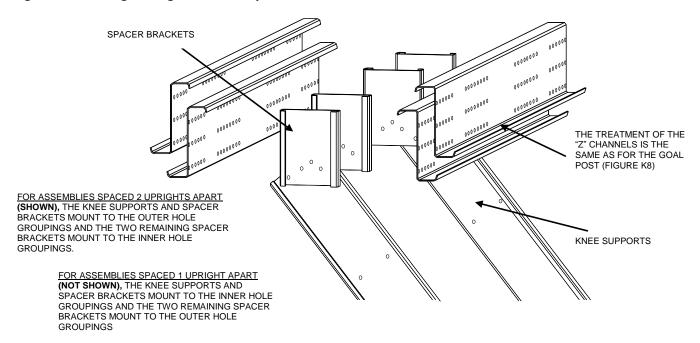
The same Z-channel configuration is also used for connecting the knee supports to the catwalk, only now the spacer brackets are also used to make the connection between the knee support Z-columns and the Z-channels as illustrated (see Figure 80 on page 84). First bolt the spacer brackets to the ends of the knee support Z-columns in the correct orientation. Then bolt on the Z-channels using the same bolt hole locations as selected for the goal post attachments.

Figure 80. Knee support to catwalk connection



As with the Z-channels used for the goal post location, the channels can be strengthened with the addition of a laminate. Also the channels must be strengthened with the insertion of spacer brackets in between the Z-channels within the hole groupings not already occupied by the attachment to the knee supports (see Figure 81 on page 85).

Figure 81. Strengthening Z-channels by lamination



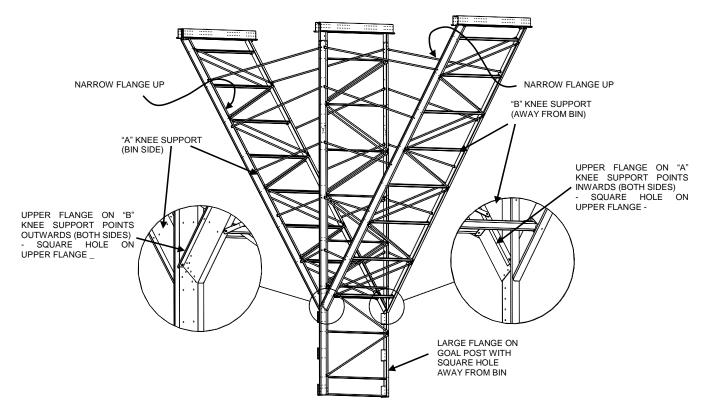
Finally, when connecting to the catwalk, the catwalk Z-support beams should be sitting squarely on, and at right angles to, the Z-channels of the above goal post and knee brace assemblies. If there is interference with any of the hat section braces on the bottom of the catwalk, then these hat section braces can be removed. Field drill ½" holes through the mating Z-flanges at all mating locations and secure with ½" x 1 ½" bolts and nuts.

5.13.5 Connecting Goal Posts and Knee Supports

Orientation of the various Z-columns with respect to each other is critical. If interference occurs when making the following connections then the original assemblies may be wrong.

When assembled to the goal posts <u>the "A" knee supports are positioned such they are on the inside of the vertical Z-goal post columns</u>. Conversely <u>the "B" knee supports are positioned on the outside of the vertical Z-goal post columns</u>. Note that in both cases the narrow flanges with the square holes are facing up.

Figure 82. Connecting the A and B knee supports to the goal post column

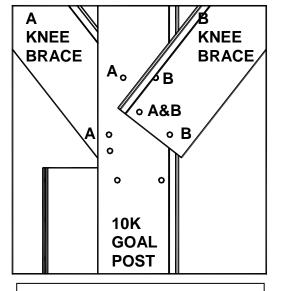


Important

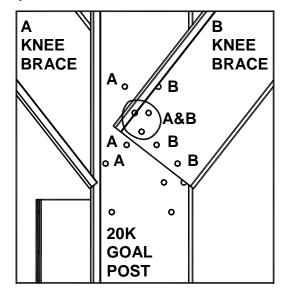
There is a square orientation hole in both ends of the two knee support columns. For both "A" and "B" support columns the square holes identify the smaller flange and should be positioned such that they are on the upper flange. For the "A" knee support columns, the flange with the square holes should be pointing towards each other. For the "B" knee support columns, the flanges with the square holes should be pointing away from each other, or outwards

The assembly of the knee supports to the goal posts occurs at the bolt locations in the goal posts just above the eave of the grain bin. When assembling both an "A" and "B" knee support to a goal post assembly, there are shared bolt holes as illustrated (Figure 83 on page 87) It would be advisable to make the initial connections using the non-shared holes, and only put in the shared bolts once both knee support assemblies are correctly positioned.

Figure 83. Bolt holes for knee support / goal post assembly



BOLT HOLES FOR ATTACHING "A" & "B" KNEE SUPPORTS FOR 44.5 kN (10,000 lb) CAPACITY CONNECTION

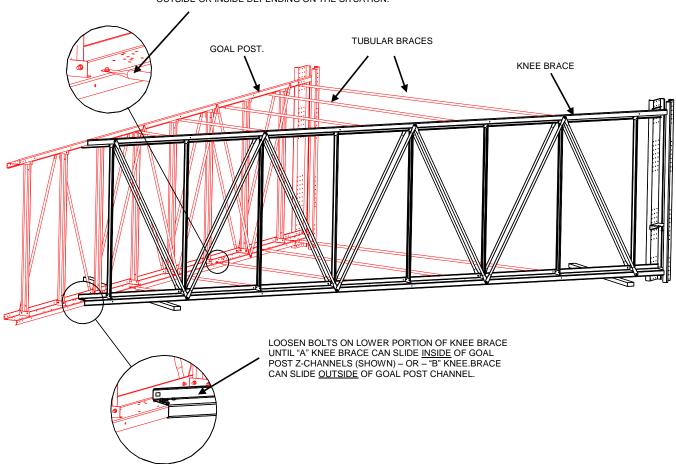


BOLT HOLES FOR ATTACHING "A" & "B" KNEE SUPPORTS FOR 89 kN (20,000 lb) CAPACITY CONNECTION

It would be preferable to assemble the knee supports to the goal posts on the ground and then hoist the completed assembly into place as a unit. When slinging the completed assembly insure the weight is supported such that excessive twisting and bending does not occur. Note that tubular braces span between the knee supports and goal posts at regular intervals. These bolt into holes spaced along the center web of the respective Z-columns (Figure 84 on page 88).

Figure 84. Assembly on the ground

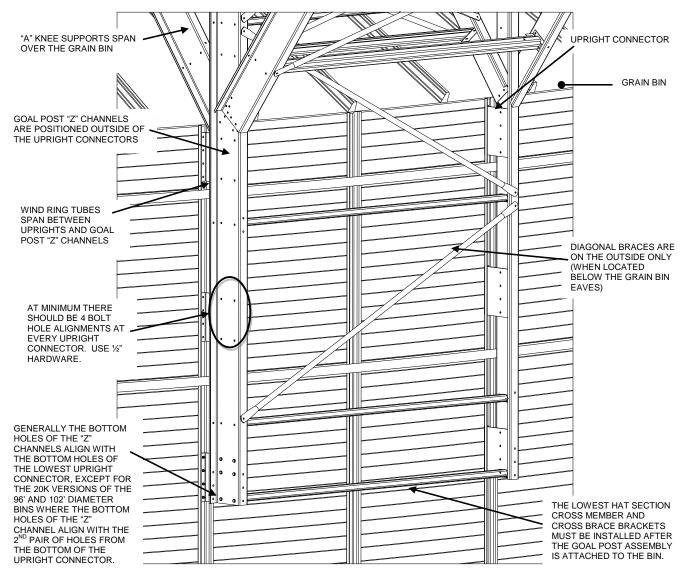
TUBULAR BRACES SPAN BETWEEN HOLES IN FLAT SURFACE OF KNEE BRACE TO FLAT SURFACE OF GOAL POST. THE MATING SURFACES MAY BE OUTSIDE OR INSIDE DEPENDING ON THE SITUATION.



5.13.6 Connection to Grain Bin

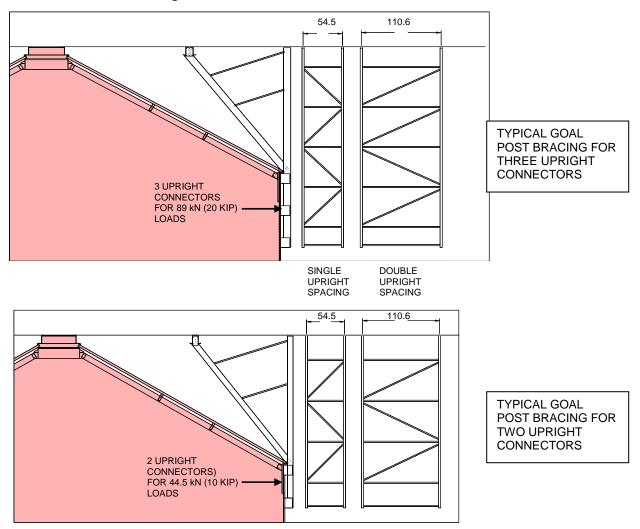
The connection to the grain bin was described earlier in Section 5.13.2 – Goal Post Assembly on page 79 and as illustrated below in Figure 85 on page 89. When slinging the completed assembly into position, the vertical goal post Z-sections are positioned on the outside of the mating upright connectors. Make sure that the mating uprights on the grain bin have been upgraded as required.

Figure 85. Connection to the grain bin detail



Each 44.5 kN (10,000 lb) connection utilizes 2 upright connectors per goal post. Each 89 kN (20,000 lb) connection utilizes 3 upright connectors per goal post (Figure 86 on page 90).

Figure 86. Connection to the grain bin detail



Holes in the goal post align with holes in the upright connectors, however not all upright connector holes will have mating goal post holes. At minimum 4 holes should align. Make the connection utilizing 1/2" hardware. In general, the bottom of the goal post aligns with the bottom of the lowest upright connector. There are two exceptions to this for the 89 kN (20,000 lb)versions of the 96' and 102' diameter bins. For these connections only, the bottom holes in the goal post align with the second pair of holes from the bottom of the upright connectors.

The bottom hat section cross brace and cross brace brackets must be installed after the connection is made to the bin as they are positioned on the inside of the upright connectors.

5.13.7 Alternative and Additional Bracing

The need for alternative or additional bracing is dependent on a number of variables, including site considerations, customer preferences, etc. The previous sections considered knee bracing only. The following explores some other alternatives. Review the specific site layouts for those that apply. If this bracing is being utilized it will be indicated on the site layouts.

In general additional bracing must be considered when certain limits are exceeded, as follows:

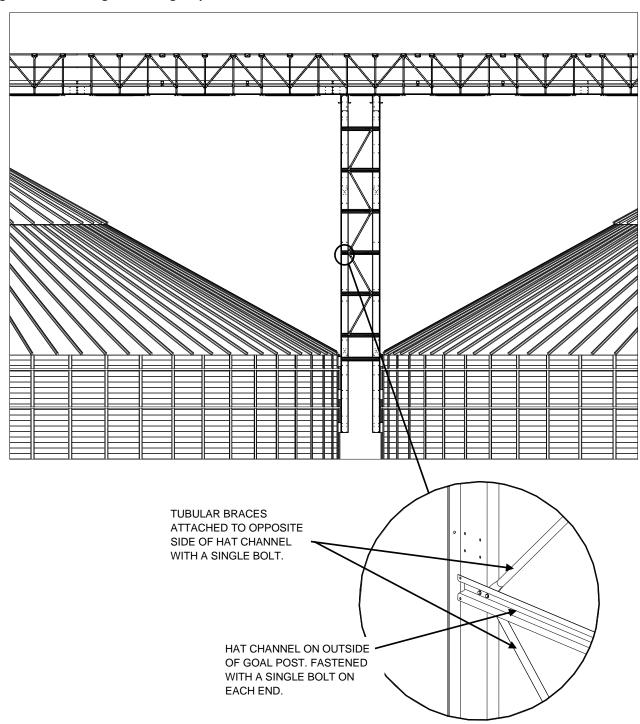
- 44.5 kN (10,000 lb) capacity goal posts from 13.7 m (45') to 33 m (108') diameter bins
- 89 kN (20,000 lb) capacity goal posts from 11 m (36') to 33 m (108') diameter bins

The next two sections provide examples of types of additional bracing.

Bracing Between Adjacent Goal Posts (without knee supports)

If there are two bins in close proximity of each other and both have goal posts but no knee supports (see Figure 87 on page 92), it may be necessary to brace between the them. Hat section braces span between the goal posts at regular 60" intervals. These may need to be shortened to fit the application depending on bin spacing. Tubular cross braces span between adjacent hat sections. If adjusting hat section lengths is necessary care should be taken to not interfere with tubular brace holes. Install on both sides.

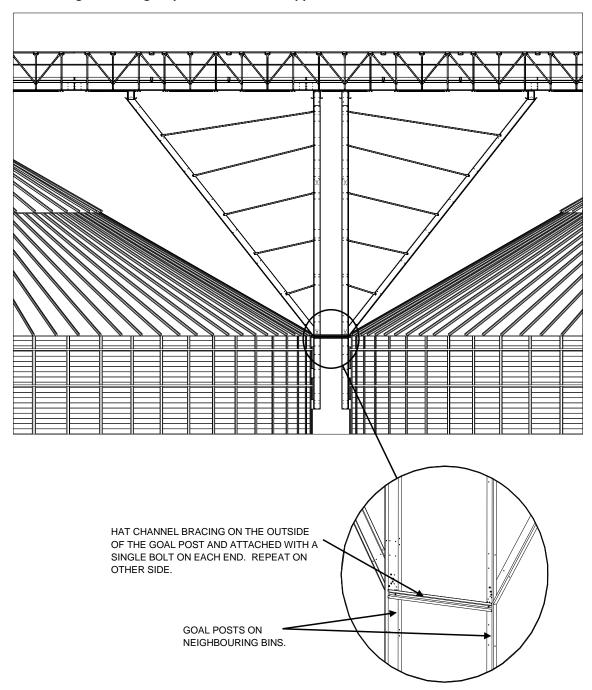
Figure 87. Bracing between goal posts



Bracing Between Adjacent Goal Posts (with knee supports)

If two bins are in close proximity of each other and both have goal posts with "A" knee supports only (see Figure 88), it may be necessary to brace between them in the vicinity of the eave as illustrated. Here a hat section spans between the two goal post sections at the eave of the bins. The hat section may need to be shortened to fit depending on bin spacing. Install on both sides.

Figure 88. Bracing between goal posts and A knee supports



6. APPENDIX CATWALK – GRAIN BIN

6. Appendix

6.1. Catwalk Parts Box Part Identification



213035 - End Plug Small



234559 - End Plug Large



234517 - Support Arm Clip



234518 - Support Arm Bracket



213029 - Corner Clip Large



213031 - Corner Clip Small



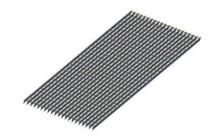
213065 - Ladder Stand-Off



213015 – Handrail Connection Bracket



Various – Toe Board Sections



Various – Bar Grating Sections



Various – Support Arms



Various – Hat Section Cross Members

CATWALK – GRAIN BIN 6. APPENDIX



Various – Z-Section Beam



Various – Diagonal Braces



213053 - Cross Walk Bracket



213011 - Lateral Brace



213023 – Toe Board Splice



234505 - Ladder Pass Thru Rail



213064 – Toe Board Corner Splice



Various - Goal Post Brackets



213066 – Toe Board Thermal Splice



213431 – Beam Support Bracket 10k



213013 – Punched Walkway



213631 – Beam Support Bracket 20k

6. APPENDIX CATWALK – GRAIN BIN



213439 - Cross Brace Bracket 10K



213063 – Catwalk Bracket for Hinge and Latch



213409 - Cross Brace Bracket 20K



213062 - Access Step



213061 – Self Closing Gate Door



234695 – Self Closing Gate Hinge



213376 - Self Closing Gate Latch



Various - Upright Connectors



234500 - Ladder Section



Various — Vertical Post End



213059 – Punched Walkway WA

CATWALK – GRAIN BIN 6. APPENDIX

6.2. Hardware Usage

Table 3. Bin Hardware

BOLT	1/4" x 3/4" Pan Socket Self Drilling Screw	1/4" x 3/4" Flanged Hex Bolt (Washer)	1/4" Hex Nut	3/8" x 1" Flanged Hex LL Adhesive Bolt	3/8" x 2" Flanged Hex LL Adhesive Bolt	3/8" x 2-1/2" Flanged Hex LL Adhesive Bolt	3/8" x 3-1/2" Flanged Hex LL Adhesive Bolt	3/8" Flanged Lock Nut	1/2" x 1-1/2" Flanged Hex LL Adhesive Bolt	1/2" Flanged Lock Nut
	235968 (50)	235901 (75)	235905 (125)	235961 (100)	235976 (100)	235964 (50)	235965 (50)	235955 (50)	235966 (50)	235967 (50)
H-CROSS BRACE to Z-SECTION BEAM				•				•		
H-DIAGONAL BRACE to Z- SECTION BEAM				•				•		
Z-SECTION BEAM to Z-SECTION BEAM SPLICE				•				•		
LATERAL BRACE to Z-SECTION BEAM				•				•		
LATERAL BRACE to H-CROSS BRACE				•				•		
TOE BOARD to TOE BOARD SPLICE				•				•		
CROSSWALK BRACKET to Z- SECTION BEAM				•				•		
ALL LADDER ACCESS CONNECTIONS to Z-SECTION or TOE BOARD				•				•		
STAMPED FLOOR to H-CROSS BRACE				•				•		
TOE BOARD to BAR GRATING FLOOR to H-CROSS BRACE					•			•		
VERTICAL POST to Z-SECTION BEAMS					•			•		
TOE BOARD to VERTICAL POST					•			•		
PASS THRU RAILS to LADDER RAILS at CATWALK ACCESS POINTS					•			•		
VERTICAL POST to MID RAIL - STD						•		•		
VERTICAL POST to MID RAIL - HD							•	•		
DIAGONAL BRACE to VERTICAL POST to Z-SECTION BEAMS						•		•		
GOAL POST BRACKETS to GRAIN BIN UPRIGHTS (DOUBLE NUT)				•				•		
PEAK SUPPORT ASSEMBLY									•	•
GOAL POST ASSEMBLY									•	•
KNEE BRACE ASSEMBLY									•	•
HANDRAIL CONNECTION BRACKET to HANDRAILS	•									
HANDRAIL CONNECTION BRACKET to VERTICAL POST or DIAGONAL BRACES				•				•		
MID RAIL TUBES to SPLICE TUBE	•									
CORNER BRACKETS to HANDRAIL or MID-RAIL TUBES	•									
CONNECTOR CLIPS to TOP RAIL to VERTICAL POST	•									
DOOR ANGLE BRACKET to HANDRAIL	•=	•=	••							

6. APPENDIX CATWALK – GRAIN BIN

Table 3 Bin Hardware (continued)

BOLT	1/4" x 3/4" Pan Socket Self Drilling Screw	1/4" x 3/4" Flanged Hex Bolt (Washer)	1/4" Hex Nut	3/8" x 1" Flanged Hex LL Adhesive Bolt	3/8" x 2" Flanged Hex LL Adhesive Bolt	3/8" x 2-1/2" Flanged Hex LL Adhesive Bolt	3/8" x 3-1/2" Flanged Hex LL Adhesive Bolt	3/8" Flanged Lock Nut	1/2" x 1-1/2" Flanged Hex LL Adhesive Bolt	1/2" Flanged Lock Nut
	235968 (50)	235901 (75)	235905 (125)	235961 (100)	235976 (100)	235964 (50)	235965 (50)	235955 (50)	235966 (50)	235967 (50)
DOOR ANGLE BRACKET to LADDER SUPPORT ARM BRACKET to MIDRAIL	•=	•=	•=							
HINGE to DOOR ANGLE BRACKET and DOOR PAN	••	•=	•=							
LATCH to DOOR ANGLE BRACKET and DOOR PAN	•=	•=	•=							
#2 ROBERTSON BIT - 213033	•									

Note

 $[\]blacksquare$ — Can use either 1/4" self drilling screws, or 1/4" bolts and nuts at these locations.

CATWALK – GRAIN BIN 7. WARRANTY

7. Warranty

AGI Grain Bin Products

Ag Growth International, Inc. ("AGI") warrants that the goods and/or services being supplied (the "Goods") will be free from defects in materials and workmanship under normal conditions, use, service, and maintenance, for a period of twelve (12) months from the date of first operation of the Goods, but in no event more than eighteen (18) months from the date of delivery of the Goods to the end-user (or as otherwise set out in the chart below) (the "Warranty Term"). If the Goods are being used for rental purposes, the Warranty Term for the subject Goods shall be limited to 90 days.

Galvanized Bins	5 Years						
SureTrack	2 Years						
Easyflow2	2 Years						
Fans	3 Years						
Heaters	1 Year						
Side Draw	5 Year						
Transitions	3 Years						
Roof Exhauster	1 Year						
Floors	5 Years						
Catwalk	1 Year						
Bulk Feed Tanks	2 Years						
Hopper Tanks	5 Year						
SeedStor-K Cones							
Paint	1 Year						
Structural	10 Year						
Commercial HBB Hopper							
Paint	1 Year						
Structural	10 Year						
Welded Cone(s)							
Paint	1 Year						
Structural	10 Year						
Farm Smoo	thwall Bins						
Paint	1 Year						
Structural	10 Year						
Commercial Smoothwall Bins							
Paint	1 Year						
Structural	10 Year						
SMARTStir Accessories							
Trolley	1 Year						
Down Auger	1 Year						
Disconnected Box	1 Year						
Grain Spreader	1 Year						
EasyDry Accessories							
Plenum	5 Year						
Controls	1 Year						
Blower Heater	1 Year						

Subject to AGI's sole discretion, if the Goods, or a component thereof, are found to have a default in materials and/or workmanship within the Warranty Term, AGI will, at its own option and expense, repair or replace the subject Goods or refund the purchase price for the applicable Goods. Any warranty related expenses incurred on behalf of or by the end-user without the prior written consent of AGI shall be the sole responsibility of the end-user. Expenses relating to travel, customs or import duties and tariffs, equipment rental, and any costs associated with accessing the Goods are the sole responsibility of the customer. Warranty shall be void in the event that the Goods are returned or disposed of without the written consent of AGI.

The customer shall not assert a claim that the Goods are defective unless the customer gives written notice to AGI of such defect within forty-eight (48) hours of discovering such defect. In the event of a warranty claim, the customer must complete any and all information

7. WARRANTY CATWALK – GRAIN BIN

required by AGI in order to properly assess or investigate the claim. AGI shall be given a reasonable opportunity to inspect and test the Goods in question. Failure by the customer to notify AGI of such claim within 48 hours shall operate as a waiver of any and all such claims by the customer.

THIS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY AGI WITH RESPECT TO THE GOODS AND IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO SELLER IN SPECIFICATIONS, DRAWINGS, OR OTHERWISE, AND WHETHER OR NOT AGI'S GOODS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY AGI FOR BUYER'S USE OR PURPOSE.

This limited warranty extends solely to Goods manufactured by AGI and does not cover any third-party parts, components, or materials. To the extent permitted by the manufacturer, AGI will pass on applicable warranties on third-party parts, components or materials to the end-user. This warranty does not extend to any losses or damages due to misuse, use of a kind and/or to a degree not reasonably expected to be made of the Goods, any use of the Goods which is not an intended use as specified in AGI's published product literature or otherwise specified by AGI in writing, accident, acts of God, abuse, neglect, normal wear and tear (including corrosion and cosmetic issues), any equipment attached to or used in conjunction with the Goods, any field modifications or substitutions to original Goods, component damage incurred during shipping and handling, modification or alteration, used beyond rated capacity, or improper installation, maintenance or application.

THE SOLE AND EXCLUSIVE REMEDY FOR ANY CLAIM HEREUNDER SHALL BE LIMITED TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE. AGI SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE AND IN NOT EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PURCHASE PRICE OF THE GOODS. BUYER AGREED THAT IN NO EVENT SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES. THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, LOSS OF USE, LOSS OF REVENUE, FAILURE TO MEET GOVERNMENT AND/OR ADMINISTRATIVE REQUIREMENTS, CLEAN UP COSTS, COST OF CAPITAL AND DAMAGE OR LOSS TO OTHER GOODS, PROPERTY OR EQUIPMENT.

To the fullest extent permitted by law, Buyer, on behalf of itself, its suppliers, their agents, employees or any entity or person for which Buyer is or may be responsible ("Indemnitors") shall fully indemnify, save and hold AGI, its agents, employees, officers, directors, partners and related entities harmless from and against all liability, damage, loss, claims, demands, actions and expenses of any nature whatsoever, including, but not limited to reasonable attorney's fees which arise out of or are connected with: (a) any negligent act, error or omission by any Indemnitor in the performance of this agreement; (b) the failure of the Indemnitor to comply with the laws, statutes, ordinances or regulations of any governmental or quasi-governmental authority; or (c) the material breach of any term or condition of this agreement by any of the Indemnitors. Without limiting the generality of the foregoing, the indemnity hereinabove set forth shall include all liability, damage, loss, claims, demands, and actions on account of personal injury, death or property loss to any third party, any Indemnitee, any of Indemnitee's employees, agents, licensees or invitees. The indemnity set forth herein shall survive any termination of this agreement.

THIS WARRANTY IS NON-TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL END-USER AND SHALL BE CONSIDERED VOID IF NOT REGISTERED WITHIN 30 DAYS OF RECEIPT OF THE GOODS BY THE ORIGINAL END USER.

CATWALK – GRAIN BIN 7. WARRANTY

AGI is a leading provider of equipment solutions for agriculture bulk commodities including seed, fertilizer, grain, and feed systems with a growing platform in providing equipment and solutions for food processing facilities. AGI has manufacturing facilities in Canada, the United States, the United Kingdom, Brazil, South Africa, India and Italy and distributes its products globally.



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