

Assembly Manual

Elevation Modular Ramp

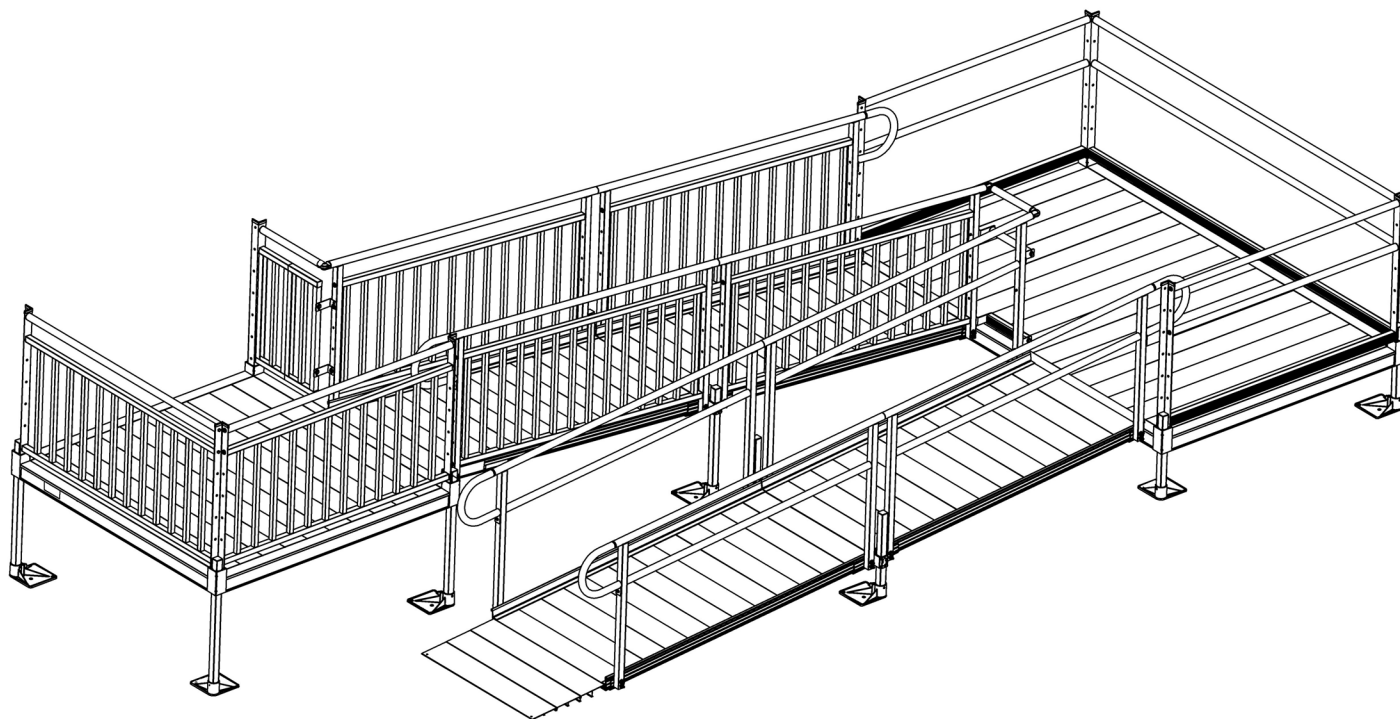


Image shown with multiple ramp and platform handrail options.



Manufactured in the USA



Patented components.
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21723 REV 2-25-2025






















INTRODUCTION



Throughout this manual, the term “system” refers to the entire Elevation Modular Ramp, including ramps, platforms, stairs, handrails, gates, transition plates, landing pads, and any/all hardware and components which are intended to be assembled on the Elevation Modular Ramp.

SYMBOLS

-  The **WARNING** symbol indicates a potentially hazardous condition/situation. The safety warnings throughout this manual, and on your equipment, if any, are for the protection of people and property. Failure by any operator to abide by safety warnings will result in a waiver of all liabilities, loss of your warranty, and could result in equipment damage and or failure, property damage, risk of serious bodily injury, and or death. The symbol may appear in various colors and in conjunction with other symbols and with or without the written word “WARNING”.
-  The **NOTE** symbol indicates important information. Failure to obey all notes could result in improper operation, less-than-optimum equipment performance, and at the sole discretion of the equipment manufacturer, may void your warranty. The symbol may appear in various colors and in conjunction with other symbols and with or without the written word “NOTE”.

WARNINGS

-  Maximum weight capacity is 1,000 lbs.; never exceed weight capacity.
-  Prior to assembly and use, read and follow all instructions, warnings, and labels. Following all instructions and obeying all warnings before and during use is necessary for safe operation. Do not remove labels. For additional information or to obtain copies of instructions or labels, call 1-800-833-0478.
-  For residential use only.
-  This product must be installed by a qualified installer and maintained as specified in this manual and per your applicable local codes.
-  Before use with mobility equipment, refer to your mobility equipment's owner guide for acceptable ramp usage, including proper slope/incline, chair direction, etc.; never exceed its recommendations.
-  If needed, use a qualified helper when using the system.
-  Always use a lap belt if using the system with mobility equipment.
-  Handrails are required and must be installed.
-  Only use components supplied by the manufacturer with the system.
-  Before each use, check the system for worn, loose, or damaged parts. If you find any of these conditions, do not use the system and contact your installer for service or repairs. Failure to do so may result in serious injury.
-  Do not use the system if it is damaged or unstable.
-  Do not tamper with, attempt to repair, or modify any portion of the system.
-  Ensure that the landings the system will be placed on are substantial and of sound construction.
-  Use only if the secure, unobstructed, level landings can support the weight capacity of the system (1,000 lbs.).
-  Before each use, confirm the system is secure and assembled per the instructions. Contact your installer for any necessary adjustments.
-  Use only if sufficient maneuvering room is available at both ends of the system to assure safe travel when entering and exiting the system.
-  The system may be slippery in wet conditions; use caution as traction may be reduced.
-  Before each use, remove ice, snow, dirt, leaves, and other debris on contact surfaces. Please refer to ‘MAINTENANCE AND SAFETY’ and ‘DEICING’ sections in the assembly manual for more information.
-  Do not lean on, walk on, or otherwise bear weight on the system until assembly is complete.
-  Do not run, jump, or play on or around the system.
-  Do not sit, stand, or climb on handrails or gates.

-  Do not place anything on, under, or attach anything to the system including, but not limited to, planters, lights, decorations, etc.
-  Improper use of the system could result in serious injury.

WARNINGS, CONT'D.

- ⚠ Always exercise caution when handling, assembling, and or using the system.
- ⚠ Aluminum conducts electricity. Do not use the system during electrical storms or in proximity to damaged or exposed wiring.
- ⚠ Properly support and restrain the system in transit or storage.
- ⚠ For additional care, usage, or general safety information, please call 1-800-833-0478.

TOOLS AND HARDWARE TYPICALLY REQUIRED

- | | |
|--------------------------------|--|
| ✓ 1/2" SOCKET OR 1/2" WRENCH | ✓ BOX KNIFE |
| ✓ 9/16" SOCKET OR 9/16" WRENCH | ✓ HAMMER |
| ✓ 5/16" SOCKET OR 5/16" WRENCH | ✓ LEVEL |
| ✓ TORQUE WRENCH | ✓ FILE |
| ✓ POWER DRILL | ✓ RUBBER Mallet |
| ✓ #2 PHILLIPS SCREWDRIVER | ✓ 1/4" MASONRY DRILL BIT (IF INSTALLING TO CONCRETE) |
| ✓ PLIERS | ✓ DIGGING TOOLS (IF AN OBSTACLE NEEDS TO BE REMOVED) |
| ✓ 1/8" DRILL BIT | ✓ HACKSAW (FOR OPTIONAL HANDRAIL KITS) |
| ✓ 5/16" DRILL BIT | ✓ 25' TAPE MEASURE |
| ✓ 5/32" ALLEN WRENCH | ✓ CONSTRUCTION ADHESIVE |
| ✓ 3/16" ALLEN WRENCH | |

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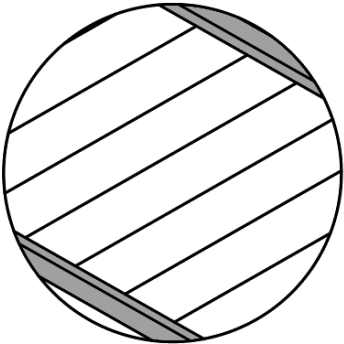
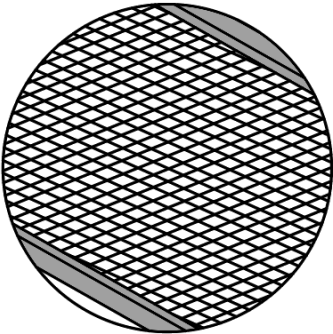
SECTION 9: DEICING

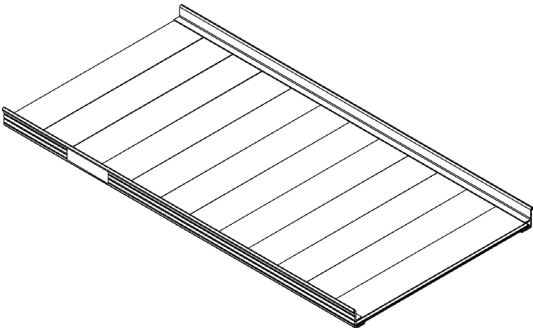
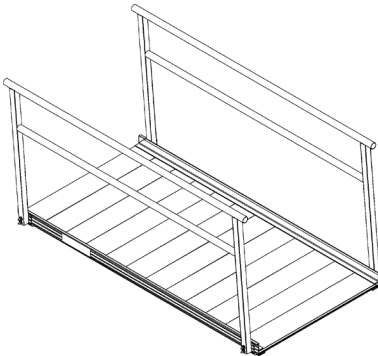
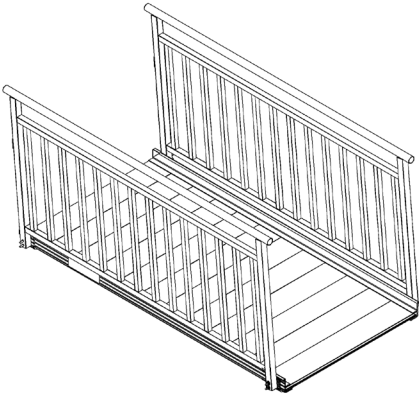
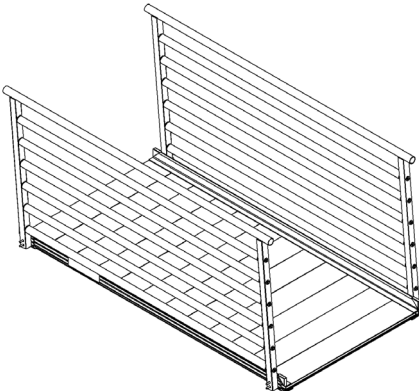
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1. **BASIC SYSTEM COMPONENTS**

Because each ramp configuration will differ from one another, your system may or may not contain all these basic system components. Identify your system components before you begin.

- ✎ All ramp handrail frames, regardless of fill (Two-Line, Vertical, or Horizontal Pickets) install identically.

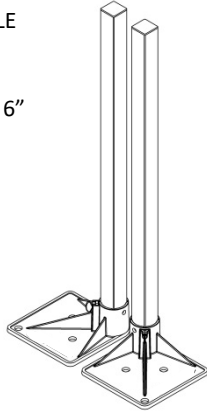
SURFACE OPTIONS	
SOLID SURFACE	EXPANDED METAL SURFACE
	

RAMP AND RAMP HANDRAIL OPTIONS	
RAMP W/O HANDRAILS	RAMP W/ TWO-LINE HANDRAILS
	
RAMP W/ VERTICAL PICKETS	RAMP W/ HORIZONTAL PICKETS
	

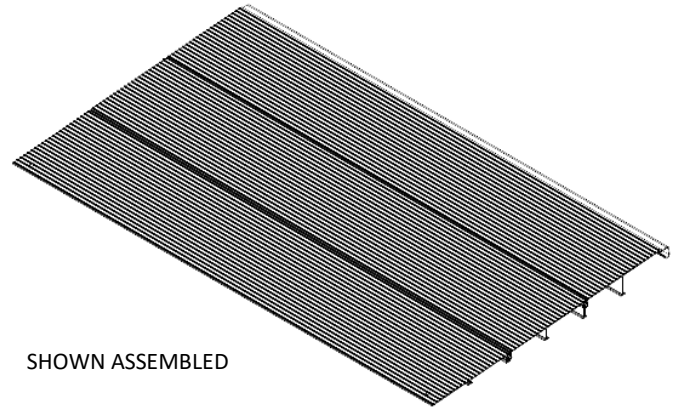
KEY RAMP COMPONENTS

HARSLxxPR – SUPPORT LEG PAIRS

xx DENOTES USABLE
LENGTH (LENGTHS
AVAILABLE 10"
THROUGH 100" IN 6"
INCREMENTS)

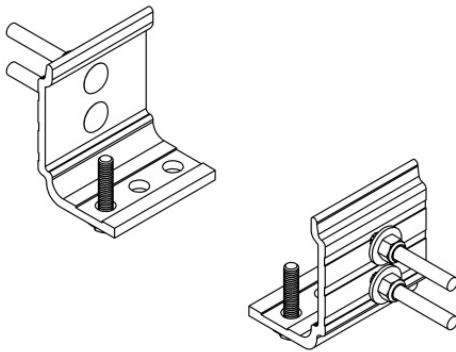


HARRGT – RAMP GROUND TRANSITION 18" X 36"



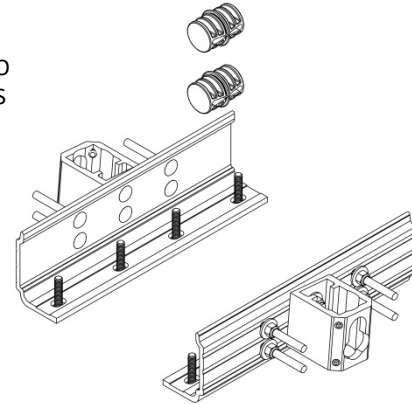
SHOWN ASSEMBLED

HARRHBPR RAMP HANDRAIL END BRACKET (PAIR)

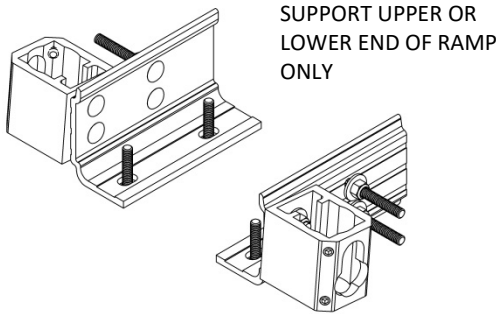


HARRRUC UNIVERSAL CONNECTOR – RAMP TO RAMP

INCLUDES
COMPONENTS TO
CONNECT RAMPS
AND RAMP
HANDRAILS

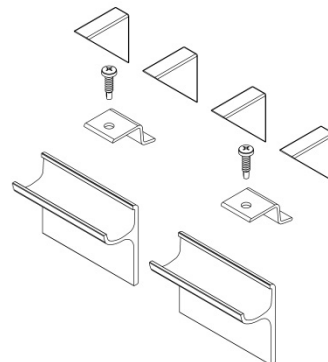


HARRSUT – UNIVERSAL RAMP SUPPORT – TOP

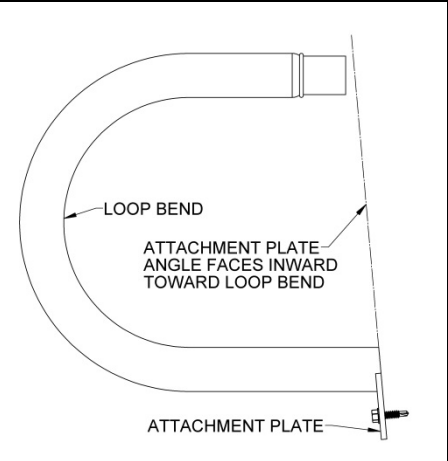
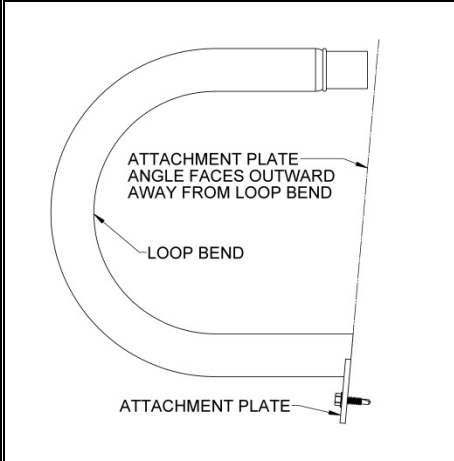
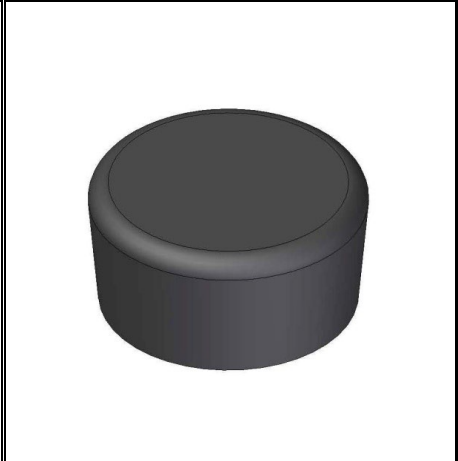
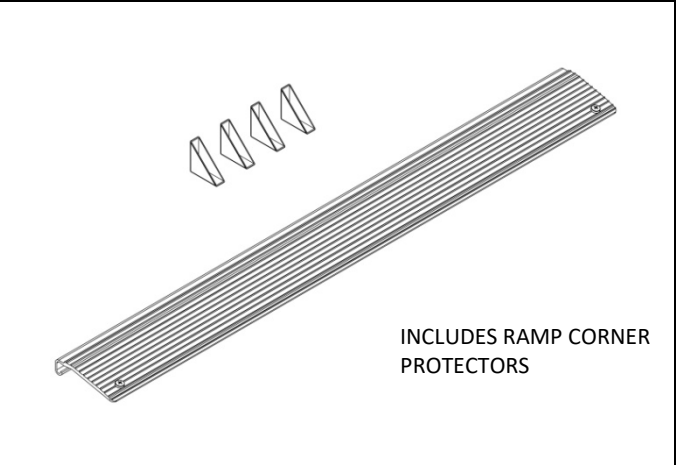
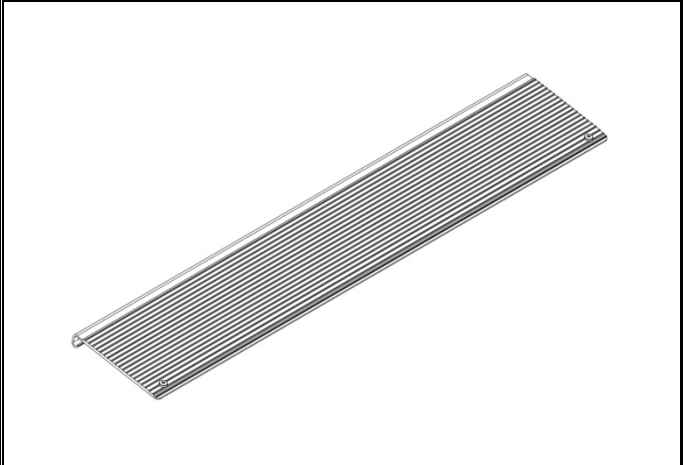


USED WHEN LEGS
SUPPORT UPPER OR
LOWER END OF RAMP
ONLY

HARRHP – RAMP HANGER PAIR

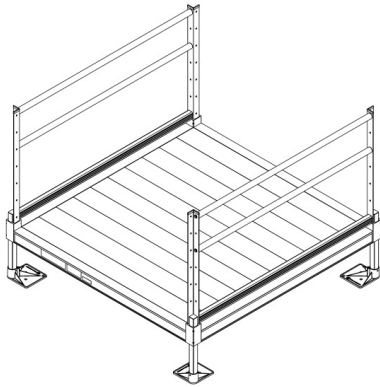


KEY RAMP COMPONENTS, CONT'D.

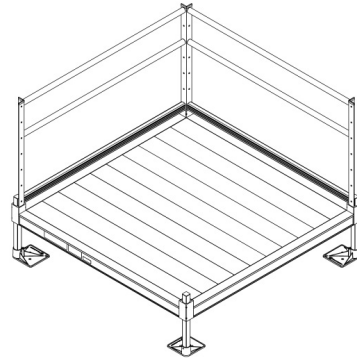
HARRHRLU UPPER HANDRAIL END LOOP	HARRHRL LOWER HANDRAIL END LOOP	HARHREC HANDRAIL END CAP
		
HARRUT – RAMP UPPER TRANSITION		HARRLT – RAMP LOWER TRANSITION
		

PLATFORMS AND PLATFORM HANDRAIL OPTIONS

**PLATFORM (STRAIGHT CONFIGURATION)
W/ TWO-LINE HANDRAILS**



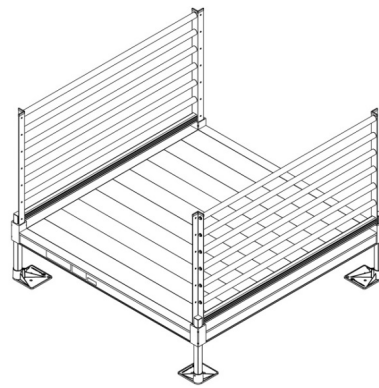
**PLATFORM (TURN CONFIGURATION)
W/ TWO-LINE HANDRAILS**



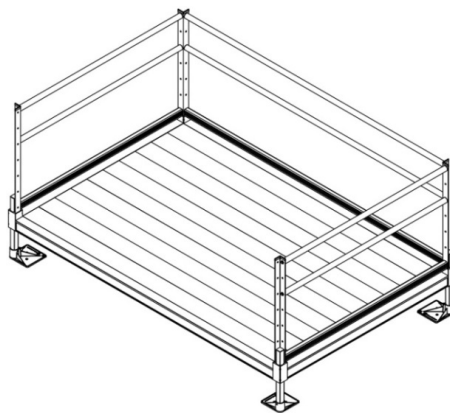
PLATFORM W/ VERTICAL PICKET HANDRAILS



PLATFORM W/ HORIZONTAL PICKET HANDRAILS

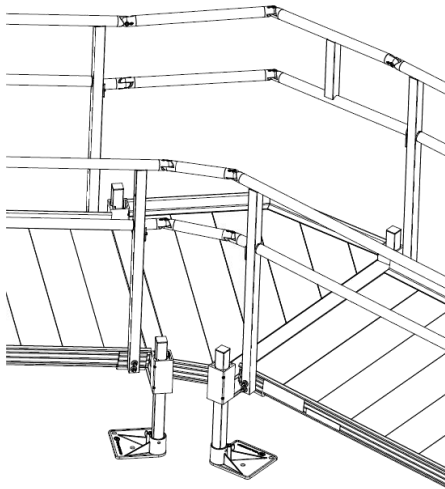


**PLATFORM (8' X 5' TURN BACK)
W/ TWO-LINE HANDRAILS**

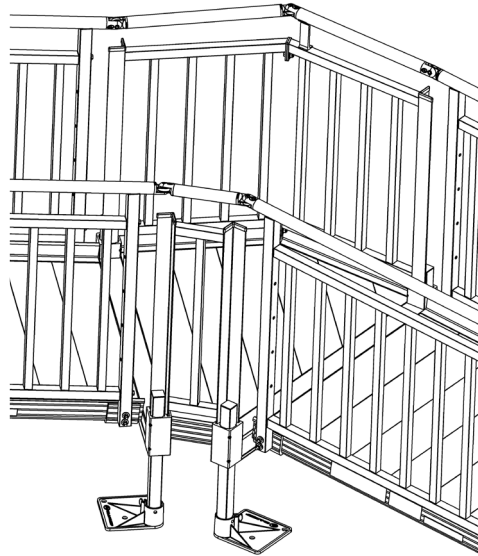


PLATFORM AND PLATFORM HANDRAIL OPTIONS, CONT'D.

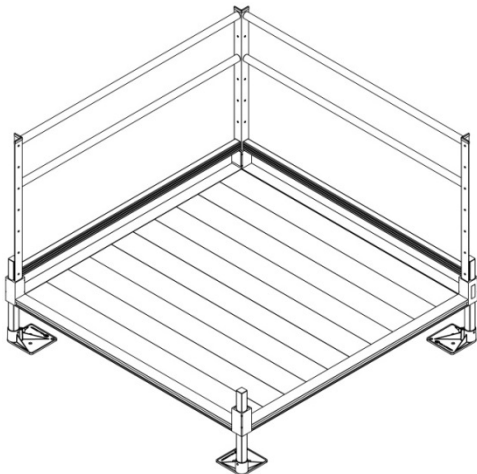
**PLATFORM 45-DEGREE ANGLE
W/ TWO-LINE HANDRAILS**
NOT AVAILABLE WITH HORIZONTAL PICKET HANDRAILS



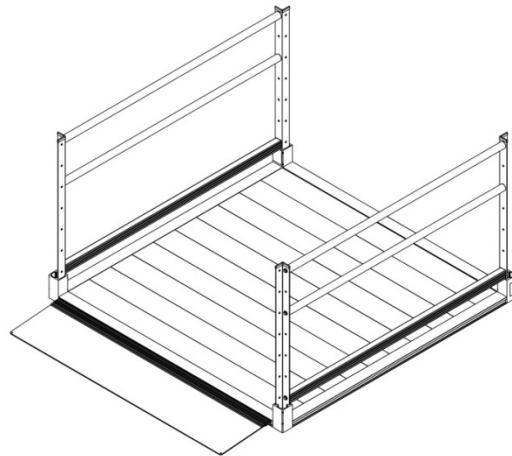
**PLATFORM 45-DEGREE ANGLE
W/ VERTICAL PICKET HANDRAILS**
NOT AVAILABLE WITH HORIZONTAL PICKET HANDRAILS



LOW PROFILE PLATFORM W/ TWO-LINE HANDRAILS

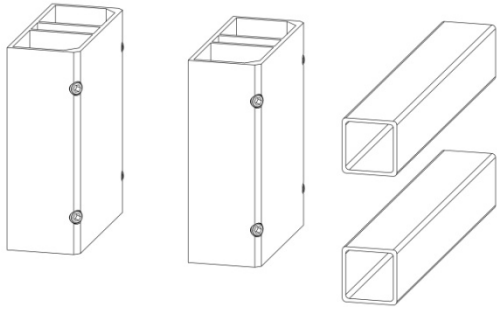


LOW PROFILE PLATFORM W/ TWO-LINE HANDRAILS
SHOWN USED AS A LANDING PAD

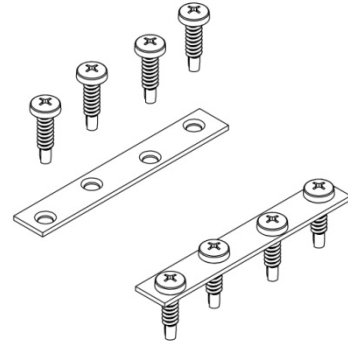


KEY PLATFORM COMPONENTS

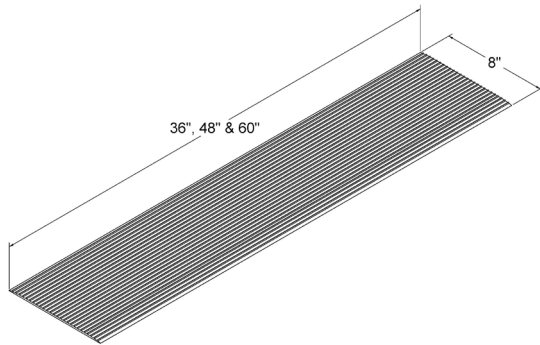
HARPPC – CONNECTOR – PLATFORM TO PLATFORM



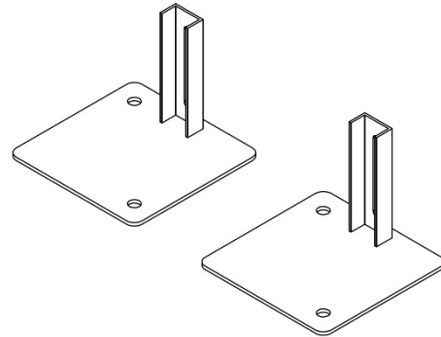
HARPTS – PLATFORM TIE STRAP



HARBP36 – BRIDGE PLATE



**HARRLWALP
RAMP LEG WELDED ALUMINUM – LOW PROFILE PAIR**

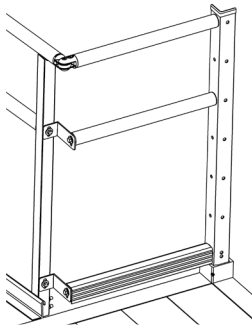


**HARPLPGT06, HARPLPGT08, HARPLPGT10, HARPLPGT12, HARLPBT48
LOW PROFILE GROUND TRANSITION OR BRIDGE TRANSITION**

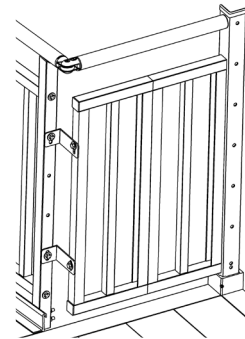


CLOSURE OPTIONS

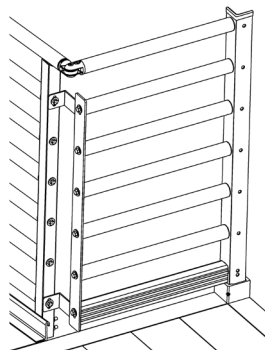
HARPCTL – TWO-LINE CLOSURE HANDRAIL



**HARPCVP4, HARPCVP5, HARPCVP6
VERTICAL PICKET CLOSURE HANDRAIL**



HARPCHP – HORIZONTAL PICKET CLOSURE HANDRAIL

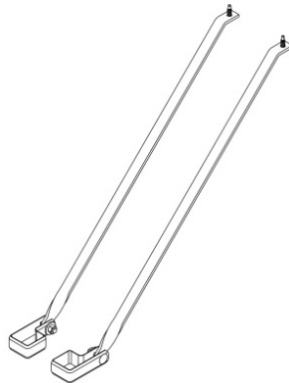


ADDITIONAL OPTIONS

HARTDK – TIE DOWN KIT



**HARUAB
UNIVERSAL ANGLE BRACE**

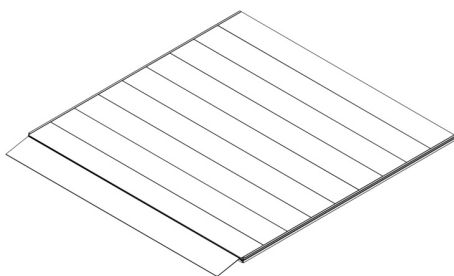


**HARUCB4, HARUCB5, HARUCB8
UNIVERSAL CROSS BRACE**

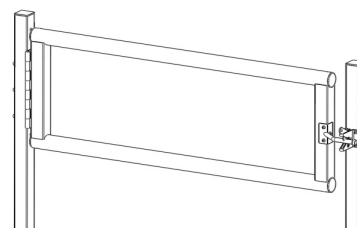
- HARUCB4
USED ON 4'
PLATFORM
SIDE
- HARUCB5
USED ON 5' &
6' PLATFORM
SIDES
- HARUCB8
USED ON 8'
PLATFORM
SIDE



HARLP – LANDING PAD



HARUG – UNIVERSAL GATE 36"



2. PLATFORMS

2.1. INSTALL PLATFORMS

- ✎ If your system does not include a platform, skip to 'CONNECT RAMP SECTIONS'.
- ✎ Platform handrails are shown for clarity on how to orient platforms in various configurations. It is strongly suggested that all platforms and ramps be assembled before installing handrails (see 'HANDRAILS' section).

2.1.1. There are four basic platform arrangements (one or more of these arrangements may be used in an installation). All four require the same procedure for assembly except for FIG. 2.3 which requires an additional HARPPC (CONNECTOR – PLATFORM TO PLATFORM).

FIG. 2.1 Straight configuration

FIG. 2.2 Turn configuration

FIG. 2.3 Turn back configuration (two 5' x 4' platforms shown combined to make a 5' x 8' turn back)

FIG. 2.4 8' x 5' turn back

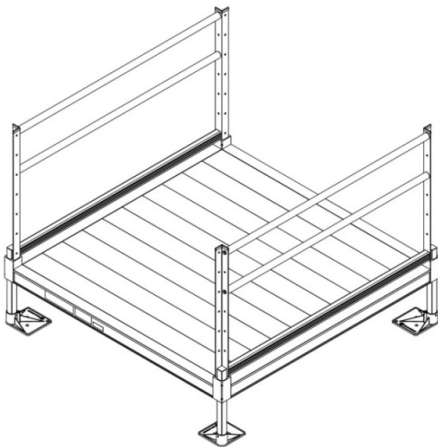


FIG. 2.1

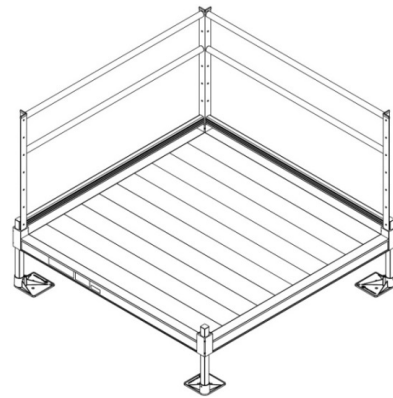


FIG. 2.2

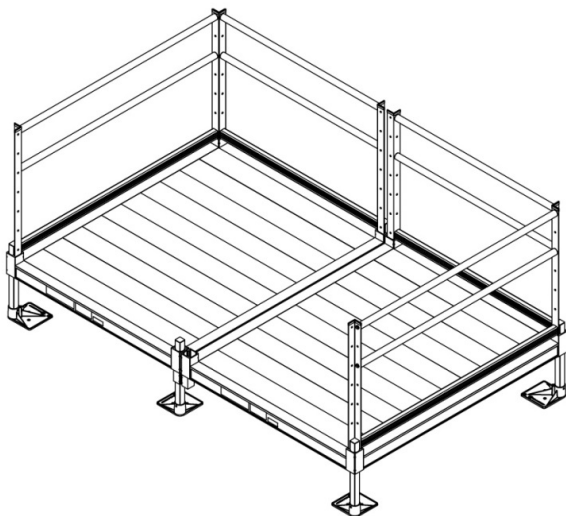


FIG. 2.3

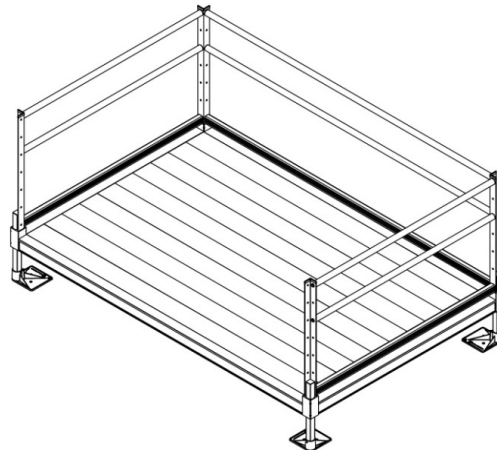
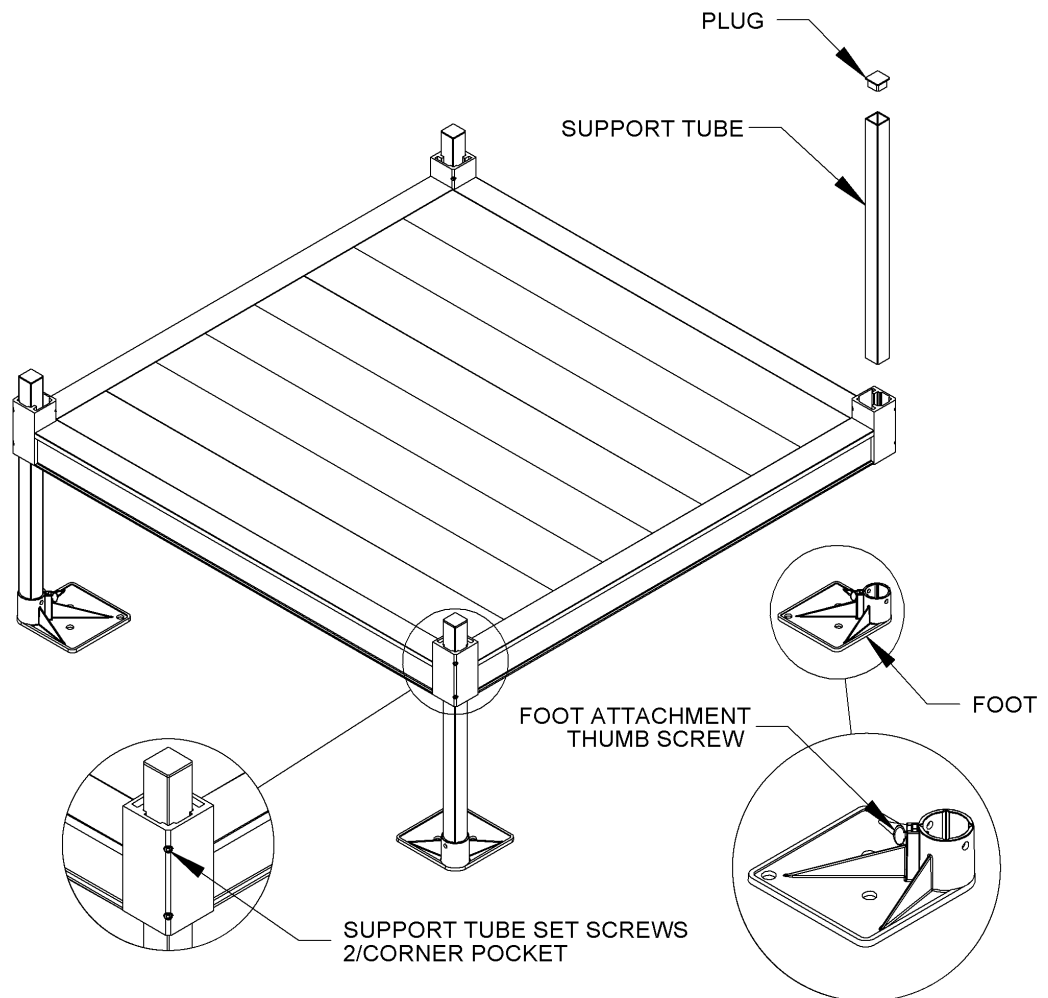





FIG. 2.4

2.2. INSTALL SUPPORT TUBES AND FEET, THEN ADJUST PLATFORM HEIGHT



- 2.2.1. Support tubes, plugs, and feet come in pairs. Support tubes will come in lengths sufficient for the heights at specific locations.
- 2.2.2. Loosen all set screws in the platform corner pockets.
 - 2.2.2.1. The set screws on the outside of the platform are for the platform support tubes.
 - 2.2.2.2. The set screws on the inside of the platform (one above the deck and one below the deck) are for the handrail posts.
- 2.2.3. Tip the platform on its side, then slide the support tubes into the four platform corner pockets (FIG. 2.5). Adjust the support tubes to the approximate platform height needed.
- 2.2.4. Use a 3/16" Allen wrench to tighten the upper of the two set screws in the corner pocket, just enough to hold the support tube in place but do not overtighten (the second set screw will be tightened after final height adjustments are complete).
 - ✋ Platforms configured as a turn back platform (FIG. 2.3) will have six tubes to adjust.
 - ⚠ Do not attempt to walk on the platform until all support tube set screws have been tightened securely.
- 2.2.5. Place the platform (with support tubes attached) into the upright position.
 - ⚠ Do not let the weight of the platform bear on the support tubes while tipping the platform upright.

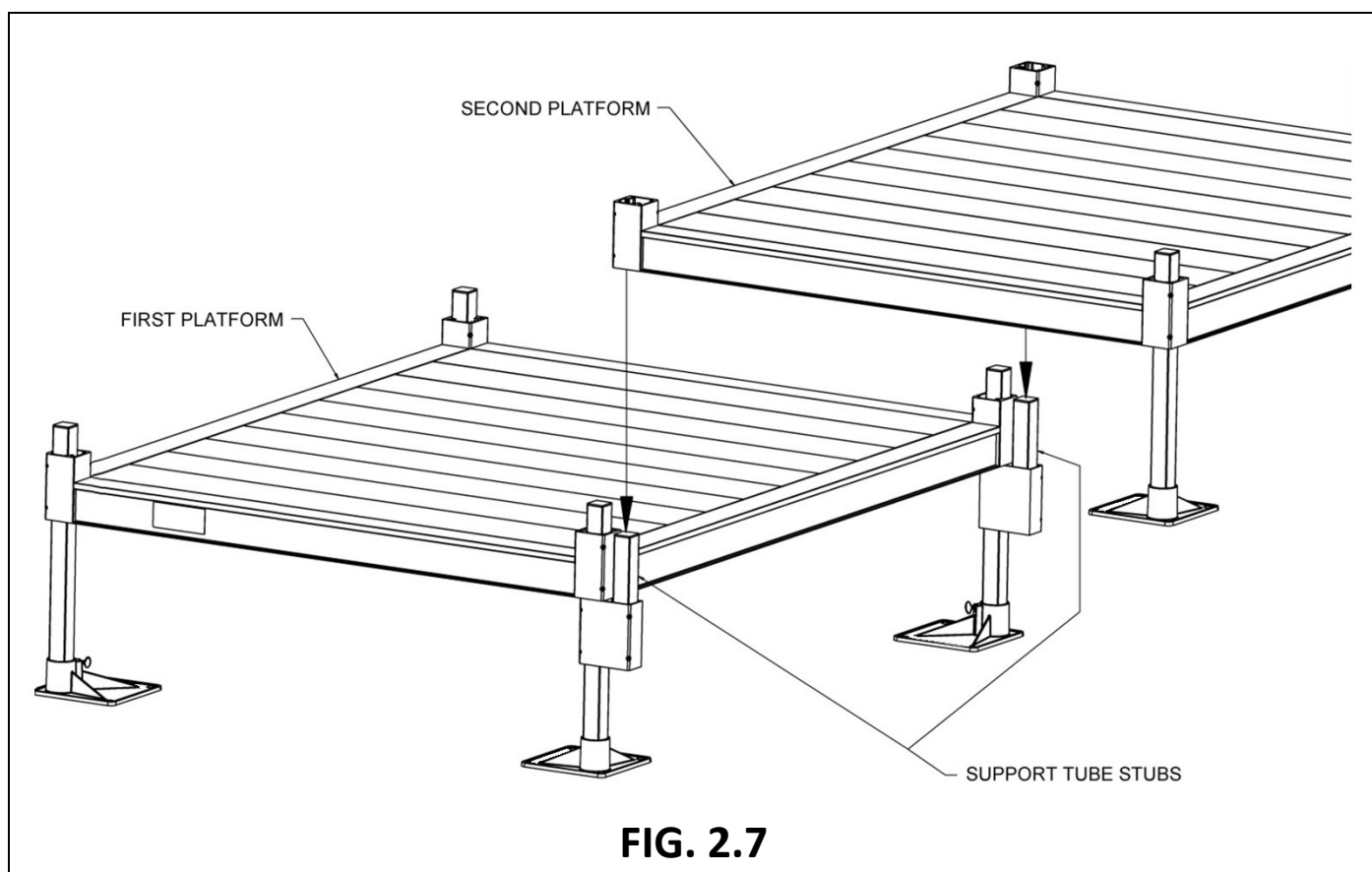
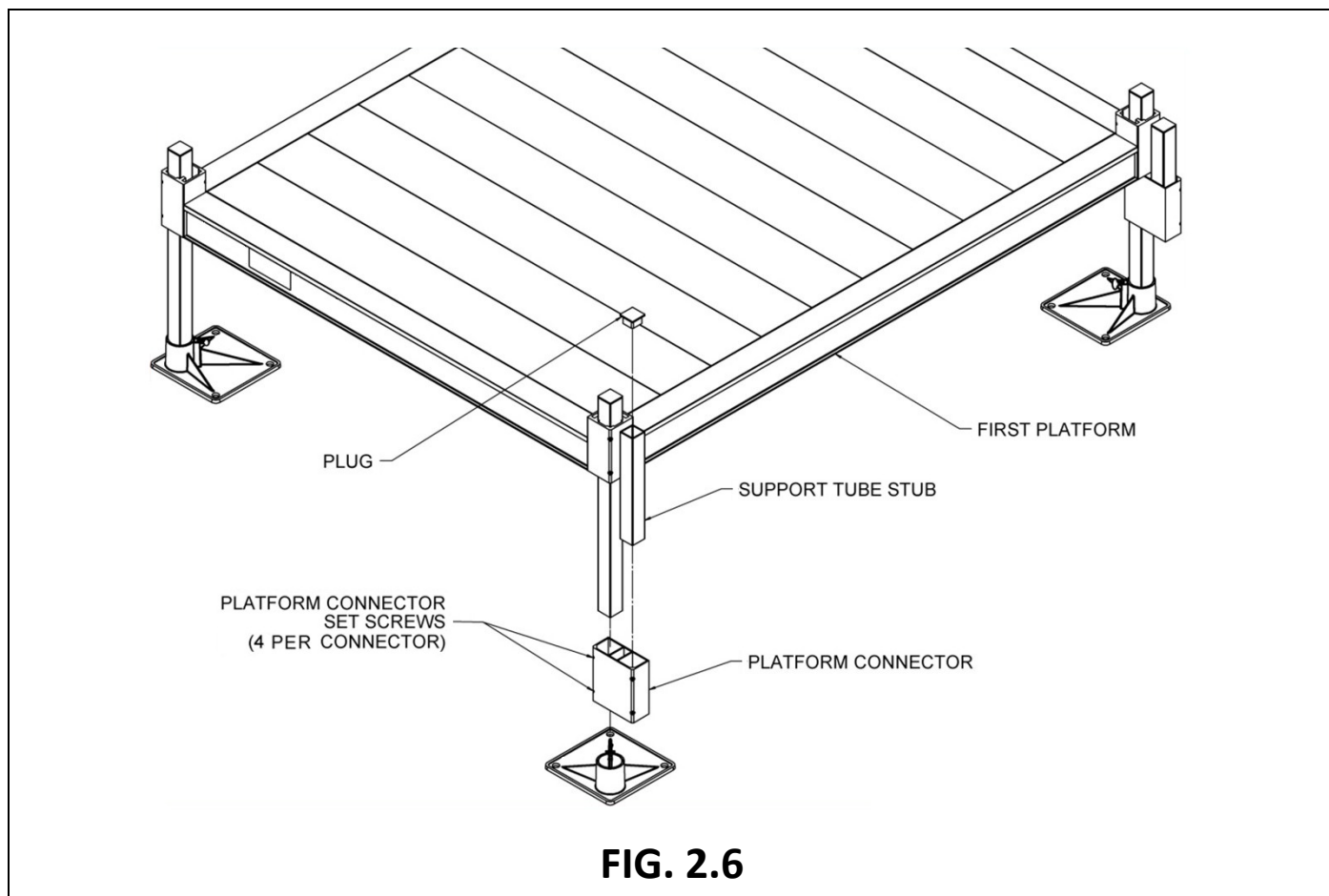
FIG. 2.5



- 2.2.6. Lift each corner of the platform and install a base foot on each support tube oriented so that the foot extends under the platform (FIG. 2.5).
-  The feet can be oriented in other directions if necessary due to site conditions but may present a tripping hazard if not oriented under the platform.
 -  It is the installer's responsibility to install the system in a manner that is safe for the people on and around the system and clearly mark any hazards created by the installation.
- 2.2.7. Make sure each foot is fully engaged on the tube and tighten the thumb screw securely.
-  If installing on soft soil it may be necessary to set the base foot on a concrete pad.
- 2.2.8. Adjust the final height of the platform by adjusting the legs, one at a time, by loosening the outer set screws in the platform corner pockets. Using a level, adjust the platform height and re-tighten.
- 2.2.9. Once the final height has been adjusted, tighten the second, lower set screw in each platform corner pocket.
- 2.2.10. To allow access to the lowermost hole in the platform post, the support tubes must not extend more than 1/2" above the platform corner pockets. Trim the support tubes as needed before installing plugs.
- 2.2.11. Insert a plug into the top of each support tube. Use a rubber mallet or similar tool as needed (FIG. 2.5).
- 2.2.12. Ensure all set screws are tightened securely.

2.3. CONNECT TWO PLATFORMS TOGETHER

- 2.3.1. Assemble the first platform as described in the previous steps, except on the side where the second platform will connect, and install two HARPPC (CONNECTOR – PLATFORM TO PLATFORM) before installing feet onto the support tubes.
- 2.3.2. Make sure the platform connector set screws are oriented outward so they will be accessible.
-  Any two platforms of the same width can be connected. However, two 5' x 4' platforms are usually connected to make a turn back platform.
- 2.3.3. Slide the platform connectors up until they contact the bottom of the platform and tighten the set screws securely (FIG. 2.6).
- 2.3.4. Install a support tube stub into the open pocket in each connector until the bottom of the stub is flush with the bottom of the connector and tighten the set screws securely.
- 2.3.5. Install a plug in the top of each support tube stub (FIG. 2.6).
- 2.3.6. Assemble the second platform as described in the previous section except only install support tubes, plugs, and feet on the opposite side of where the platforms will connect (FIG. 2.7).
- 2.3.7. Lift the second platform and slide the open corner pockets over the support tube stubs extending up from the platform connectors. Tighten the set screws in the platform corner pockets securely.
- 2.3.8. Adjust the platform heights and level as needed.
-  Make sure all the set screws in both the platform corner pockets and the platform connectors are tightened securely before proceeding with the installation.



2.4. 45-DEGREE ANGLE PLATFORM

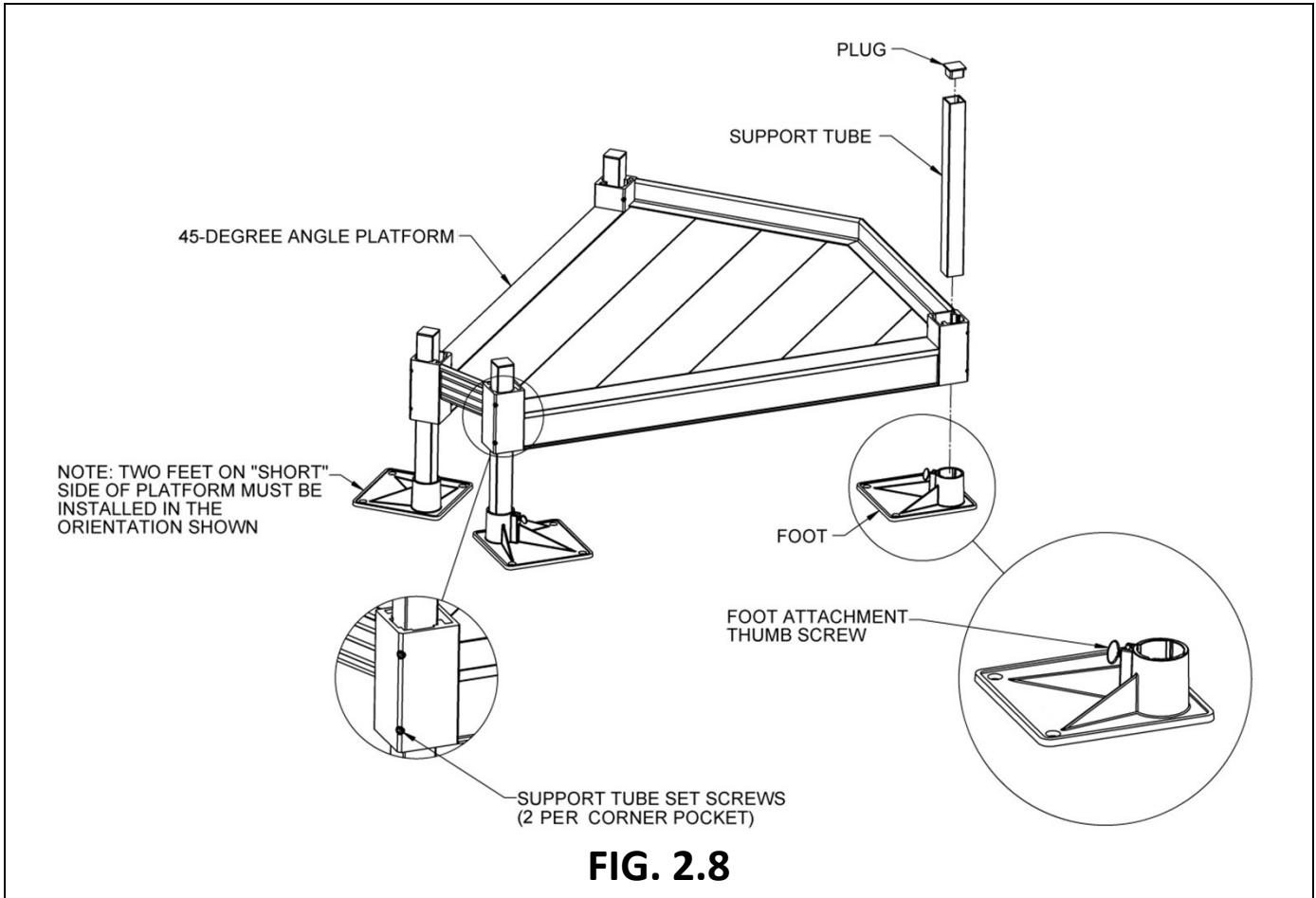
This platform is used between two ramps to make a 45-degree turn and features a symmetrical design, making it usable in either direction.

- 2.4.1. There are two handrail options for 45-degree Angle Platforms: Two-Line and Vertical Pickets. The platform includes the handrail components needed for the option ordered.

👉 Platform handrails are shown for clarity on how to orient platforms in various configurations. It is strongly suggested that all platforms and ramps be assembled before installing handrails (see 'HANDRAILS').

- 2.4.2. Set platform on one of the sides where the ramp will attach and install legs and feet, then adjust height as described previously in this section. The two legs on the short side must be installed in the orientation shown (FIG. 2.8).

👉 Use "low profile foot" for platform heights under 4".



2.5. 8' X 5' TURN BACK PLATFORM

This platform is used to create a turn back (or switchback) instead of connecting two 5' x 4' platforms. It includes two standard 5' platform handrails and handrails for the 8' side with a curb (FIG. 2.4).

2.6. LOW PROFILE PLATFORM

2.6.1. Low profile platforms are 1-9/16" thick (tall) as compared to standard platforms which are approximately 3-1/2" thick (tall).

2.6.2. There are three types of low profile platforms (one or more of these platform arrangements may be used in an installation).

FIG. 2.9 Low profile platform straight configuration

FIG. 2.10 Low profile platform turn configuration

FIG. 2.11 Low profile platform turn back configuration (two 5' x 4' platforms shown combined to make a 5' x 8' turn back)

2.6.3. All three require the same procedure for assembly except for the turn back (FIG. 2.11) which requires an additional HARPPC (CONNECTOR – PLATFORM TO PLATFORM).

2.6.4. Low profile platforms can be elevated when used with support tubes and feet or set directly on the ground and used as a landing pad (FIG. 2.12). When used as a landing pad, it may be used with or without handrails and will require a low profile ground transition.

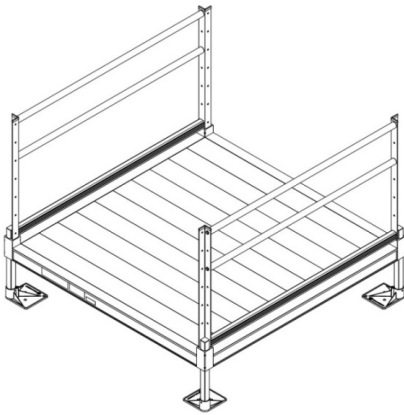


FIG. 2.9

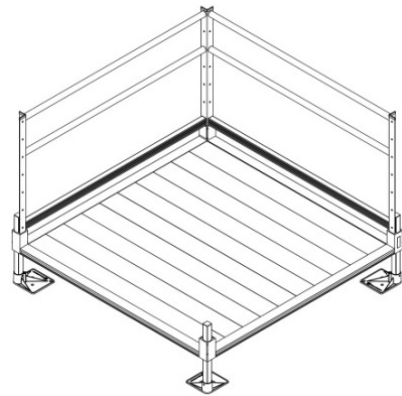


FIG. 2.10

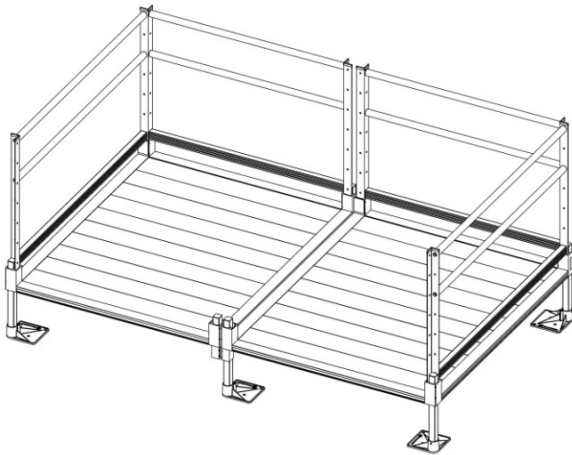


FIG. 2.11

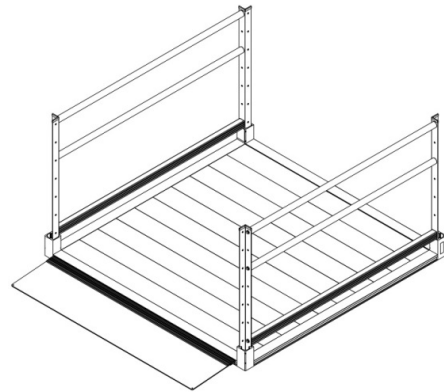


FIG. 2.12

2.6.5. INSTALL RAMPS ON LOW PROFILE PLATFORMS

✎ This section addresses the attachment of a ramp (or ramp run) to a platform. If the ramp needs to be angled with respect to the platform section, skip to 'ANGLE RAMPS WITH RESPECT TO PLATFORMS, PORCHES, OR DECKS' in SECTION 3.

- 2.6.5.1. Locate the HARPLPRHP (RAMP HANGER PAIR LOW PROFILE). Install two hangers onto the side of the platform where the ramp will be attached.
- 2.6.5.2. Hold the hanger perpendicular to the platform side rail, then bring the hanger upward until it is against the side rail lip. Rotate the hanger and continue pushing upward in such a manner that the "hook" at the top of the hanger goes behind and catches on the lip in the top of the platform side rail and the hanger sits on the ledge at the bottom (FIG. 2.13).

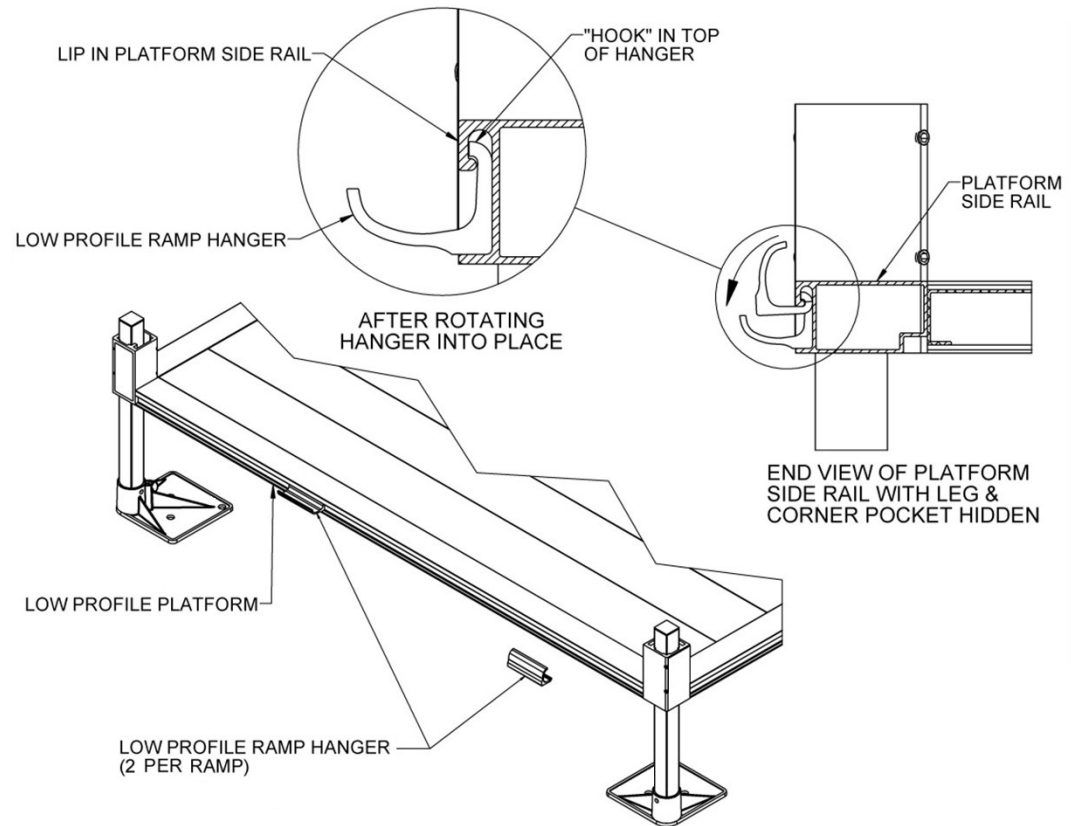


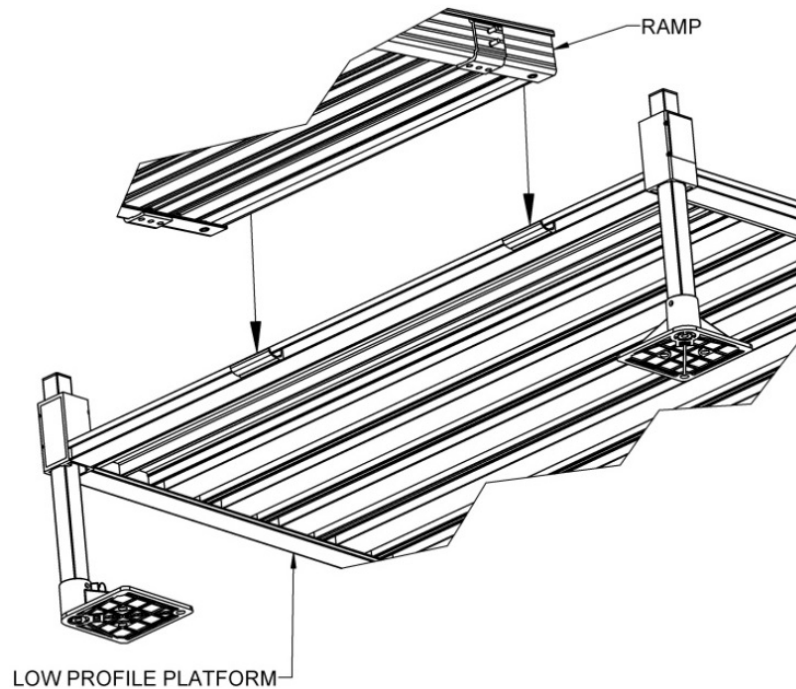
FIG. 2.13

2.6.5.3. Set the ramp on the hangers, ensuring that the hangers are positioned as close as possible to the ramp side rails (FIG. 2.14). The procedure is the same at both the top and bottom of ramp runs which end at a platform unless a low profile ground or bridge transition is used.

⚠ Do not attempt to walk on system until installation is complete.

2.6.5.4. Proceed with the system installation. Secure all ramps to platforms as described in the 'SECURE RAMPS TO PLATFORMS' section as part of the final steps and checks.

FIG. 2.14



2.6.6. INSTALL LOW PROFILE PLATFORM HANDRAILS

2.6.6.1. Handrail assembly for low profile platforms is the same as standard platforms. Refer to 'HANDRAILS' and assemble for desired configuration.



The only installation difference between low profile platforms and standard platforms is where the handrail inserts into the platform corner pockets. On the low profile platform, both handrail set screws are above the platform walking surface (FIG. 2.15) instead of having one underneath the deck as they are on a standard platform.

2.6.6.2. Tighten two set screws per handrail post on the inside of each corner pocket.

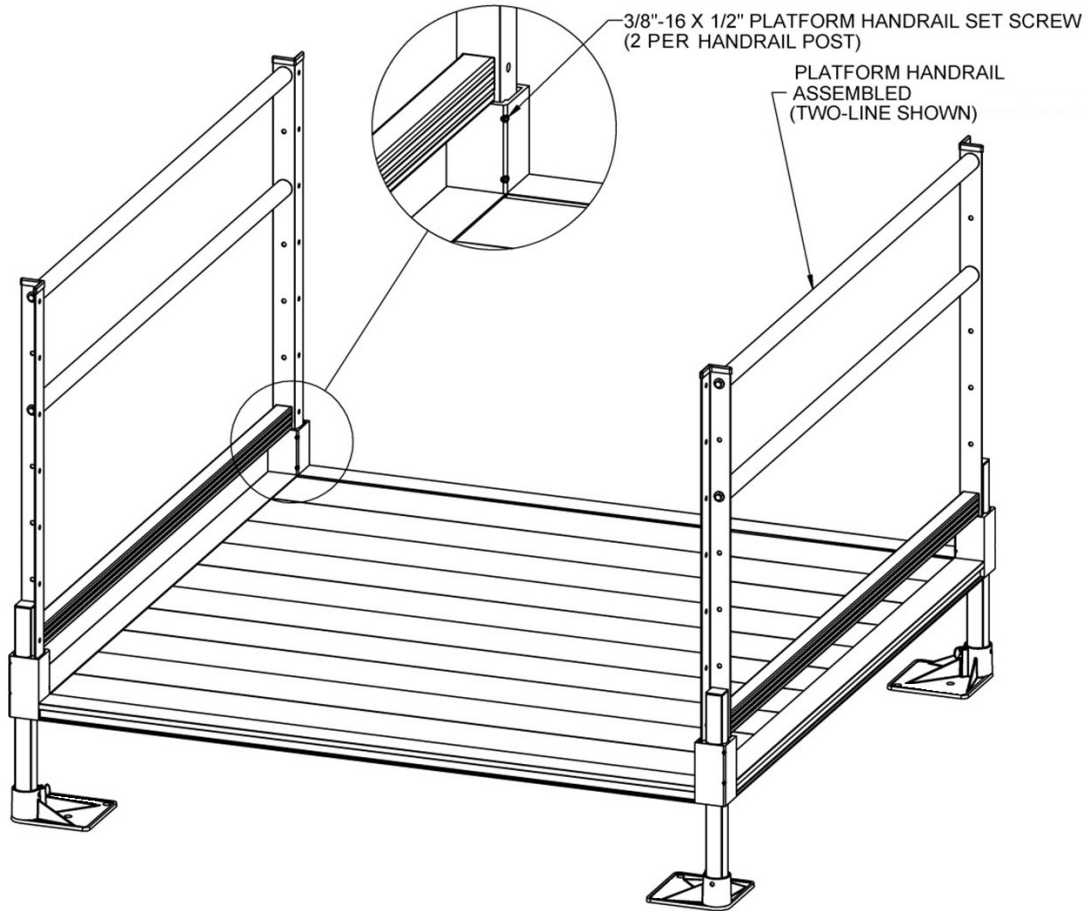


FIG. 2.15

2.6.7. INSTALL LOW PROFILE GROUND TRANSITION OR BRIDGE TRANSITION

2.6.7.1. Low profile ground transitions for the 5' side of the low profile platform are available in four slope options:

- 1:6 slope at 59-1/8" x 7.32"
- 1:8 slope at 59-1/8" x 9.70"
- 1:10 slope at 59-1/8" x 11.95"
- 1:12 slope at 59-1/8" x 14.13"

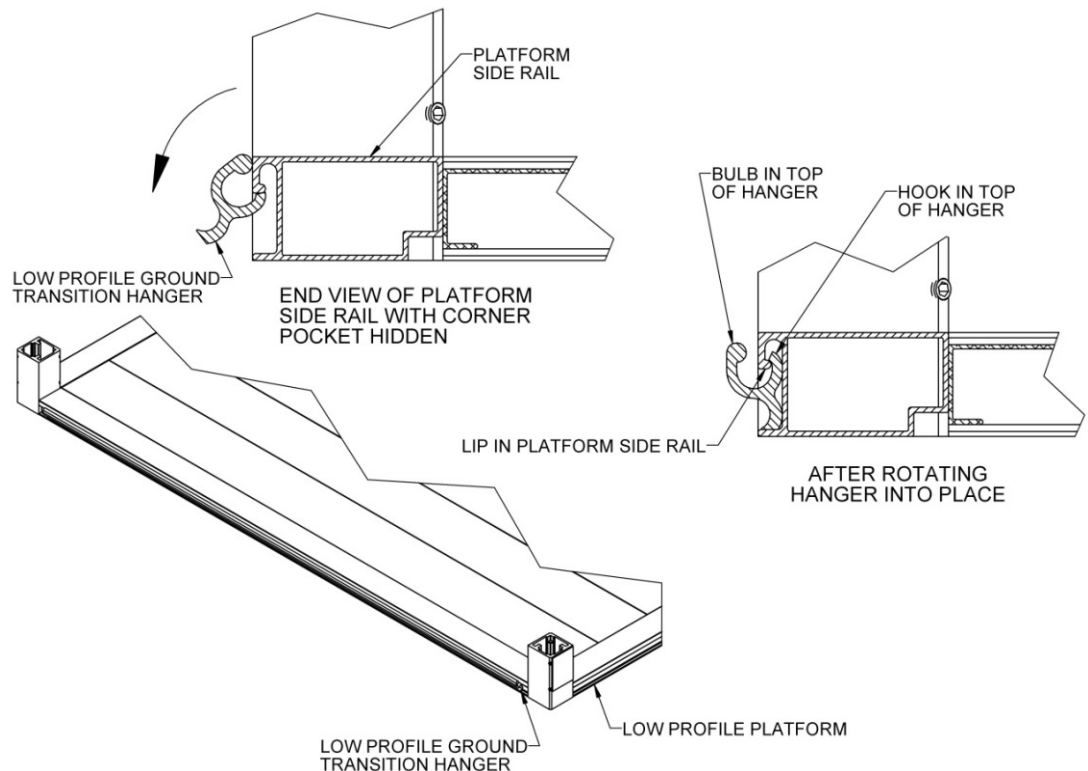


Only use the 1:6 slope 59-1/8" x 7.32" low profile ground transition as a bridge transition for the 5' side of a low profile platform. A bridge transition is a level transition from the low profile platform to another level surface. The other slope options for the 5' side of a low profile platform are only for use as a transition from the low profile platform to the ground.

- ⚠ Bridge transitions must be level, extend onto the adjacent landing or platform a minimum of 1", and have a 6" maximum gap between the low profile platform and the adjacent landing or platform.
- ⚠ Bridge transitions must be secured to the adjacent landing or platform. It is the installer's responsibility to choose the appropriate fastener based on the landing material and ensure the landing is structurally sufficient to support all applied loads.

- 2.6.7.2. For the 4' side of a low profile platform, only a bridge transition at 47-1/8" x 7.32" is available.
- 2.6.7.3. The low profile ground transition hanger is factory assembled to the low profile ground transition or bridge transition. First, disassemble the two components so the hanger can be installed in the platform side rail.
- 2.6.7.4. Hold the low profile ground transition hanger as shown (FIG. 2.16), then rotate the hanger and continue pushing upward in such a manner that the hook at the top of the hanger goes behind and catches on the lip in the platform side rail and the hanger sits on the lower ledge of the side rail (FIG. 2.16).

FIG. 2.16



- 2.6.7.5. Set the low profile platform on its side in such a manner that the low profile ground transition hanger extends up from the ground and the low profile ground transition or bridge transition can be held at approximately 90 degrees to the platform (FIG. 2.16).
 - ⚠ Do not attempt to walk on system until installation is complete.
 - ✋ When installing a low profile bridge transition, install the legs and set the low profile platform height before installing the bridge transition.
- 2.6.7.6. Rotate the low profile ground or bridge transition until hook in transition is captured between the bulb in the top of the low profile ground transition hanger and the platform side rail and the ground or bridge transition is parallel with the platform (FIGs. 2.17 and 2.18).

2.6.7.7. Continue holding the low profile ground or bridge transition in place while setting the low profile platform onto the ground (if being used as a ground transition) or back on its legs (if being used as a bridge transition) in the desired position, then allow the ground or bridge transition to rotate down onto the surface where it will rest.

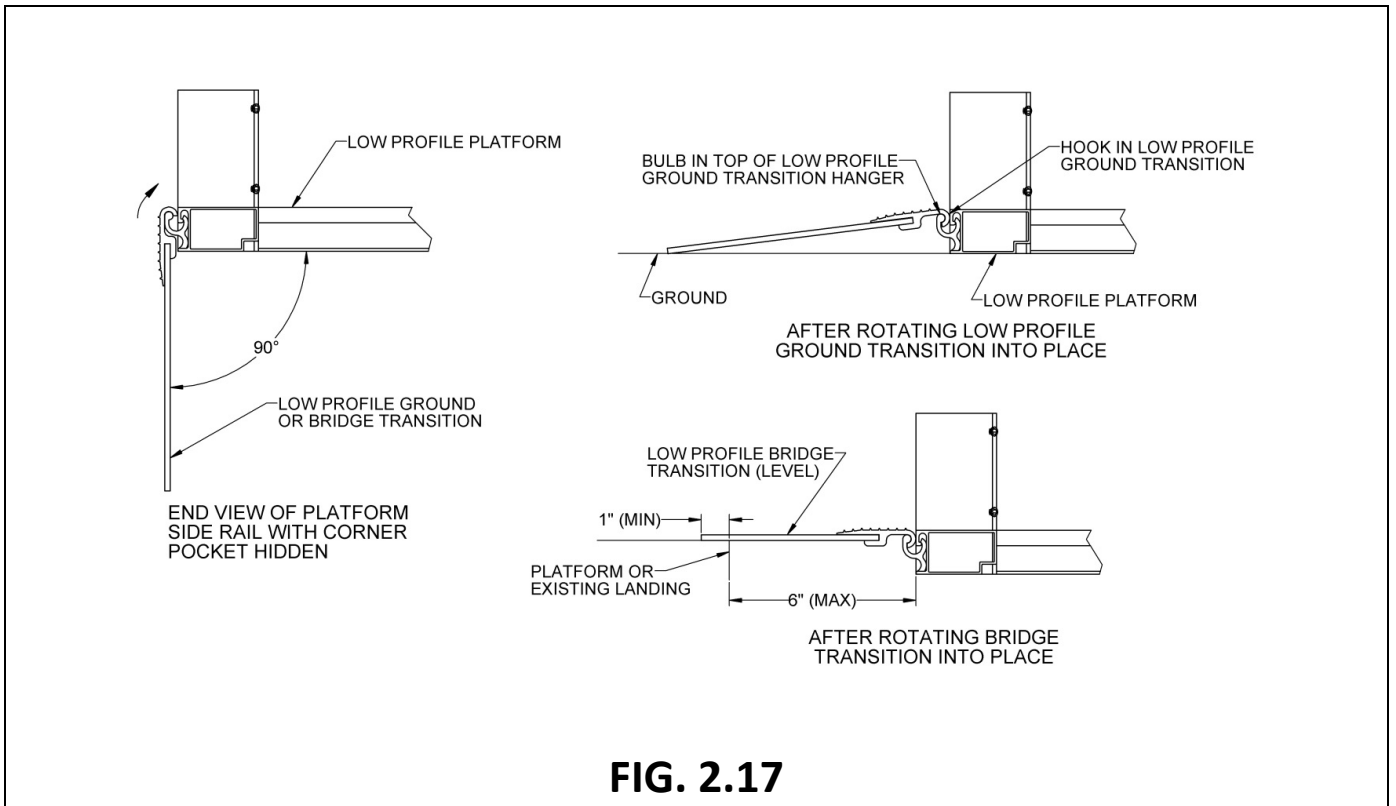


FIG. 2.17

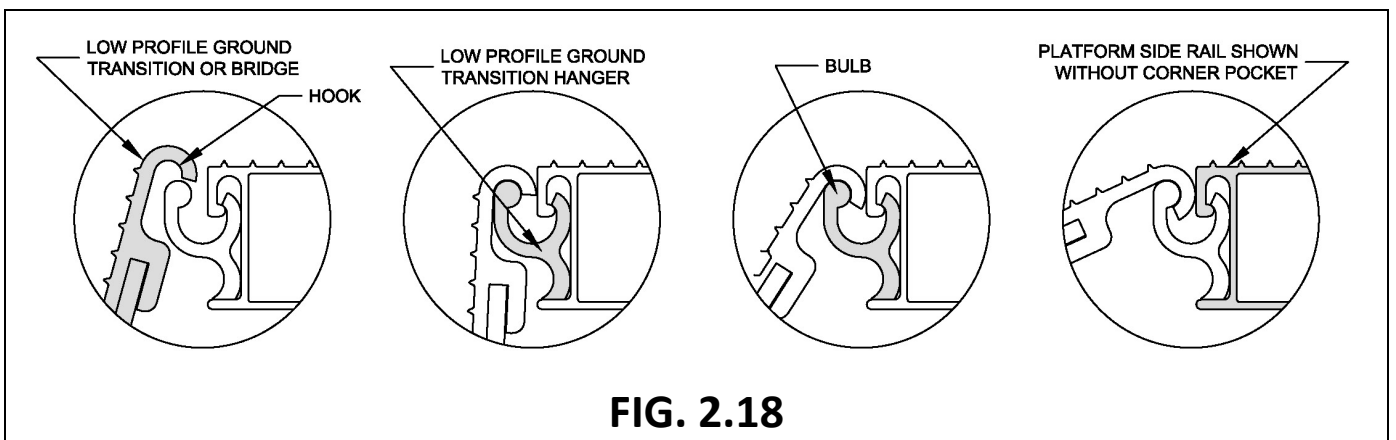
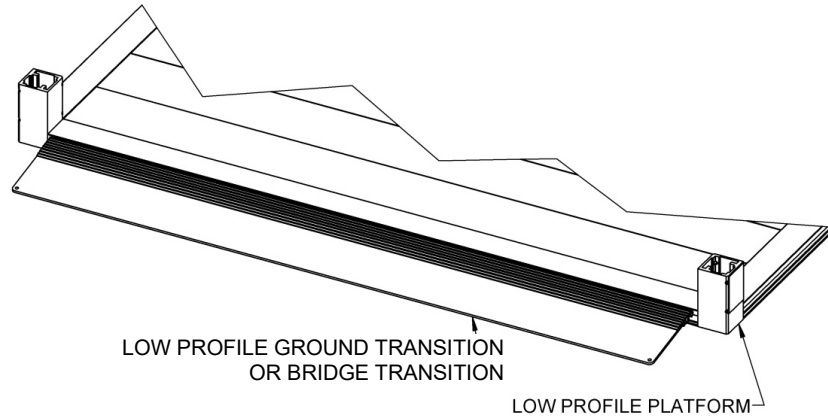


FIG. 2.18

- 2.6.7.8. The installed low profile ground or bridge transition is shown (FIG. 2.19).
- 2.6.7.9. If using as a bridge transition, check and adjust the height of the platform until the bridge transition is level. Attach the bridge transition to the platform or landing using fasteners appropriate for the surface (provided by the installer) through the two 1/4" holes in the corners. If using as a ground transition, anchoring is optional.

FIG. 2.19



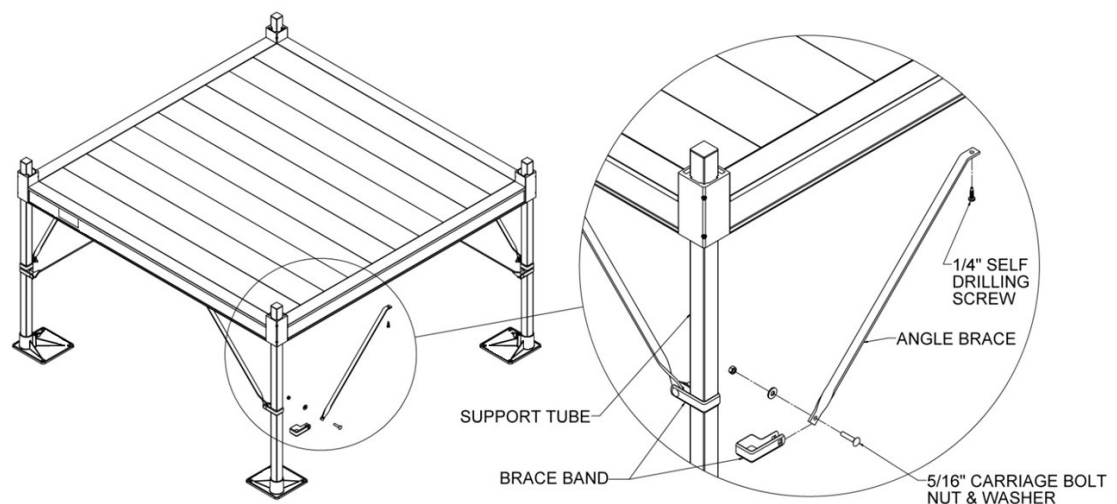
2.7. INSTALL UNIVERSAL ANGLE BRACE – PLATFORMS

For added stability, any platform with a walking surface over 36" high requires bracing. The HARUAB (UNIVERSAL ANGLE BRACE) is used for surfaces 36" up to 71".

- 2.7.1. Angle braces come in pairs. Use four pairs per platform (one pair per support tube, or side) or six pairs when two platforms are connected.
- 2.7.2. Use two brace bands to secure the ends of the two angle braces nearest the twist to the support tube using a 5/16" bolt, flat washer, and nut (FIG. 2.20).
- 2.7.3. Opposite ends of the braces are attached to the bottom of the platform side rail at 90 degrees to each other using a 1/4"x 1" long self-drilling screw (FIG. 2.20).

⚠ Ensure that all angle braces are secured before using platform.

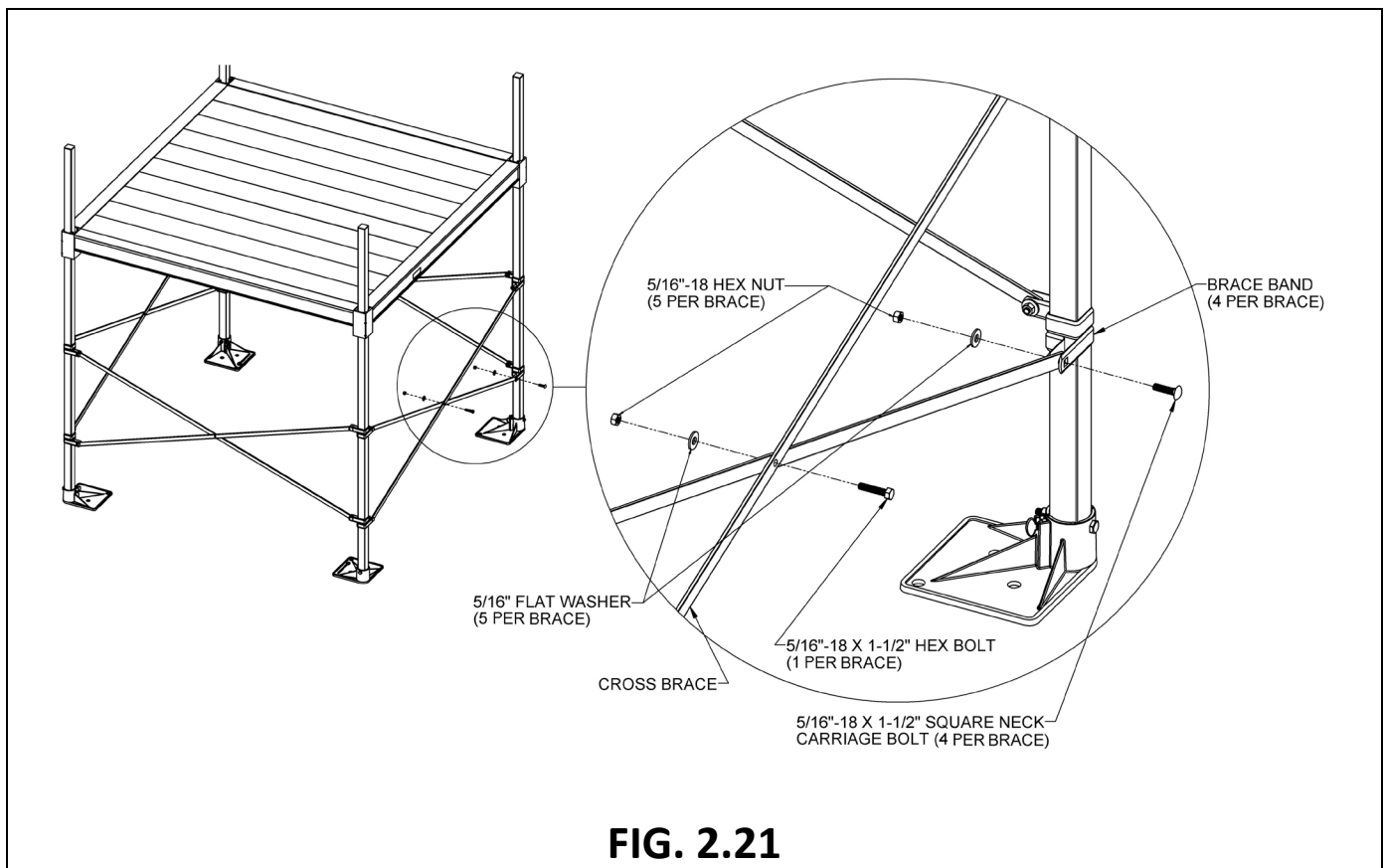
FIG. 2.20



2.8. INSTALL UNIVERSAL CROSS BRACE

- 2.8.1. Install universal cross braces on all support tubes when the walking surface is 72" or higher above the ground. Cross braces are normally installed on all four sides unless two platforms are connected.
- 2.8.2. Use four braces per platform or six braces when two platforms are connected.
- 2.8.3. Separate ends of brace bands until they fit around the 1-1/2" support leg.
- 2.8.4. Install four bands on each leg with the part containing bolt holes at 90 degrees from each other and in line with the outer edge of the foot (FIG. 2.21).
- 2.8.5. The cross brace should be placed approximately in the middle of the platform legs on all four sides with the top brace bands a minimum of two feet from the bottom brace bands.
- 2.8.6. Install the cross brace by installing the 5/16"-18 x 1-1/2" hex bolt, 5/16"-18 hex nut, and 5/16" flat washer through the center hole in the braces. Tighten enough to hold the brace together but still allow it to pivot around the bolt (FIG. 2.21).
- 2.8.7. If needed for the location, trim the ends of the cross brace to fit.
- 2.8.8. Drill one 11/32" or 3/8" diameter hole on center approximately 1/2" from both ends of each brace.
- 2.8.9. Install the assembled cross brace between the legs of the brace bands using the four 5/16"-18 x 1-1/2" long square neck carriage bolts, 5/16"-18 hex nuts, and 5/16" washers provided (FIG. 2.21).
- 2.8.10. Tighten all fasteners securely.

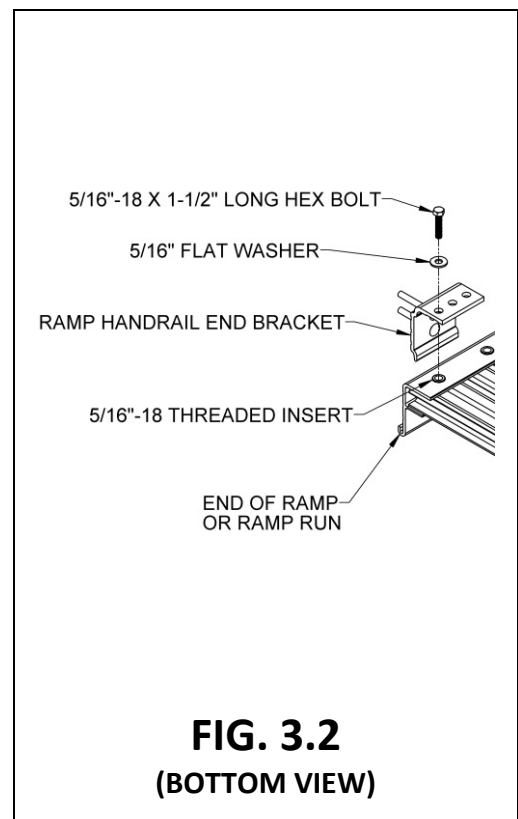
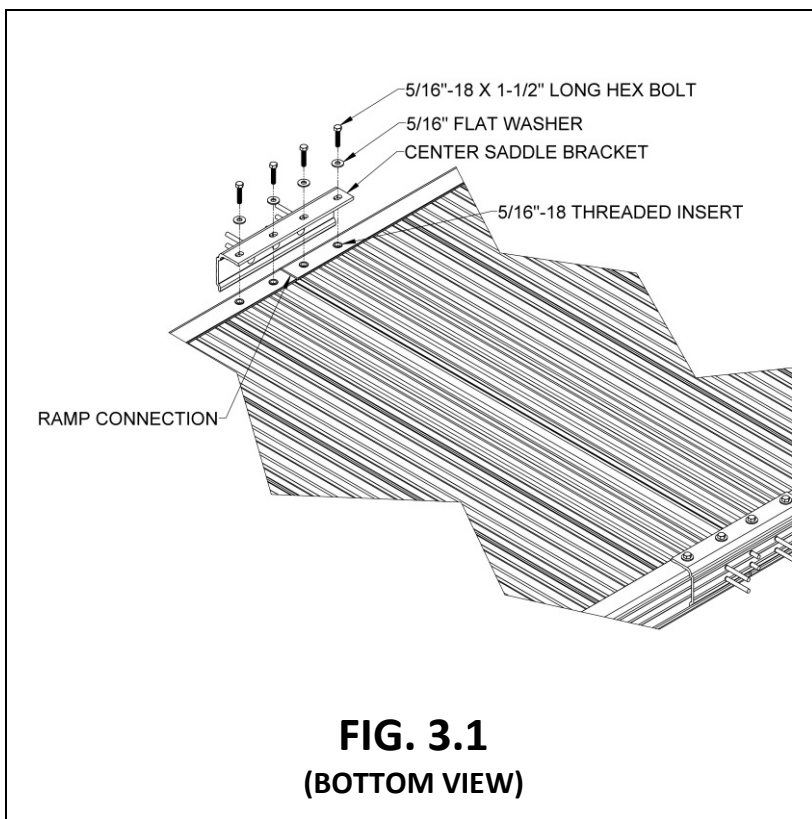
⚠ Ensure that all cross braces are secured before using platform.



3. RAMPS

3.1. CONNECT RAMP SECTIONS

- ✎ If your configuration does not contain two or more consecutive ramps, skip to 'INSTALL A SINGLE RAMP RUN TO AN EXISTING STRUCTURE'.
- 3.1.1. Place the walking surface side of the ramp sections face down, onto cardboard or lawn so that the ramp is not damaged (scratched or dented).
- 3.1.2. Butt the sections together end-to-end and ensure there is no gap, then position the two center saddle brackets, included in the HARRRUC (UNIVERSAL CONNECTOR – RAMP TO RAMP), over the threaded inserts at the end of each ramp section (FIG. 3.1).
- 3.1.3. One edge of the center saddle bracket will slide into the groove of the ramp sections.
 - ✎ To create a run, ramp sections are connected using two interchangeable center saddle brackets per joint. The center saddle brackets are also where the handrails and ramp legs are attached.
- 3.1.4. Attach the center saddle brackets using four each 5/16"-18 x 1-1/2" bolts and 5/16" washers per bracket. Tighten all eight bolts (four each per center saddle bracket).
 - ✎ Although a system can have multiple ramps per run, it is recommended that a maximum of three ramp sections at a time be joined in this manner.
- 3.1.5. If necessary, install optional HARRSUT (UNIVERSAL RAMP SUPPORT – TOP) now (see 'OPTIONAL EQUIPMENT').
- 3.1.6. Install four end brackets, HARRHBPR (RAMP HANDRAIL END BRACKET PAIR). These will be used to attach handrails in a later step. Use one end bracket at each outside corner of the ramp or ramp run using one 5/16"-18 x 1-1/2" bolt and washer into the threaded insert closest to the end of the ramp (FIG. 3.2).
- 3.1.7. Turn the joined ramps to their upright position, being careful not to damage the threaded studs.

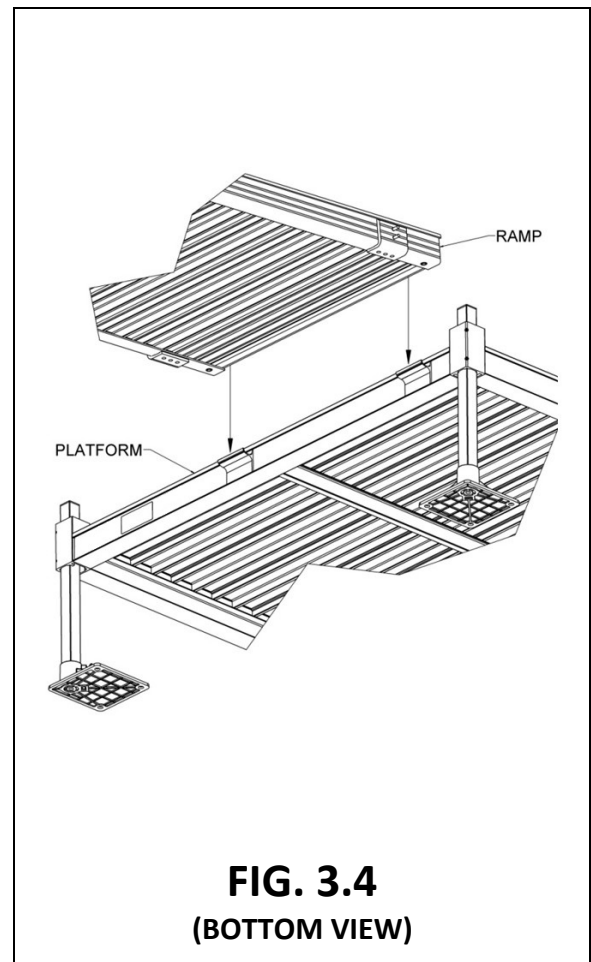
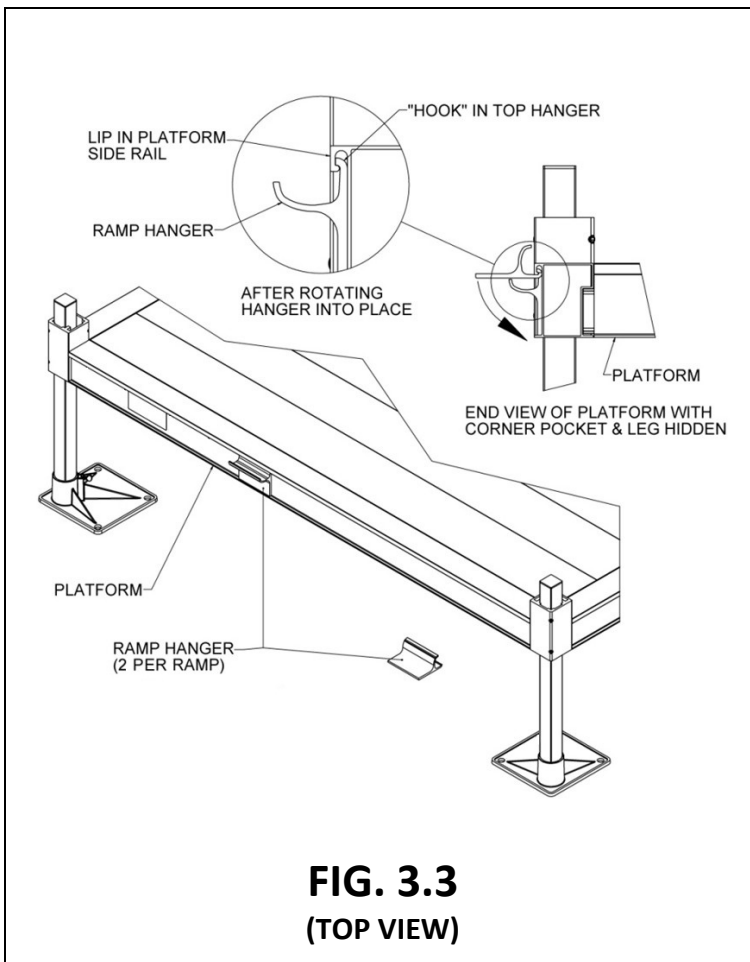


3.2. INSTALL RAMPS ON PLATFORMS

This section addresses the attachment of a ramp or ramp run to a platform. If the ramp needs to be angled with respect to the platform or is going to be attached to an existing porch, refer to 'ANGLE RAMPS WITH RESPECT TO PLATFORMS, PORCHES, OR DECKS'.

- 3.2.1. Ramps are typically located toward either the left or right side of the platform or centered but can be placed in any location on a platform side except when using a 'VERTICAL PICKET CLOSURE' (outlined in SECTION 5). When the ramp is located toward the side of a platform, the ramp handrail post should be positioned 1-1/2" (minimum) to 2" from the inside of the platform post. When using other locations, a second Two-Line Closure must be used to connect the ramp and platform handrails. When centering ramps using a Vertical Picket Closure, additional components are needed. The additional components will come with the closure if specified at the time of order. The closure can also be converted in the field by ordering a second set of hardware.
- 3.2.2. Locate the HARRHP (RAMP HANGER PAIR) and install the two hangers in the platform side rail where the ramp will be attached.
- 3.2.3. Hold the hanger perpendicular (approximately) to the platform side rail then bring the hanger upward until it is against the side rail lip. Rotate the hanger and continue pushing upward in such a manner that the "hook" at the top of the hanger goes behind and catches on the lip in the top of the platform side rail and the hanger sits on the ledge at the bottom (FIG. 3.3).
- 3.2.4. Set the ramp on the hangers. The hangers should be positioned as close as possible to the ramp side rails (FIG. 3.4). The procedure is the same at both the top and bottom of ramp runs which end at a platform unless a transition plate is used.

⚠ Do not attempt to walk on the system until installation is complete.



3.3. ATTACH SUPPORT LEG BRACKETS AND LEGS TO RAMPS

- 3.3.1. Install the Support Leg Bracket (included with HARRRUC) on the center studs of the Center Saddle Bracket (ramp connector included with HARRRUC) with the round hole on the upper stud and the curved slot over the lower stud (FIG. 3.5).
- 3.3.2. Attach the Support Leg Bracket using the provided 5/16" flat washers and 5/16"-18 nylon insert locknuts onto the studs but do not tighten fully until the bracket has been leveled.

FIG. 3.5

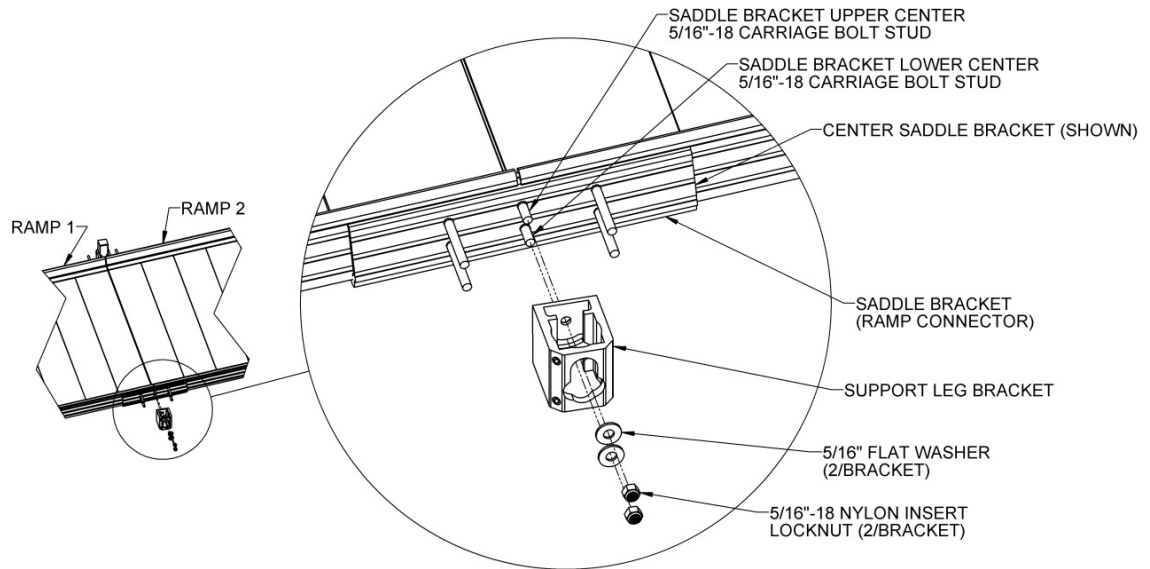
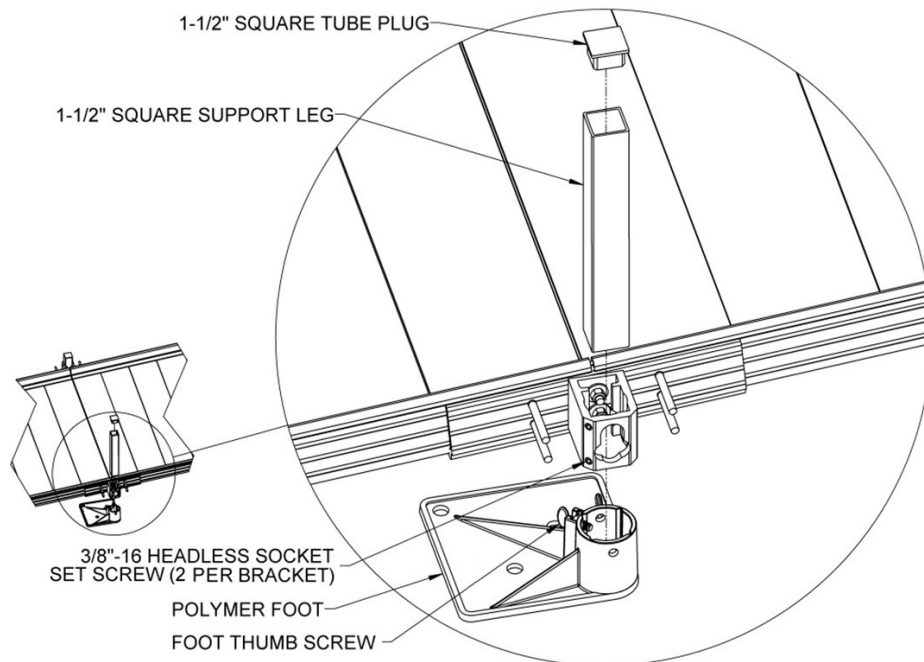
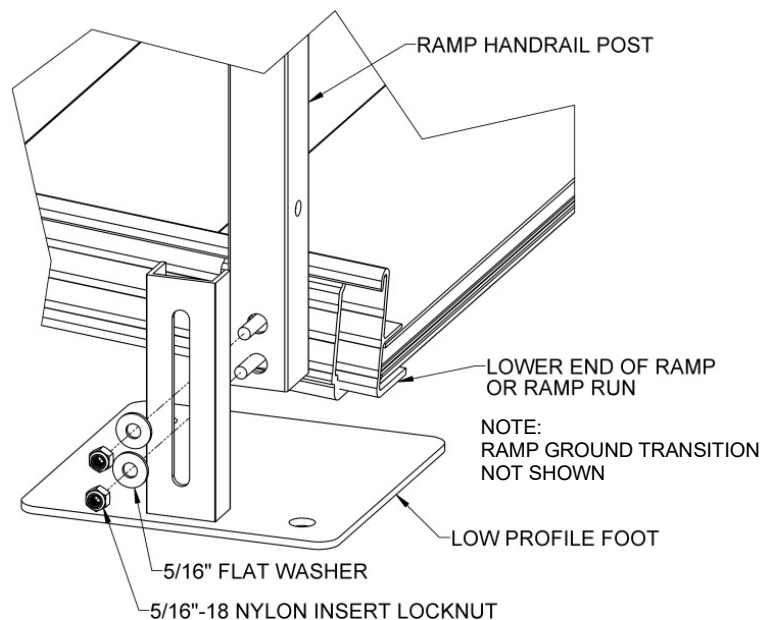


FIG. 3.6

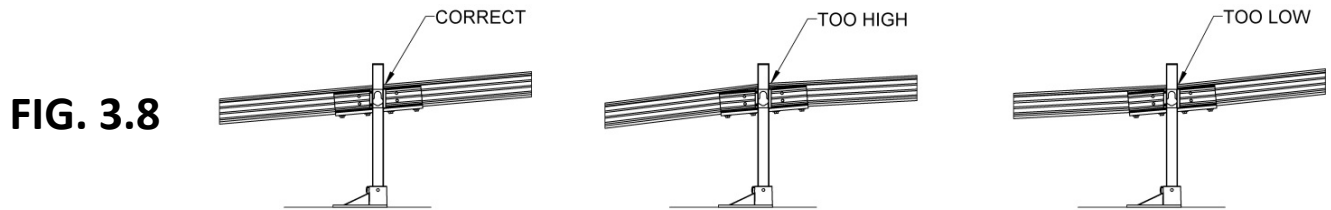


- 3.3.3. Level the Support Leg Bracket using a bubble level or similar tool, then torque the 5/16"-18 nylon insert locknuts to 20 ft.-lbs.
- 3.3.4. Locate the appropriate HARSLxxPR (SUPPORT LEG PAIR where "xx" denotes the leg length) for the location. Place a foot under the Support Leg Bracket with the foot extending under the ramp, then insert a 1-1/2" square Support Leg through the Support Leg Bracket into the foot. Loosen the 3/8"-16 headless socket set screws and the foot thumb screw if needed to fully engage the Support Leg in the foot (FIG. 3.6).
- ✎ If installing on soft soil it may be necessary to set the foot on a concrete pad.
- 3.3.5. After the Support Leg is fully engaged in the foot, tighten the 3/8"-16 headless socket set screws to 15 ft.-lbs. (FIG. 3.6).
- ⚠ Do not attempt to walk on the ramps until all Support Leg set screws have been tightened as specified.
- 3.3.6. Tighten the foot thumb screw and insert a 1-1/2" square plug into the top of the Support Leg (FIG. 3.6).
- 3.3.7. Repeat the above procedure at all locations where ramps connect and at the ends of a ramp or ramp run if an HARRSUT (UNIVERSAL RAMP SUPPORT – TOP) is used.
- ✎ In situations where the lower end of a ramp or ramp run is too close to the ground to install normal feet and feet are needed due to ground or other conditions, low profile feet (part no. HARRLWALP) are available (FIG. 3.7).
- 3.3.8. Remove the 5/16"-18 nylon insert locknuts and 5/16" flat washers attaching the ramp handrail post (if already installed).
- 3.3.9. Position the low profile foot so the foot is oriented under the ramp and the channel leg wraps around the ramp post. Reinstall the locknuts and flat washers, adjust height as described below, then tighten fasteners securely (FIG. 3.7). Repeat on the opposite side.

FIG. 3.7



- 3.3.10. Adjust the ramp legs one at a time.
- 3.3.11. Raise the ramp sections (at the center saddle bracket) to take any sag out of the ramp run, then tighten the two locknuts in each leg.
 - ⚠ ADA guidelines call for a maximum slope of 1:12 (approximately 5 degrees), and this is the ideal slope for the system. However, the ramps can be installed from 1:14 to 1:8 (approximately 4 to 7 degrees. Do not attempt to install the ramps outside this range.
 - ✋ If the ramp is installed at the maximum angle (approximately 7 degrees, longer legs may be required.
 - ✋ Adjusting sections can be accomplished by having someone sight down the ramp while another person adjusts the ramp height.
 - ✋ Ensure that the ramp sections are parallel to each other. If they are not, it may be difficult to install the handrails (FIG. 3.8).
- 3.3.12. Ensure that all bolts are tight and that the ramp sections are aligned parallel to one another.



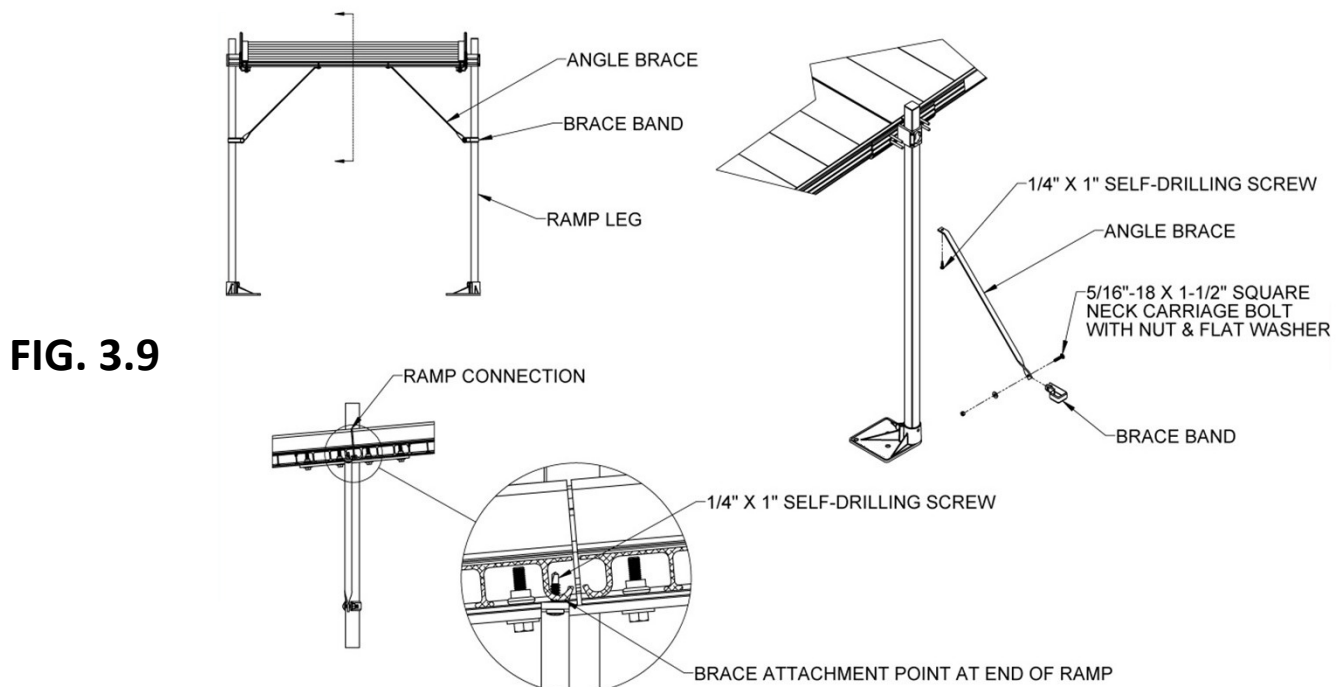
3.4. INSTALL UNIVERSAL ANGLE BRACE – RAMPS

If the walking surface is over 36" high, an HARUAB (UNIVERSAL ANGLE BRACE) must be installed under the ramp (FIG. 3.9).

- 3.4.1. The opposite end of the angle brace is attached to the bottom of the ramp (near the center of the tread at the end of the ramp) using a 1/4" x 1" long self-drilling screw.

⚠ Ensure that all angle braces are secured before using the ramp.

- 3.4.2. Walking surfaces over 72" or higher require Universal Cross Braces in addition to the angle braces (see 'INSTALL UNIVERSAL CROSS BRACE' in SECTION 2). The process for installing cross braces to ramp legs and platform support tubes is the same.

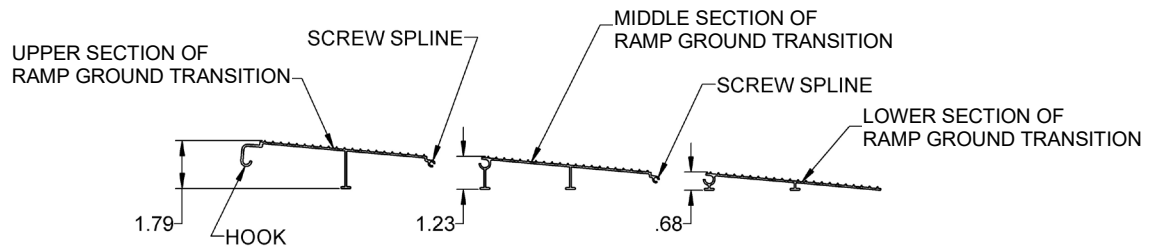


3.5. INSTALL RAMP GROUND TRANSITION

3.5.1. The HARRGT (RAMP GROUND TRANSITION) consists of three sections that need to be installed into the ramp and connected together (FIG. 3.10).

⚠ The HARRGT (RAMP GROUND TRANSITION) is only designed to transition from the lowest ramp in the run to the ground. Do NOT USE it in any other location.

FIG. 3.10



3.5.2. Lift the lowest end of the ramp/ramp run and bring the upper section of the HARRGT into the ramp end tread until the “hook” is engaged (FIG. 3.11).

3.5.3. Rotate into place (FIG. 3.12) and set back on the ground.

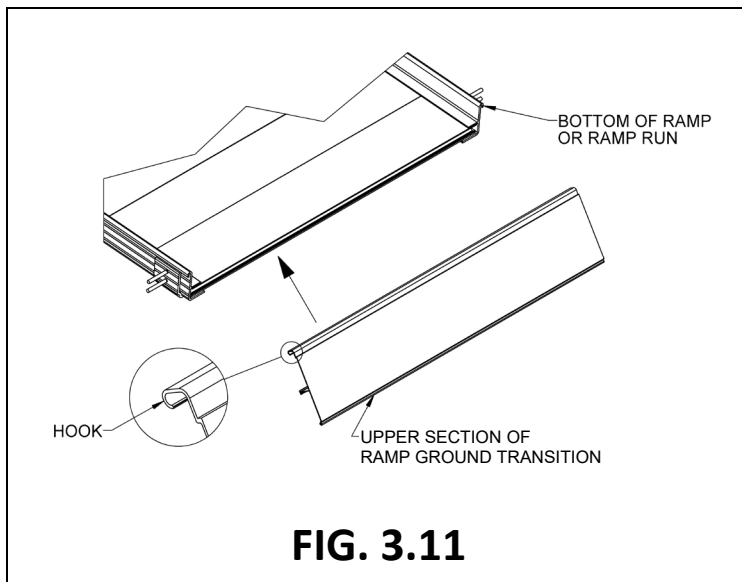


FIG. 3.11

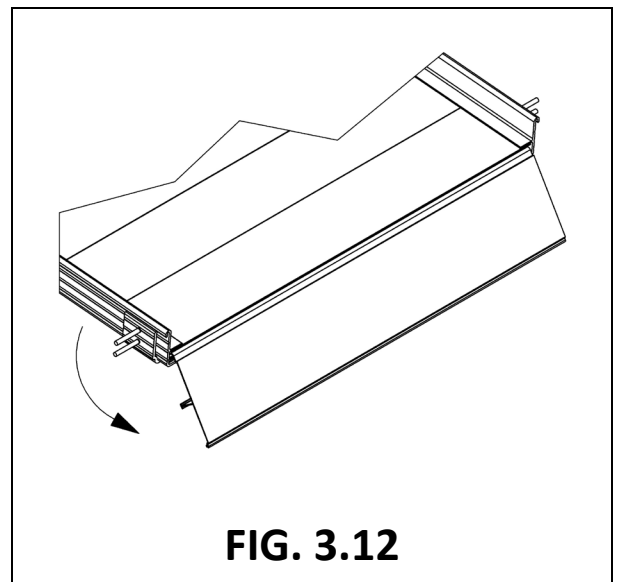


FIG. 3.12

3.5.4. Slide the middle section of the HARRGT onto the upper section then slide the lower section of the HARRGT onto the middle section (FIG. 3.13).

3.5.5. Install #8-32 x 1/2” hex washer head thread cutting screws into the screw slots on both sides where the sections connect (FIG. 3.14).

⚠ Do not overtighten the thread-cutting screws as thread stripping can result.

✋ The hex washer head screws will keep the sections from sliding with respect to each other, but the sections can still be separated until they are installed in the ramp and resting on the ground.

3.5.6. Holes and fasteners are included for anchoring into wood or concrete. Other methods may be used when anchoring into other surfaces.

3.5.7. If connecting the lowest end of the ramp to an HARLP (LANDING PAD) use an HARRLT (RAMP LOWER TRANSITION) instead of an HARRGT (RAMP GROUND TRANSITION). Please see ‘OPTIONAL EQUIPMENT’ for instructions.

FIG. 3.13

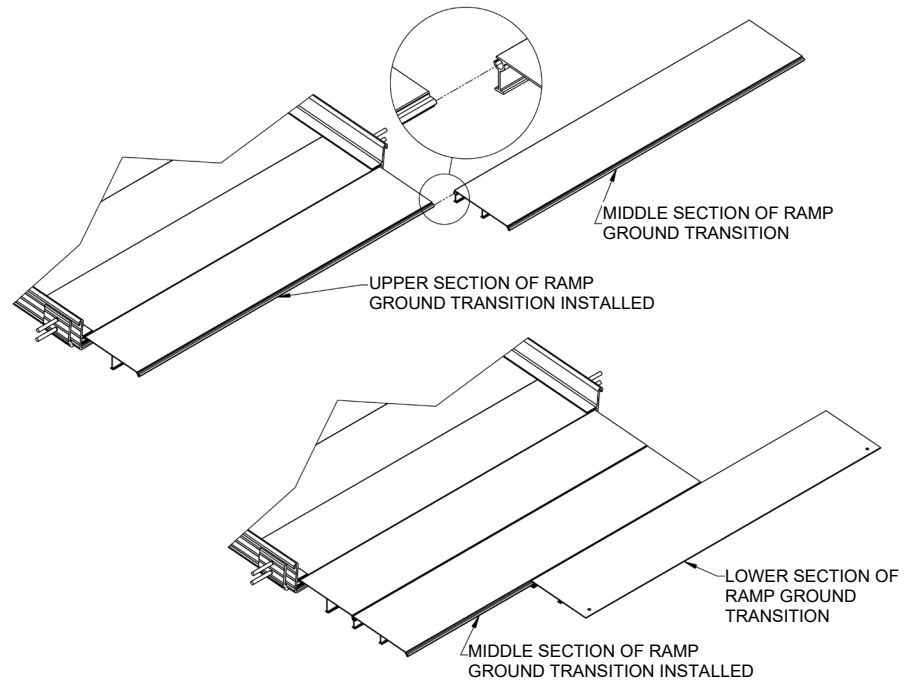
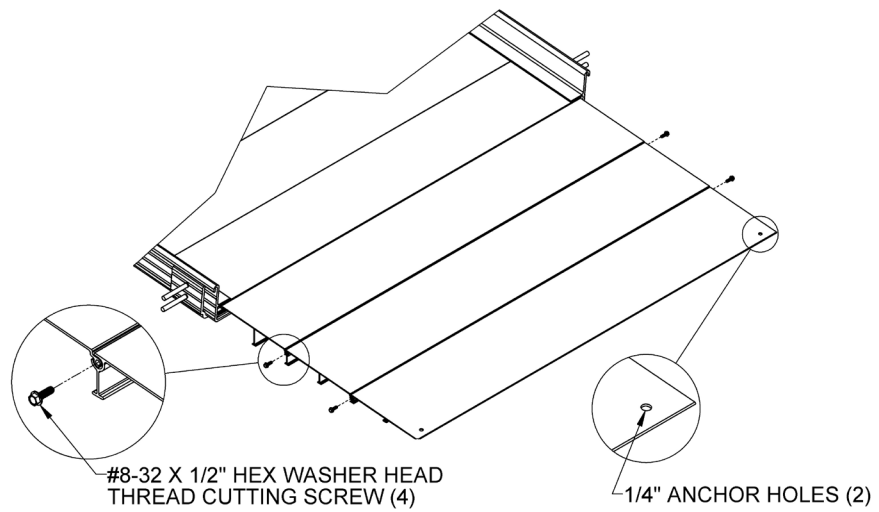


FIG. 3.14

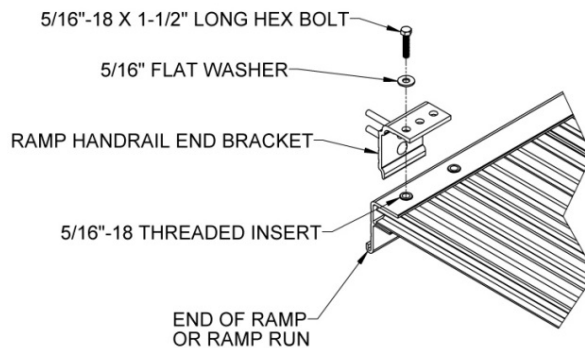


3.6. INSTALL A SINGLE RAMP RUN TO AN EXISTING STRUCTURE

If installing a ramp run to an existing landing other than an Elevation Platform, such as a porch, deck, stairs, etc., follow these steps:

- 3.6.1. Turn the ramp section upside down on a flat surface. Do this on cardboard or a lawn so that the ramp is not damaged (scratched or dented).
- 3.6.2. Locate HARRHBPR (RAMP HANDRAIL END BRACKET PAIR). Install four end brackets (will be used to attach handrails in a later step). Install one end bracket at each outside corner of the ramp section using one 5/16"-18 x 1-1/2" bolt and washer into the threaded insert closest to the end of the ramp (FIG. 3.15).
- 3.6.3. Turn the ramp over to the upright position.

FIG. 3.15



- 3.6.4. Place the upper end of the ramp onto supporting surface (i.e., platform, porch, etc.). Once the ramp is resting on the porch or platform, lift the upper end of the ramp and install the HARRUT (RAMP UPPER TRANSITION) into what will be the upper end of the ramp (FIG. 3.16) and the HARRGT (RAMP GROUND TRANSITION) into what will be the lower end of the ramp.
- 3.6.5. If the lower end of the ramp is not resting on the ground, use either an upper transition or lower transition with an HARRSUT (UNIVERSAL RAMP SUPPORT – TOP). Please see 'OPTIONAL EQUIPMENT' for instructions.
- 3.6.6. Maneuver the ramp to its desired position (FIG. 3.17).

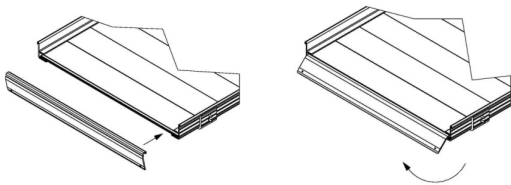


FIG. 3.16

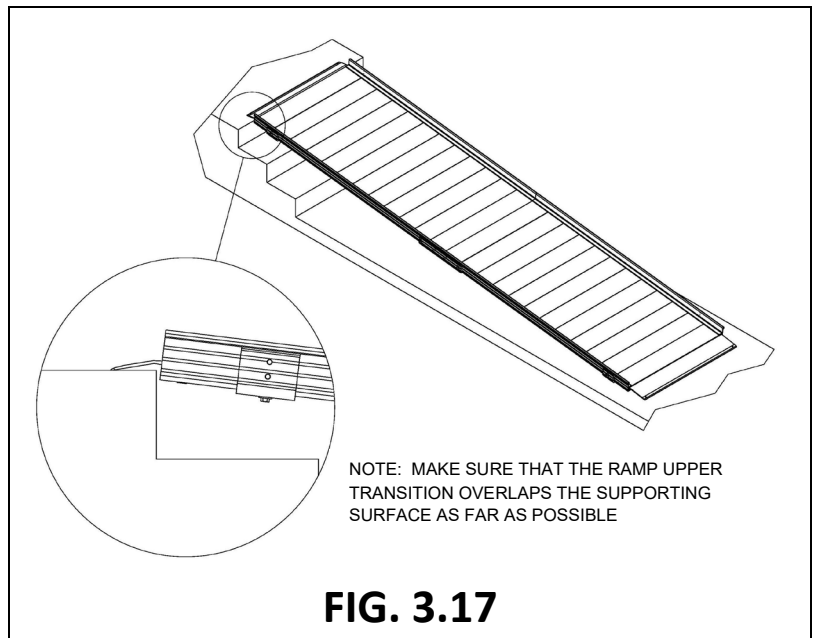


FIG. 3.17

3.7. ANCHOR RAMP UPPER TRANSITION

The HARRUT (RAMP UPPER TRANSITION) must be anchored to a substantial surface. Use the pre-drilled holes at each corner of the HARRUT (RAMP UPPER TRANSITION) as guides.

3.7.1. IF RESTING ON A WOOD SURFACE:

- 3.7.1.1. Secure HARRUT (RAMP UPPER TRANSITION) by installing the 1/4" x 1" long self-drilling screw through each hole (FIG. 3.18).

3.7.2. IF RESTING ON A CONCRETE SURFACE:

- 3.7.2.1. Using the HARRUT (RAMP UPPER TRANSITION) as a template, transfer the hole locations to the concrete surface and note locations with marking device.

- 3.7.2.2. Remove HARRUT (RAMP UPPER TRANSITION). Using a 1/4" masonry bit, drill two 1-1/2" deep holes at the marked locations.



After drilling, make sure that the holes are free of any residue and or debris.

- 3.7.2.3. Re-attach the HARRUT (RAMP UPPER TRANSITION) and align over the drilled holes.

- 3.7.2.4. Drive the 1/4" diameter mushroom head pin drive anchors into the holes in the HARRUT (RAMP UPPER TRANSITION) with a hammer until the head is seated flush with anchor body.

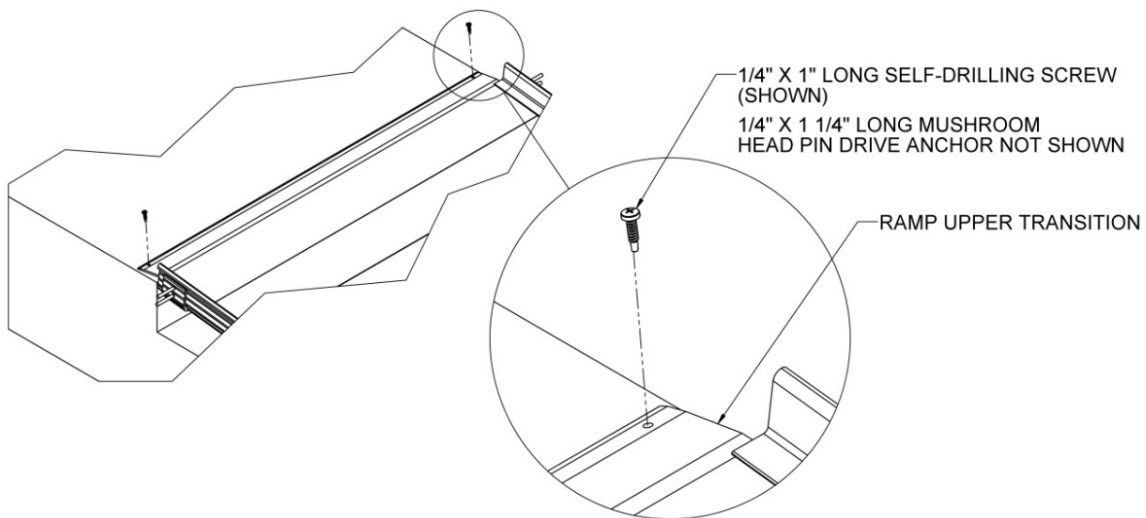


FIG. 3.18

3.8. ANGLE RAMPS WITH RESPECT TO PLATFORMS, PORCHES, OR DECKS

There are situations where it is necessary to angle ramps with respect to a platform, porch, or deck. If a ramp must be angled when attaching to a platform, an HARRUT (RAMP UPPER TRANSITION) or HARRLT (RAMP LOWER TRANSITION) with an HARRSUT (UNIVERSAL RAMP SUPPORT – TOP) must be used instead of an HARRHP (RAMP HANGER PAIR). The same components can be used at the top and bottom of ramp or ramp runs depending on the angle required.

- 3.8.1. Angles up to approximately 3 degrees can be accommodated using the HARRUT (RAMP UPPER TRANSITION) if it overlaps the surface of the platform, porch, or deck by at least 1" (FIG. 3.19).
- 3.8.2. Angles up to approximately 6 degrees can be accommodated using the HARRLT (RAMP LOWER TRANSITION) with an HARRSUT (UNIVERSAL RAMP SUPPORT – TOP) and ramp legs. Legs must be used on both sides of the ramp when angled over 3 degrees. Refer to the appropriate sections in 'OPTIONAL EQUIPMENT' for installing the HARRUT (RAMP UPPER TRANSITION) or HARRLT (RAMP LOWER TRANSITION) (FIG. 3.20).
- 3.8.3. The HARRLT (RAMP LOWER TRANSITION) must overlap the surface of the platform, porch, or deck by at least 1" regardless of the angle required (FIG. 3.20).

FIG. 3.19

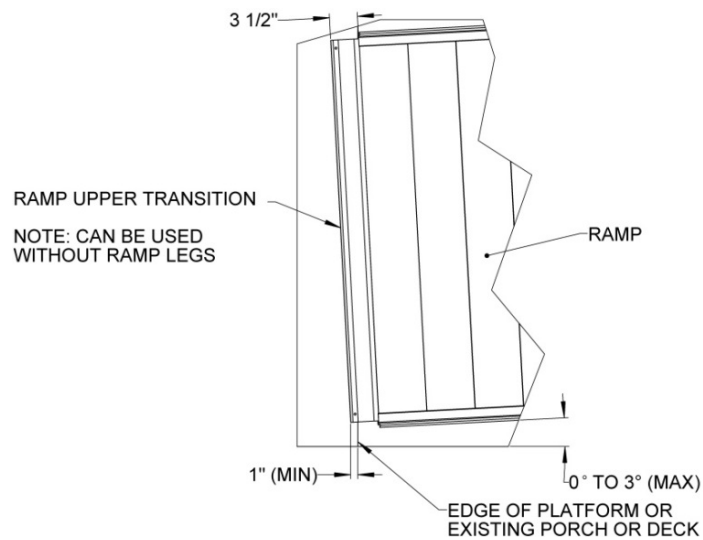
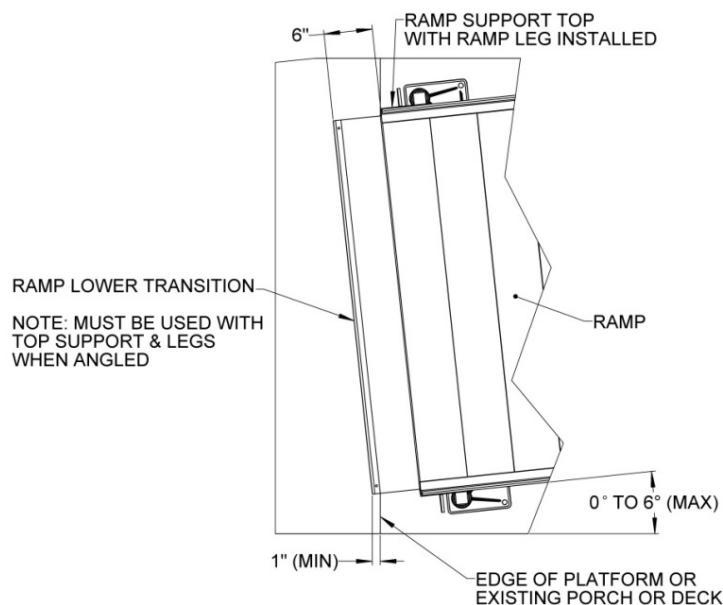


FIG. 3.20

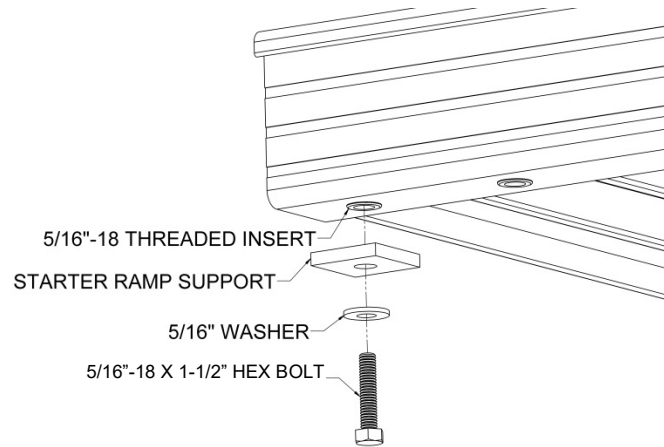


4. HANDRAILS

4.1. RAMP WITHOUT HANDRAILS

- 4.1.1. Attach Starter Ramp Support to the 5/16"-18 threaded insert located on the underside of the first ramp run, using a 5/16"-18 x 1-1/2" hex bolt with 5/16" washer (FIG. 4.1).

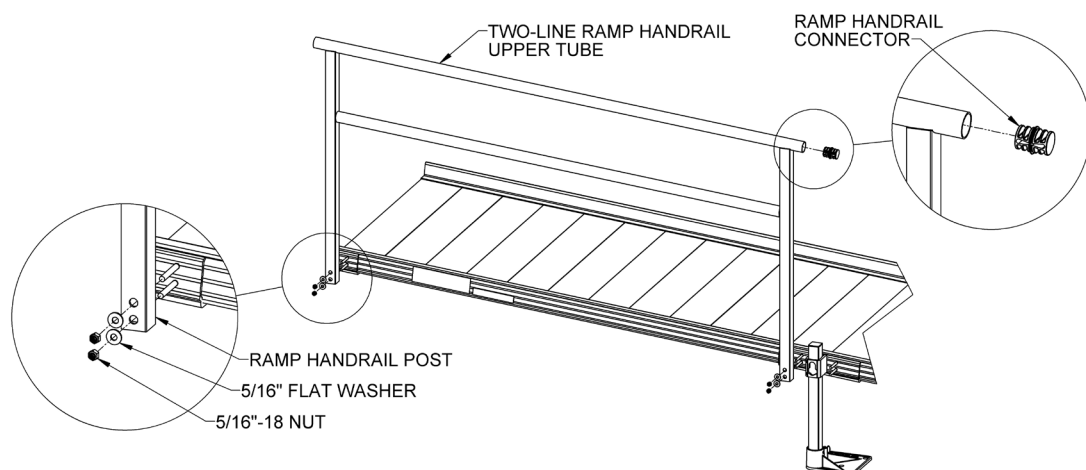
FIG. 4.1



4.2. RAMP HANDRAILS

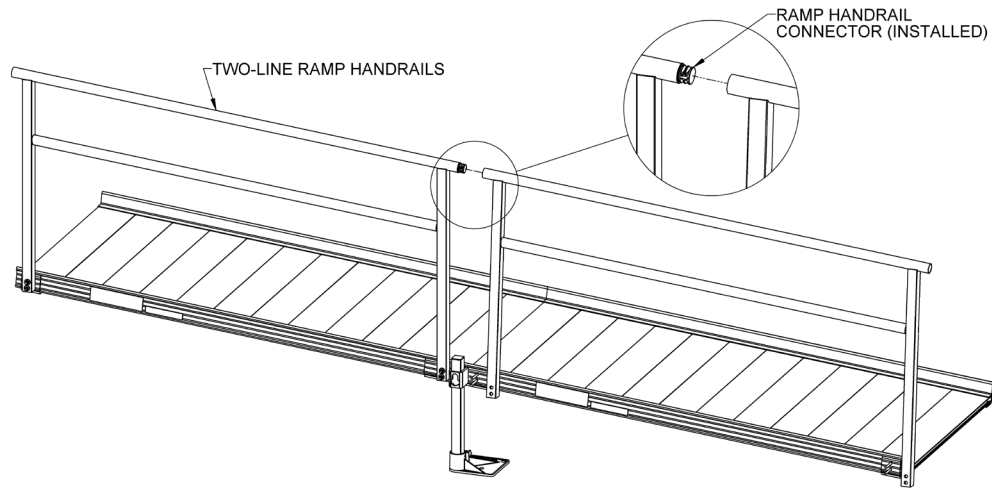
- 4.2.1. Ramp handrails are provided in pairs. Regardless of style, it is strongly recommended the bolts be assembled loosely and not fully tightened until all have been installed and the handrail has been installed on the ramp.
- 4.2.2. One handrail is required on each side of the ramp, but handrails are interchangeable side to side.
- 4.2.3. In a multiple ramp run configuration, handrail connectors (HARRRUC – UNIVERSAL CONNECTOR – RAMP TO RAMP) are used to join handrails together. Refer to FIGS. 4.2 and 4.3 for the following:
- 4.2.3.1. The vertical posts of the handrails each have two holes that correspond with the studs on the end or center saddle brackets (installed in previous steps).
 - 4.2.3.2. Attach handrails to the studs using two 5/16" flat washers and two 5/16"-18 nuts per post. Tighten 5/16"-18 nuts just enough to hold the handrail in place.
 - 4.2.3.3. If the studs do not align with the posts in the handrail, the handrail end bracket is most likely installed into the wrong threaded insert in the ramp side rail (see FIGS. 3.2 or 3.15 for proper installation location). Slide the ramp handrail connector into one end of the upper handrail tube.
 - ✎ If the connector does not fit in the tube, use pliers to lightly compress the connector while sliding into the handrail tube.

FIG. 4.2



- 4.2.3.4. Slide the next handrail section over the connector, ensuring the upper handrail tubes are pushed firmly towards each other. Compress the connector. Use a rubber mallet or similar tool to fully seat as needed.
- 4.2.3.5. Rotate the handrail until the holes in the handrail post align with the studs in the saddle brackets that are connected to the ramp. Attach with 5/16" flat washers and 5/16"-18 nuts but tighten only enough to hold the handrail in place.
- 4.2.3.6. Repeat for the remaining handrails in the run, then tighten all fasteners securely.

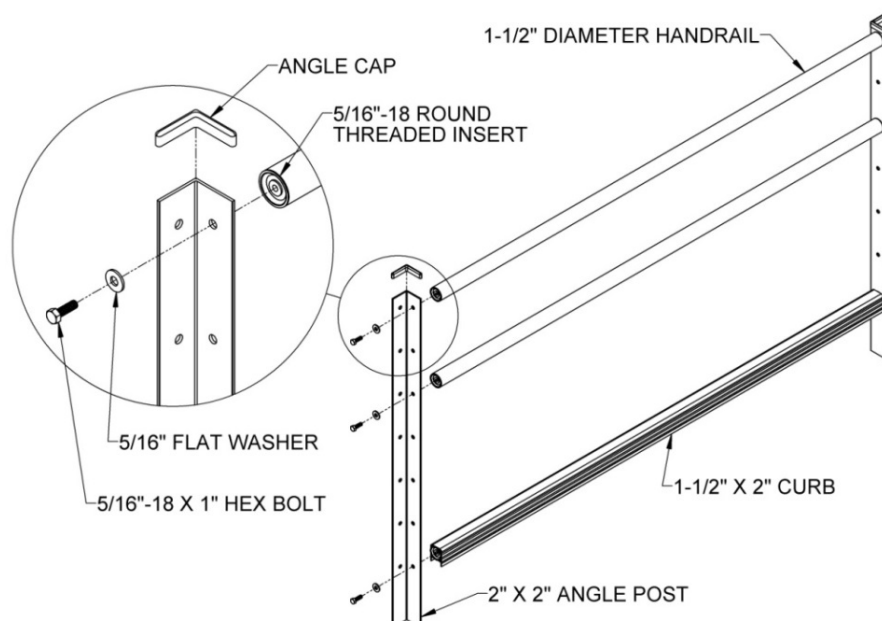
FIG. 4.3



4.3. ASSEMBLE STANDARD PLATFORM HANDRAILS

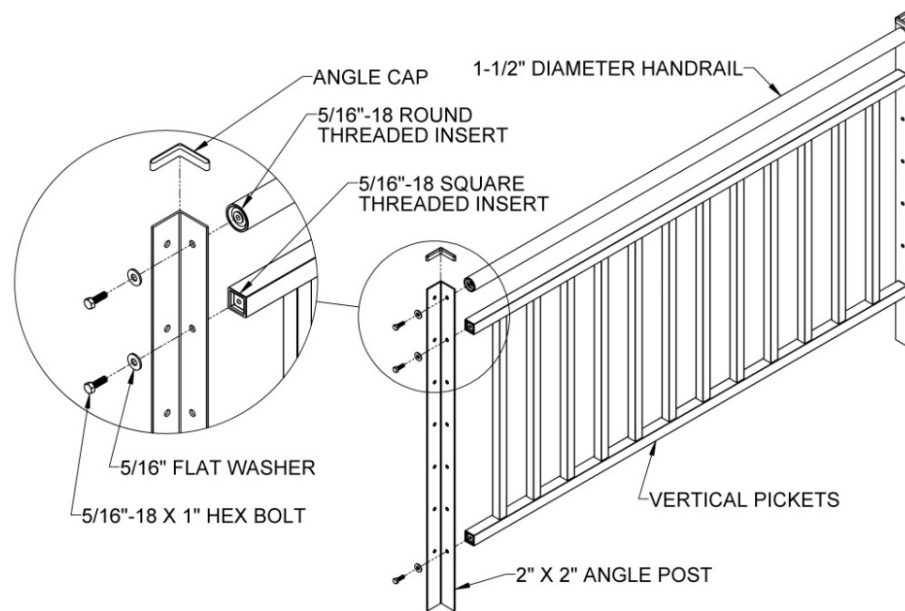
- 4.3.1. Platform handrails are provided in pairs. Regardless of style, it is strongly recommended the bolts be assembled loosely and not fully tightened until all have been installed and the handrail has been installed on the platform.
- 4.3.2. Using the holes shown (FIG. 4.4) for Two-Line platform handrails, pre-assemble handrails by inserting a 5/16"-18 x 1" hex bolt through a 5/16" flat washer, the angle post, and into a 5/16"-18 round threaded insert in the handrails and curb.

FIG. 4.4



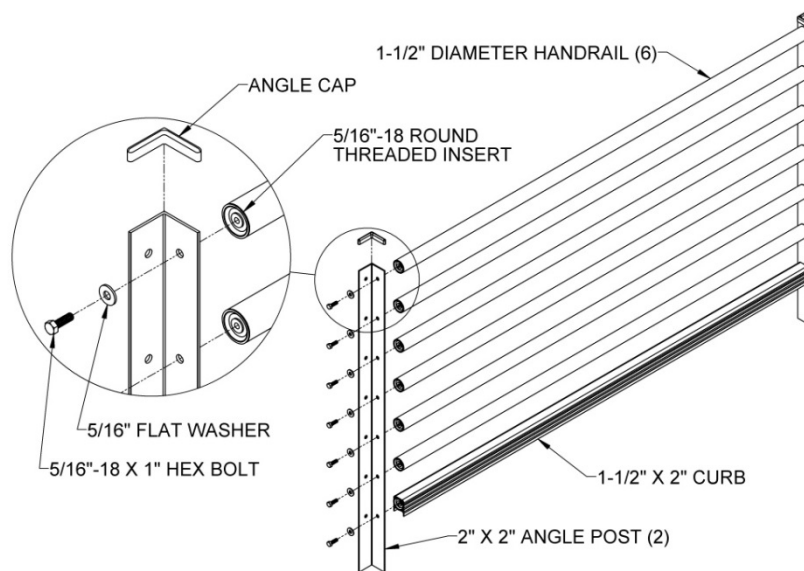
- 4.3.3. Using holes shown (FIG. 4.5) for Vertical Picket platform handrails, pre-assemble handrails by inserting a 5/16"-18 x 1" long hex bolt through a 5/16" flat washer, the angle post, and into a 5/16"-18 round threaded insert in the handrail or square threaded insert in the vertical pickets.

FIG. 4.5



- 4.3.4. For Horizontal Picket platform handrails, pre-assemble the handrails by inserting a 5/16"-18 x 1" long hex bolt through a 5/16" flat washer, the angle post, and into a 5/16"-18 round threaded insert in the handrails and curb. Use the holes shown in FIG. 4.6.

FIG. 4.6



4.4. INSTALL STANDARD PLATFORM HANDRAILS

- 4.4.1. Regardless of the handrail style, but depending on the configuration, refer to FIG. 4.7 and FIG. 4.8 as needed.
- 4.4.2. Pre-assemble the platform handrail for both sides of a straight configuration and the "first" handrail of a turn configuration. Make sure the unattached legs of the angle posts are on the same side with respect to handrail tubes, curb, and pickets and pointing outward (FIG. 4.7).

- 4.4.3. For the “second” handrail in a turn configuration, only assemble one angle post as described above, paying attention to how it will connect to the “first” handrail so the angle post will be oriented correctly.
- 4.4.4. For straight platform configurations and the “first” handrail on a turn platform, drop platform handrails into the corner pockets (FIG. 4.8). The curb should rest on top of the corner pocket when installing the Two-Line handrails. For the Vertical Picket handrails, align the bottom of the post with the bottom of the platform corner pockets.
- 4.4.5. For the “second” handrail on a turn platform, insert the angle post into a corner pocket at 90 degrees from the “first” handrail, then install a 5/16”-18 x 1” long hex bolt through a 5/16” flat washer, the angle post in the “first” handrail, and into a 5/16”-18 threaded inserts in the “second” handrail, curb or picket (FIG. 4.8). Tighten all fasteners securely.
- 4.4.6. Tighten two set screws on the inside of each platform corner pocket. One set screw is located above the platform deck and the other is underneath (FIG. 4.7).
- 4.4.7. Install an angle cap on top of each handrail post. Use construction adhesive to bond the cap in place (FIGs. 4.4, 4.5, and 4.6).
- 4.4.8. Ensure all fasteners are tightened securely.

FIG. 4.7

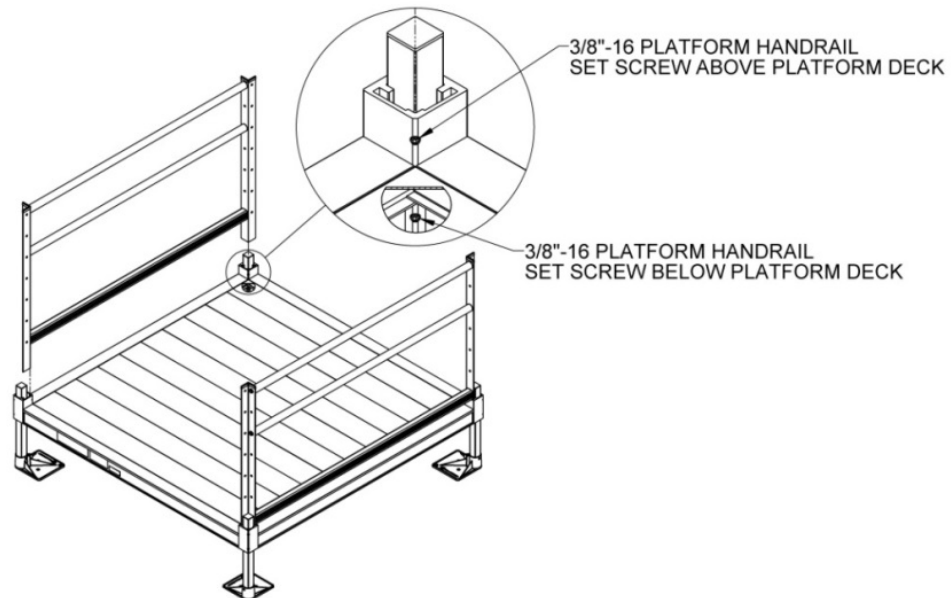
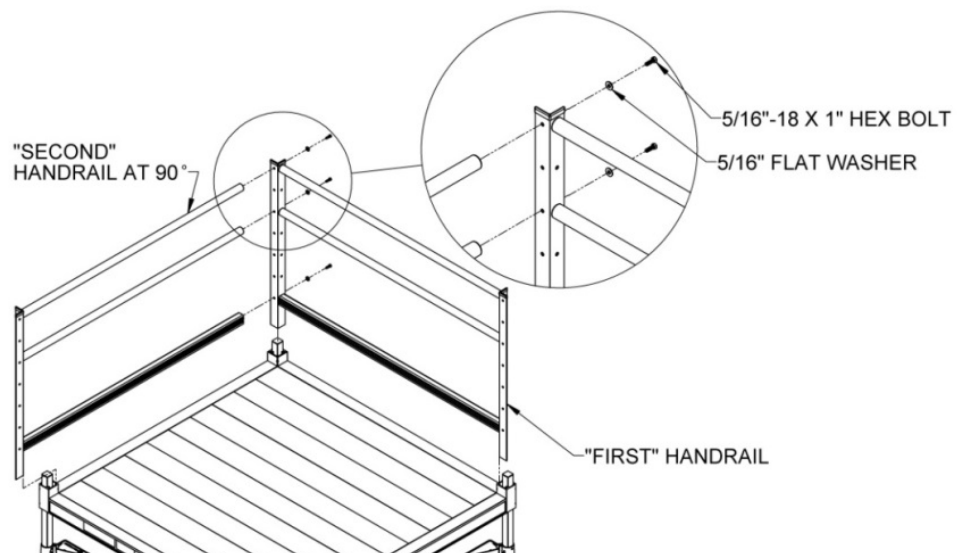
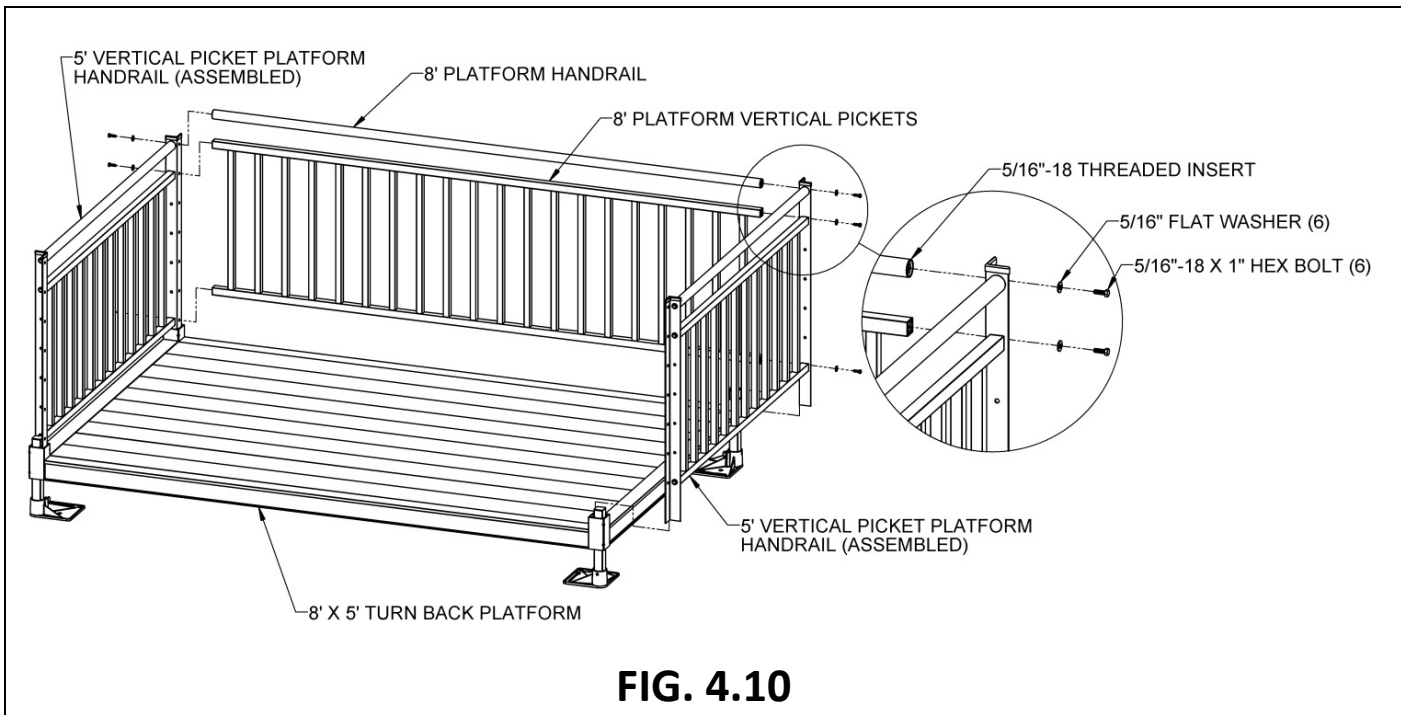
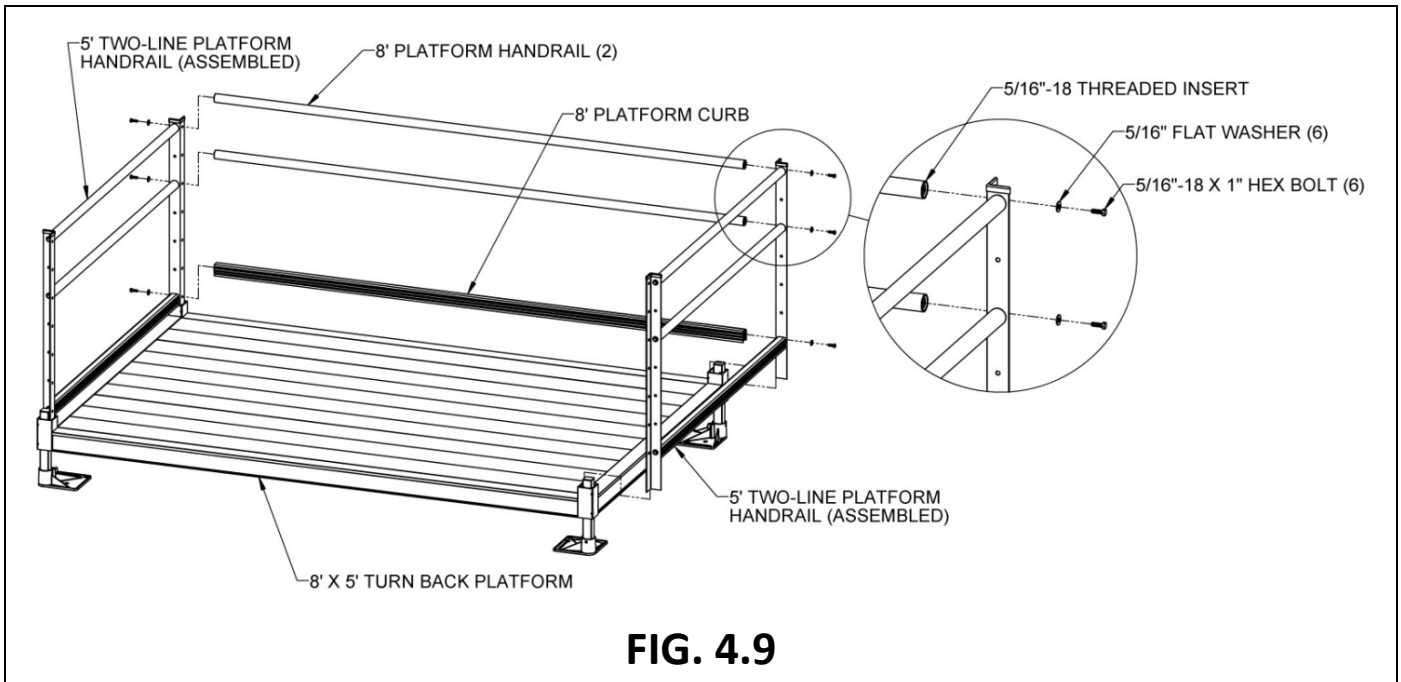


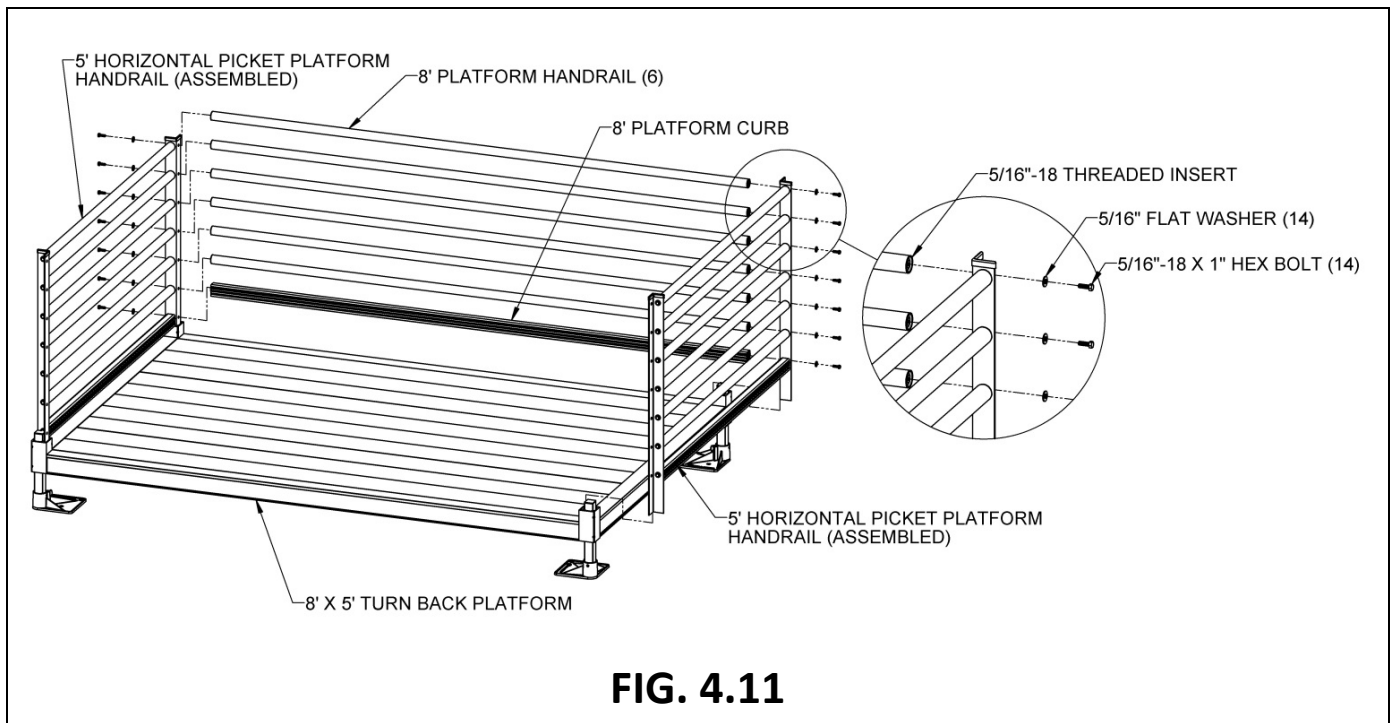
FIG. 4.8



4.5. 8' X 5' TURN BACK PLATFORM HANDRAILS (OPTIONAL EQUIPMENT)

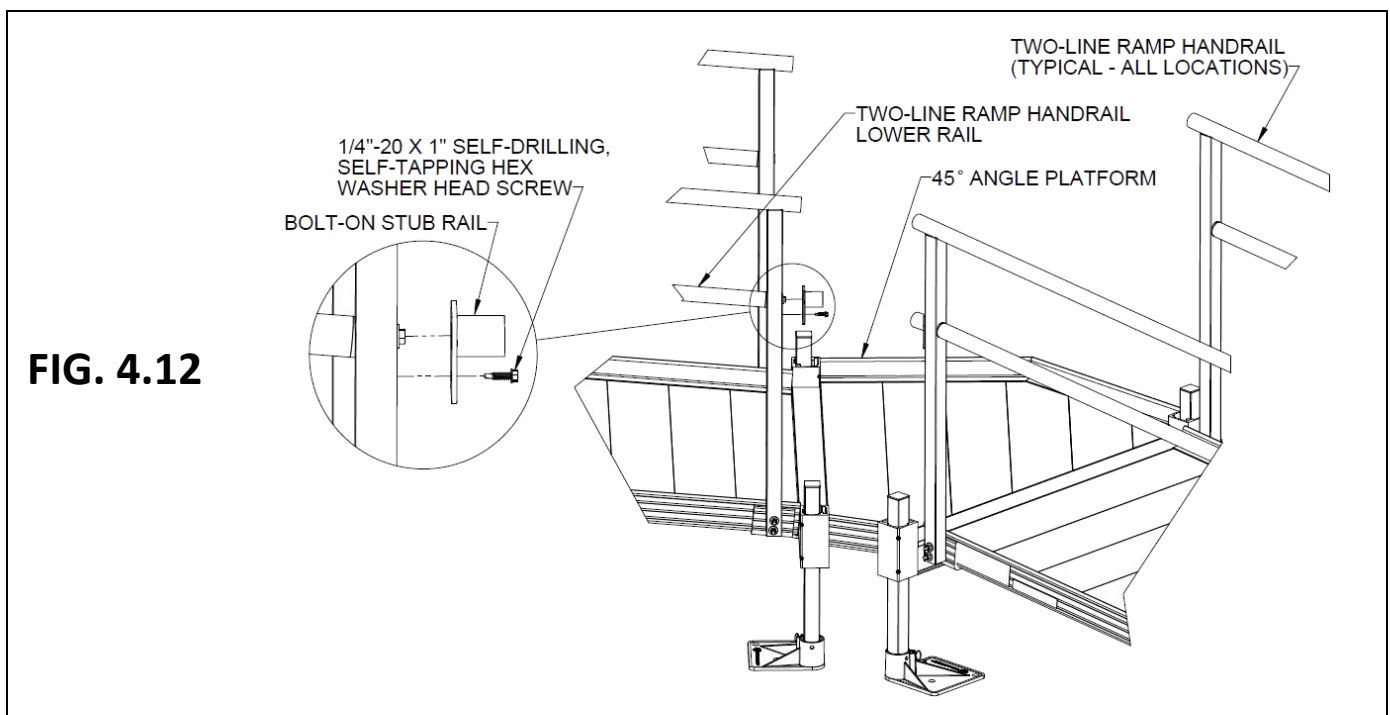
- 4.5.1. The 8' x 5' Turn Back Platform is used to create a turn back (or switchback) instead of connecting two 5' x 4' platforms. It includes two standard 5' platform handrails and handrails for the 8' side with a curb.
- 4.5.2. Refer to 'INSTALL STANDARD PLATFORM HANDRAILS' for 5' platform handrails.
- 4.5.3. Assemble the 8' platform handrails and curb between the two 5' platform handrails by threading 5/16"-18 x 1" long hex bolts through the holes in the 5' platform posts which align with the 5' handrails and curb and into the threaded inserts in the ends of the 8' handrails and curb. Tighten all fasteners securely (FIG. 4.9).
- 4.5.4. 8' platform Vertical Picket handrails are assembled in a similar manner (FIGs. 4.10 and 4.11).





4.6. 45-DEGREE ANGLE PLATFORM HANDRAILS (OPTIONAL EQUIPMENT)

- 4.6.1. There are two options for 45-degree Angle Platform handrails: Two-Line and Vertical Pickets. The platform includes the handrail components needed for the option ordered.
- 4.6.2. Assembling either 45-degree Angle Platform Two-Line or Vertical Picket handrails should be completed after all ramps and platforms have been set and the ramp handrails have been installed. The ramps on both sides of the 45-degree Angle Platform should be set as close to the corner pockets on the “long” side of the platform as possible. Refer to the following steps for Two-Line handrails; skip to 4.6.16 for Vertical Picket handrails.
- 4.6.3. After installing the ramp handrails, attach two Bolt-On Stub Rails to the ramp handrail posts on the “short” side of the 45-degree Angle Platform. Center the 1-1/2” diameter tube of the Bolt-On Stub Rail with respect to the ramp handrail lower rail and secure using a 1/4”-20 x 1” self-drilling, self-tapping hex washer head screw (FIG. 4.12).



- 4.6.4. Insert adjustable elbows into the ramp handrails and the Bolt-On Stub Rails (FIG. 4.14).
- 4.6.5. Loosen the elbow assembly screws and position the adjustable elbows so they are aligned with the adjustable elbows on the opposite side (but do not tighten), then measure the distance between the two larger round faces. Measure both upper and lower gaps because they could be different (FIG. 4.14).
 - 4.6.5.1. Trim the tubes accordingly.
- 4.6.6. The procedure for installing the 1-1/2" diameter handrail tubes and adjustable elbows is the same as installing the closure top rail (refer to 'CLOSURES').
- 4.6.7. To connect the handrails on the "long" side of the 45-degree Angle Platform, the welded handrail extension (shaped like an "H" with unequal legs) must first be connected to the ramp handrail whose uppermost point ends at the angled platform (not the ramp whose lowermost point starts at the angled platform).
 - 4.6.7.1. Locate an adjustable elbow (elbow assembly and disassembly shown in FIG. 4.13).

FIG. 4.13

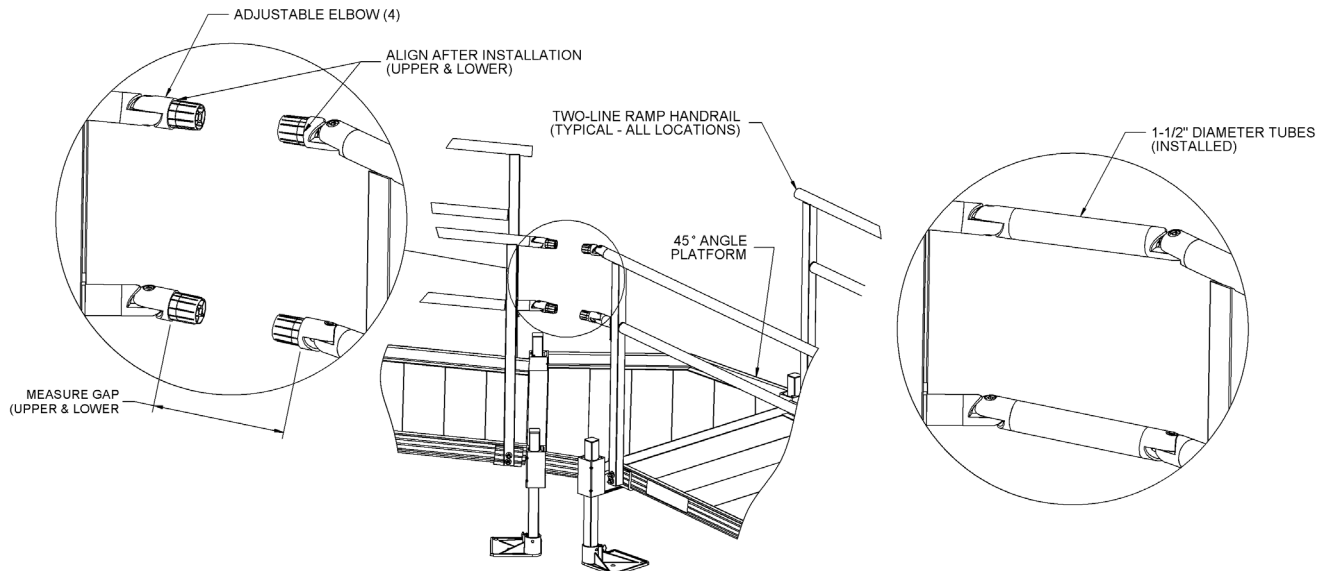
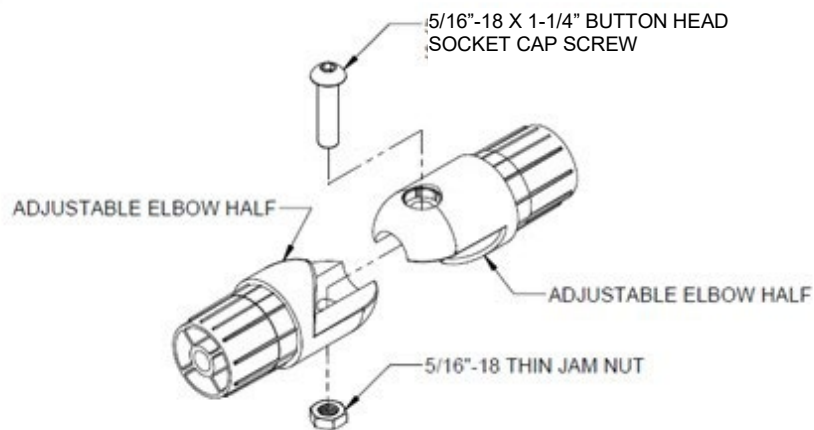


FIG. 4.14

- 4.6.8. Insert one half of the elbow into the ramp handrail and the other half into the leg of the handrail extension above the connector plate (FIG. 4.15).
- 4.6.9. Let the connector plate rest against the ramp handrail post and reassemble the adjustable elbow.
- 4.6.10. Secure the connector plate to the ramp handrail post using a 1/4"-20 x 1" self-drilling, self-tapping hex washer head screw (FIG. 4.15).
- 4.6.11. Attach a Bolt-On Stub Rail to the ramp handrail post on the opposite side of the welded "H". Center the 1-1/2" diameter tube of the Bolt-On Stub Rail with respect to the ramp handrail lower rail and secure using a 1/4"-20 x 1" self-drilling, self-tapping hex washer head screw (FIG. 4.16).

FIG. 4.15

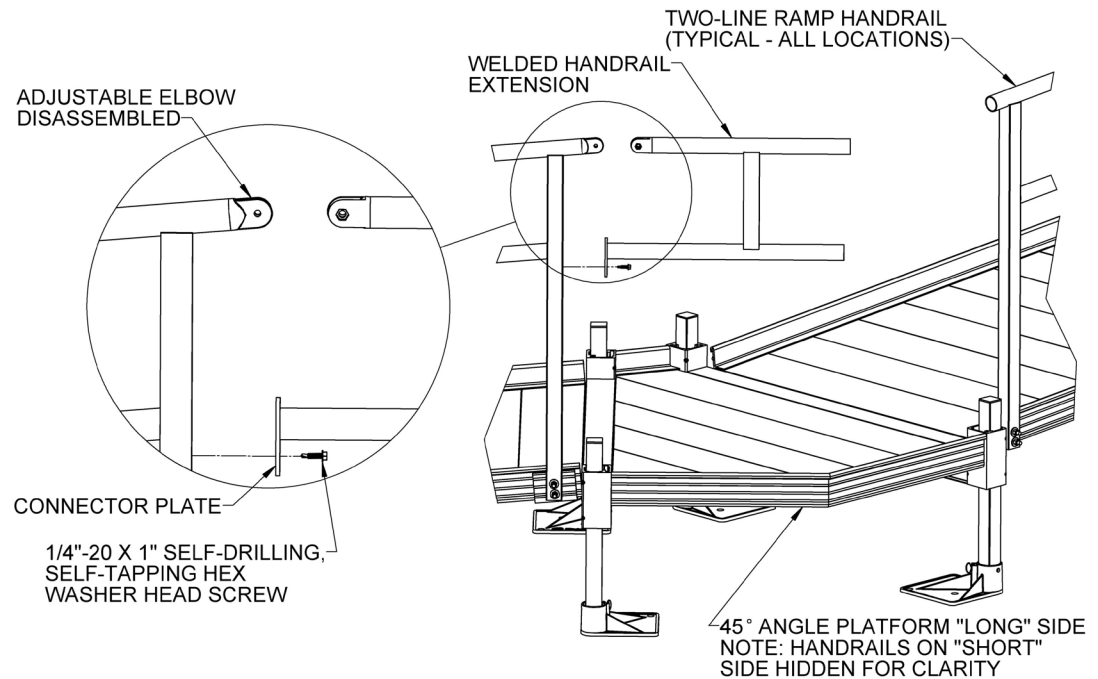
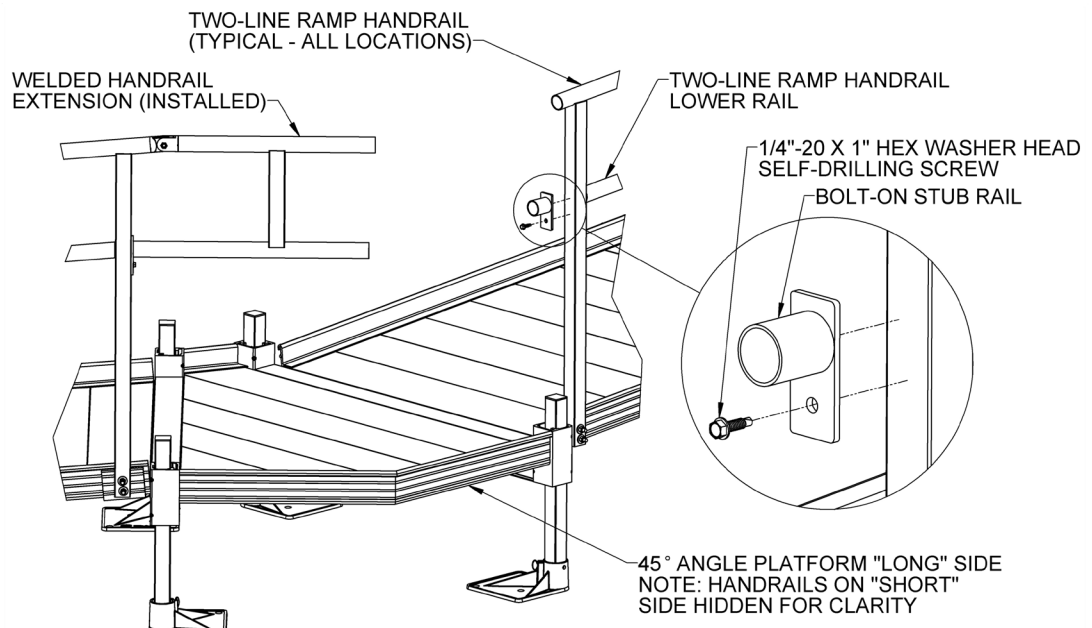
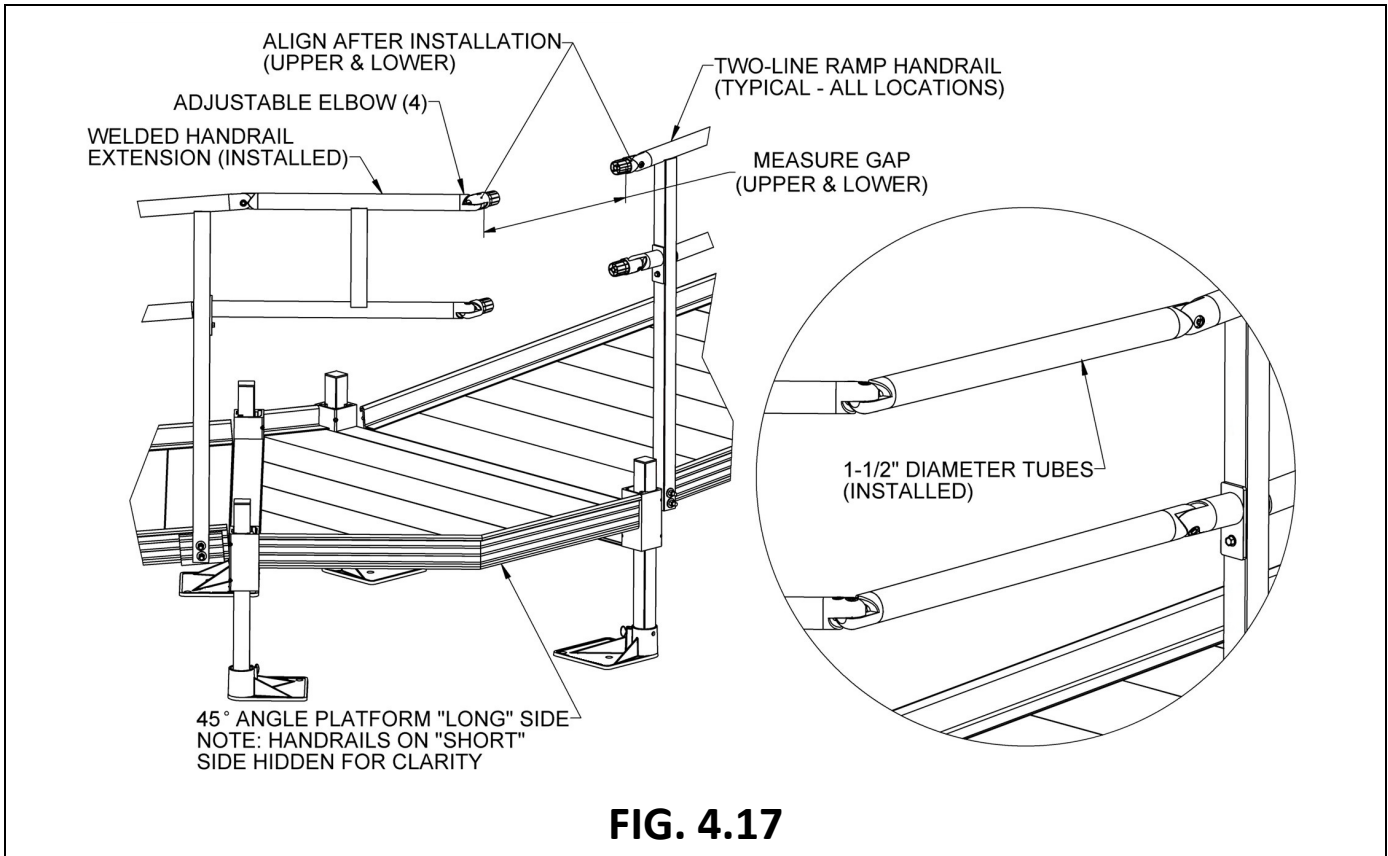


FIG. 4.16



- 4.6.12. Insert adjustable elbows into the open ramp handrail, the Bolt-On Stub Rail, and the open ends of the welded handrail extension (FIG. 4.17).
- 4.6.13. Align the adjustable elbows and measure and trim the 1-1/2" diameter handrail tubes connecting the ramp handrail and Bolt-On Stub Rail to the handrail extension. Measure both upper and lower gaps because they could be different and trim tubes accordingly. The procedure for installing the 1-1/2" diameter handrail tubes and adjustable elbows is the same as installing the closure top rail (refer to 'CLOSURES').
- 4.6.14. FIG. 4.17 shows the completed connection.
- 4.6.15. Ensure all fasteners on both sides are tightened securely.



- 4.6.16. After installing ramp handrails, insert the Short Side Vertical Picket on the "short" side of the 45-degree Angle Platform. Align the bottom of the posts with the bottom of the corner pockets and tighten the set screws securely. Install angle caps on top of each post (FIG. 4.18). Refer to SECTION 4.4 for installing platform handrails and attaching angle caps.
- 4.6.17. Insert adjustable elbows into both ramp handrails and install 1-1/2" diameter handrail tubes in the same manner as described in 'HANDRAILS' and shown in FIG. 4.19.

FIG. 4.18

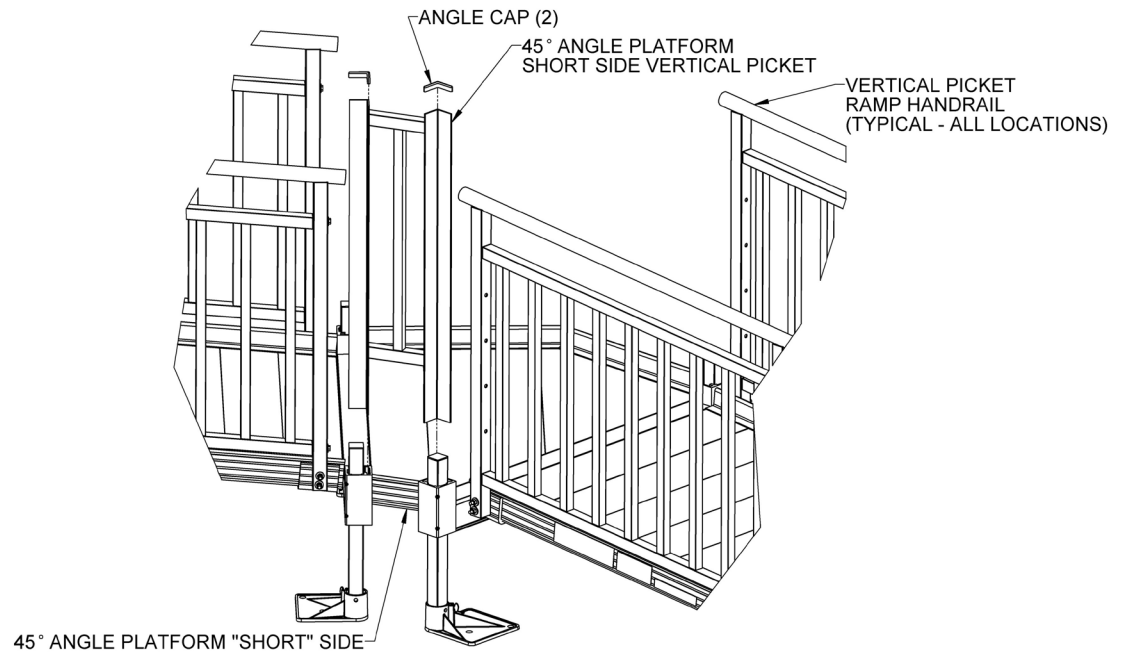
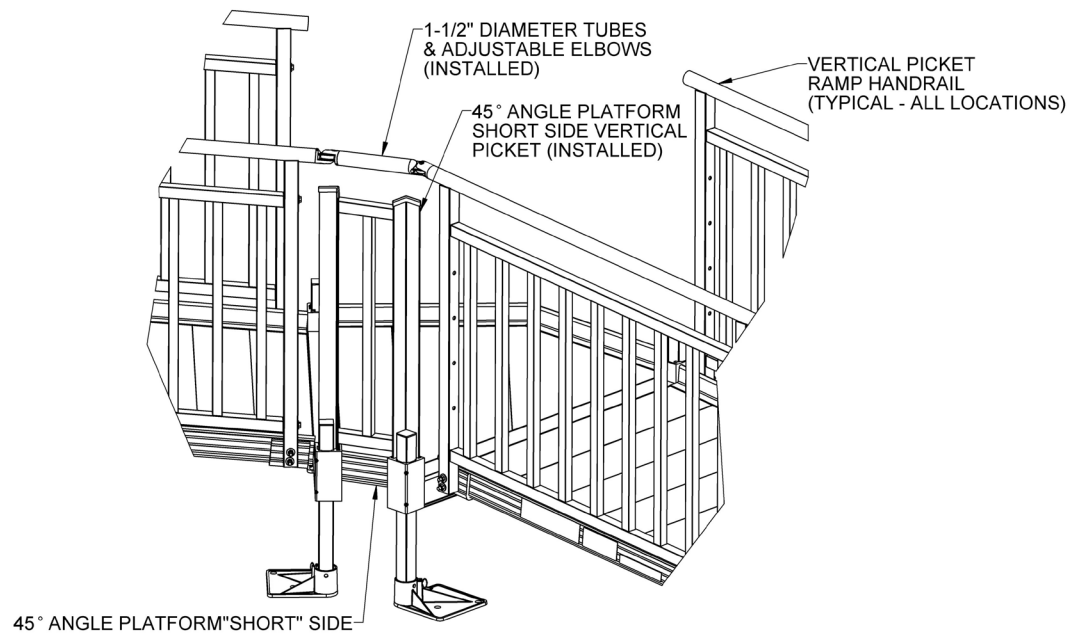
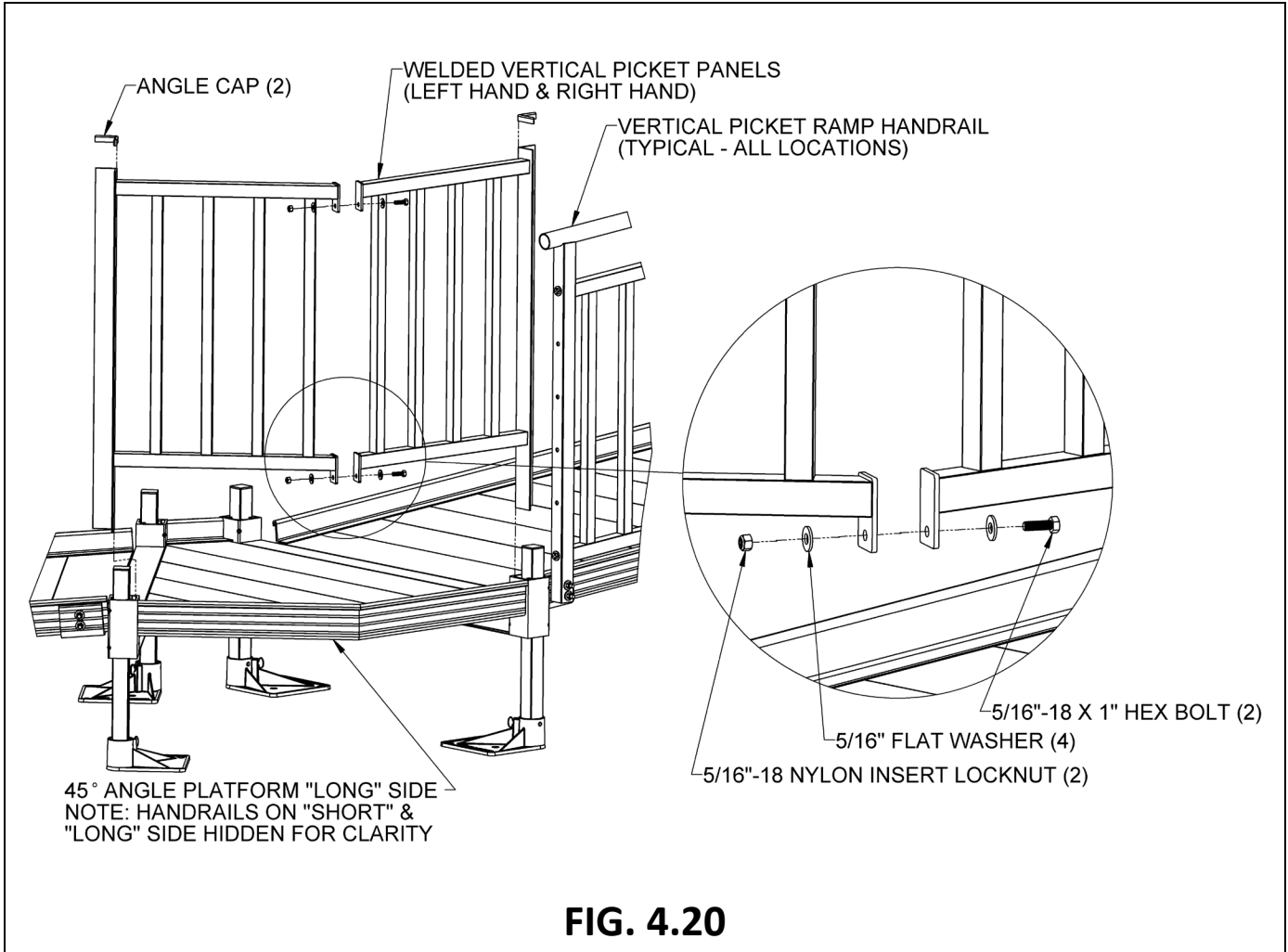


FIG. 4.19



- 4.6.18. For the “long” side of the 45-degree Angle Platform, there are two welded Vertical Picket panels which are inserted into the corner pockets then bolted together. Left hand and right hand refer to looking at the “long” side from the “short” side. Insert both into their respective corner pockets and align the bottom of the posts with the bottom of the corner pockets. Bolt the two sections together using 5/16”-18 x 1” hex bolts, 5/16” flat washers, and 5/16”-18 nuts as shown (FIG. 4.20).
- 4.6.19. Tighten set screws in the corner pockets securely and install angle caps on top of the posts.
- 4.6.20. Refer to SECTION 4.4 for installing platform handrails and attaching angle caps.



- 4.6.21. Install an adjustable elbow in the ramp handrail closest to the right-hand Vertical Picket panel and a 1-1/2" diameter handrail tube to this elbow. Set the Handrail Support Bracket so it is centered over the picket shown and set the 1-1/2" diameter handrail tube in the saddle of the bracket (but do not attach), then trim the handrail tube so that a second adjustable elbow will align (approximately) with the split between the Vertical Picket panels (FIG. 4.21). The procedure for installing the 1-1/2" diameter handrail tubes and adjustable elbows is the same as installing the closure top rail.

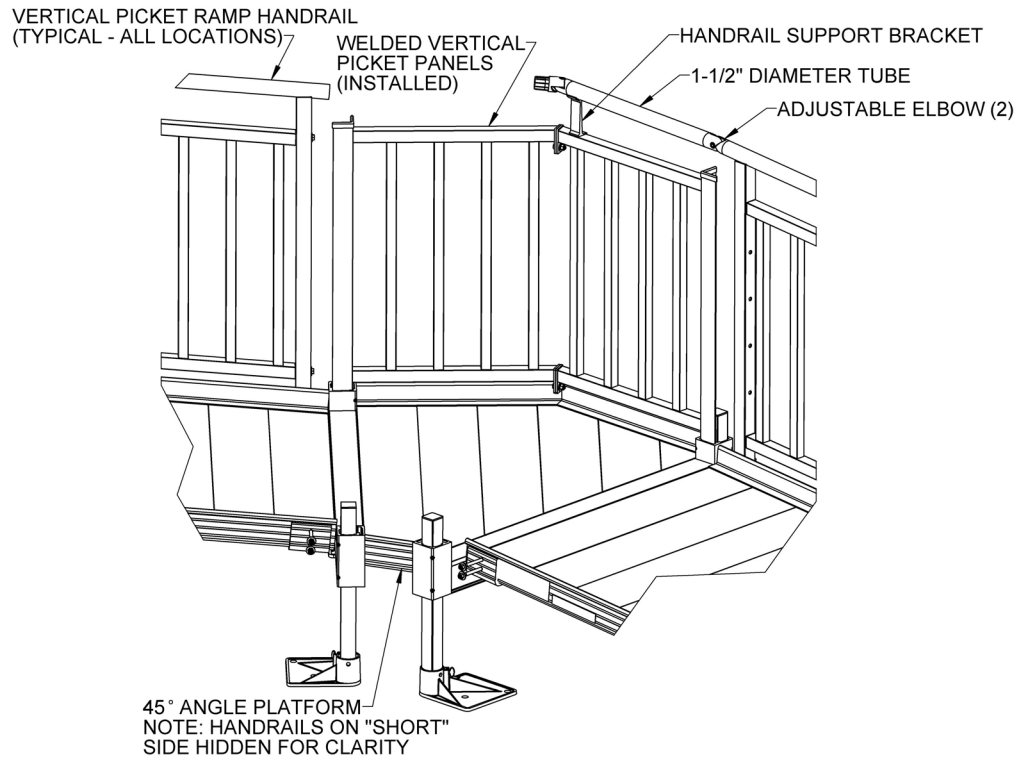


FIG. 4.21

- 4.6.22. Install an adjustable elbow in the last open ramp handrail and align with the adjustable elbow at the split between the Vertical Picket panels. Measure the gap between the large round faces, trim a 1-1/2" diameter handrail tube to fit the gap, and install the handrail tube (FIG. 4.22). The procedure for installing the 1-1/2" diameter handrail tubes and adjustable elbows is the same as installing the closure top rail.
- 4.6.23. Secure the Handrail Support Bracket to both the 1-1/2" diameter handrail tube and the top rail of the Vertical Picket panel using two #8-18 x 1/2" hex washer head self-drilling screws. Orient the attachment leg of the Handrail Support Bracket away from the platform as shown (FIG. 4.23).
- 4.6.24. Ensure all fasteners on both sides are tightened securely.

FIG. 4.22

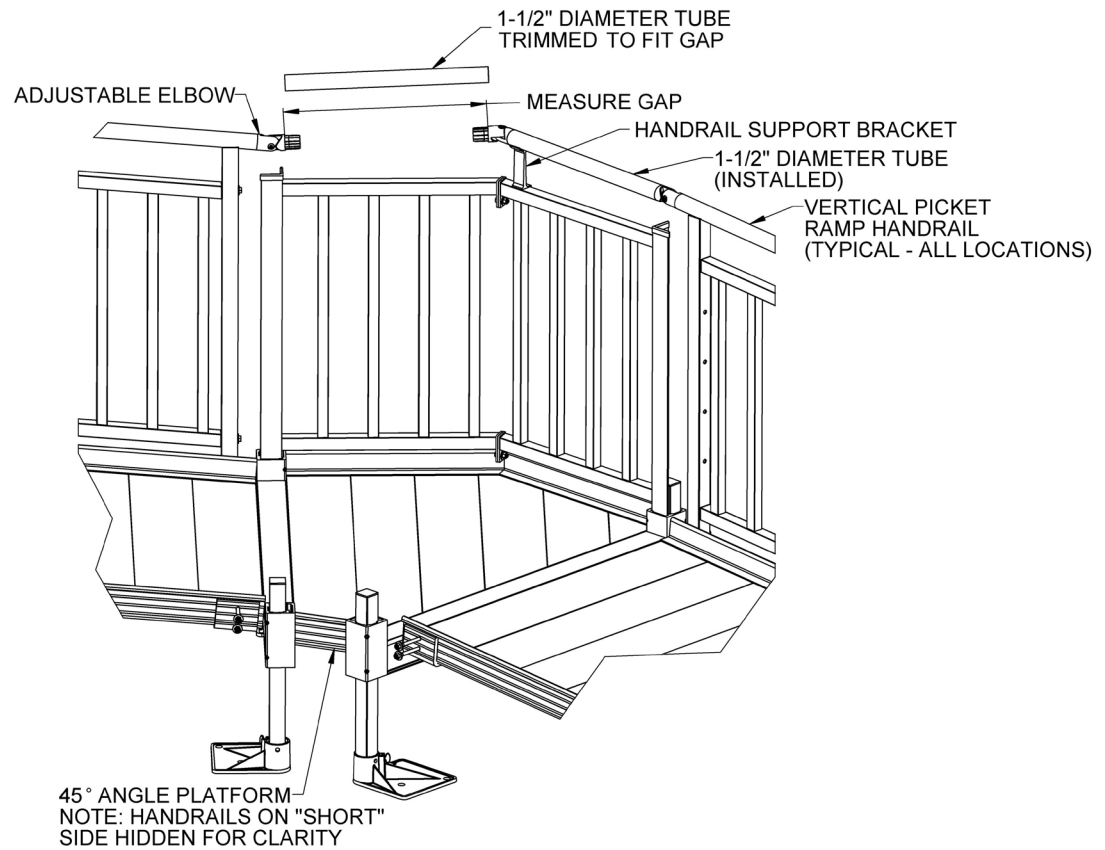
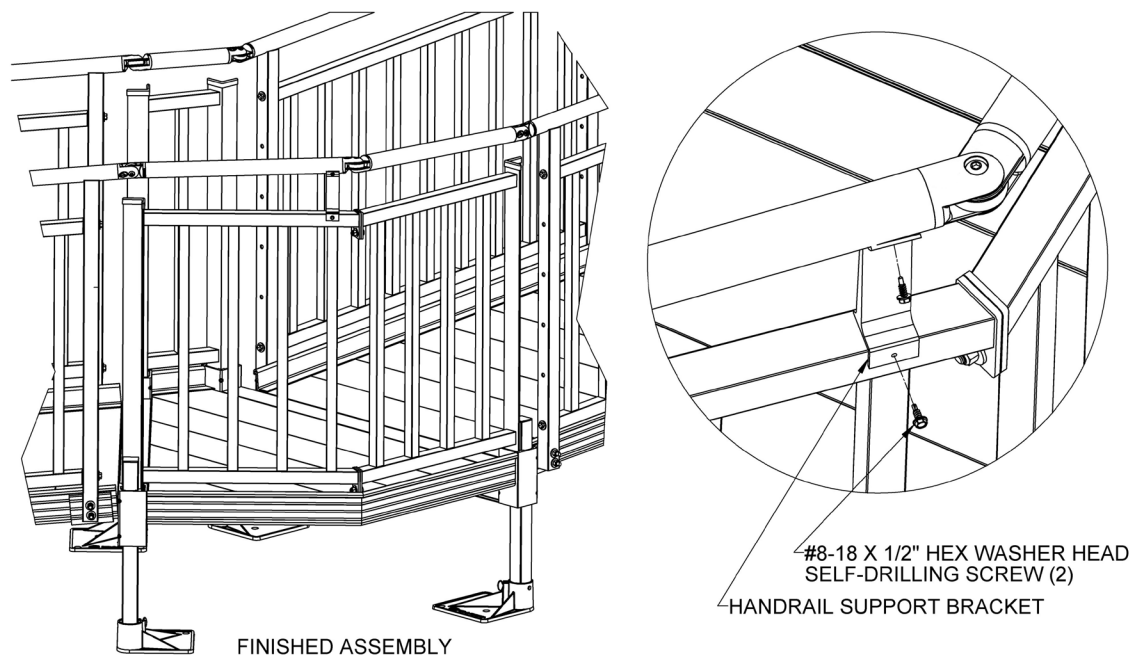


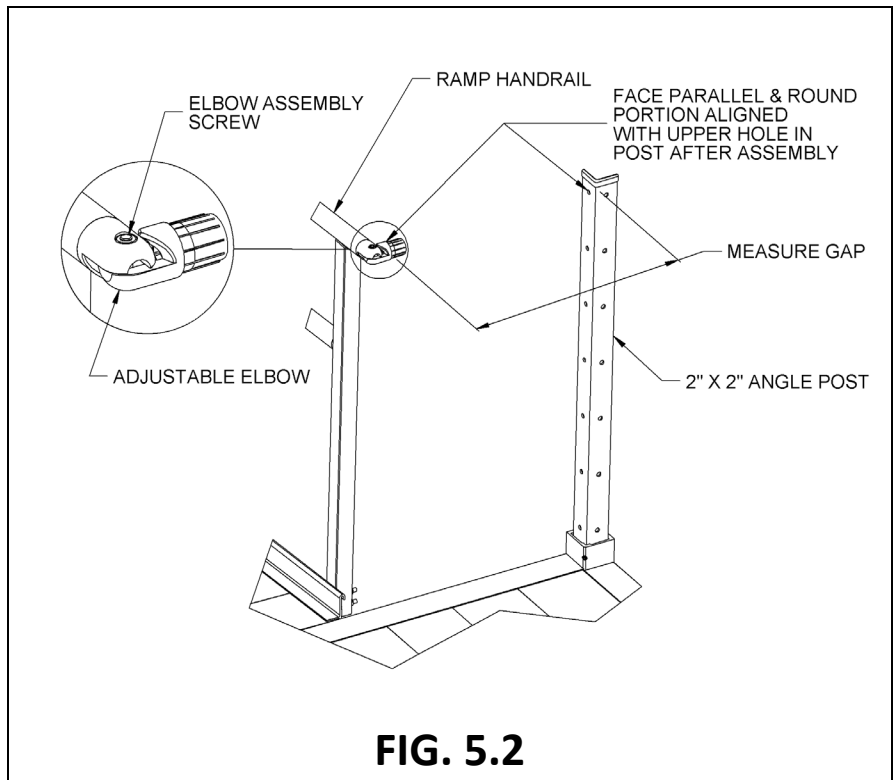
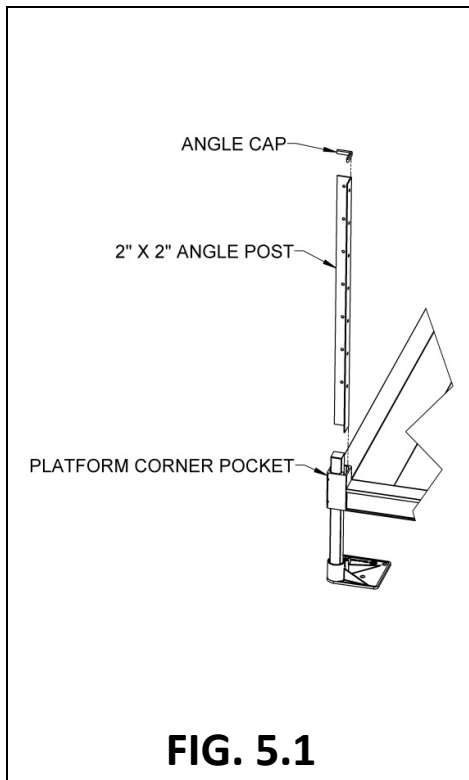
FIG. 4.23



5. CLOSURES

Closures fill the space between ramp handrails and platform posts. Like the ramp and platform handrails, they are available in Two-Line and Vertical Pickets. As a standard, the closures come with components that require the ramp to be mounted to one side or the other of a platform, but the ramp can also be centered or mounted in any location on a platform side except when using the Vertical Picket Closure (refer to SECTION 5.6). When centering the ramp or mounting in a location other than the side, a second Two-Line Closure must be ordered and is installed in the same manner as described below. When mounting to the side, the ramp handrail post should be positioned 1-1/2" (minimum) to 2" from the inside of the platform post. For all closures, the installation of the top rail is the same. Complete steps in this section to install the top rail. For the Two-Line, complete steps 5.4.9 through 5.4.15 to install the curb and SECTION 5.5 to install the lower rail. If installing a Vertical Picket Closure, skip to SECTION 5.6 after installing the top rail.

- 5.1. If installing a closure on a platform in the "straight" configuration, the 2" x 2" angle post will already be in place; skip to step 5.4.
- 5.2. If installing on a platform in the "turn" configuration, install the 2" x 2" angle post not attached to a platform handrail in the open platform corner pocket (FIG. 5.1). Align the bottom of the post with the bottom of the corner pocket and tighten the set screws securely.
- 5.3. Install an angle cap on top of the handrail post (FIG. 5.1). Use construction adhesive to bond the cap in place.
- 5.4. **TOP RAIL AND CURB**
 - 5.4.1. Install the top rail, the rail connecting the ramp handrail to the platform post.
 - 5.4.2. This procedure is the same regardless of the style of closure. Insert an adjustable elbow in the ramp handrail. Loosen the elbow assembly screw and position the round portion of the adjustable elbow so it is aligned with the upper hole in the angle post and the face is parallel to the post. Measure the gap between the face and the post (FIG. 5.2).



- 5.4.3. Trim the 1-1/2" diameter round tube to the length measured less 1/16" (FIG. 5.3).
- 5.4.4. Using a metal file, smooth any sharp edges from the trimming.
- 5.4.5. Disassemble the adjustable elbow by removing the screw and nut (FIG. 5.4).
- 5.4.6. Install an elbow half into the end of the trimmed tube which will attach to the ramp handrail and a 5/16"-18 round threaded insert into the end which will attach to the post (FIG. 5.3).
- 5.4.7. Reassemble elbow with the screw and nut (FIG. 5.4).

FIG. 5.3

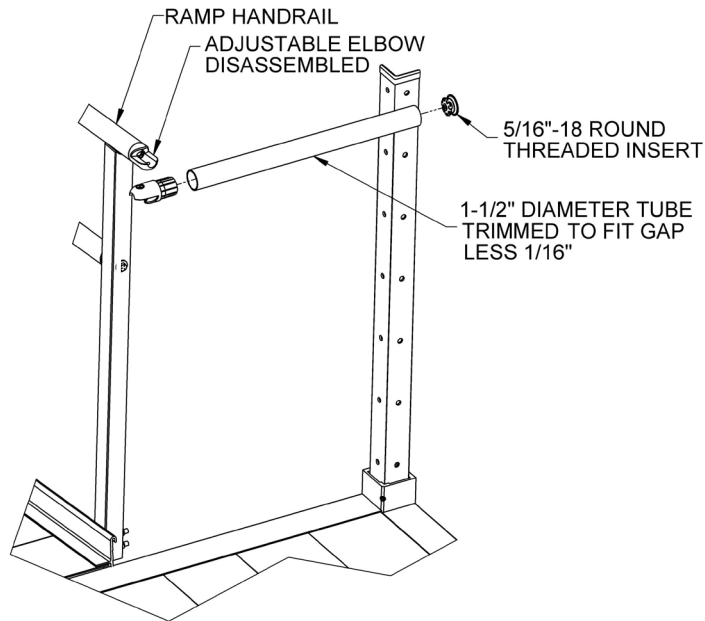
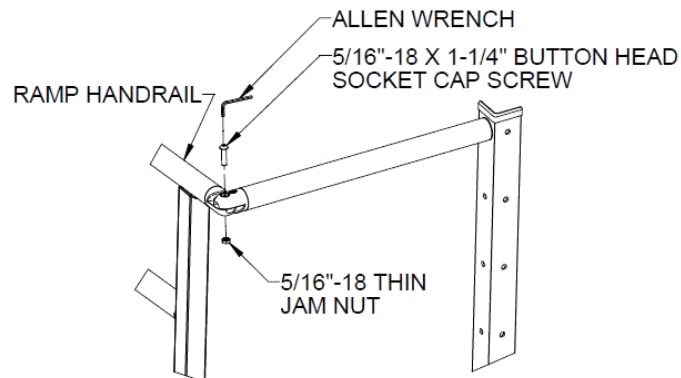


FIG. 5.4



- 5.4.8. Install a 5/16"-18 x 1" hex bolt through a 5/16" flat washer and the upper hole in the angle post into the 5/16"-18 round threaded insert (FIG. 5.5), then tighten all fasteners securely.
- 5.4.9. Drill 3/32" or 1/8" pilot holes through the 1-1/2" diameter tubes adjacent to the elbows. The holes should be in line with the assembly fasteners and approximately 1/4" from the elbow (FIG. 5.6).
- 5.4.10. Drive #8-18 x 3/4" self-drilling, self-tapping pan head Phillips screws into the holes drilled in the previous step. Tighten securely but use caution not to overtighten and strip the threads (FIG. 5.6).
- 5.4.11. Ensure the elbow is properly attached and secure.
- 5.4.12. Locate a platform closure bracket and clamp the short leg of the bracket to the ramp handrail post 4" above the platform deck with the short leg aligned with the post. Orient the bracket so the long leg is on the same side as and parallel to the platform post (FIG. 5.7).

FIG. 5.5

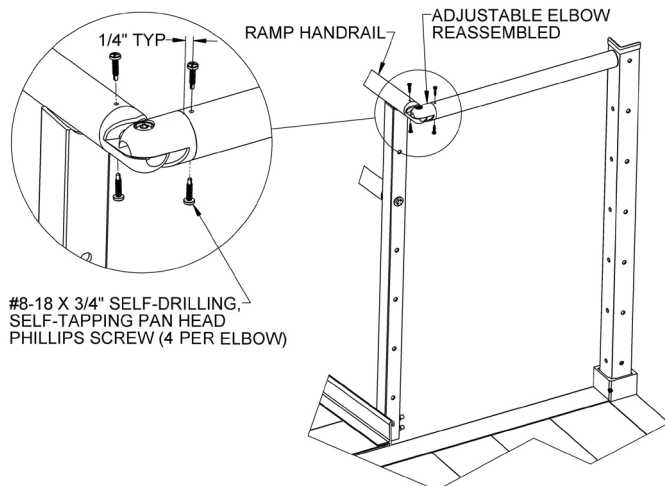
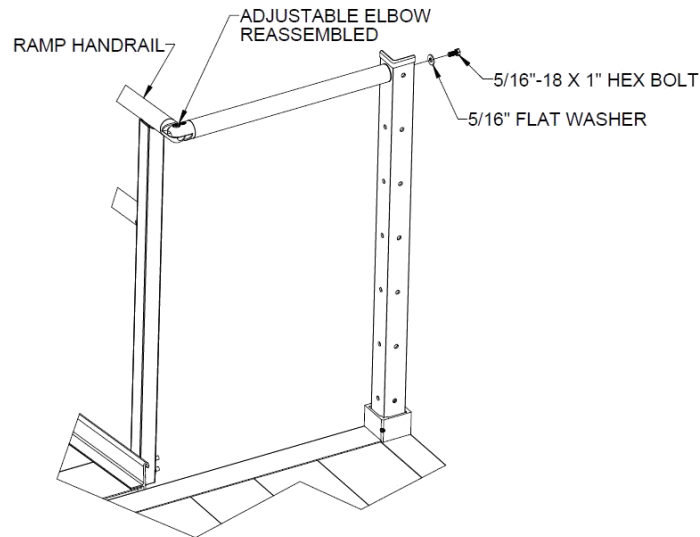


FIG. 5.6

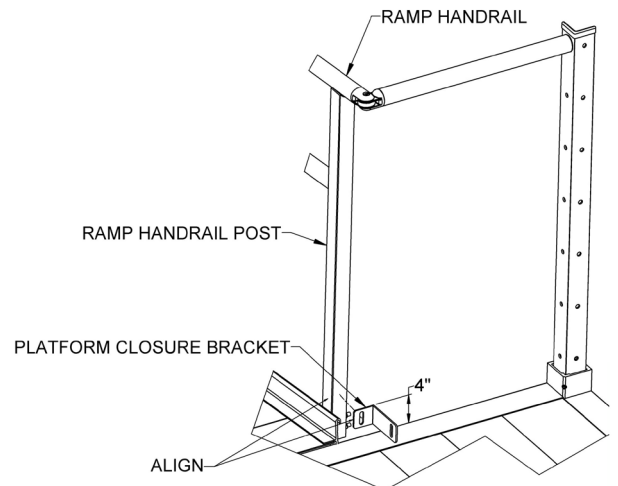


FIG. 5.7

- 5.4.13. Measure the gap between the long leg of the bracket and the post, then trim the 1-1/2" x 2" curb to the measured length, less 1/8" to account for the threaded inserts which will be installed after trimming (FIG. 5.8).
- 5.4.14. Insert 5/16"-18 square threaded inserts into both ends of the curb. Use a rubber mallet or similar tool to fully seat the threaded inserts as needed (FIG. 5.8).
- 5.4.15. Insert 5/16"-18 x 1" hex bolts through 5/16" flat washers, the long leg of the closure bracket, and the platform post, into the 5/16"-18 square threaded inserts installed in the curb. Use the hole which is 1/2" above the lowermost hole in the platform post to align the curb correctly (FIG. 5.9).
- 5.4.16. Unclamp the closure bracket and drive a 5/16"-18 x 1-1/4" self-drilling, self-tapping hex washer head screw, centered in the slot, through the platform closure bracket and into the ramp handrail post. Tighten securely but use caution not to overtighten and strip the threads (FIG. 5.9).
- 5.4.17. Ensure all fasteners are tightened securely.

FIG. 5.8

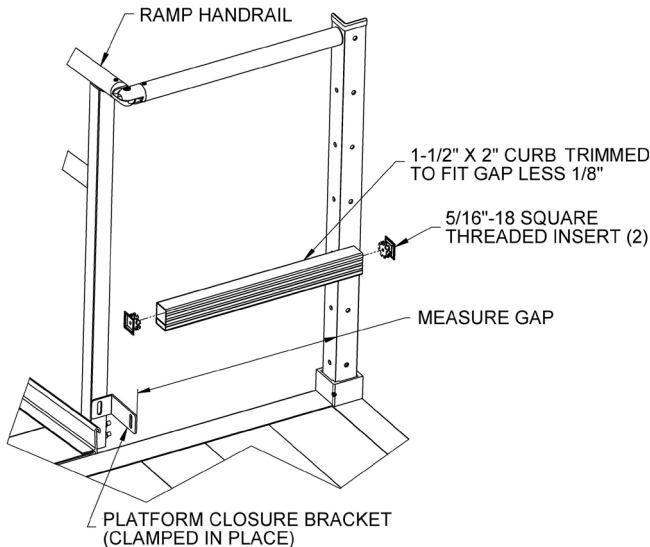
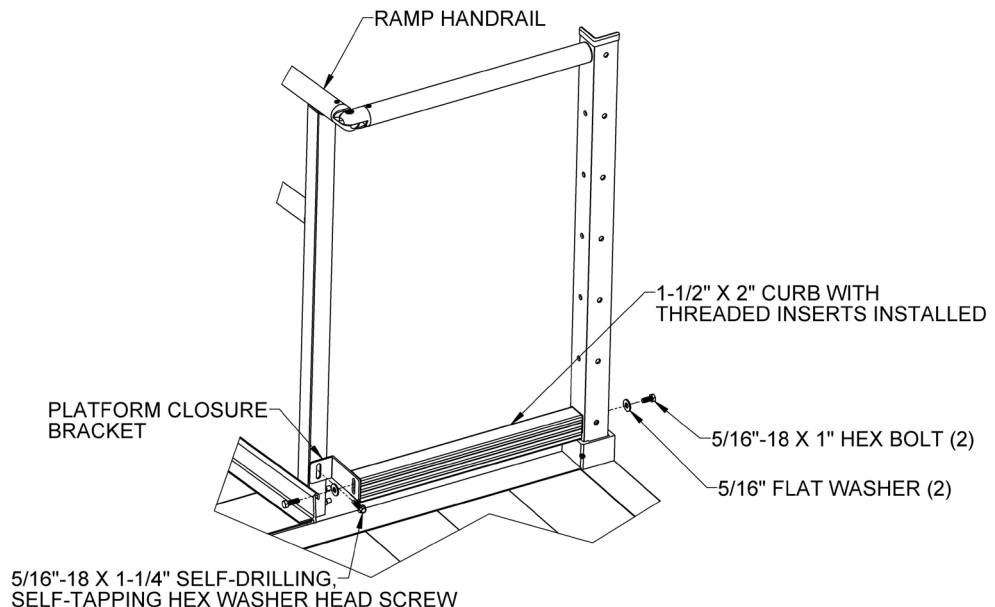
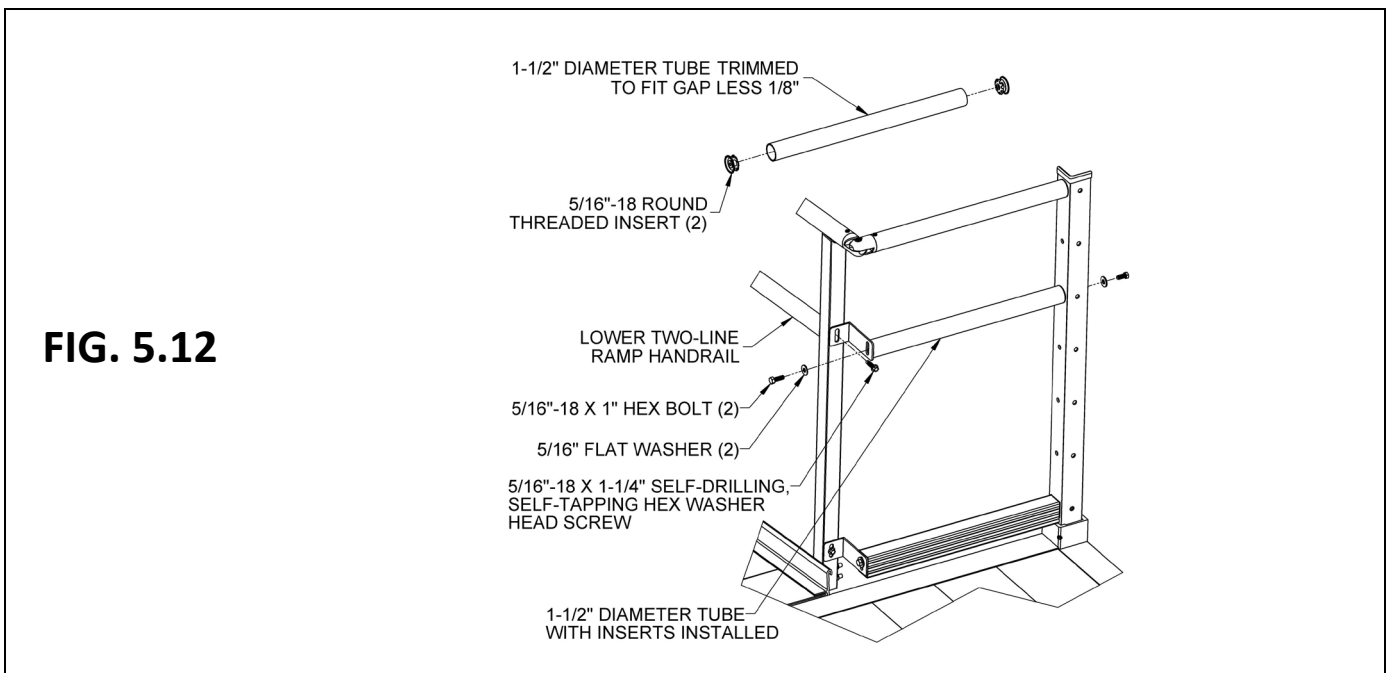
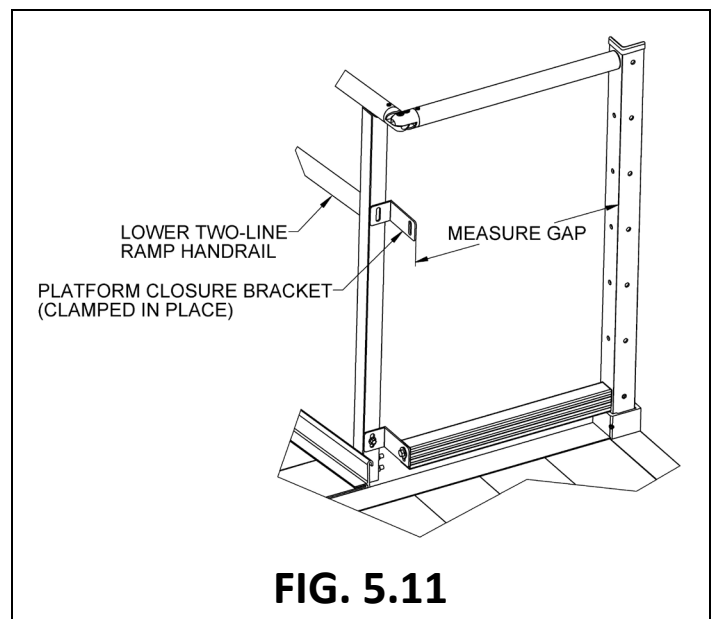
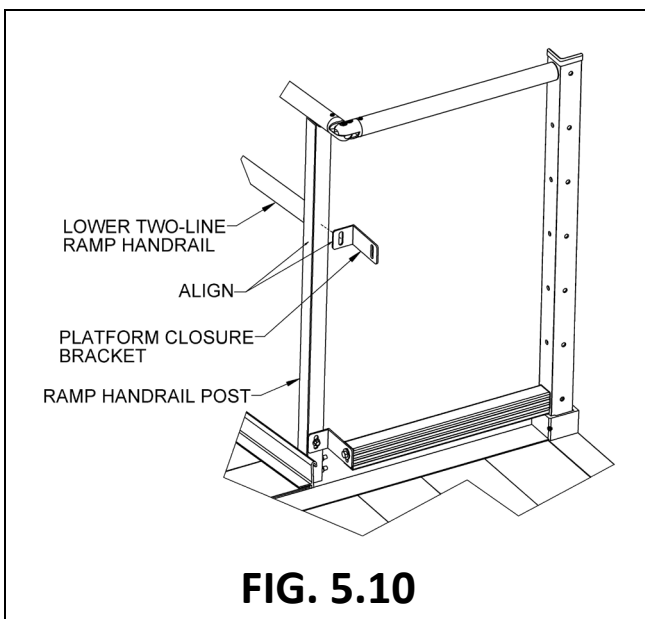


FIG. 5.9



5.5. TWO-LINE CLOSURE LOWER RAIL

- 5.5.1. Locate a platform closure bracket. Clamp the closure bracket to the ramp handrail post such that the short leg is centered on the lower Two-Line ramp handrail and aligned with the post. Orient the bracket so the long leg is on the same side as and parallel to the platform post (FIG. 5.10).
- 5.5.2. Measure the gap between the long leg of the closure bracket and platform post (FIG. 5.11).
- 5.5.3. Trim the 1-1/2" diameter round tube to the measured gap length less 1/8" to account for the threaded inserts which will be installed after trimming (FIG. 5.12).
- 5.5.4. Using a metal file, smooth all sharp edges from trimming the round tube.
- 5.5.5. Install 5/16"-18 round threaded inserts into both ends of the trimmed tube. Use a rubber mallet or similar tool to fully seat the threaded inserts (FIG. 5.12).
- 5.5.6. Install 5/16"-18 x 1" hex bolts through 5/16" flat washers, the slot in the long leg of the closure bracket, and the third hole from the top of the platform post, into the threaded inserts installed in the previous step, then tighten all fasteners securely (FIG. 5.12).
- 5.5.7. Unclamp the closure bracket and drive a 5/16"-18 x 1-1/4" self-drilling, self-tapping hex washer head screw, centered in the slot, through the platform closure bracket and into the ramp handrail post. Tighten securely but use caution not to overtighten and strip the threads. (FIG. 5.12).



5.6. VERTICAL PICKET CLOSURE

- 5.6.1. Vertical Picket Closures are specific to the platform size (4', 5', and 6') and come in two pieces which allow the ramp to be mounted to one side or be centered on a platform.
- ✎ If the ramp is to be centered on a platform, additional components are needed. The additional components will come with the closure if specified at the time of order, but the closure can be converted to allow the ramp to be centered in the field by ordering a second set of hardware.
- 5.6.2. Bolt the two Vertical Picket Closure sections together using 5/16"-18 x 3/4" long hex bolts, 5/16" flat washers, and 5/16"-18 nuts (FIG. 5.13).
- 5.6.3. Insert 1-1/4" square tube plugs in the open ends of the top and bottom rails on one side. If the ramp will be centered, do not assemble. Insert 1-1/4" square tube plugs in all open ends which do not attach to a platform post.
- ✎ The 4' closure includes angles (rather than channels) on one side to allow access to the assembly fasteners. Always bolt the 4' closure together using the side with the angles and attach the side with the channel to the platform post (FIG. 5.14).

FIG. 5.13

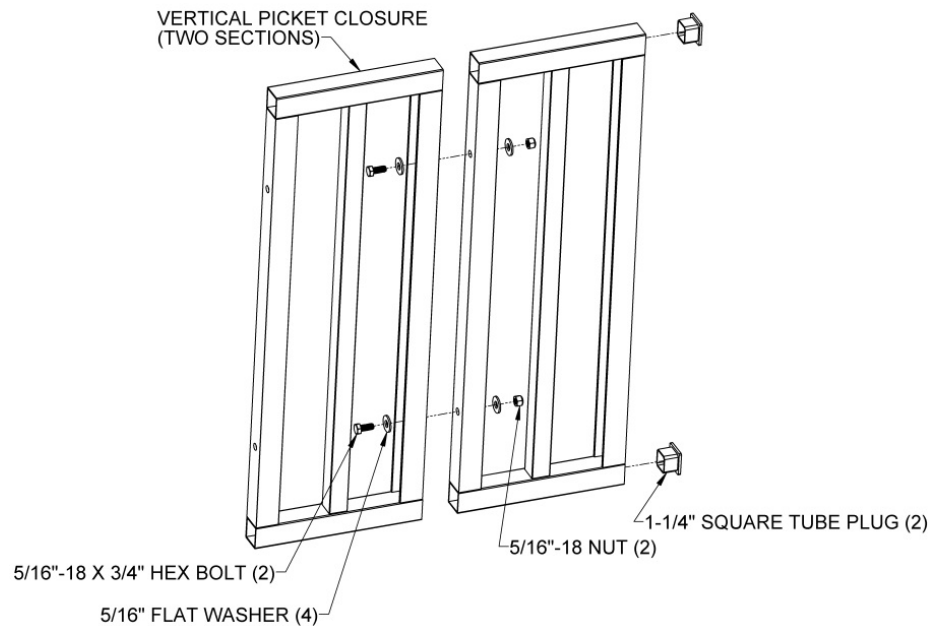
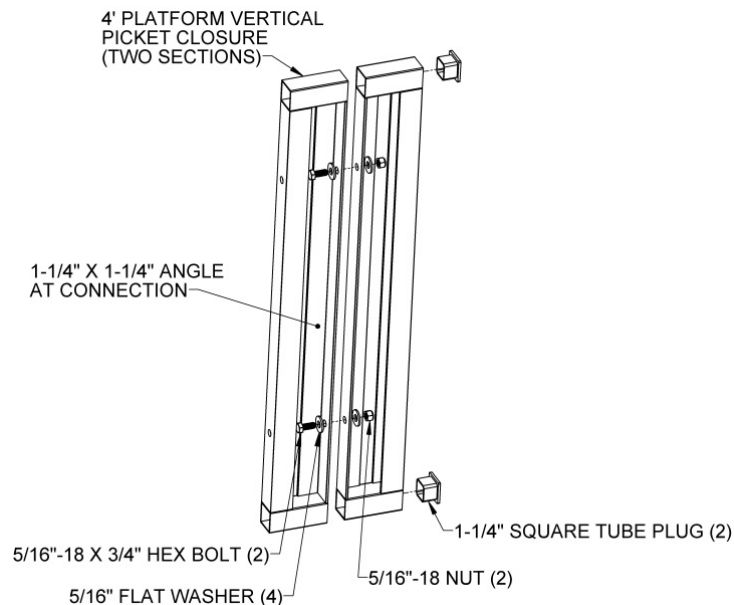


FIG. 5.14



- 5.6.4. Attach the Vertical Picket Closure to the platform handrail post using 5/16"-18 x 3/4" long hex bolts, 5/16" flat washers, and 5/16"-18 nuts (FIG. 5.15). When centering the ramp, attach one section (unassembled) to the platform posts on both sides of the ramp and secure in the same manner.
- 5.6.5. Locate the platform closure brackets and clamp the closure brackets to the ramp handrail post such that the long leg is in contact with and centered on the upper and lower holes in the Vertical Picket Closure (FIG. 5.16).
- 5.6.6. Install a 5/16"-18 x 1" hex bolt through a 5/16" flat washer, the slot in the long leg of the closure bracket, and the holes in the Vertical Picket Closure. Use 5/16" flat washers and 5/16"-18 nuts to attach, then tighten all fasteners securely (FIG. 5.17).
- 5.6.7. Repeat steps 5.6.5 through 5.6.6 on the opposite side when centering the ramp.

FIG. 5.15

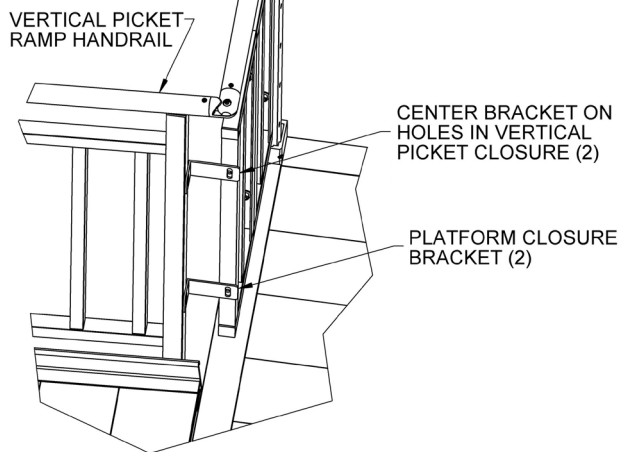
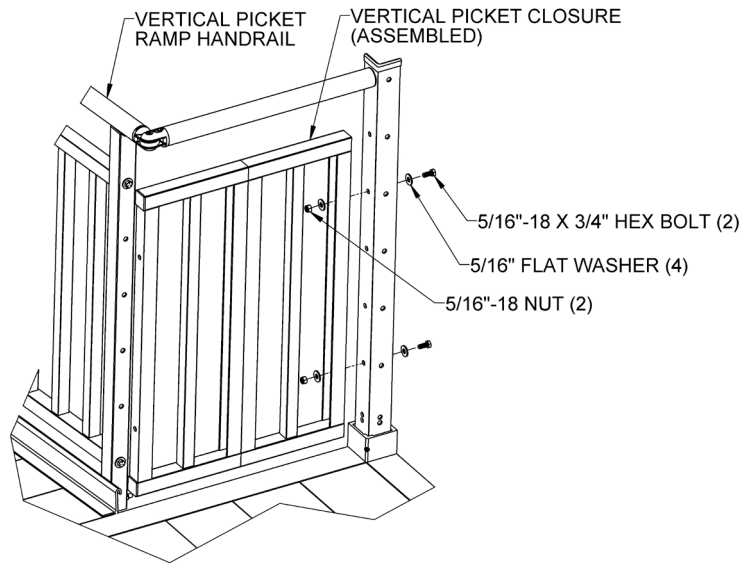


FIG. 5.16

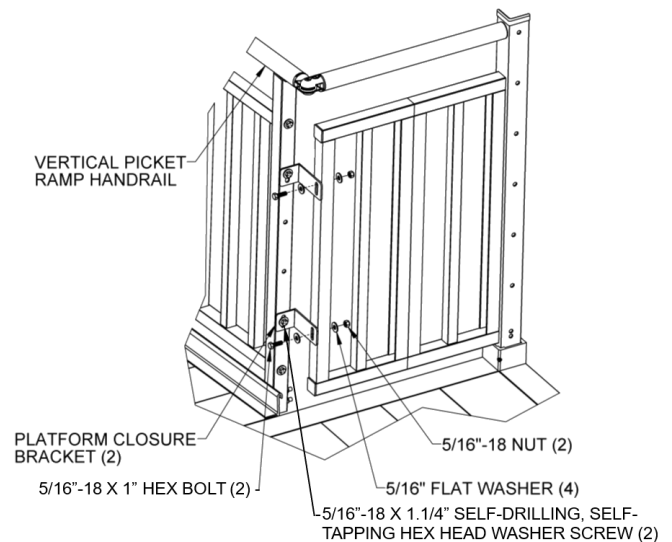
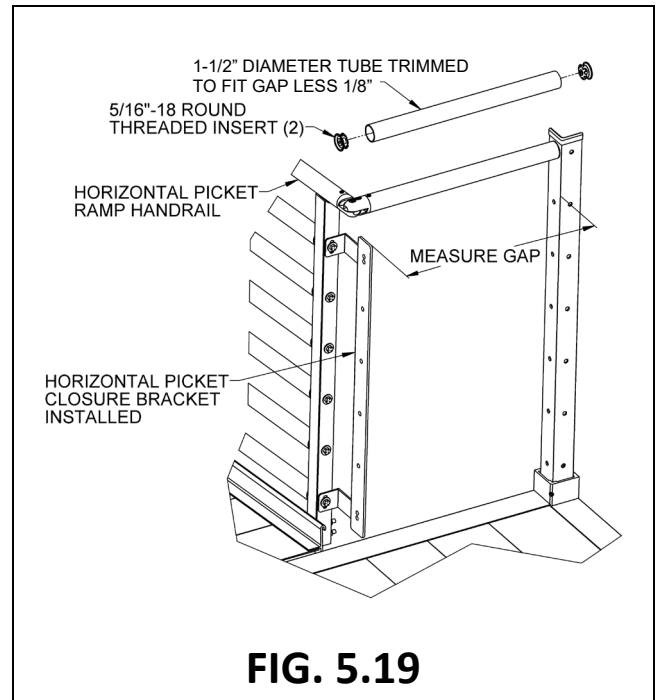
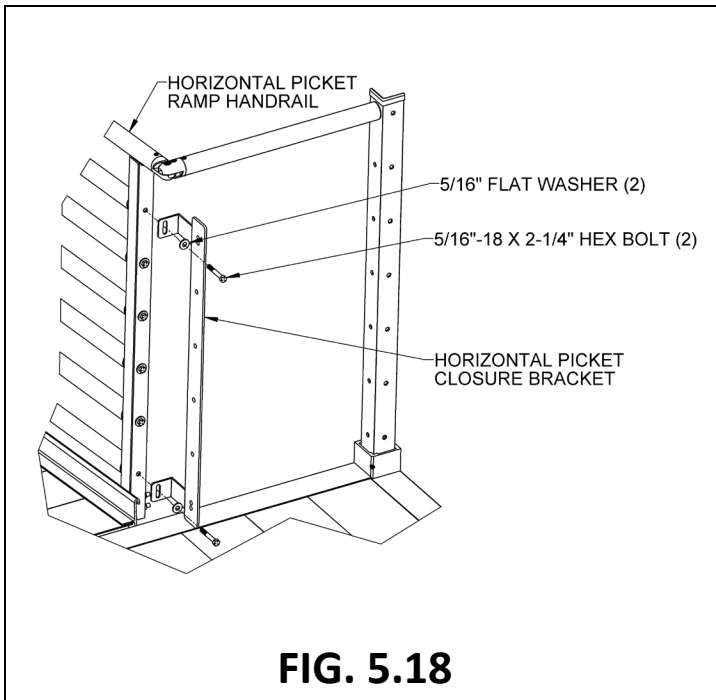


FIG. 5.17

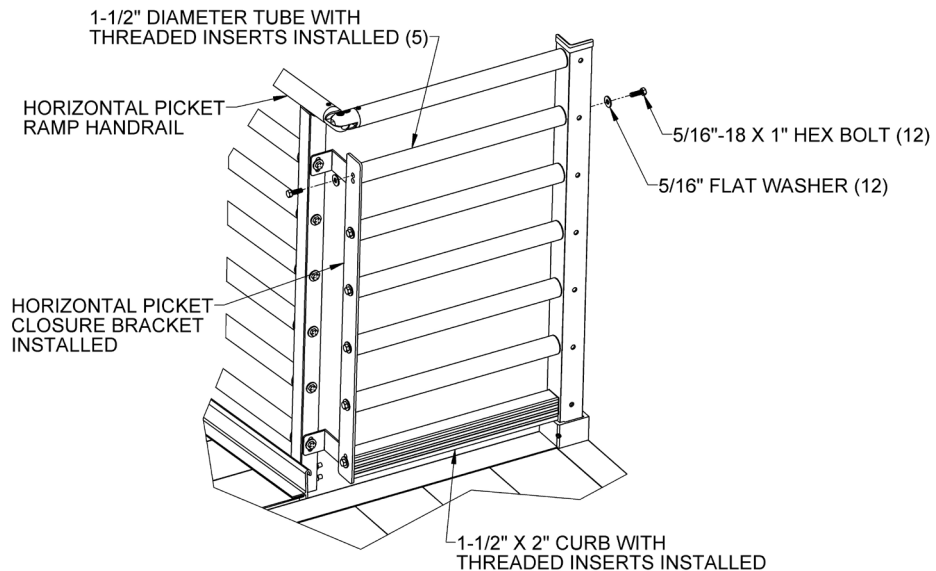
5.7. HORIZONTAL PICKET CLOSURE

- 5.7.1. The Horizontal Picket Closure includes a special bracket that is attached to the ramp handrail post. If the ramp handrail has Horizontal or Vertical Pickets, remove the 5/16"-18 x 2-1/4" hex bolt and 5/16" flat washer attaching the upper and lower rail then reinstall through the slots in the horizontal picket closure bracket as shown in FIG. 5.18. If the ramp handrail is a Two-Line or all-welded handrail, use 5/16"-18 x 2-1/4" hex bolts and 5/16" flat washers with 5/16"-18 nuts to attach the bracket in the same manner (FIG. 5.18). Orient the bracket toward the platform post and align the holes in the bracket with the holes in the platform post as closely as possible, then tighten the fasteners lightly (enough to hold the bracket in place but still allow movement). If the ramp is centered, a second Horizontal Picket Closure is needed and is installed in the same manner described below.
- 5.7.2. Measure the gap between the horizontal picket closure bracket and the platform post (FIG. 5.19).
- 5.7.3. Trim a 1-1/2" diameter round tube and the 1-1/2" x 2" curb to the measured gap length, less 1/8" to account for threaded inserts which will be installed after trimming (FIG. 5.19).



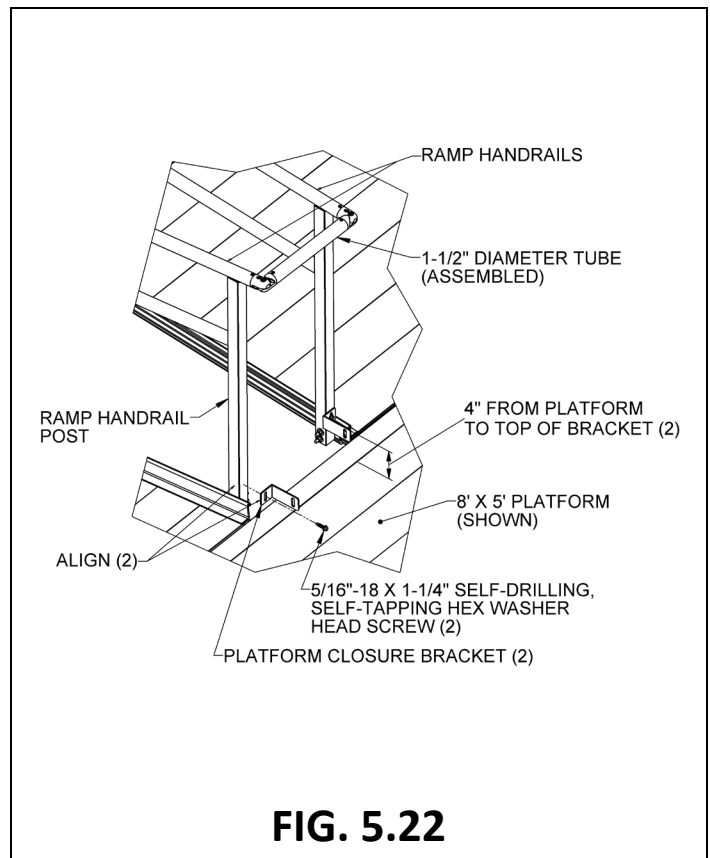
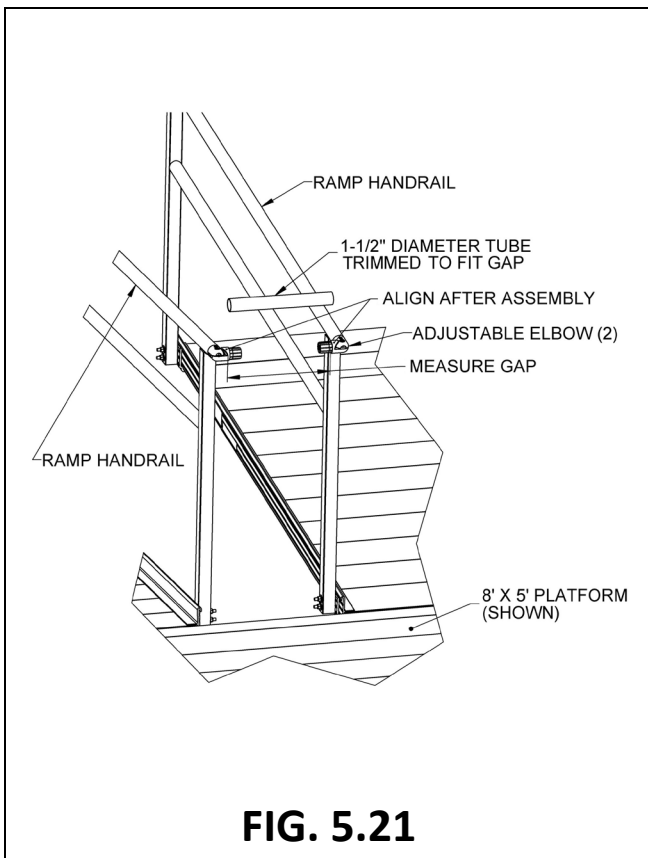
- 5.7.4. Attach the tube with threaded inserts installed to the platform handrail post and the horizontal picket closure bracket using 5/16"-18 x 1" long hex bolts and 5/16" flat washers, but do not tighten fully (FIG. 5.20).
- 5.7.5. Repeat the steps above until all five 1-1/2" diameter round tubes and curb have been installed, then tighten all fasteners securely. For the curb, use the hole which is 1/2" above the lowermost hole in the platform post and horizontal picket closure bracket to align the curb correctly.
- 5.7.6. Repeat steps 5.7.3 through 5.7.5 on the opposite side when centering the ramp.

FIG. 5.20



5.8. TWO-LINE AND VERTICAL PICKET TURN BACK CLOSURE

- 5.8.1. There are two special closures available for filling the space between two ramps in a turn back configuration. The Two-Line Turn Back Closure can be used with platforms of any size, but the 8' x 5' Vertical Picket Closure can only be used with the 8' x 5' platform. Turn Back Closures can also be created using the methods described in the proceeding sections by attaching the components to platform posts between the ramps rather than directly from ramp handrail to ramp handrail.
- 5.8.2. Regardless of style, first connect the ramp handrails by installing adjustable elbows in the ramp handrails. Loosen the elbow assembly screws and position the adjustable elbows so they are aligned with the elbow on the opposite side (but do not tighten), and then measure the distance between the two larger round faces (FIG. 5.21).
- 5.8.3. Trim a 1-1/2" diameter round tube to the measured gap (FIG. 5.21).
- 5.8.4. Using a metal file, smooth all sharp edges from trimming the round tubes.
- 5.8.5. Disassemble the adjustable elbows by removing the screw and nut (FIG. 5.4).
- 5.8.6. Install an elbow half into each end of the trimmed tube (FIG. 5.3).
- 5.8.7. Drill 3/32" or 1/8" pilot holes through the 1-1/2" diameter tubes adjacent to the elbows. The holes should be in line with the assembly fasteners and approximately 1/4" from the elbow (FIG. 5.6).
- 5.8.8. Drive #8-18 x 3/4" self-drilling, self-tapping pan head Phillips screws into the holes drilled in the previous step. Tighten securely but use caution not to overtighten and strip the threads (FIG. 5.6).
- 5.8.9. Test to ensure all elbows are properly secured and attached.
- 5.8.10. Locate the platform closure brackets and orient the brackets so the long leg is on the same side as and parallel to the bracket on the opposite side, the short leg is aligned with the ramp handrail post, and the tops of the brackets are 4" above the platform deck. Clamp in place temporarily if needed (FIG 5.22).
- 5.8.11. Drive 5/16"-18 x 1-1/4" self-drilling, self-tapping hex washer head screws, centered in the slot, through the platform closure brackets and into the ramp handrail posts. Tighten securely but use caution not to overtighten and strip the threads (FIG 5.22).



- 5.8.12. Measure the gap between the long leg of the closure brackets and trim the 1-1/2" x 2" curb to the measured gap length less 1/8" to account for the threaded inserts which will be installed after trimming (FIG. 5.23).
- 5.8.13. Install 5/16"-18 square threaded inserts into both ends of the trimmed curb. Use a rubber mallet or similar tool to fully seat the threaded inserts (FIG. 5.23).
- 5.8.14. Using a metal file, smooth all sharp edges from trimming the curb.
- 5.8.15. Align the top of the curb with the top of the closure brackets, then install 5/16"-18 x 1" hex bolts through 5/16" flat washers and the slot in the long leg of the closure bracket, into the threaded insert installed in the previous step (FIG. 5.24). Tighten all fasteners securely.

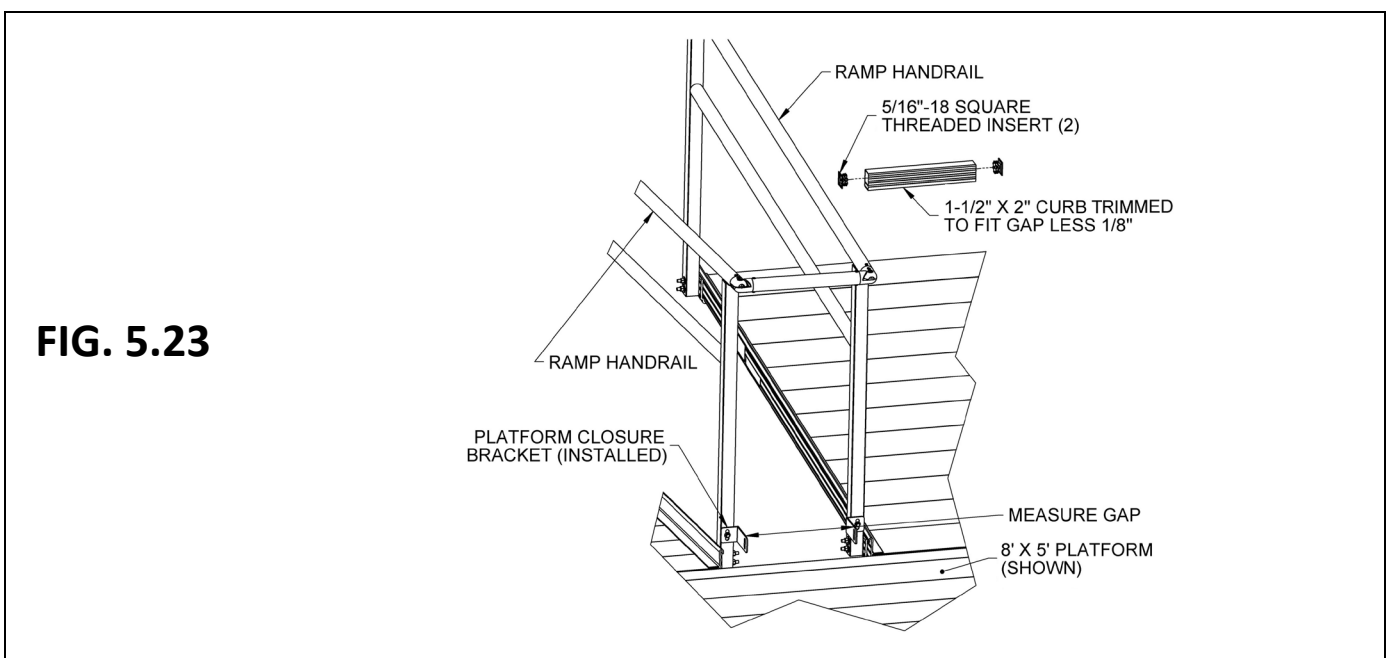
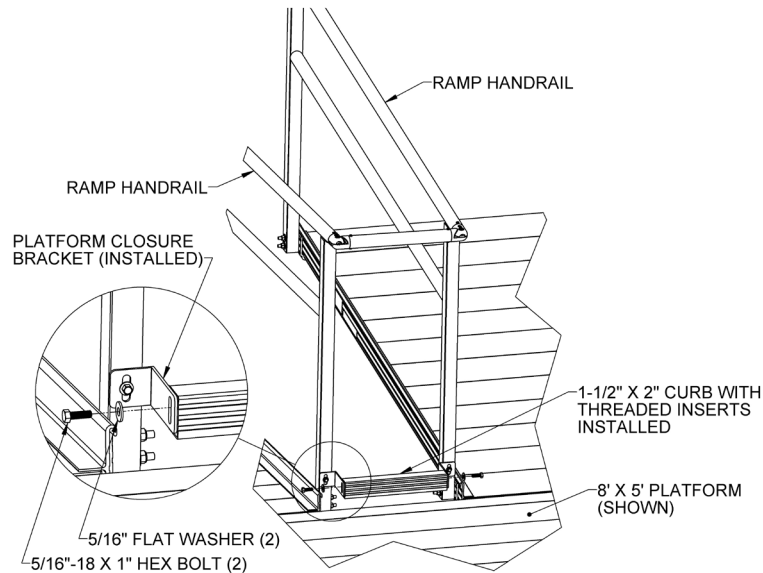


FIG. 5.24



- 5.8.16. If installing a Two-Line Turn Back Closure, a second 1-1/2" diameter round tube is installed in the same manner as the curb at the bottom. Orient the brackets so the long leg is on the same side as and parallel to the bracket on the opposite side, the short leg is aligned with the ramp handrail post, and the tops of the brackets are 20-1/2" above the tops of the brackets attaching the curb. Clamp in place temporarily if needed (FIG. 5.25).
- 5.8.17. Drive 5/16"-18 x 1-1/4" self-drilling, self-tapping hex washer head screws, centered in the slot, through the platform closure brackets and into the ramp handrail posts. Tighten securely but use caution not to overtighten and strip the threads.
- 5.8.18. Measure the gap between the long leg of the closure brackets, trim the 1-1/2" diameter tube to the measured gap length less 1/8", and install 5/16"-18 round threaded inserts in the ends of the tube as described previously (FIG. 5.25).
- 5.8.19. Attach the 1-1/2" dia. tube with 5/16"-18 round threaded inserts installed to the brackets using 5/16"-18 x 1" hex bolts through 5/16" flat washers and tighten securely (FIG. 5.25).
- 5.8.20. Attach 1-1/2" dia. tube with 5/16"-18 round threaded inserts installed to the brackets using 5/16"-18 x 1" hex bolts through 5/16" flat washers and tighten securely (FIG. 5.25).
- 5.8.21. The 8' x 5' Vertical Picket Closure can only be used with the 8' x 5' platform. Set the base of the 8' x 5' Vertical Picket Closure on the platform side rail then drive 5/16"-18 x 1-1/4" self-drilling, self-tapping hex washer head screws, centered in the slots of the closure brackets, through the brackets and into the ramp handrail posts. Tighten securely but use caution not to overtighten and strip the threads.
- 5.8.22. Attach the base of the 8' x 5' Vertical Picket Closure to the platform side rail using four 1/4" x 1" long self-drilling screws (FIG. 5.26).

FIG. 5.25

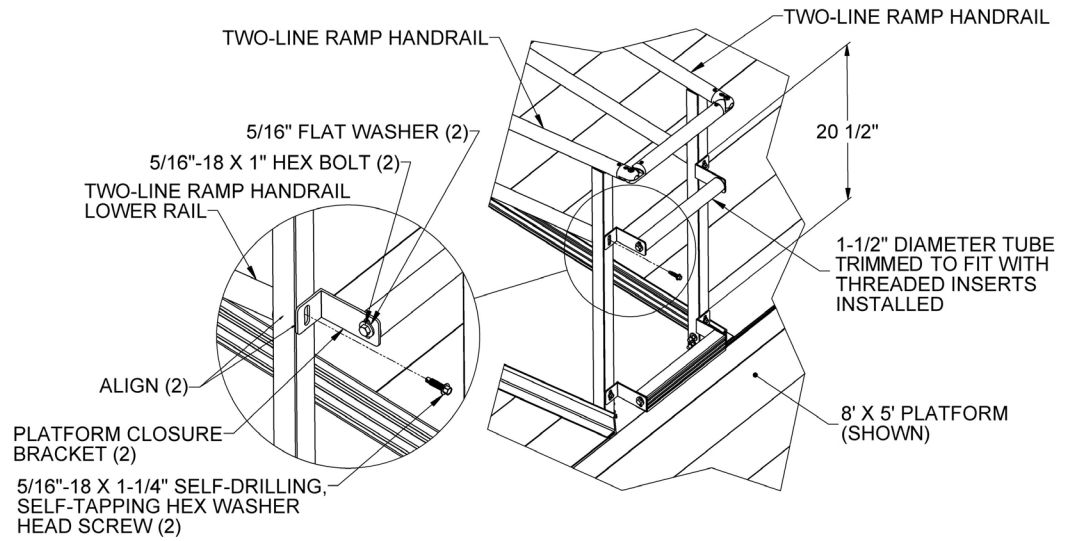
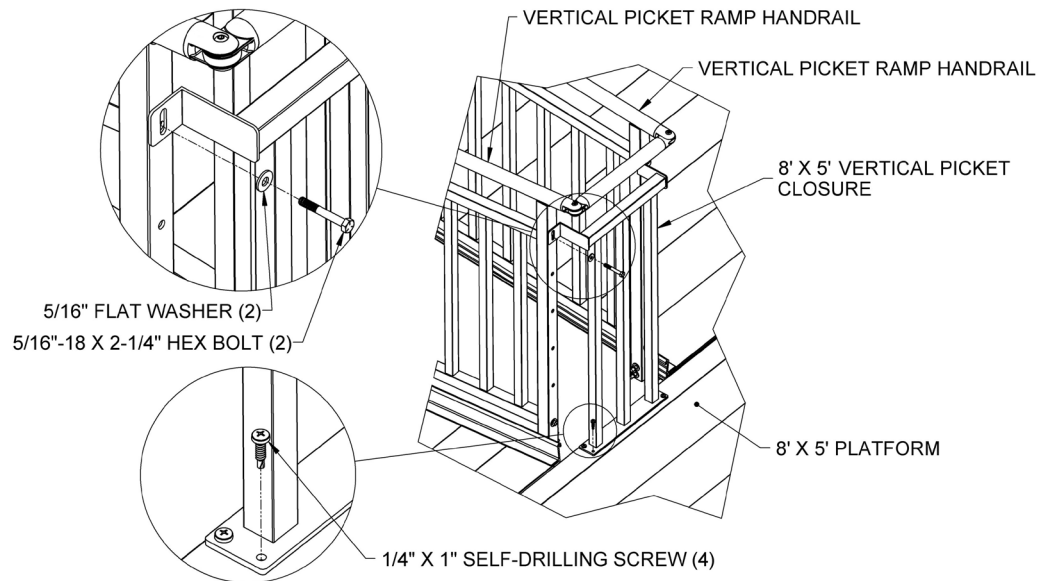


FIG. 5.26



6. FINAL PLATFORM/RAMP STEPS AND CHECKS

6.1. SECURE RAMPS TO PLATFORMS

- 6.1.1. Once positioning of all ramps and platforms, and installation of all handrails, connectors, and end loops are complete, you will need to secure ramps to platforms with Ramp End Clips (included in HARRHP – RAMP HANGER PAIR).

▲ Use two Ramp End Clips at all locations where ramps meet platforms.

- 6.1.2. Position each Ramp End Clip with the hole pointing up and oriented as shown in FIG. 6.1, then insert the short end of the Ramp End Clip into the small gap between the ramp and the platform in the area where the ramp side rail overlaps the ramp end tread (FIG. 6.1).
- 6.1.3. Before the Ramp End Clip contacts the ramp side rail, rotate the Ramp End Clip so the short end extends into the recess under the ramp end tread (FIG. 6.1).
- 6.1.4. Use the hole in the Ramp End Clip as a template to drill a 1/8" pilot hole in the platform side rail, then use the 1/4" x 1" long self-drilling screws to secure the Ramp End Clip to the platform side rail (FIG. 6.2).
- 6.1.5. Top view of the completed process (FIG. 6.3).

FIG. 6.1

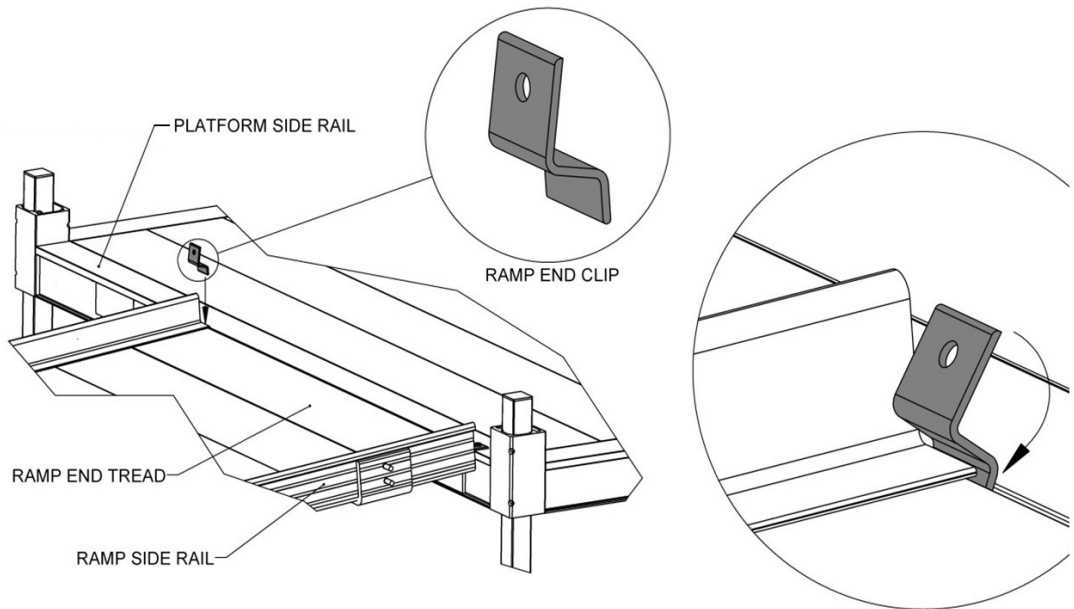


FIG. 6.2

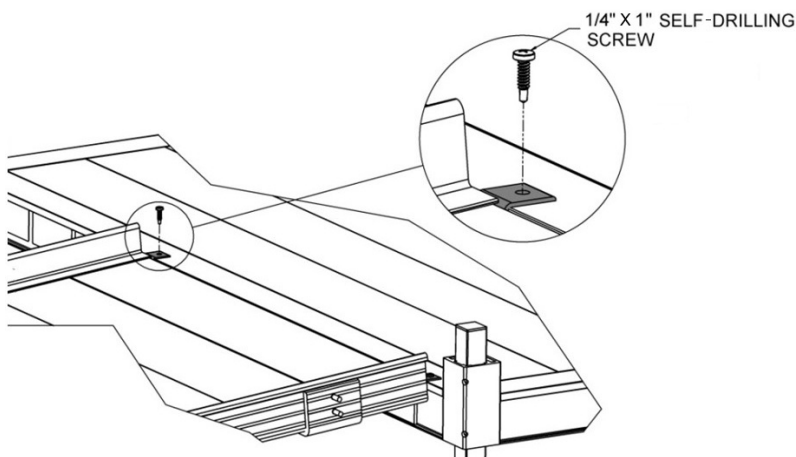
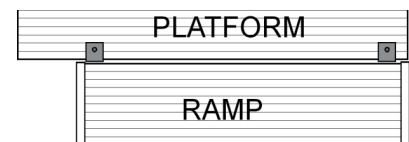


FIG. 6.3



6.2. INSTALL RAMP HANDRAIL END LOOPS

- 6.2.1. The system may include end loops (FIG. 6.4). Upper and lower end loops are installed in the same manner. If the end loop being installed does not fit correctly (i.e., the attachment plate is angled in the wrong direction, the lower leg seems too long or short, etc.), you are most likely trying to install it on the wrong end of the ramp or ramp run.
- 6.2.1.1. Install the O-ring over the swaged portion of the end loop until it rests against the loop shoulder (FIG. 6.5).
- 6.2.1.2. Install one 1/4" x 1" long self-drilling hex washer head screw through the hole in the end loop attachment plate, into the ramp handrail post, and tighten securely (FIG. 6.6).
- 6.2.2. Install one #10 x 1/2" pan head Phillips self-drilling screw into each handrail (FIG. 6.6).
- 6.2.2.1. To assist, use a punch to create a divot on the lower side of ramp handrail tube approximately 1" from the end of the handrail.
- ✎ An alternate method is to pre-drill the hole with a 1/8" drill bit.
- 6.2.2.2. Using a screwdriver, hand tighten the screw until no threads remain exposed.

FIG. 6.4

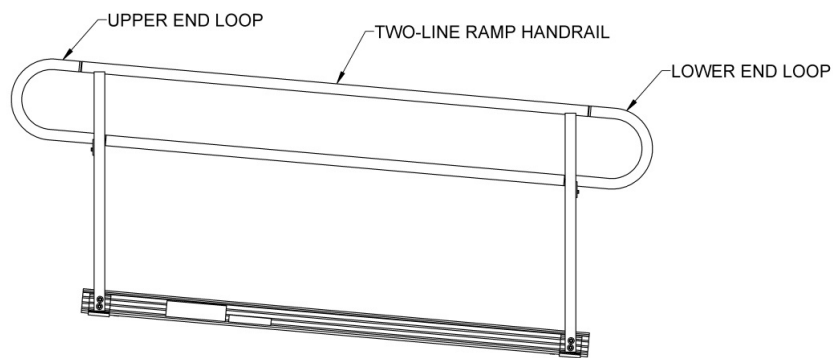
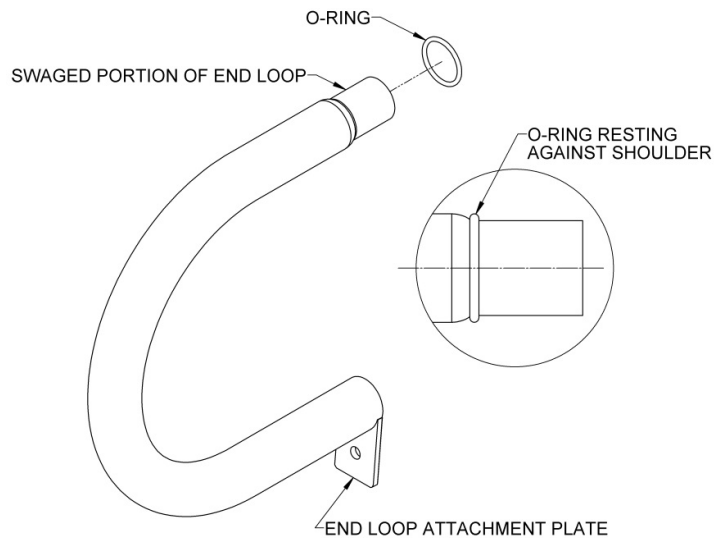
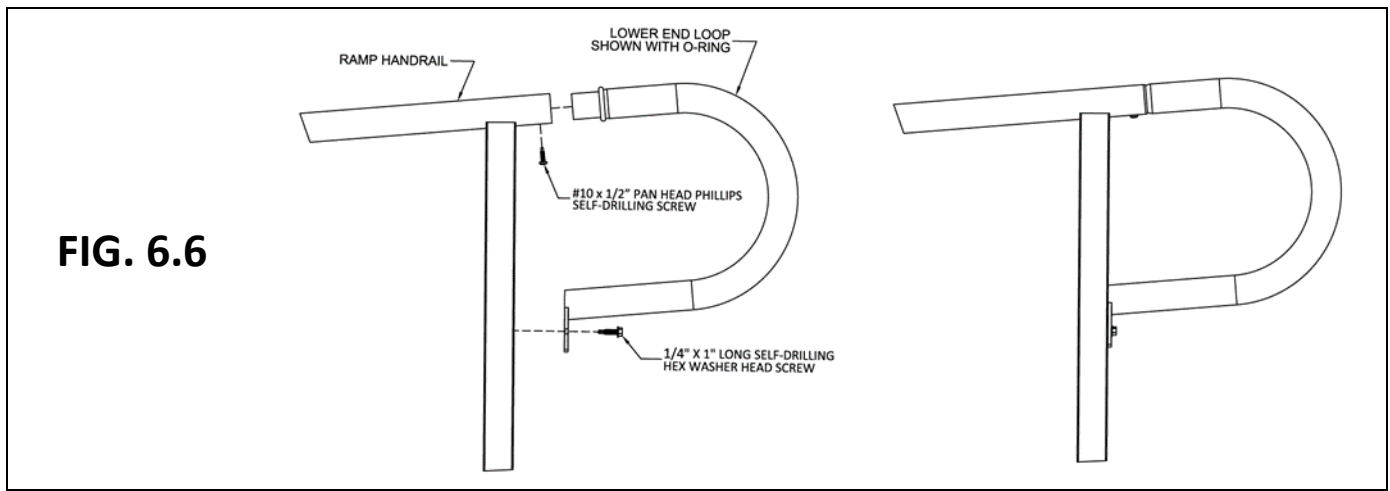


FIG. 6.5





6.3. INSTALL RAMP HANDRAIL END CAPS

- 6.3.1. Use plastic end caps when there are any remaining open ends on the handrails (FIG. 6.7). Use a rubber mallet or similar tool to fully seat as needed. If necessary, use construction adhesive to bond the cap to the ramp handrail.

6.4. INSTALL RAMP CORNER PROTECTORS

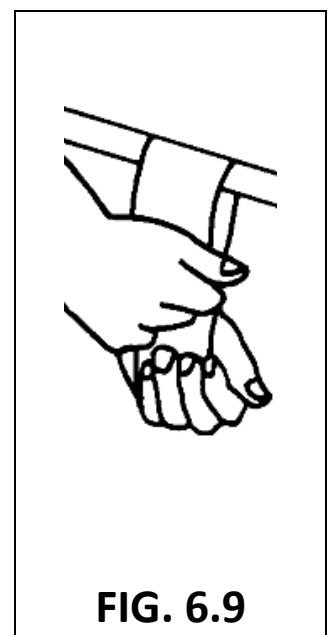
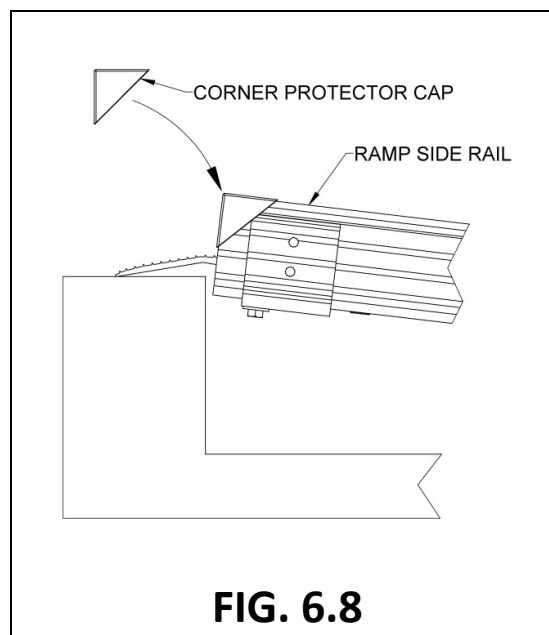
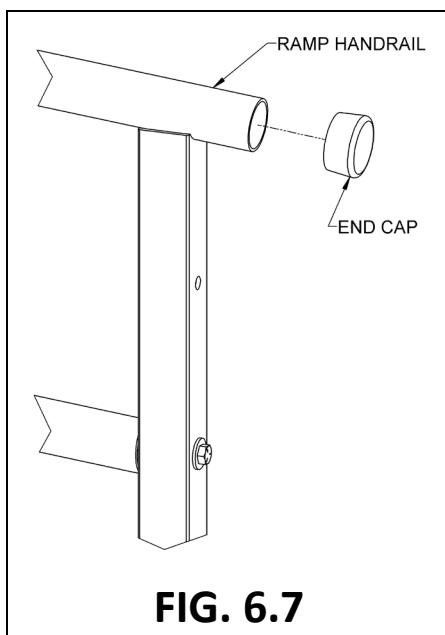
- 6.4.1. Install protective caps over side rail corners by placing one cap on each side at both the top and bottom of the ramp or ramp run (FIG. 6.8). If necessary, use construction adhesive to bond the cap to the ramp.

6.5. TOUCH-UP ARCHITECTURALLY FINISHED HANDRAILS

- 6.5.1. As needed, use sandpaper (180 grit or equivalent) for blending scratches on architecturally finished handrails. Sand in direction of the grain as shown (FIG. 6.9).
 ✎ Do not use on painted or powder-coated surfaces.

6.6. FINAL CHECKS

- 6.6.1. Ensure that all fasteners are in place and fastened securely.
 6.6.2. Walk on the assembled system, checking for any undue movement.
 ⚠ Use the assembled system only after system stability has been confirmed.
 6.6.3. Remove any metal chips and other assembly debris.
 6.6.4. Ensure that system level and slope have not shifted during installation.
 6.6.5. Ensure that all handrail ends are covered (either with loops or end caps).



7. OPTIONAL EQUIPMENT

7.1. RAMP SUPPORT TOP

The HARRSUT (UNIVERSAL RAMP SUPPORT – TOP) provides supplemental support at the upper (or lower) end of the ramp. When used, the HARRSUT (UNIVERSAL RAMP SUPPORT – TOP) replaces the HARRHBPR (RAMP HANDRAIL END BRACKET PAIR).

- 7.1.1. Attach top support brackets with two 5/16"-18 x 1-1/2" hex bolts and two 5/16" flat washers (FIG. 7.1).

✎ There is a "left" and "right" top support bracket, but they can be installed on either side of the ramp depending on whether they are used at the upper or lower end of the ramp or ramp run. The two longer studs must be oriented toward the end of the ramp regardless of the side where they are being installed.

- 7.1.2. If used with a transition plate (upper or lower), the following steps are completed after the ramp is resting on a supporting surface and transition plate is installed.

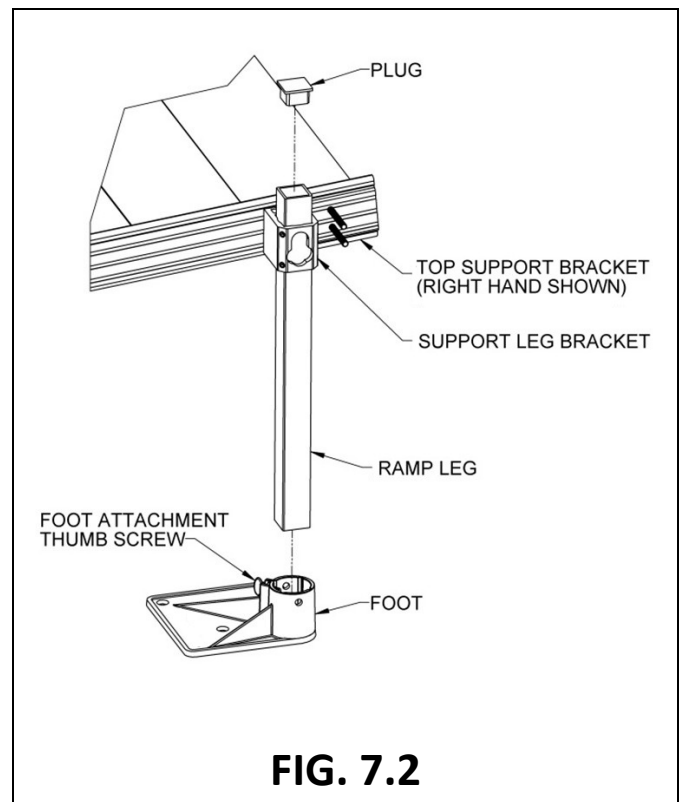
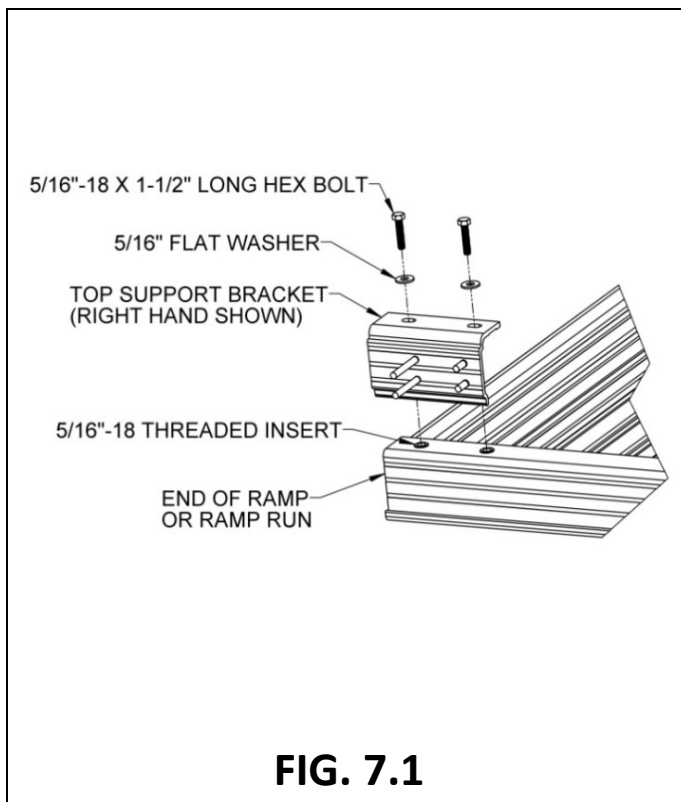
- 7.1.3. Install and level Support Leg Brackets on the two shorter studs of the top support bracket in the same manner described in SECTION 3.3 (FIG. 7.2).

- 7.1.4. Locate the appropriate HARSLxxPR (SUPPORT LEG PAIR where xx denotes the leg length) for the location and install it in the same manner described in SECTION 3.3 (FIG. 7.2).

✎ If installing on soft soil, it may be necessary to set the foot on a concrete pad.

- 7.1.5. Insert plugs into tops of the ramp legs.

- 7.1.6. Refer to previous sections for anchoring upper and lower transitions.



7.2. RAMP LOWER TRANSITION

- 7.2.1. The lower transition, in combination with an HARRSUT (UNIVERSAL RAMP SUPPORT – TOP), is commonly used to span wider gaps or accommodate larger angular misalignment than can be achieved with an upper transition. It can also be used in place of the ground transition in some situations. Despite being called a lower transition, it can be used at either end of a ramp or ramp run.
 - ✎ The lower transition is the larger of the two transitions.
- 7.2.2. Lift the end of the ramp and install the lower transition as shown (FIG. 7.3).
- 7.2.3. If the lower transition is resting on the ground, anchoring is optional.
- 7.2.4. If a lower transition is resting on any type of raised area (i.e., a platform, deck, or porch), it must be anchored using the same procedures as used in 'ANCHOR RAMP UPPER TRANSITION'.

7.3. SINGLE BRIDGE PLATE

- 7.3.1. Securing to WOOD SURFACE OR PLATFORM:
 - 7.3.1.1. To secure to a wooden deck or platform, use the four supplied 1/4" x 1" self-drilling self-tapping screws.
 - 7.3.2. Securing to CONCRETE:
 - 7.3.2.1. To secure to concrete, drill a 1/4" diameter hole at least 1-1/4" deep. Ensure that all debris from the hole is removed using a shop vacuum, blower, or another suitable type of equipment.
 - 7.3.2.2. Insert the four supplied pin head mushroom anchors and secure by using a hammer to drive the pin in flush with the mushroom.
- ⚠ Use HARBP36 (BRIDGE PLATE) in the horizontal (flat) position only.
 - ⚠ It is intended to be used to bridge gaps up to a maximum of 6" between a platform and a porch or deck. IT IS NOT INTENDED TO BE USED AS A RAMP OR ON AN INCLINE.
 - ⚠ Ensure that at least 1" on each of the supporting edges of the plate is supported on a good, sound construction surface that is free from defects (FIG. 7.4).

FIG. 7.3

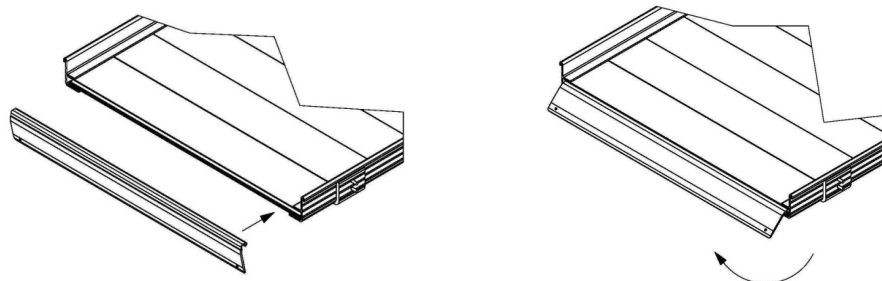
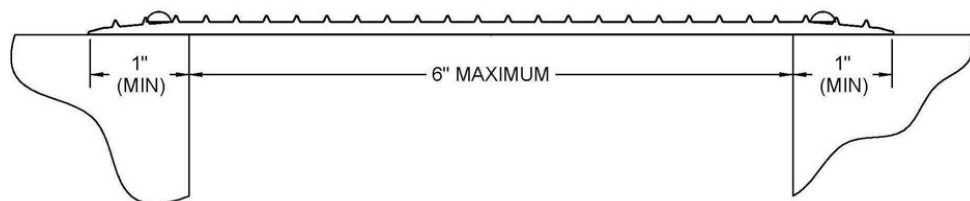


FIG. 7.4



7.4. LANDING PAD

The HARLP (LANDING PAD) is used at the bottom of a ramp or ramp run to assist mobility on soft ground.

- 7.4.1. Contour the ground to remove any high or low areas which would prevent portions of the Landing Pad from contacting the ground.
 - ⚠ The underside of the Landing Pad must be fully supported by the ground. It should never be used in an elevated position like a ramp or a platform.
- 7.4.2. Slide the bottom plate into one of the three available slots (FIG. 7.5).
 - ⚠ The ramp must be installed on the side marked for ramp attachment.
- 7.4.3. After installing the bottom plate, install #8-32 hex washer head thread cutting screws into the screw slots on both sides (FIG. 7.6).

FIG. 7.5

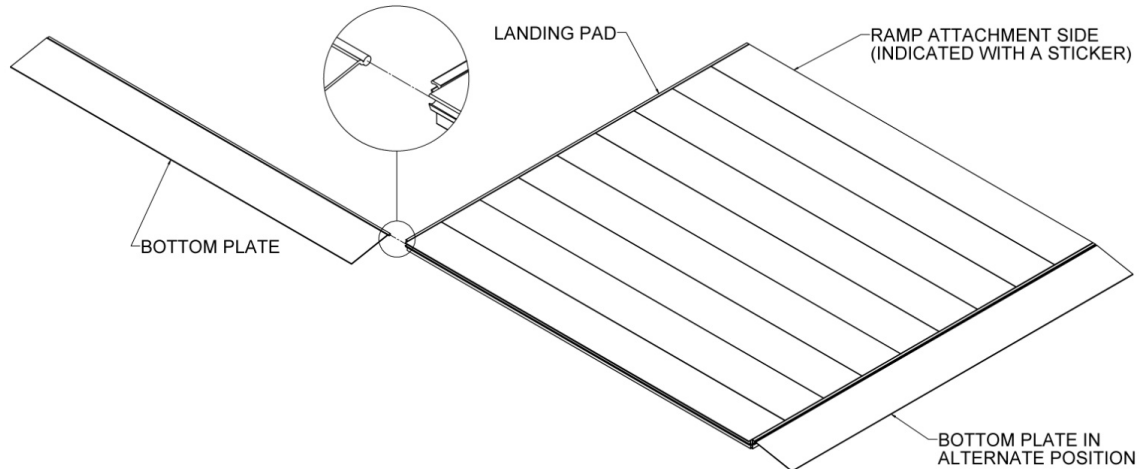
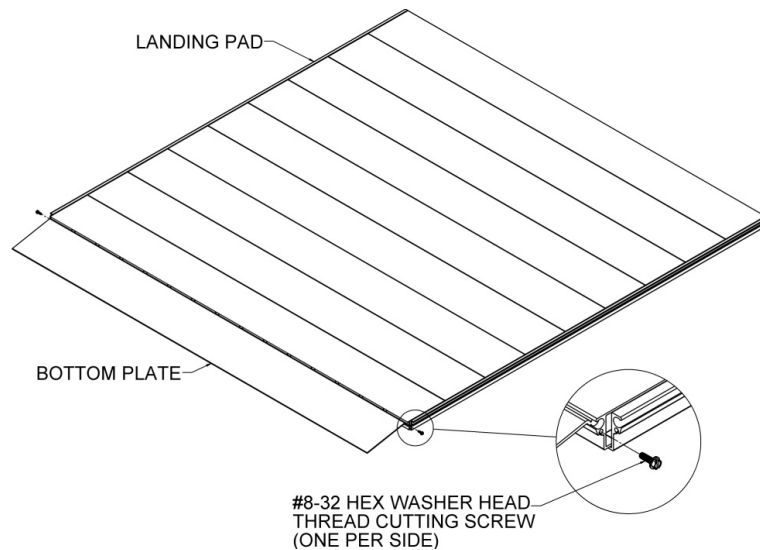


FIG. 7.6



- 7.4.4. Lift the lower end of the ramp and install lower transition as described (see 'RAMP LOWER TRANSITION'), then slide the pad underneath. Make sure the ramp is on the side marked for ramp attachment and ensure that the lower transition extends fully onto the pad.
- 7.4.5. Attach lower transition to the pad using two provided 1/4" self-drilling screws (FIG. 7.7).

7.5. PLATFORM TIE STRAPS

- 7.5.1. The Platform Tie Strap ("strap") is intended to attach a platform to an existing porch, deck, threshold, or platform where there is little or no gap (1/2" maximum if being installed per ADA Guidelines).
- 7.5.2. Position straps next to the platform corner pockets, extending equally onto the platform and the existing surface (FIG. 7.8).
- 7.5.3. Using the strap as a template, mark and drill 1/8" pilot holes.
- 7.5.4. Secure strap to the platform and existing structure using the supplied 1/4" x 1" self-drilling self-tapping screws.

FIG. 7.7

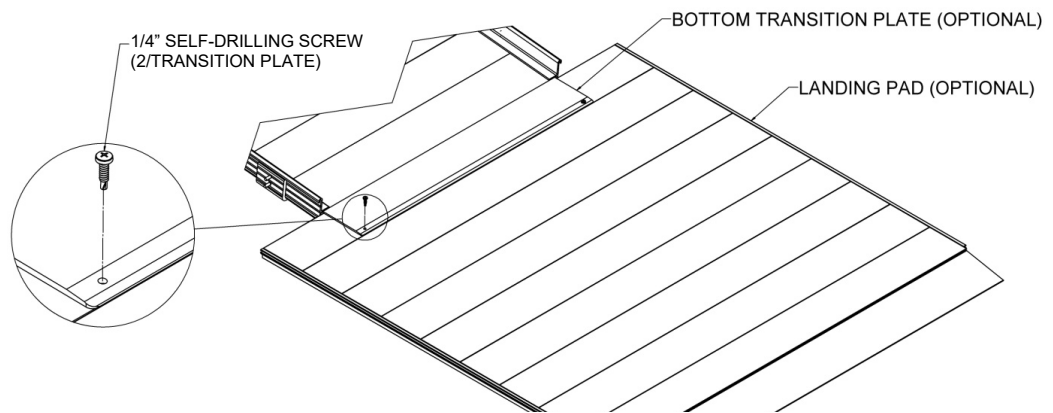
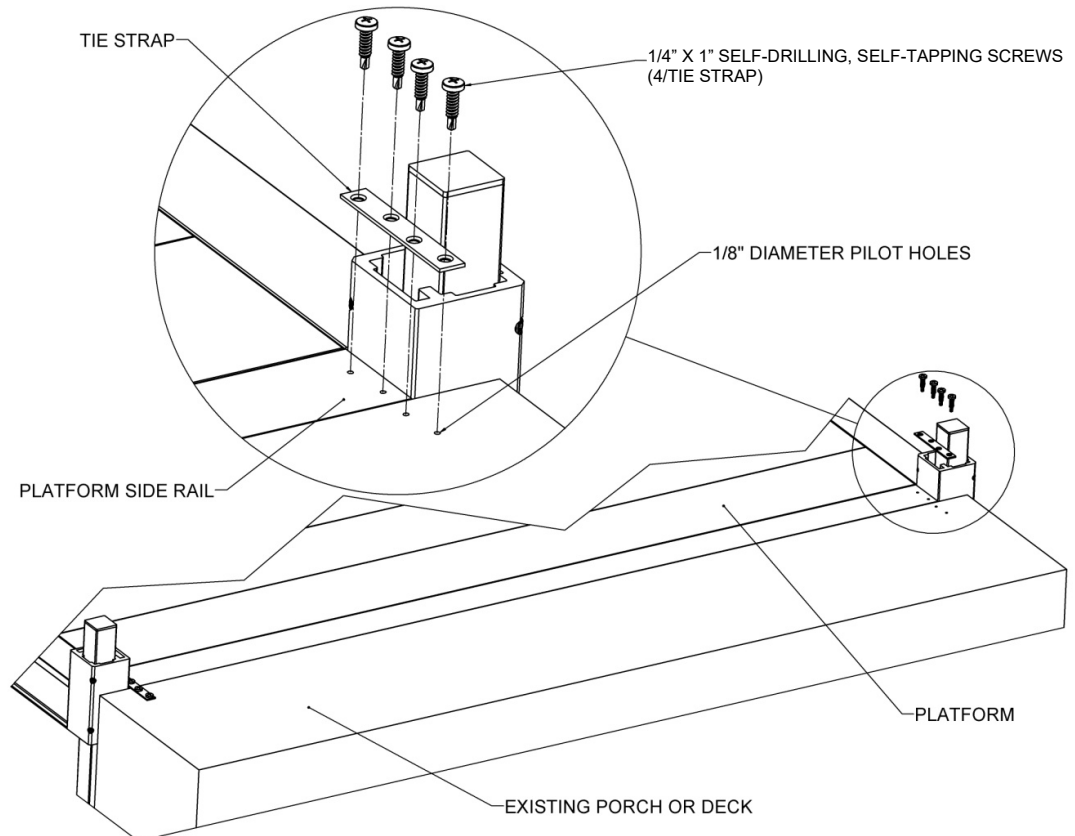


FIG. 7.8



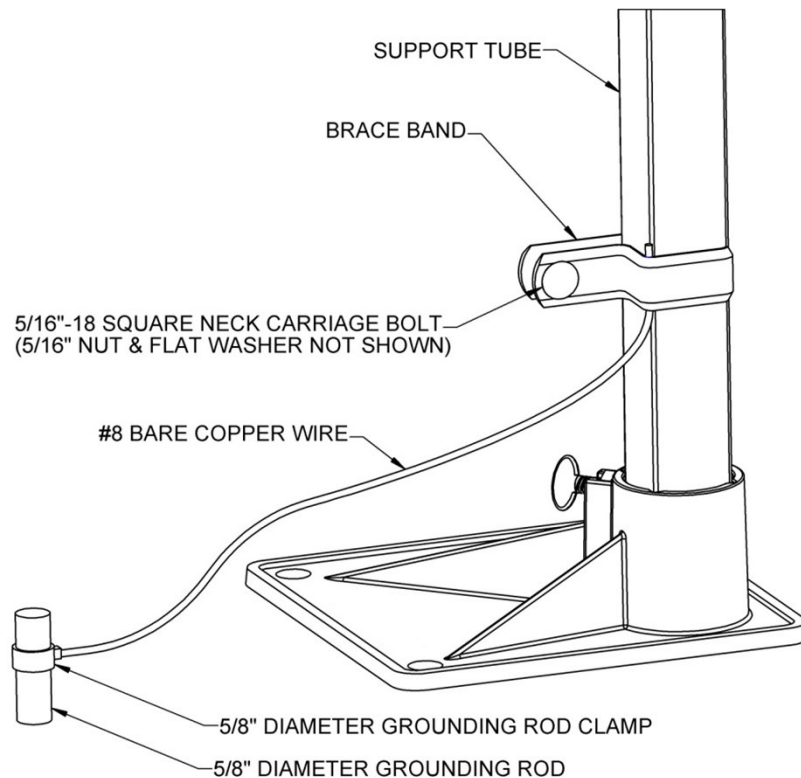
7.6. LIGHTNING GROUND ROD

Because aluminum can conduct electricity, the HARLGRK (LIGHTNING GROUND ROD KIT) is available and provides the components needed to ground a ramp system.

⚠ Prior to installing, ensure that any underground electrical conductors, natural gas lines, water/drain lines, and or other interferences are located and will not hinder the installation.

- 7.6.1. Drive the grounding rod straight into the ground as close as possible (within 1-1/2 feet maximum) to one of the support tubes leaving approximately 2" exposed.
- 7.6.2. Install the brace band around support tube. Place the #8 bare copper wire under the brace band on the corner as shown (FIG. 7.9).
- 7.6.3. Install the 5/16"-18 carriage bolt, nut, and flat washer and tighten so that wire is in good contact with the support tube.
- 7.6.4. Install 5/8" grounding rod clamp to grounding rod. Place #8 wire between clamp and rod, then tighten the clamp.

FIG. 7.9

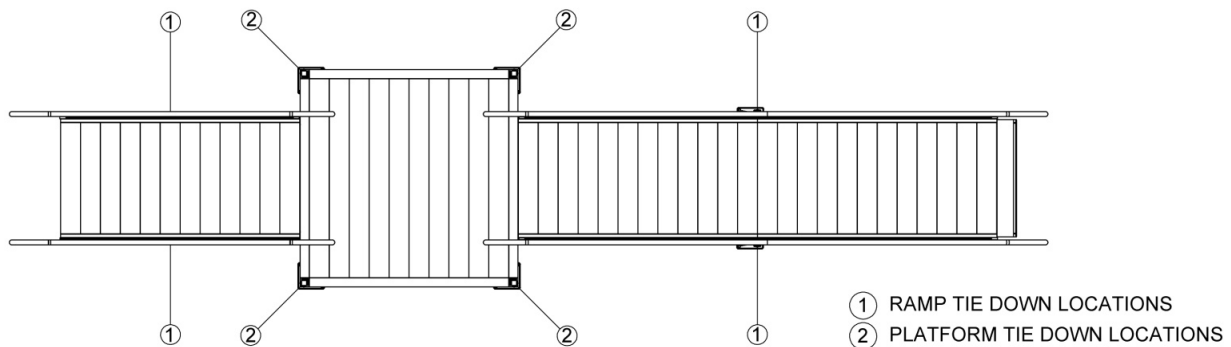


7.7. TIE DOWN

The Tie Down Kit ("tie down") includes a pair of auger-style anchors for mounting the system in soil or through asphalt, plus wire rope and hardware needed to attach the ramp or platform to the anchor. The tie down is designed to anchor the system to resist seismic loading and hurricane-strength winds but is not rated for specific soil conditions or seismic zones. Compliance with local building codes usually requires anchoring calculations for the specific location, ground condition, and system stamped by a professional engineer. Consult your sales representative if site-specific stamped calculations are required.

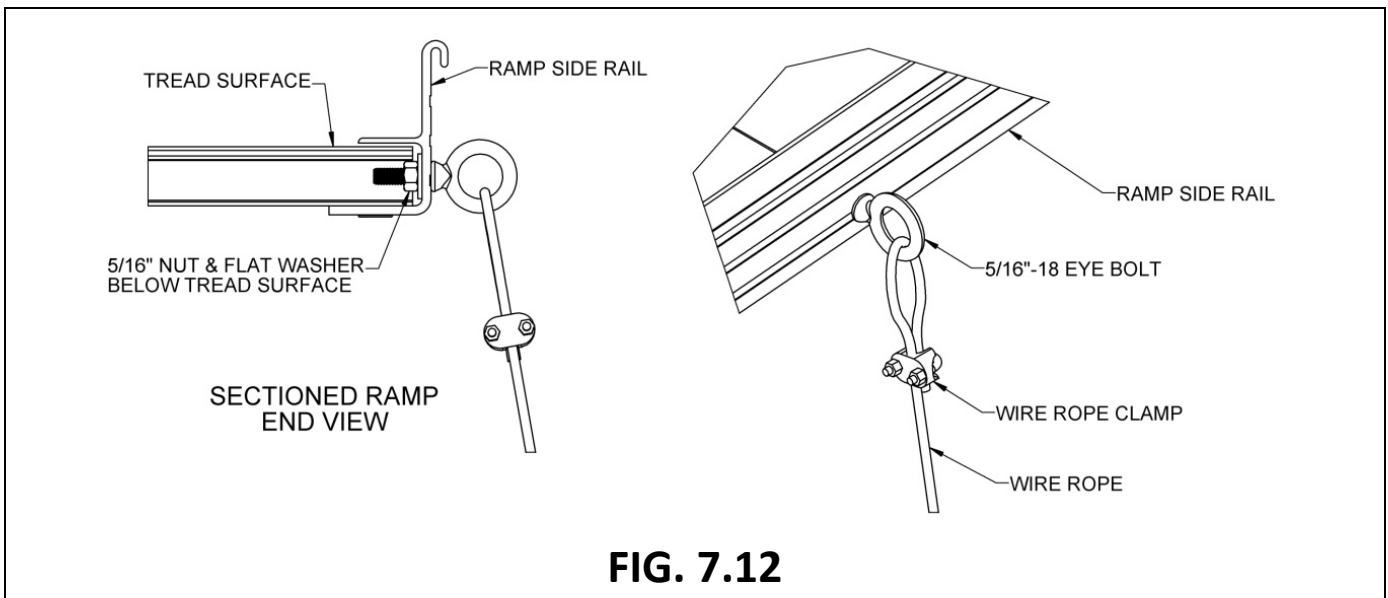
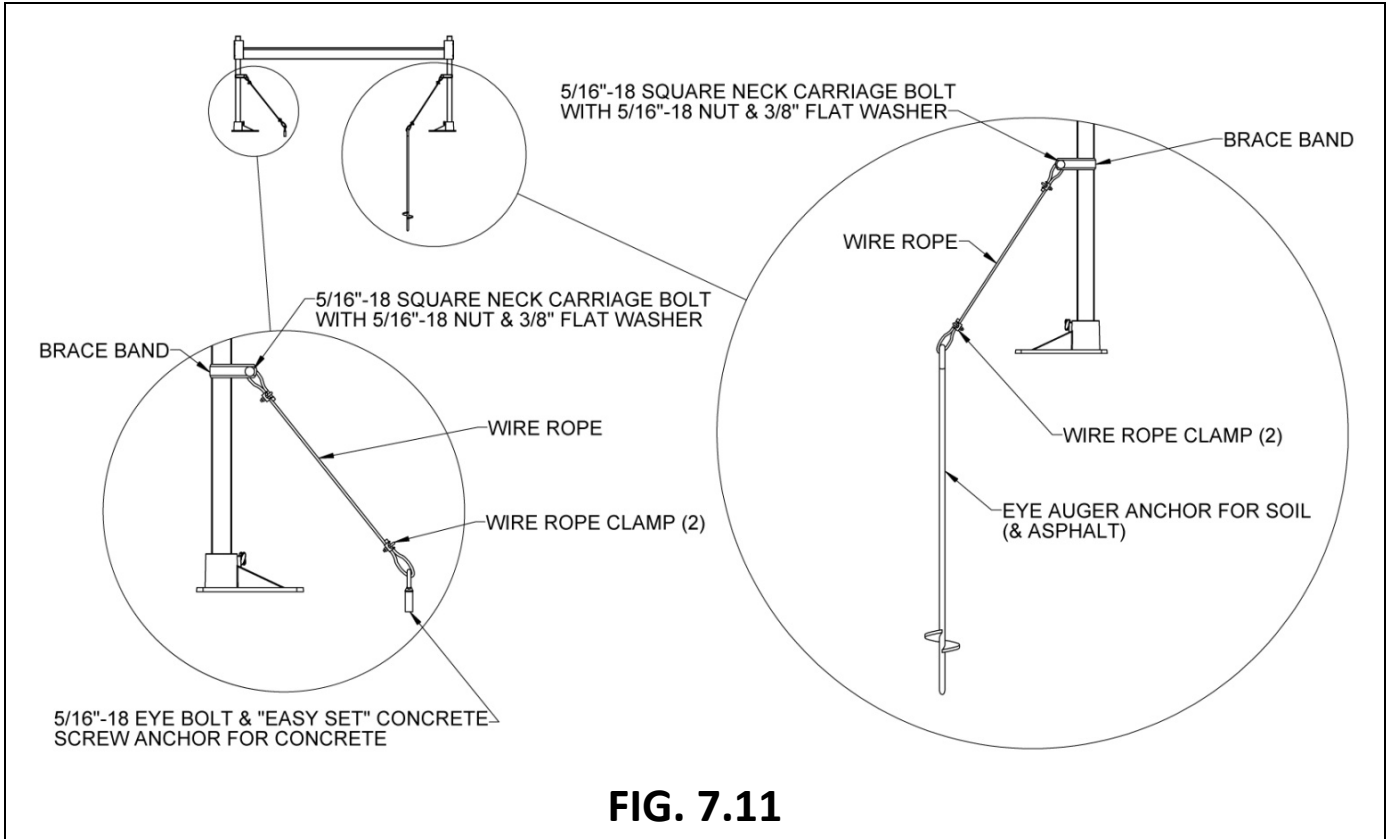
- ⚠ Prior to installing the auger anchors into the ground, ensure that any underground electrical conductors, natural gas lines, water/drain lines, and or other interferences are located and will not hinder the installation.
- ⚠ Inspect installation regularly for any loose wire ropes, fasteners, auger anchors, etc.
- ⚠ Do not use concrete anchors in asphalt. Asphalt is not usually considered a suitable surface for anchoring. Create holes in the asphalt and anchor the system to the ground using auger-style anchors.

- 7.7.1. The installer, based on field conditions, will determine the exact location of the tie downs. Generally, they should be positioned opposite one another as shown (FIG. 7.10).
- 7.7.2. Install the Elevation Modular Ramp to establish layout and locations. It may be necessary to temporarily reposition components to install the anchors.



- 7.7.3. For platforms, install one tie down at each corner where a support tube is installed (FIG. 7.11).
- 7.7.4. Place a brace band around the support tube approximately 2" below the corner pocket of a platform and secure using the 5/16" square neck carriage bolt, 5/16"-18 nut, and 3/8" washer.
- 7.7.5. Place one end of the wire rope between the legs of the brace band and around the square neck carriage bolt, then secure the wire rope together using the supplied 3/16" wire rope clamp.
- 7.7.6. If using the auger-style tie downs (soil and asphalt), install the auger into the ground in line with the brace band. Install as close to vertical as possible, 10-degree angle maximum. Use a 1/2" steel rod (or similar item) through the eye of the auger anchor to turn the auger anchor into the ground. Keep turning the auger until only the eye is exposed.
- 7.7.7. For concrete anchors, install per manufacturer's instructions and then install a 5/16" eye bolt.
- 7.7.8. Place the other end of the wire rope either through the eye of the auger anchor or through the eye bolt in the concrete anchor and secure the wire rope together using the supplied 3/16" wire rope clamps.
 - ⚠ Ensure that the wire rope has been pulled taut and all slack has been removed prior to securing it with the wire rope clamps.
- 7.7.9. Trim the excess wire rope as required using a cable cutter or other appropriate tool. Wrap the trimmed ends with vinyl tape (or equivalent) to keep the wire rope from fraying.
- 7.7.10. Repeat for all support tubes.
- 7.7.11. If used on a single ramp, install tie downs approx. in the center using eye bolts (FIG. 7.10).

- 7.7.12. If there are support tubes in the ramp run, the same method as described above for platforms can be used. Otherwise, drill a 5/16" hole below the tread surface (approximately 3/4" above the bottom of the side rail) and between the ribs underneath the treads in each of the side rails at the desired location.
- 7.7.13. Install one of the 5/16" eye bolts and secure to the ramp using one 5/16" flat washer and one 5/16" nut in each hole (FIG. 7.12).
- 7.7.14. Secure one end of the wire rope to the eye bolts using the supplied 3/16" wire rope clamps.
- 7.7.15. Repeat for all locations.



7.8. GATE

- 7.8.1. The Modular Gate 36" ("gate") can be installed to swing in either direction. Determine which side the hinge should be on and the direction the gate should swing before starting the installation (FIG. 7.13).
- 7.8.2. Using a rubber mallet, tap the provided round tube plugs into the tubing ends (FIG. 7.14).

FIG. 7.13

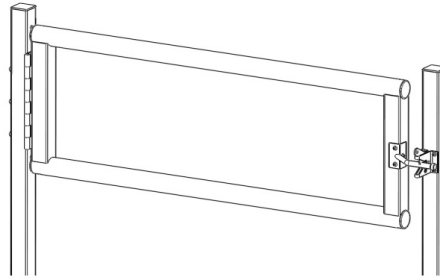
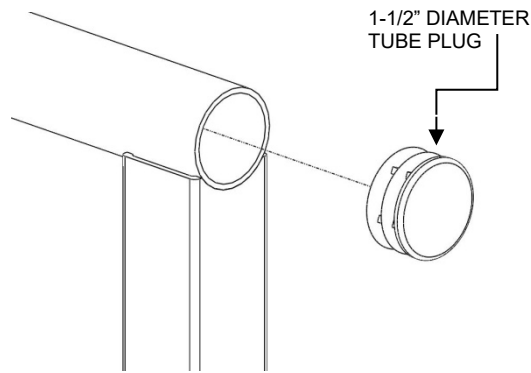


FIG. 7.14



- 7.8.3. Position the gate hinge against the vertical handrail post. Position the hinge vertically so the top of the gate is even with the top of the handrail and so that the edge of the hinge is flush with the edge of the vertical handrail post.
- 7.8.4. Using the holes in the hinge as a template, mark locations with a pencil, then drill three 1/8" holes through both sides of the vertical handrail tube (FIG. 7.15). Install fasteners through hinge and vertical handrail post and secure as shown (FIG. 7.16).

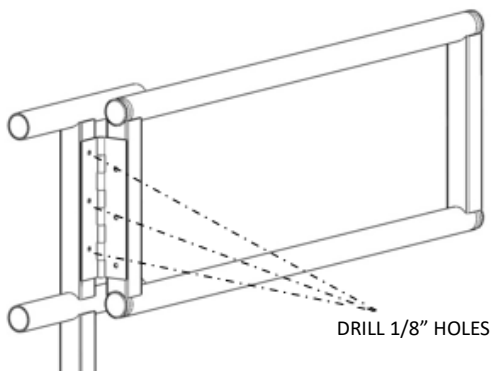


FIG. 7.15

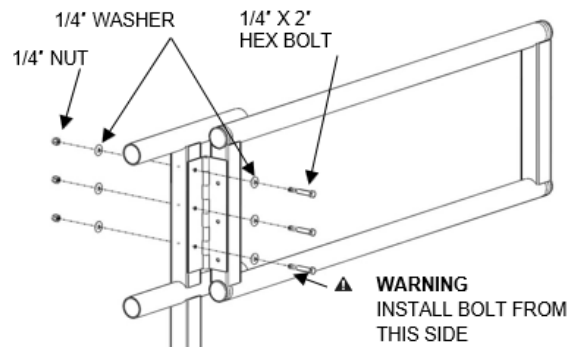


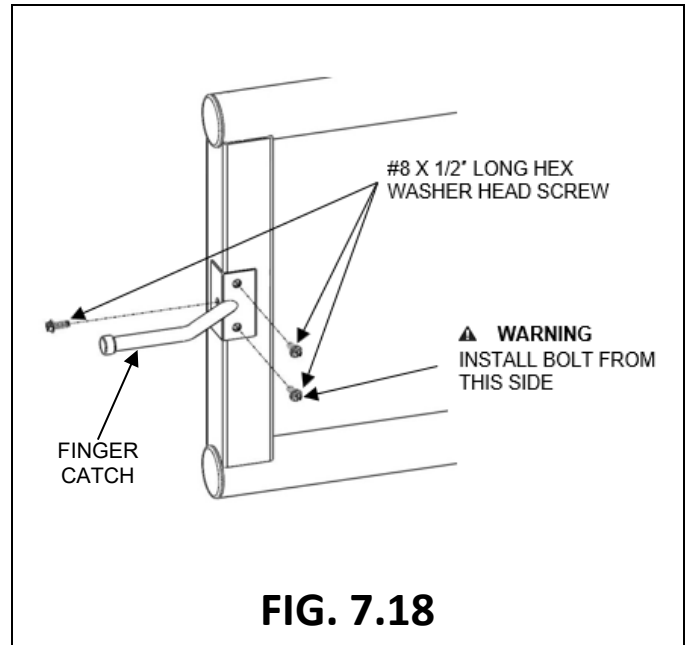
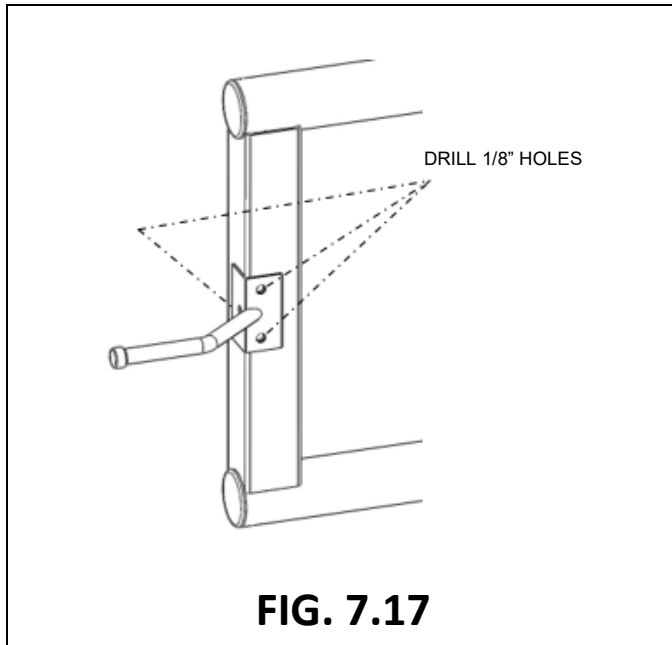
FIG. 7.16

7.8.5. Remove gravity latch and finger catch from bag.

7.8.5.1. **IMPORTANT!** Discard the screws included in the same bag as the gravity latch and finger catch, as they will not be used. Instead, use the screws included in the separate hardware bag for the following steps.

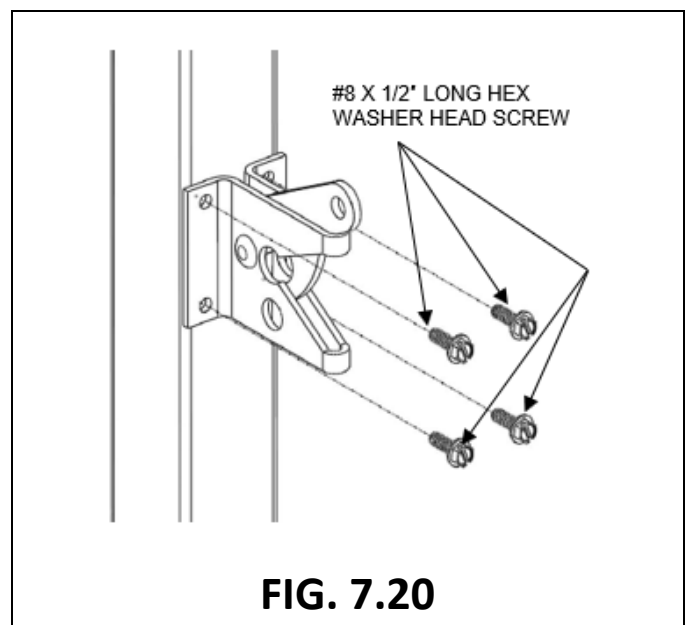
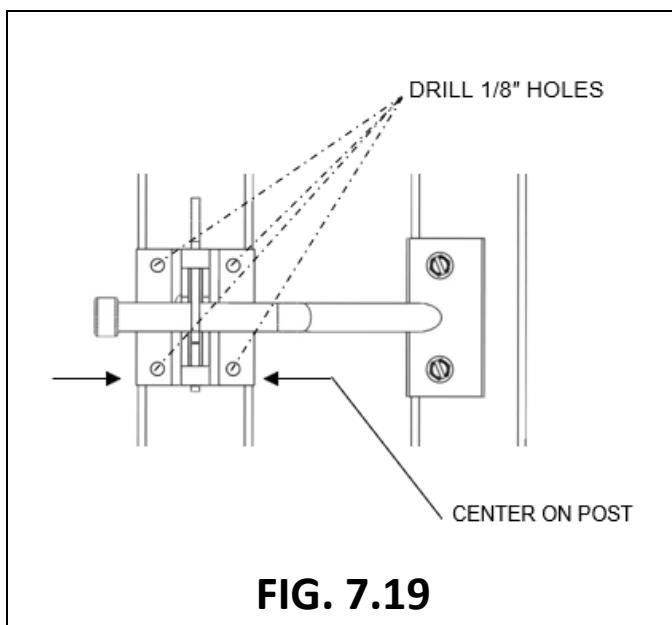
7.8.6. Center the finger catch on the gate square tube opposite the hinge and mark center of holes with a pencil. Drill three 1/8" holes through one side of the vertical handrail tube (FIG. 7.17).

7.8.7. Use a 1/4" nut driver to secure catch with screws (FIG. 7.18).



7.8.8. Clip the latch to the finger catch and center on the step or ramp vertical square tube. Mark the center of the holes with a pencil, then drill four 1/8" holes through one side of the vertical handrail tube (FIG. 7.19).

7.8.9. Use a 1/4" nut driver to secure latch using screws (FIG. 7.20).



7.9. CONNECT 45-DEGREE ANGLE PLATFORM WITH TWO-LINE RAILS TO STANDARD PLATFORM

7.9.1. The 45-degree Angle Platform can also be connected to a standard square or rectangular platform. Install support tubes in both platforms and set at the desired height. Refer to SECTION 2.2 for installing support tubes and feet in the standard platform and SECTION 2.4 for installing support tubes and feet in the 45-degree Angle Platform.



The 45-degree Angle Platform can be connected to platform sides up to 6'.

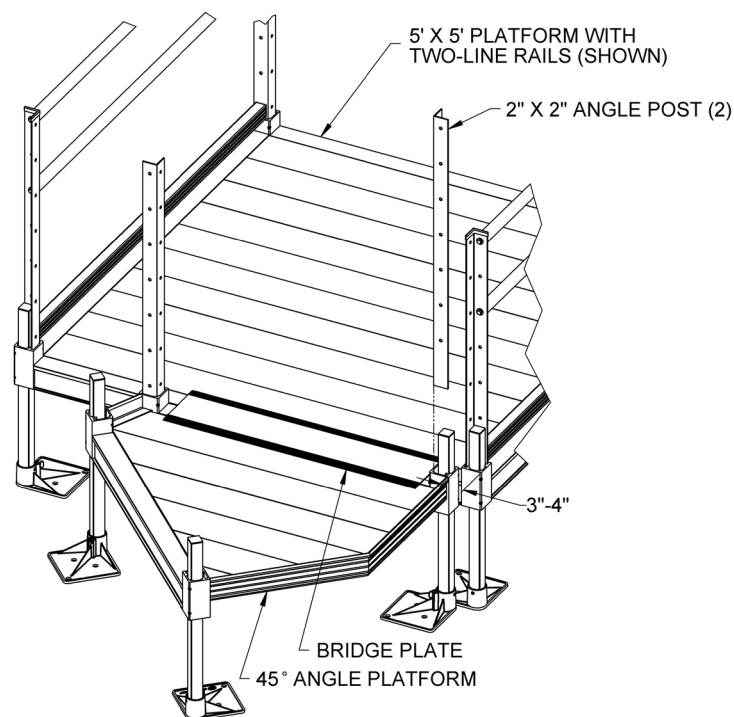
Additional components are needed if attempting to connect the 45-degree Angle Platform to a platform side over 6'.

7.9.2. Confirm the platforms are set at the same elevation, then set the 45-degree Angle Platform adjacent to the standard platform, approximately 3" to 4" in from one side (FIG. 7.21).

7.9.3. Install two 2" x 2" Angle Posts in the corner pockets of the 45-degree Angle Platform adjacent to the standard platform (FIG. 7.21). Refer to SECTION 4.4 for installing the 2" x 2" Angle Posts.

7.9.4. Install a Bridge Plate at the connection between the 45-degree Angle Platform and the standard platform (FIG. 7.21). Refer to SECTION 7.3 for Bridge Plate installation.

FIG. 7.21



7.9.5. Assemble a ramp to the side of the 45-degree Angle Platform, opposite the standard platform, and install the ramp handrails. Refer to SECTIONs 3.2 and 3.3 for ramp installation and SECTION 4.2 for ramp handrail attachment (FIG. 7.22).



Installation cannot be completed until ramp and ramp handrails are installed.

7.9.6. Install the Bolt-On Stub Rail, the welded handrail extension, and the adjustable elbows to the ramp handrails as described in SECTION 4.6 (FIG. 7.22).

7.9.7. Attach two closure elbows per 2" x 2" angle post with 5/16"-18 x 3/4" button head screws using the holes shown (the uppermost and the third from the top). Tighten enough to hold the elbows in place, but still allow them to rotate (FIG. 7.22).

7.9.8. The procedure for installing the 1-1/2" diameter upper and lower tubes is the same as described in SECTION 4.6 except the connection is between an adjustable elbow and a closure elbow instead of between two adjustable elbows. Align the opposing round faces, measure the upper and lower gaps separately, trim and install the upper and lower tubes, and reassemble the elbows as described in SECTION 4.6 (FIG. 7.23).

FIG. 7.22

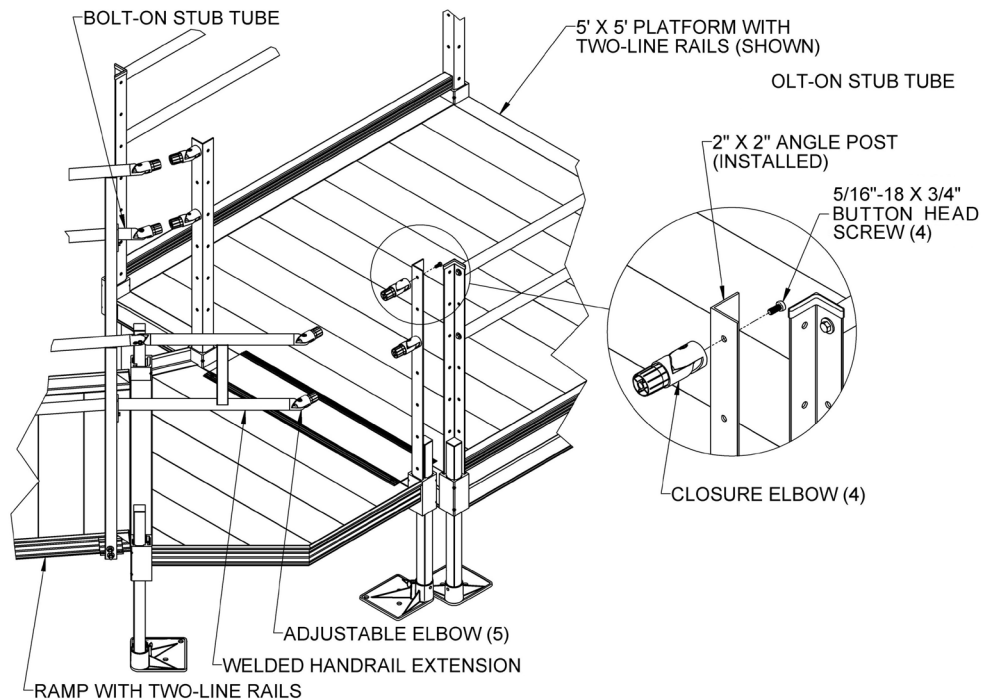
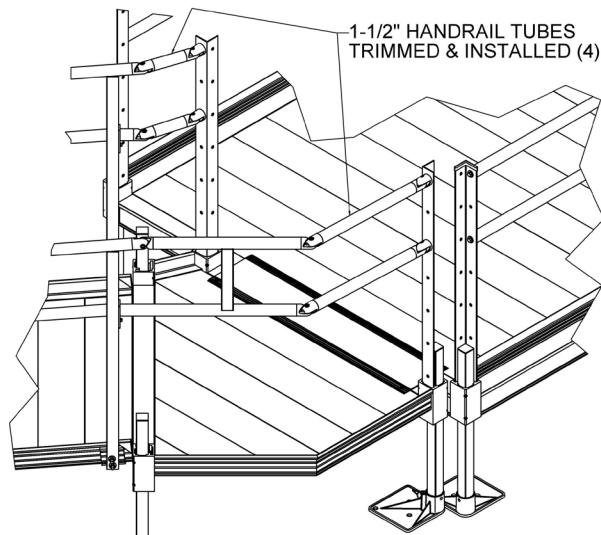


FIG. 7.23



- 7.9.9. Locate the closure bracket and screw to the platform side rail using a 1/4" x 1" self-drilling, self-tapping pan head Phillips screw and a 1/4" flat washer.
- 7.9.10. Center the long leg of the closure bracket with respect to the 2" x 2" angle post and align the short leg (approximately) with the 45-degree Angle Platform corner pocket, then screw the short leg to the platform side rail using a 1/4" x 1" self-drilling, self-tapping pan head Phillips screw and 1/4" flat washer (FIG. 7.24).
- 7.9.11. Measure the gap between the long leg of the closure bracket and the 2" x 2" angle post, then trim the 1-1/2" x 2" curb to the measured gap length less 1/8" to account for the threaded inserts which will be installed after trimming (FIG. 7.24).
- 7.9.12. Deburr all sharp edges from trimming the curb and insert 1-1/2" square, 5/16"-18 threaded inserts in the ends. Use a rubber mallet or similar tool to fully seat the threaded inserts (FIG. 7.24).
- 7.9.13. Attach the 1-1/2" x 2" curb to the closure bracket and the 2" x 2" angle post using 5/16"-18 x 1" hex cap screws and 5/16" flat washers (FIG. 7.24).

✎ It may be necessary to temporarily remove or reposition the platform leg to attach the curb.

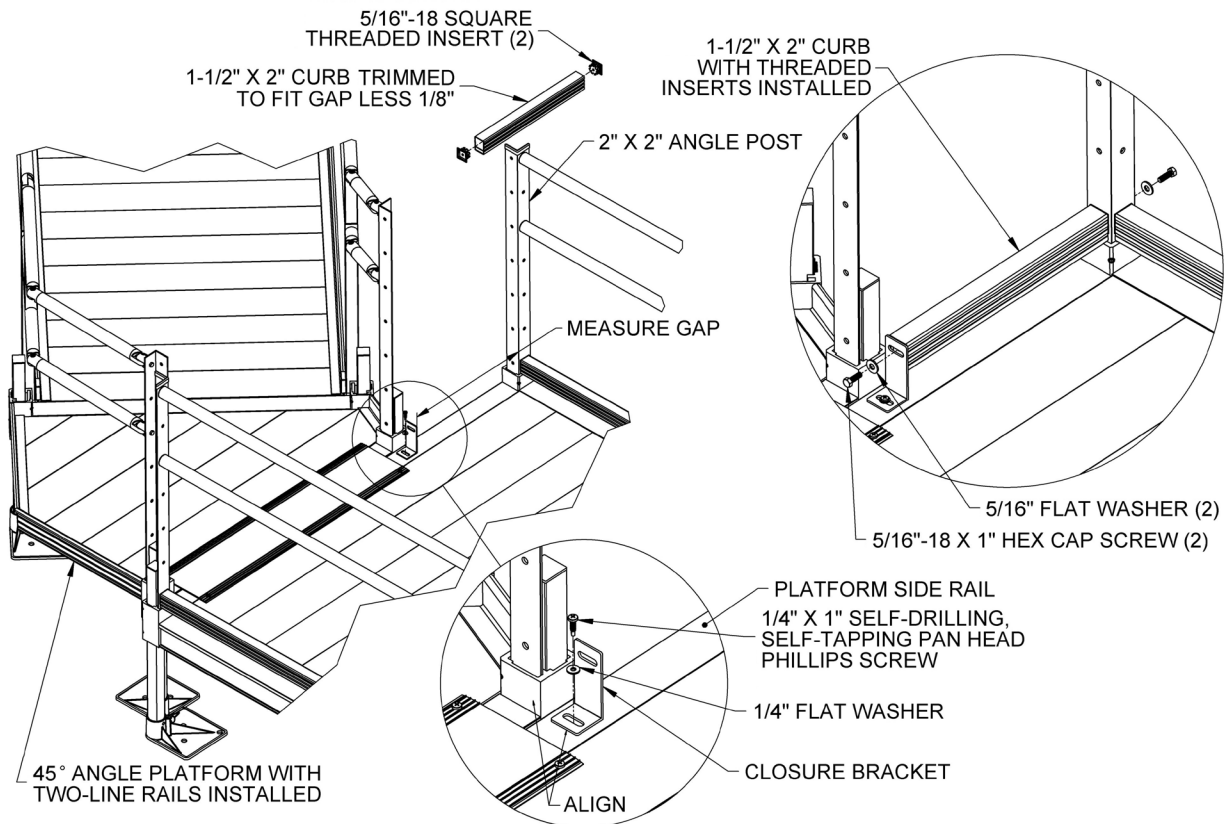


FIG. 7.24

- 7.9.14. Attach two more closure elbows to the 2" x 2" angle post in the 45-degree Angle Platform and two to the angle post where the closure will connect with 5/16"-18 x 3/4" button head screws. Use the holes shown (the uppermost and the third from the top). Tighten enough to hold the elbows in place but still allow them to rotate (FIG. 7.25).
- 7.9.15. The procedure for installing the 1-1/2" diameter upper and lower tubes at the closure is the same as described in SECTION 4.6 except the connection is between an adjustable elbow and a closure elbow instead of between two adjustable elbows. Align the opposing round faces, measure the upper and lower gaps, trim and install the upper and lower tubes, then reassemble the elbows as described in SECTION 4.6 (FIG. 7.25).
- 7.9.16. Install an angle cap on top of each handrail post. Use construction adhesive to bond the cap in place (FIG. 7.26).

FIG. 7.25

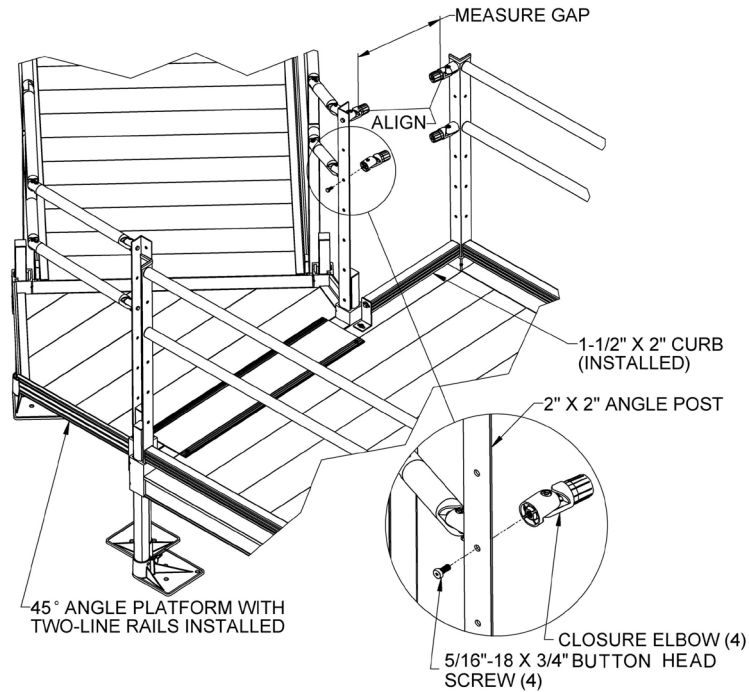
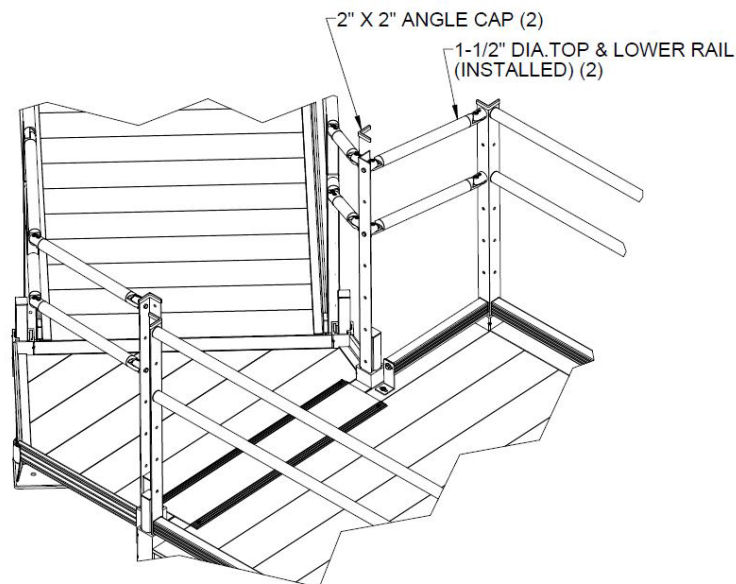


FIG. 7.26



8. MAINTENANCE AND SAFETY

8.1. PERIODIC MAINTENANCE AND SAFETY

- 8.1.1. Always exercise caution when handling, assembling, and or using the system. Proper maintenance and upkeep of the ramp surface is vital.
- 8.1.2. If needed, use a qualified helper when using the system.
- 8.1.3. Always use a lap belt if using the system with mobility equipment.
- 8.1.4. Before use with mobility equipment, refer to your mobility equipment's owner guide for acceptable ramp usage, including proper slope/incline, chair direction, etc.; never exceed its recommendations.
- 8.1.5. Before each use, check the system for worn, loose, or damaged parts. If you find any of these conditions, do not use the system and contact your installer for service or repairs. Failure to do so may result in serious injury.
- 8.1.6. At all times, keep the system clear of dirt, leaves, and other debris that may accumulate on the surface. Simply sweeping the ramp or using a garden hose will usually suffice, but, if needed, a damp cloth or soft brush with soap and water can be used (avoid use of alkaline detergents).
- 8.1.7. If tread surface is covered with ice and or snow, remove ice and or snow before use. Snow accumulation should be shoveled, and the tread surface swept clean. Magnesium Chloride may be used to melt snow or ice accumulation on the ramp; however, after the snow and or ice threat has cleared, be sure to clean the tread surface with soap and water (avoiding alkaloid detergents) to remove Magnesium Chloride residue. See 'DEICING' below for additional information.
- 8.1.8. Keep the system clear of debris and clutter. Do not use the system if walking surface is unsafe.
- 8.1.9. Do not run, jump, or play on or around the system, including climbing on or between the handrails.
- 8.1.10. Do not use any part of the system to support planters, lights, decorations, etc.
- 8.1.11. The system may be slippery in wet conditions; use caution as traction may be reduced.

9. DEICING

- ⚠ For the safety of all users, it is important to keep your system clear of snow, ice, and other debris.
- ⚠ Always follow the deicing agent manufacturer's directions.
- ⚠ Harmar will not be held responsible for any injuries or damages that arise from the information provided. ALWAYS check with the deicing product's manufacturer or your local supplier to determine which method is best for your situation.
- ⚠ After the snow and or ice threat has cleared, be sure to clean the tread surface with mild soap and water (avoid alkaline detergents) to remove deicing residue.
- ✋ Sodium Chloride (salt) and Calcium Chloride are particularly damaging to newly poured concrete. In addition, these chemicals should not be applied to brick or stone surfaces.
- ✋ While care has been taken to ensure that the table below is accurate, the information shown is not all-inclusive. Manufacturers of deicing products may make changes to their products as well as recommended functions and usage requirements. The deicing method you choose should be researched with your deicer supplier so you can determine which method is best for your situation.
- ✋ The information below is taken from Fact Sheet 707, Cooperative Extension Service, University of Maryland at College Park, University of Maryland Eastern Shore, and was up to date at the time of this manual's publication.

PRODUCT	MIN. WORKING TEMP (°F)	SPEED OF ACTION	DAMAGES CONCRETE & METAL	HARMFUL TO PLANTS
MAGNESIUM CHLORIDE	-13	VERY FAST	NO	MODERATE
CALCIUM CHLORIDE	5	FAST	YES	YES
SODIUM CHLORIDE (SALT)	18	MODERATE	YES	YES
POTASSIUM CHLORIDE	25	SLOW	OK ON OLD CONCRETE	MODERATE
CALCIUM MAGNESIUM ACETATE (CMA)	25	SLOW	NO	NO