DANT CLAYTON

The Next Level

I-BEAM INSTALLATION MANUAL

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You have purchased the most unique portable bleacher system on the market. It is the highest quality, the best appearing, and the strongest bleacher system and the Alum-A-Stand will assemble faster and at less cost than any other bleacher system with comparable features. No other bleacher system will give you all of this:

Standard Installation Manual for I-Beam Bleachers

This manual has been compiled as an aid to those involved with the installation of I-Beam bleachers for Dant Clayton Corporation and contains basic requirements and procedures necessary to obtain optimum results in the completion of a bleacher construction project. It is by no means intended that this manual contains all information and requirements necessary for any one specific project but rather furnishes minimum requirements necessary for all projects.

Dant Clayton is the leading designer and manufacturer of I-Beam grandstands. As the industry leader, the goals of this manual are:

- Increased safety for patrons utilizing the bleacher and for construction workers
- Enhanced training for new installers
- Increased standardization of installations
- Reduced construction duration and field backcharges

If you have questions with any of the content contained within this manual please contact one of our project managers for further discussion. Dant Clayton welcomes your comments or concerns in our quest for the continuing improvement of our I-Beam product installation process.

Sincerely,

Jamie Richardson
Vice President of Project Delivery

Tools Required

- 32-ounce rubber mallets for attaching footboards
- C-Clamp type vise grips to remove a footboard
- 1⅛" Hole saw
- TekGun
- Pop rivet gun
- Air riveter
- AVKGun
- Air compressor

Additional Tools That May Be Required

- A generator if no electric is on site
- Band cutters to break bundles
- A knife for removing packaging
- Tape measures (100' and 300')
- A drill with bits
- Ratchets with sockets.
- Open-end wrenches.
- Drift pins for hole alignment
- A circular saw with carbide-tipped blade.
- A reciprocating saw with metal-cutting blade
- A concrete hammer
- A sledge hammer
- Nylon straps
- 5/8" and 3/4" spud wrench
- Large and small bull pin
- Safety harness for each crew member
- Lanyard
- Bolt and wrench bag
- Come-a-longs
- Hammer
- Bolt cutters
- Ladders
- Sawzall
- Mitre saw
- Circular saw

Equipment That May Be Required

- 15–50 Tom crane (varying sizes)
- Lull (all-terrain forklift)
- Manlift
- Scissor lift
- Bobcat
- Pressure washer
- Magnetic drill press
- Blower
- Welder

Crew Tools

- Large and small vice grips
- ⅜" Drive ratchet
- ⅜" - ¾" Sockets
- ⅜" - ¾" Deep-well Sockets
- ⅜" Drive extension
- 30' Tape measure
- Allen sockets
- Utility knife
- Tin snips
- Fencing pliers
- Channel locks
- Torpedo level
- Claw hammer
- Screwdriver set
- ½ - ¾" Wrench
- String life
- Metal file
- Chalk
- Pry bar
- Rubber mallet
- Speed square

Pre-Job Planning

Upon execution of the Dant Clayton Corporation subcontract agreement. Subs should immediately commence pre-job planning for the various requirements of the installation. Below is a list of items to consider in your planning. Dant Clayton is the leading designer and manufacturer of I-Beam grandstands. As the industry leader, the goals of this manual are:

1. In receipt of Final Field Use drawings and Packing List.
2. Installation address and shipping address.
3. Business name, address and phone numbers for customer site contacts.
4. Ship date, start date and completion date of project.
5. Liquidated damages if any.
6. Prevailing wages rates if any.
7. Union/Non Union status.
8. Project work hours allowed on job — Saturday/ Sunday work allowed?
9. Specific site rules and regulations.
10. Pre-Construction Meeting Schedule.
11. Project Schedule and Coordination of work with other trades.
12. Press box Information (Installation, Dates, Size, Weight, Required Approval Drawings, Crane Sizes, Additional lifting beams).
13. Building Permit Requirements.
14. Project Schedule (should include other trades schedule).
15. Site Plan.
16. Setting Completion dates for key tasks, monitoring, and revising as needed.
17. Determining the crew size and phases of the installation process.
18. Establishing manpower schedule.
19. Determining hours for project using the standard times method.
20. Establishing equipment requirements and schedule of need.
21. Establishing direct billing accounts with rental companies
22. Subcontractor qualification documents
23. Bidding procedure.
24. Quote procedure.
25. Field document.

Best Practice Tips

1. Review of Dant Clayton and customer safety manuals and programs.
2. Accommodation requirements.
3. City- and state-specific contracting requirements.
4. Federal contracting requirements.
5. MBE/DBE reporting requirements.
6. Weekly certified payroll requirements.
7. In receipt of daily progress reporting forms.
8. Insurance requirements.
9. Bonding requirements.

Project Name_____ Report Date:_____ Completion Date:_____
Project No._____ Start/End Time:_____ Elapsed Work Hrs:_____
Weather AM/PM_____ Temp HI/LOW_____ Wind AM/PM_____

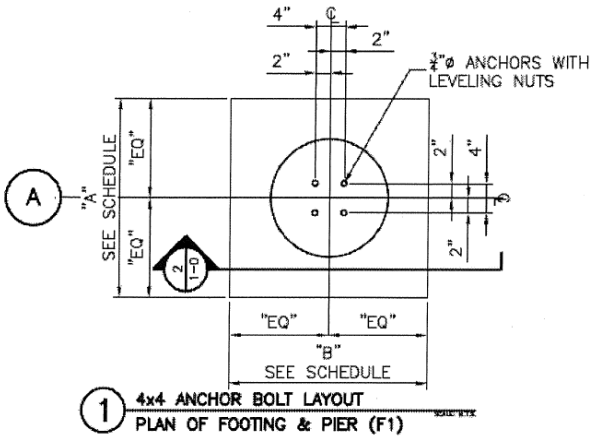
Employees Initials / Phase												TOTAL	Units Placed		Associated Rework Hours	Associated Extra Work Hours	T&M (FPR) #
Administrative												0					
OT												0					
Concrete												0	CY				
OT												0					
Inventory												0					
OT												0					
Material Handling												0					
OT												0					
Structural Steel												0	Ea				
OT												0					
Grout Piers												0	Ea				
OT												0					
Decking												0	Ea				
OT												0					
Riserboards												0	Ea				
OT												0					
Brackets												0	Ea				
OT												0					
Seatboards												0	Ea				
OT												0					
Backrest/Stancions												0	Ea				
OT												0					
Chairs												0	Ea				
OT												0					
Joint Cover												0	Ea				
OT												0					
Picket Rail Fence												0	LF				
OT												0					
Chain Link Fence												0	LF				
OT												0					
Closure Plates												0	Ea				
OT												0					
NFPA Rails												0	Ea				
OT												0					
Stairs												0	Ea				
(w or w/o platform) OT												0					
Ramps												0	Ea				
(w or w/o platform) OT												0					
Aisle Step Frames												0	Ea				
OT												0					
Intermediate Steps												0	Ea				
OT												0					
Pressbox Installation												0	Ea				
OT												0					
Pressure Wash Stand												0					
OT												0					
Non Skid Tape												0	Roll				
OT												0					
Touch-Up Paint												0					
OT												0					
Clean-Up												0					
OT												0					
Mobilization												0					
OT												0					
Weather Delays												0					
OT												0					
Punch Out												0					
OT												0					
												0					
OT												0					
Straight Hours	0	0	0	0	0	0	0	0	0	0	0	0TOTAL HOURS TODAY					
Overtime Hours	0	0	0	0	0	0	0	0	0	0	0						

Site Review

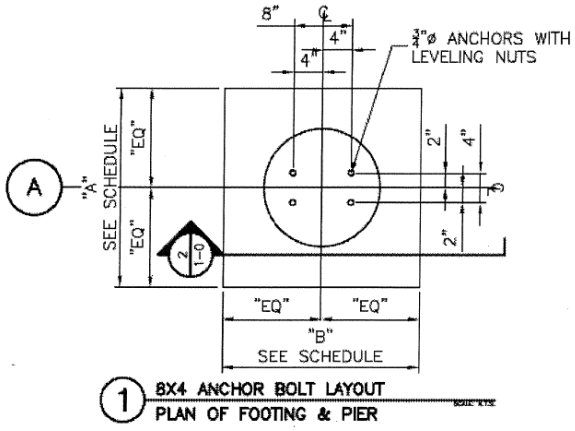
Prior to installation, the subcontractors, superintendent, foreman or Project Manager should visit the site. Upon arriving on the site, a meeting needs to be set up with the General Contractor or main contact person. During this meeting, a material staging area must be agreed upon and marked on a copy of Dant's Final Field Use drawings or site plan. The superintendent must check if preparation is required. If there are any document issues that need clarified the Supt. should ask the GC or Owner's Representative at this meeting. Following the meeting the superintendent / foreman needs to walk the site and complete the following tasks. The information obtained during this walk-thru must be recorded and forwarded to the PM:

1. Concrete Work — Verify benchmarks and review the concrete work (by others). Survey elevations of piers. Check anchor bolt patterns and check the anchor bolt and pier alignment (see figures below).
2. Utilities — Determine the distance to water and electricity. Determine if there will be a need for a generator. Check to see if there is a toilet facility near the site or if rentals will be required. If required, determine who's responsibility. Find out if there will be a dumpster on site for use or if a dumpster must be rented. Determine if site security will be an issue and if it is advisable to hire additional security for the safekeeping of the material and/or equipment.
3. Site Accessibility — Review the topographical information. Check to see if there is a road to the work area. Determine size of vehicle allowed on road and if there is a need for four wheel drive equipment. Check the access behind the stand for press box installation. Determine if the access road behind the stand will carry the weight of the truck, pressbox, and crane. Determine what changing weather conditions could do to the job site (rain, mud, snow etc.).

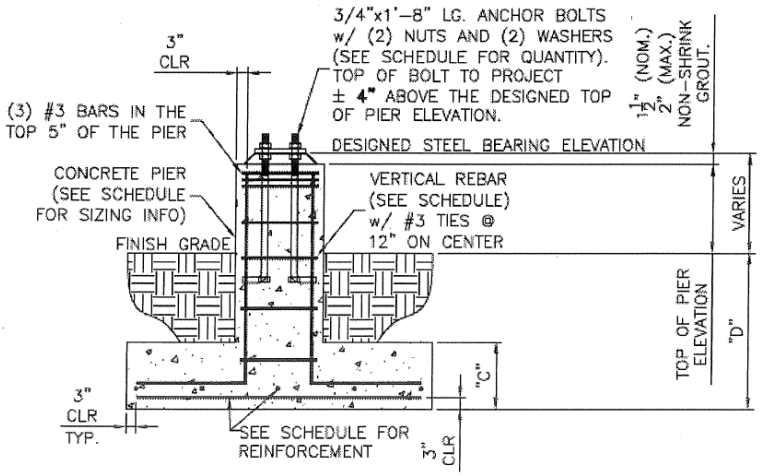
This information shall be communicated back to the Project Manager's department immediately following the visit for any follow-up that may be required.



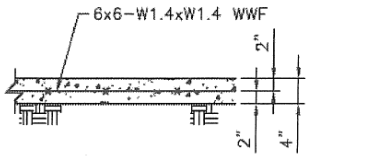
1 4x4 ANCHOR BOLT LAYOUT
PLAN OF FOOTING & PIER (F1)



1 8X4 ANCHOR BOLT LAYOUT
PLAN OF FOOTING & PIER



2 SECTION THRU SPREAD FOOTING



3 SECTION OF SLAB
ON GRADE

Daily Planning and Reporting

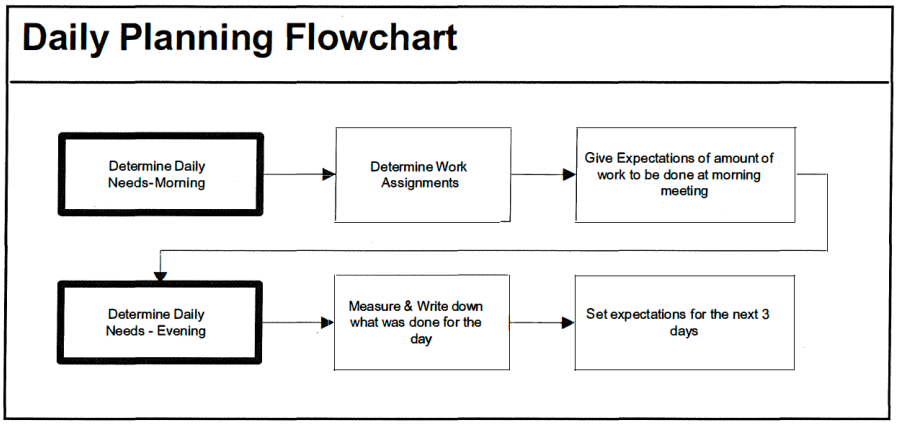
The subcontractors superintendent is the individual or team that is directly responsible for the expeditious completion of the physical work. The recommended daily planning activities of the Site Superintendent are as follows:

Morning

1. Holding a morning planning / preparedness meeting to address the expectations of the work to be performed for the day.
2. Assigning work. This will require the Three W's: Who? What? Where?

Evening

1. Reporting to the Dant Clayton construction manager to discuss days activities and any issues encountered.
2. Highlighting completed work on record drawings.
3. Meeting with foreman and leadman and setting work expectations for the following three workdays as well as crew assignments for the next day.
4. Preparing daily reports, job diaries, photos of issues, narratives, backcharges, notice documentation, equip ment safety sheets and other special documentation as may be determined by Dant Clayton and by project needs.
5. Identifying changes, conflicts, etc. that are beyond the scope of Company responsibility and report to the Project Manager and/or Construction Manager.



List Requirements of Reporting to PM

1. Daily Reports —> Daily due 10 AM next day.
2. EWTS —> W/I 48hrs of work.
3. CPs —> Weekly.
4. Safety Forms —> As required per contract.

Inspection of Material

All material, either aluminum or steel, should be thoroughly inspected during unloading. Any damaged material should be noted. Any damaged material requiring replacement should be reported to your Dant Clayton project manager. If possible, pictures should be taken of all damaged parts. The truck driver should sign the material received report if there is any damage.

Off-Loading of Material

When offloading the material, begin sorting the like material. No powder coated part is to be handled using steel chokers; only nylon chokers are to be used. Nor is it to be picked up with a fork truck or any other type of picking equipment without protective covering being placed on the forks to prevent damage to the part. Example: Burlap bags on the forks. While unloading powder-coated material you must touch up any and all nicks and scratches that occur during the process.

Storage of Material

When storing material on the job site, parts are to be stacked neatly off the ground with wooden dunnage beneath and between each part. This is to prevent damage. Powder-coated steel material must not be covered with a tarp, plastic, etc. This accelerates rust. However, all powder-coated aluminum material may be covered with a tarp, plastic, etc. to keep the weather off. SRD'd footboards should be spread out and covered with bundles and sloped to drain water off. Material left during assembly of the bleacher on the installed decking can cause staining as well, such as metal shavings or random hardware.

Inventory of Material

Clearly mark pieces in a discreet location so it is not seen from above or below the bleacher during inventory and check items off of the packing list sent with the material. It is recommended that all material be inventoried as it is being offloaded and staged. All material must be inventoried within seven working days following delivery. This is adequate time to request a shortage of material. This also allows Dant Clayton to investigate the shortage, determine a cause and fix the problem.

NOTE

To help eliminate errors and omissions, maintain the same crew for inspection, handling, storage and inventory of material.

Rust Control and Aluminum Decking

1. Caution must be taken when drilling, cutting or grinding carbon steel around the aluminum material on the bleacher. Any drill or saw shavings or carbon dust from a grinder will leave a rust stain on the aluminum materials. This stain can happen as fast as overnight if there is a heavy dew or rain that occurs and will be greatly increased by locations that are damp or near a body of water. Once started, this stain will continue to grow on the aluminum material until the carbon material is removed and the actual stain itself is cleaned. The stain is really oxidation from the carbon material and will enlarge until removed. If the rust or oxidation is not removed eventually it will embed and pit the aluminum making it next to impossible to remove or stop its growth.

We **STRONGLY** recommend if any carbon material comes in contact with the aluminum, you remove it immediately. The best way to handle the removal is by vacuuming the material up. If you use a broom or blower, you must be sure that all of the carbon material gets off of the bleacher. Do not just sweep it around or blow it someplace else, as the rust stains will just show up at another place on the bleacher.

Failure to remove the carbon materials in a timely manner will result in extra work and cost to you in trying to remove the stains.

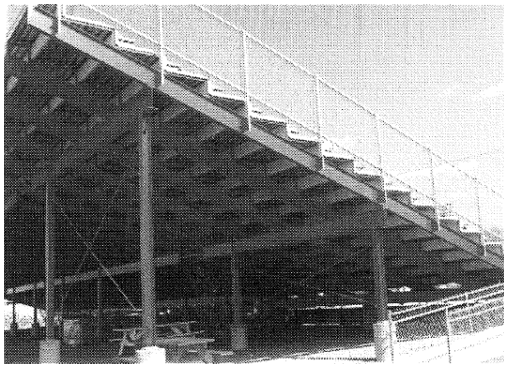
Safety

1. Today's customers are very in-tune to the potential for injuries to the public on bleachers and grandstands. A common theme that is currently being emphasized on project punchlists, are sharp edges or places where the public could be injured. As an installer it should be in the forefront of your mind and your employees minds of the importance for making sure all sharp edges or corners have been addressed to reduce the potential of injury.

A good step in helping control these items would be to make it a standard practice before you call for a final inspection by the owner or local building official, that you review the stand yourself and look for these potential issues. Items that typically are potential causes of injury would be: burrs from drilled holes, curly tails from installing self-drilling screws, sharp corners that are exposed where the public could catch an arm or even a toe, fence tie wires that are not wrapped correctly and parts that have been sawed in the field. Doing this inspection will reduce the volume of items that appear on your punchlist and reduce all of our exposure to potential lawsuits and damage costs due to public injuries.

2. Job site safety in all Dant Clayton Corporation (DCC) operations and by our subcontractors is not just a corporate goal, **it is a requirement!** To this end, we have formulated a written policy to govern all the operations of DCC and it is a condition of all subcontracts and purchase orders issued by DCC that this policy and the safety rules, instruction, and procedures issued in conjunctions with it, as well as all applicable state, federal and local codes and regulations be adhered to. Failure to comply is a breach of contract terms. If you have not been given a copy of the "Dant Clayton Safety Policies" please ask your project manager or salesman for a copy.

Steel Erection



Prior to steel arriving on the site, make sure that the part numbers on the drawings relate to the numbers on the packing list. Once steel is delivered to site, begin unloading, setting the steel in the location/ sequence the steel will be needed. As the parts come off the truck check off part numbers on the print using a colored marker. This will allow you to see at the end of unloading if everything was received for the steel erection or if a part was missing from the packing list. Included with the steel delivery will be the hardware. Sort the hardware by need / location.

Double-check the pier elevations. Shoot the elevation of one leveling nut to required elevation and then reference all other leveling nuts to the first leveling nut elevation on pier. Check measurements between gird lines before beginning steel erection.

Begin setting front row I-Beam. To verify alignment, string line from end to end of front row to set for proper alignment. This is done prior to tightening. If steel is not aligned, adjust steel to correct line. The next step will be to set the columns and beams. Pre-bolt miscellaneous clips and plates on major pieces while on the ground. Check for orientation on knee braces at support beams. Set the columns and finger tighten do not remove the straps before the column is tightened. Add braces as need and install the x-bracing. Next the beams are to be set on the columns. The walkway beams need to be set prior to the stringers. After the stringers are set in place, align and adjust. If stinger is spliced it is important to align both to specified rise / run. A string line will then be used for checking the alignment.

Complete any miscellaneous steel erections. Recheck for alignment-this is extremely important for the smooth completion of the structure. Tighten all bolts.

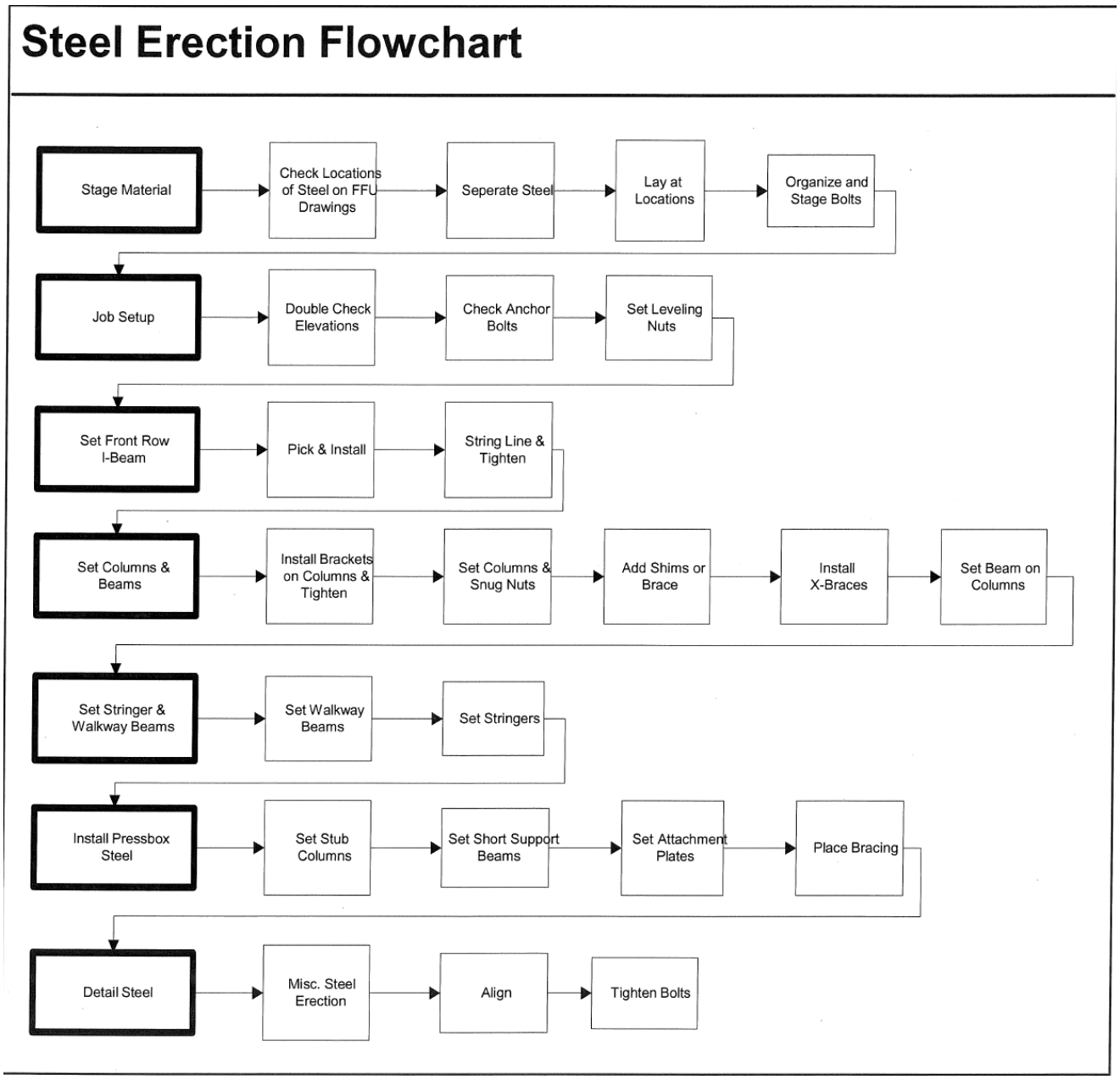
Tips

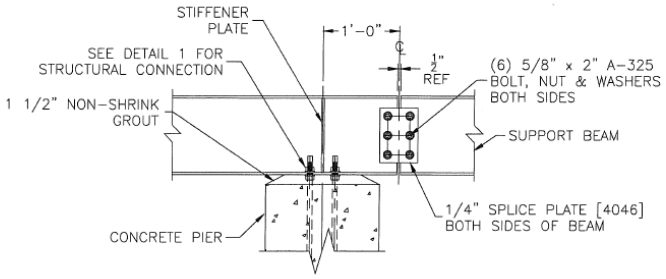
1. If project size and ability allows sub-assemblies of the columns, beams and x-bracing on the ground and then stand.
2. All field drilled holes MUST be touched-up with paint/galcon before the hardware is placed.

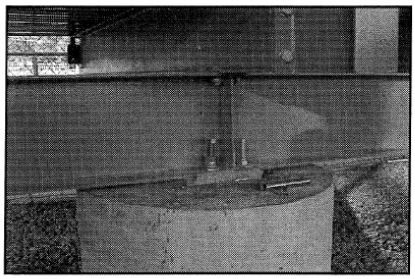
Common Problems

1. Wrong Steel Orientation — Field correct by cutting, welding, and re-drilling.
2. Rise I Run Alignment is off — Add shims to the stools
3. Powder Coat Damaged — To prevent use a protective sleeve on forklift.

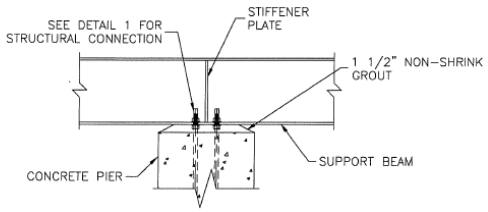
Steel Erection Flowchart



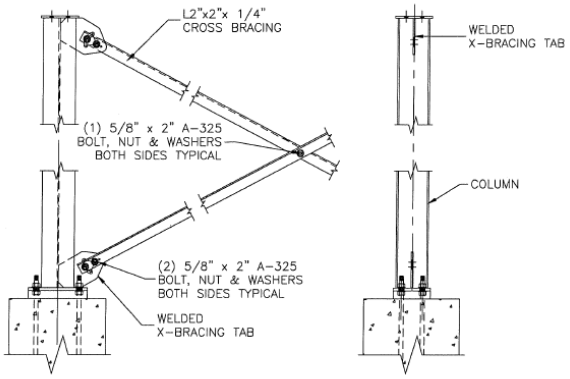




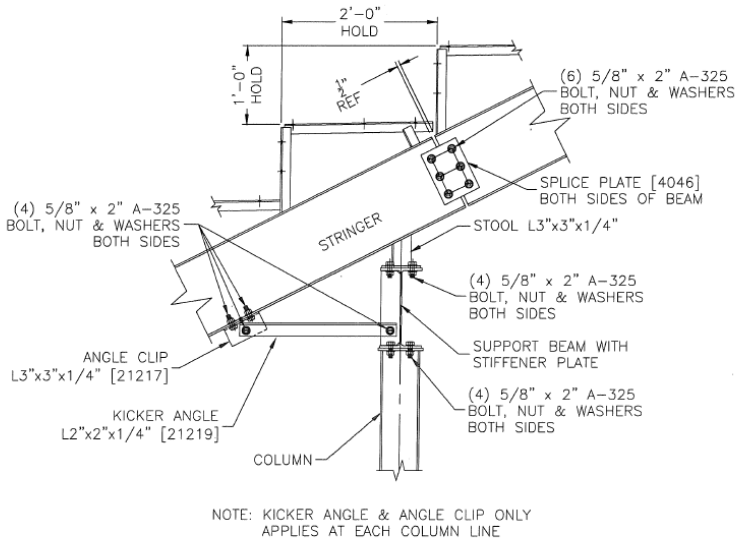
Typical Splice Connection Support Beam over Pier



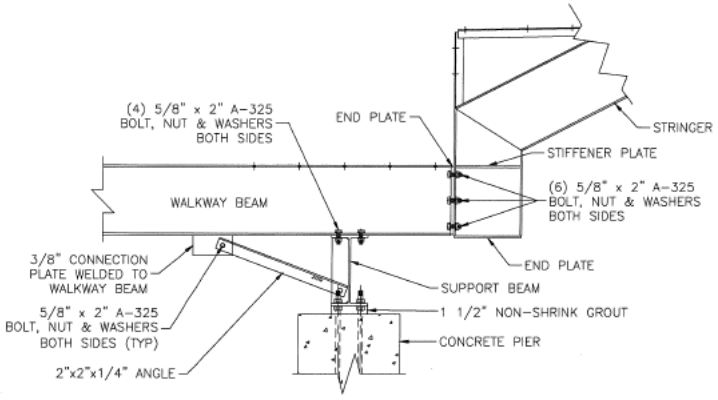
Support Beam to Pier Connection



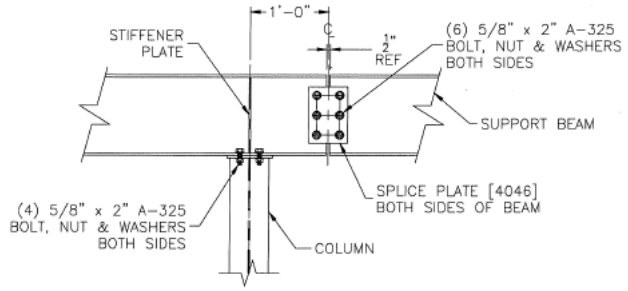
Typical Conc. Pier to Column & X-Brace Bracket Connection



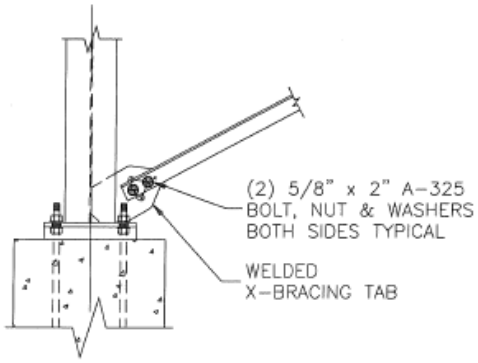
Typical Column, Support Beam & Stringer Connection w/ Brace and Splicing of Stringer Connection



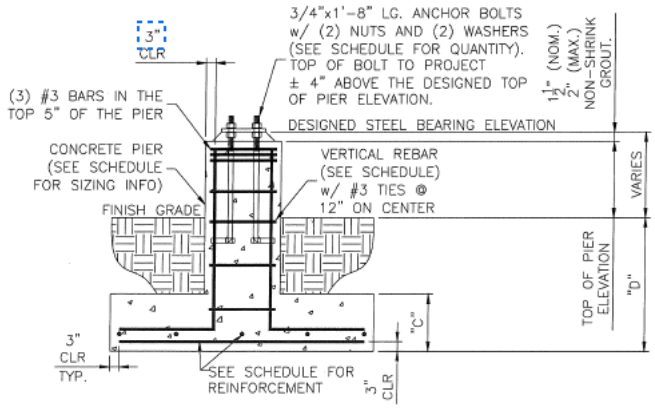
Typical Walkway Connection Beam to Pier 12/24 Stringer



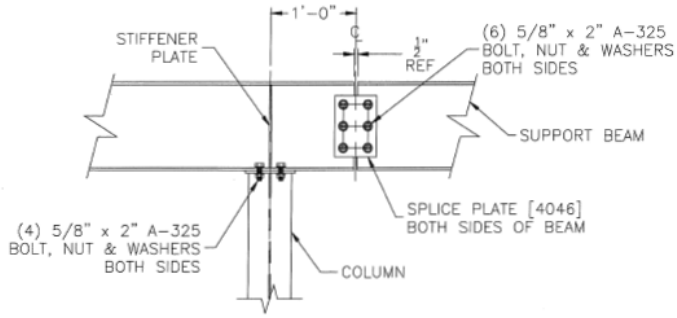
Support Beam to WF Column Connection



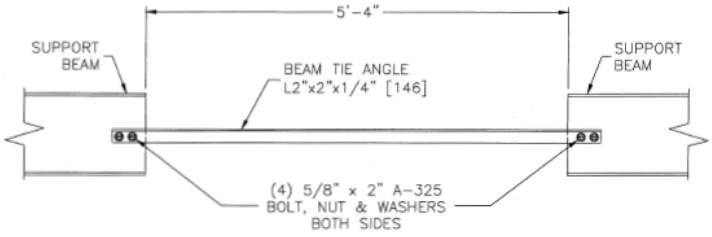
Cross Bracing to WF Column Connection



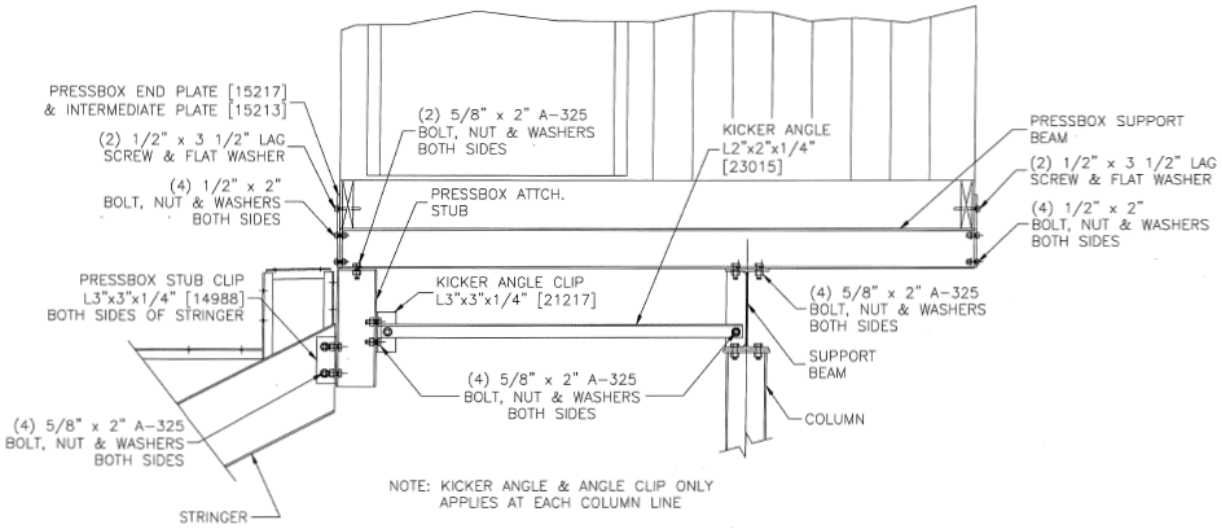
Typical Column to Pier Connection



Typical Splice Connection Support Beam over Column



Tie Angle to Support Beam Connection



Press Box Beam To Press Box Stub Connection / Press Box to Press Box Beam Connection

Pressbox Steel

Set the leveling nuts to the correct elevation using the same method described in the steel section. Install the outside stub columns and string line and plumb columns. Tighten into position (snug). The next step will be to set the outside horizontal beams and short support beams. When the steel has been installed in place, run a string line side to side to check alignment. Check for squareness by running a string line from the diagonals. The measurement of the two diagonals must be within ¼". When the structure has been aligned it is ready for the press box installation.

Decking (Footboard) Installation

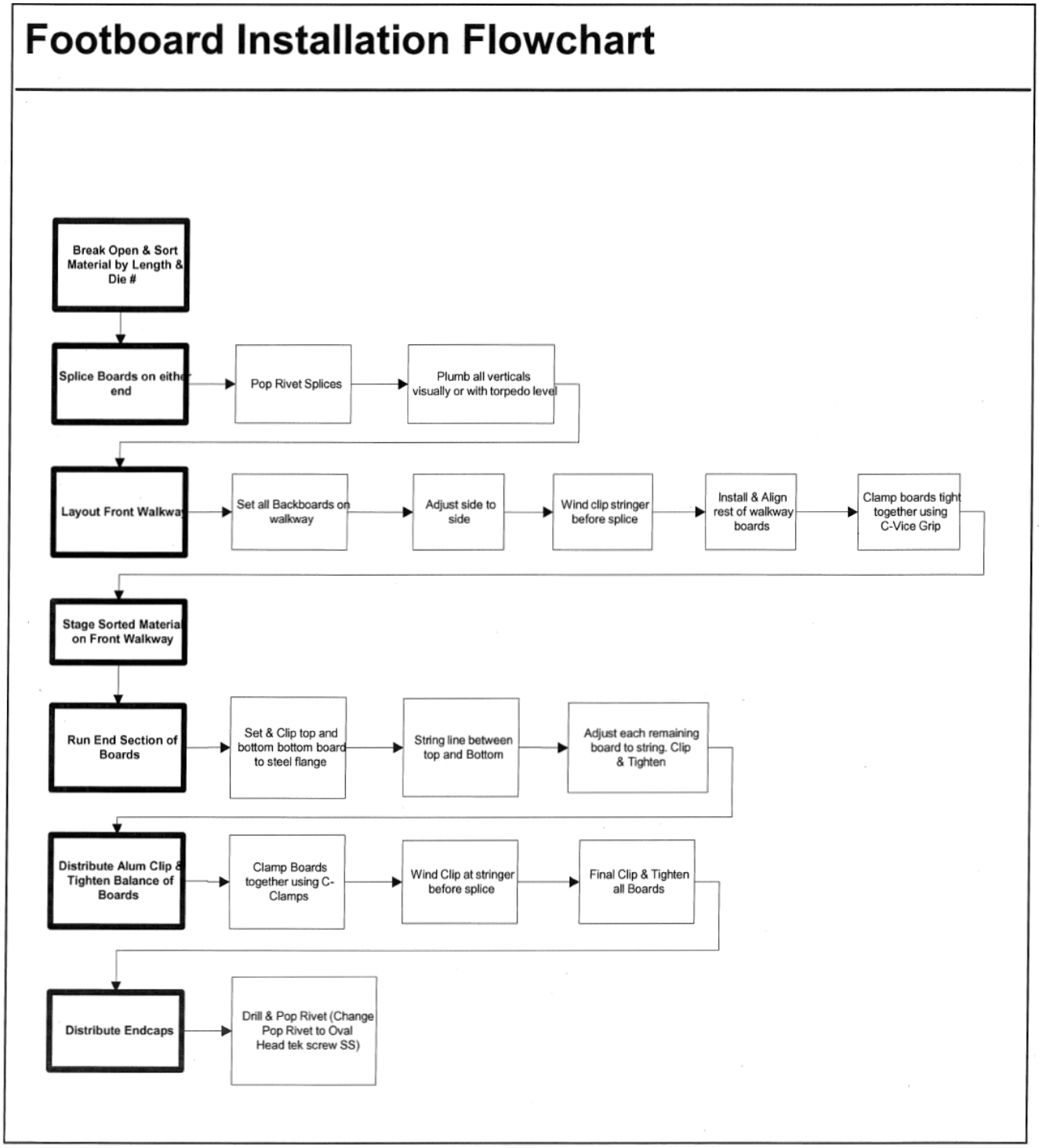
Just prior to the installation, break open bundles and sort material by length and location. Do not stage more than you can spread out and secure for staining purposes. Splice boards on one end at every opening. Pop rivet the splices. Plumb all verticals visually or with torpedo level. Begin layout of front walkway. Set all heel boards on walkway and adjust walkway structure if required. Adjust boards side to side. Wind clip stringer 1 bay before splice. Install and align rest of walkway boards. Clamp boards tight together using C-Vice grip or cabinet clip.

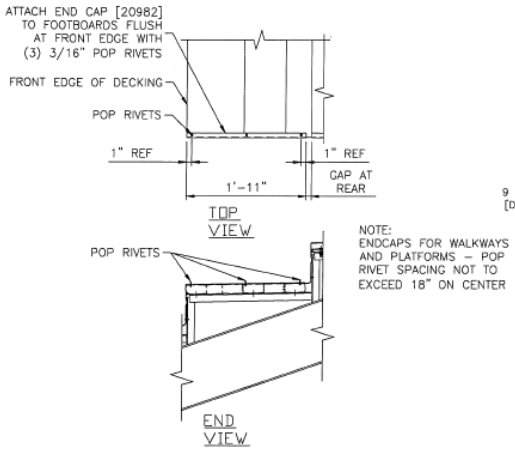
Stage remaining sorted material on front walkway. Starting at one end, run end section of boards making sure to set and clip top and bottom board to footboard support. String line from top to bottom row. Adjust each remaining board to string. Clip and tighten. Continue in the same fashion for the next sections making sure to leave a ½"-¾" gap between boards for expansion, This gap must fall on the stringer supports for installation of the joint cover. Distribute aluminum clip and tighten balance of boards. Clamp boards together using C-clamps. Wind clip at stringer 1 bay before splice. Final clip and tighten all boards. Distribute endcaps. Drill and pop rivet.

NOTE

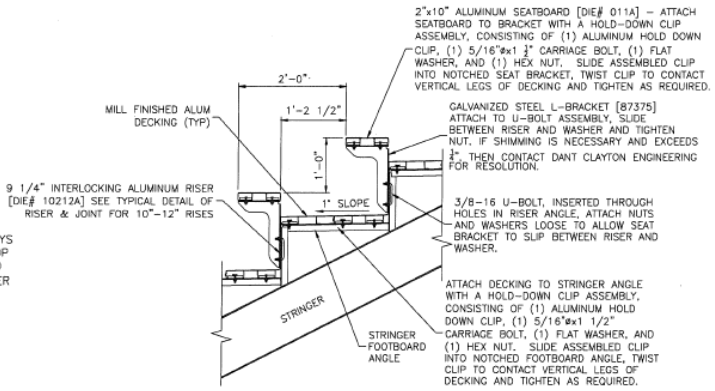
At times the installed board my be too short or too long. If the board is short, bring the next board to the center of the stringer not allowing more than the ¾" gap allowed for expansion. If the board is too long (overlaps stringer), trim the board to the center of the stringer. Check the tightness of hold-down clips.

Footboard Installation Flowchart

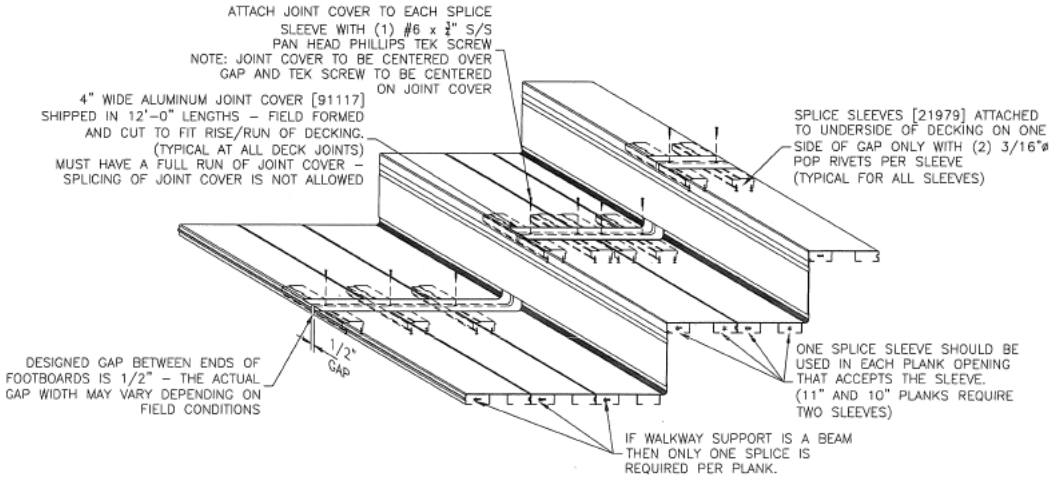




END CAP TO FOOTBOARD



TYPICAL FOOTBOARD DECKING TO STRINGER CONNECTIONS



SPLICING OF DECKING WITH JOINT COVER
FOR USE ON WELDED OR INTERLOCKING DECK

Joint Cover Installation

Pre-cut joint cover to required length. Place materials at joints. Drill and screw in place. Joint covers in the seating section must be formed where the footboards meet the risers. Prior to placing the joint cover in this section the installer must mark the center of the stringer bracket on the toe and heel of the footboards. This is to ensure a straight line is kept during the installation of the joint cover. A shaped board and mallet is to be used to bend the joint cover where the footboard is to meet the riser board and must be done prior to the installation of the risers. The joint cover must overlap under the riser. Other places that joint cover will be used include: ramps, stairs, and platforms.

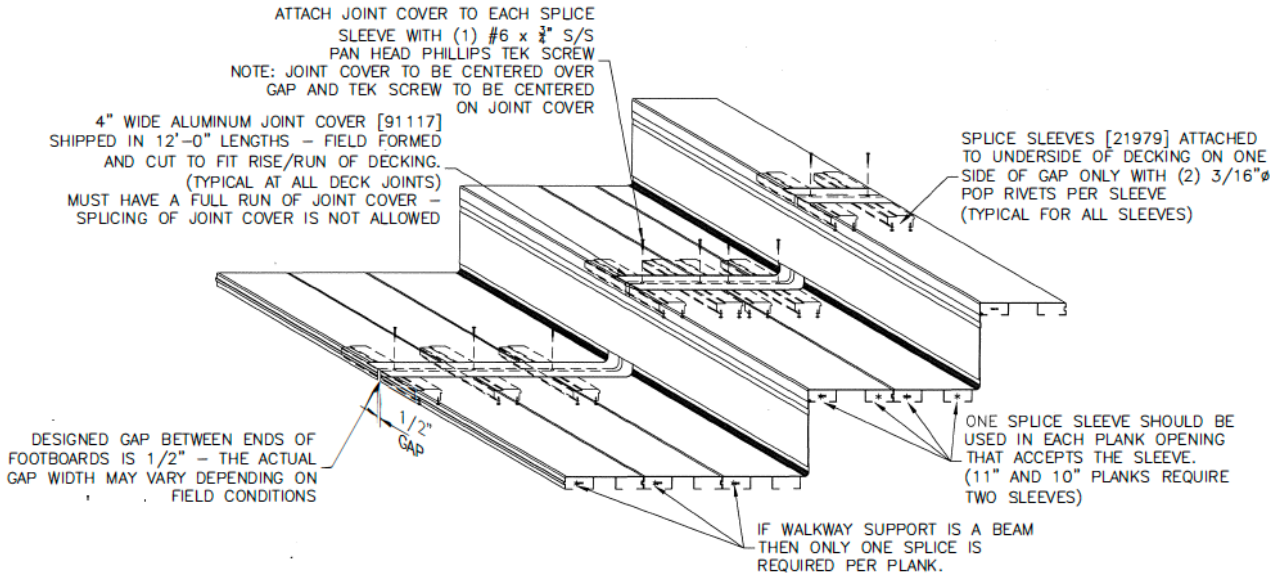
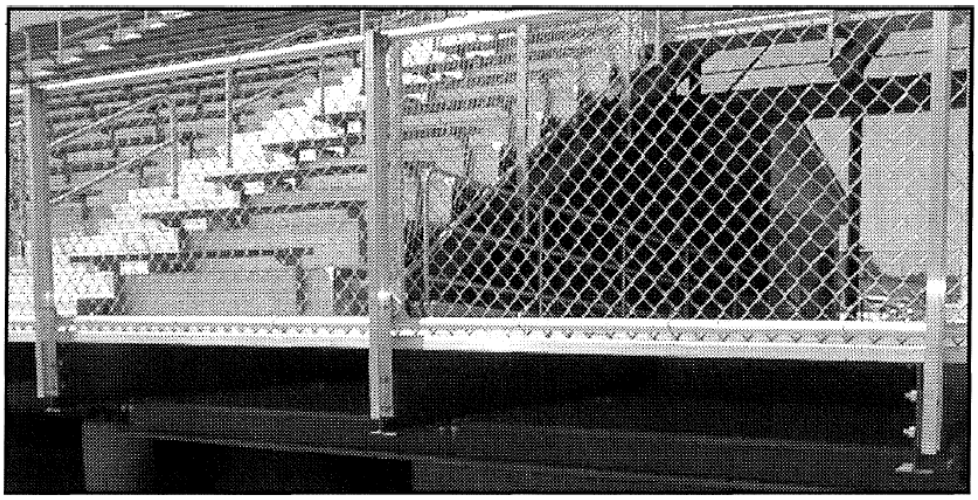


Figure 1
ALUMINUM JOINT COVER @ PLANK SPLICES

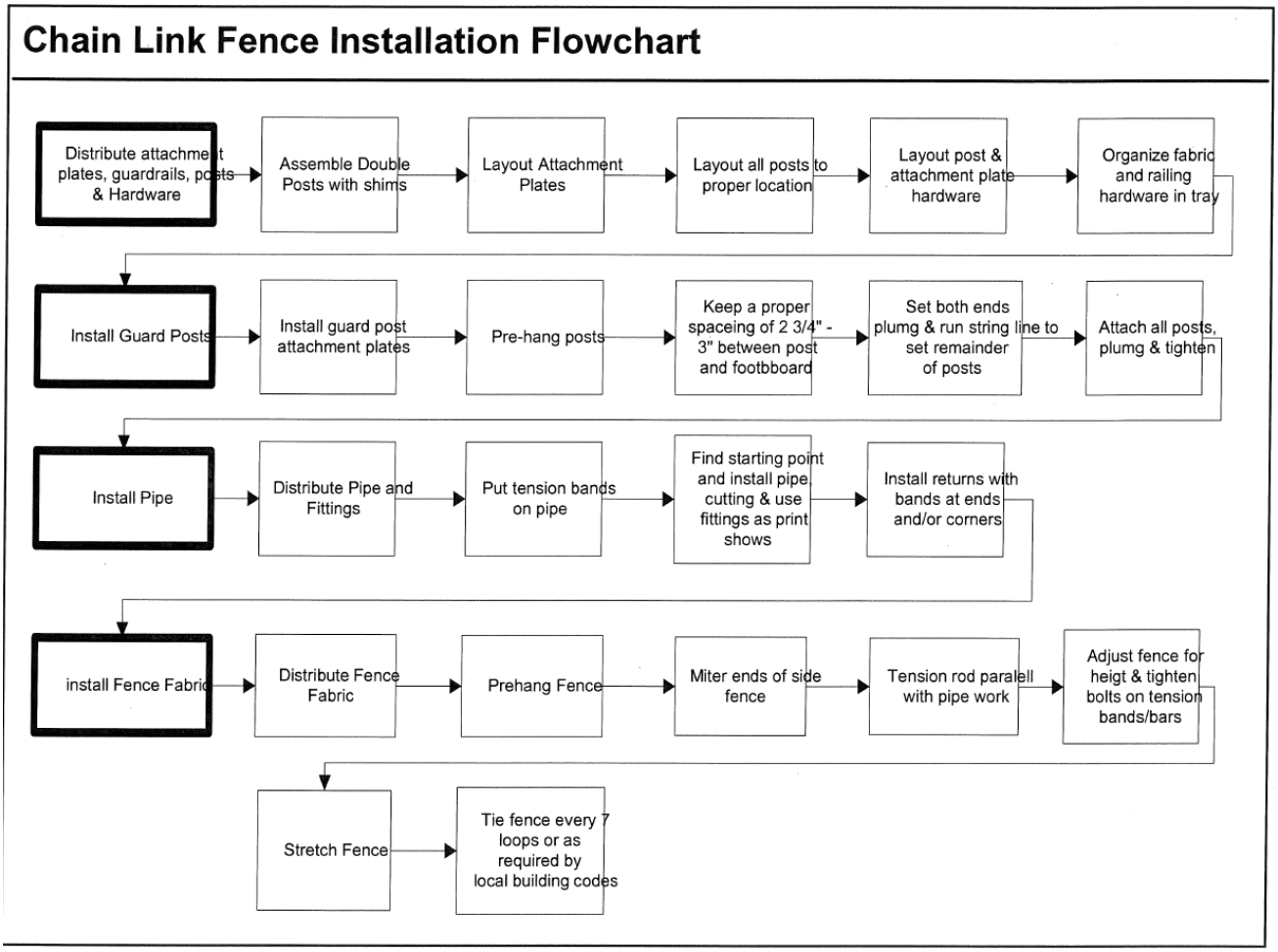
Fencing (Chain Link Fence)

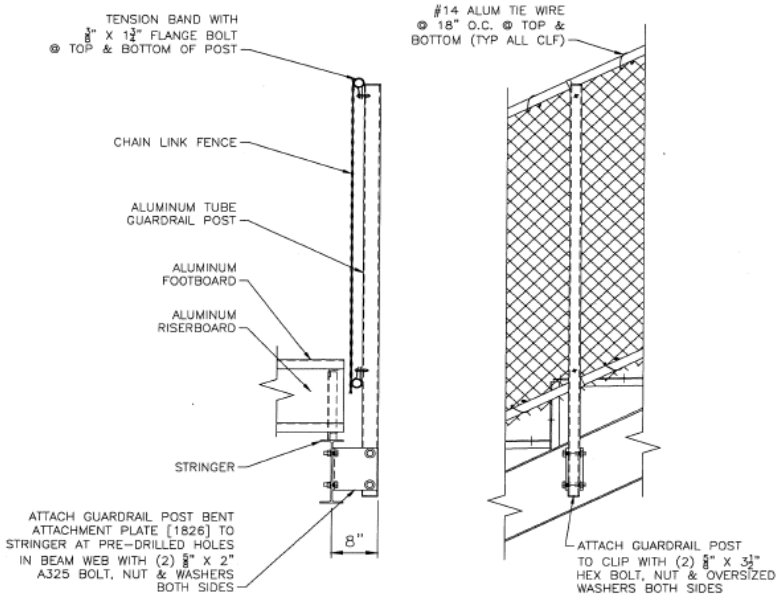
Ideally, install fence around stand after footboard and before seat posts. Start installation at the top 2 corners of the structure. Distribute guardrails, posts and hardware. Assemble double posts with shims. Layout all posts to proper locations. As well as the hardware. Organize fabric (spread out every 50') and place railing hardware in tray. Reminder: Guard post attachment plates have been installed during the steel erection phase. Pre-hang posts. Keep a proper spacing of 2¾"–3" between post and footboard. Set both ends plumb and run string line to set remainder of posts. Attach all posts, plumb and tighten. Distribute pipe and fitting. Put tension bands on pipe. Find starting point and install pipe, cutting and using fittings as print shows (splices need to be close to post for aesthetic reasons). Make sure pipe is cut long enough to fit securely in fittings. Install returns with bands at ends and/or comers. Distribute fence fabric. Pre-hang fence. The ends of the side chain link will have to be cut at an angle and should be precut. Slide the tension bar through on the path ofleast resistance, cut the excess triangular material behind the tension bar with bolt cutters, and wrap the ends that have been cut around the tension bars with fencing pliers. Keep tension rod parallel with pipe work. Reminder: When cutting tension bars, the cut end needs to touched up with Galcon and be installed downward. Adjust fence for height and tighten bolts on tension bands. Stretch fence, using a come-a-long for long lengths offence. Fence on sloped runs needs to maintain a consistant height above top of piping. Tie fence to pipe every 7 loops or as required by local building codes.



FENCING AT FRONT WALKWAY

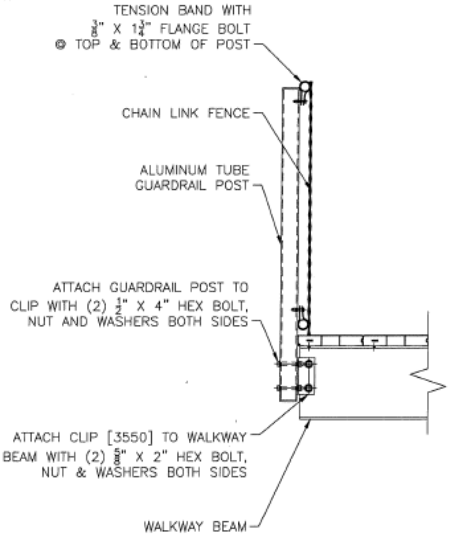
Chain Link Fence Installation Flowchart





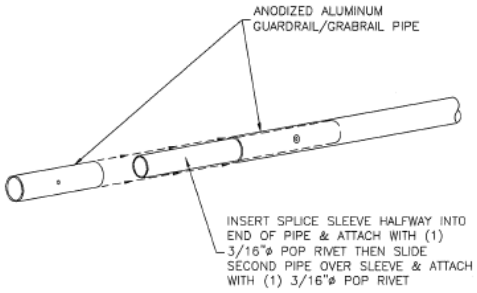
TYPICAL GUARDRAIL CONNECTION AT SIDE OF STAND

CLF AT PLATFORM

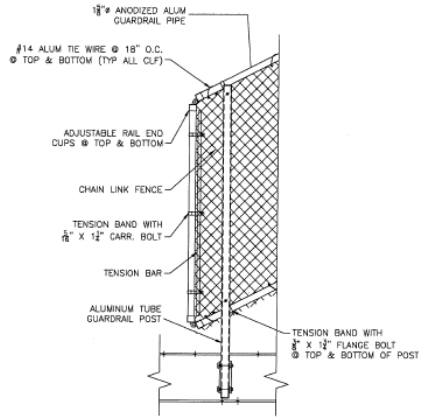


CLF AT STAIR / FRONT WALKWAY

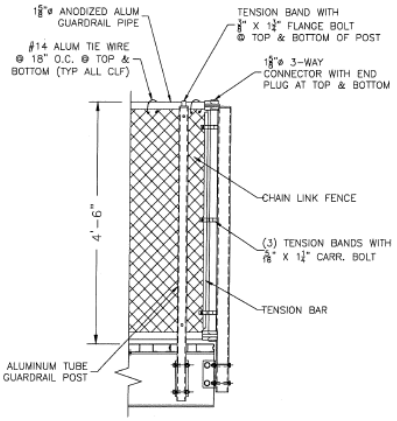
TYPICAL GUARDRAIL CONNECTION AT FRONT OF STAND



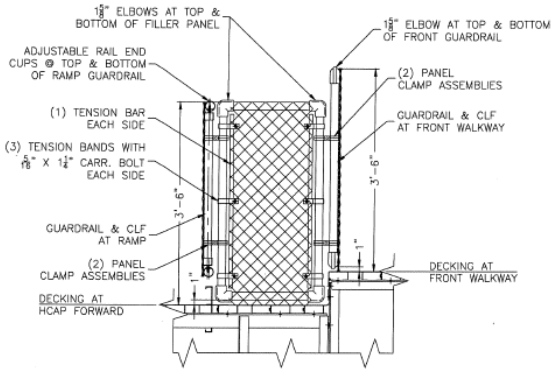
TYP. GUARD/HAND RAIL SPLICE DETAIL



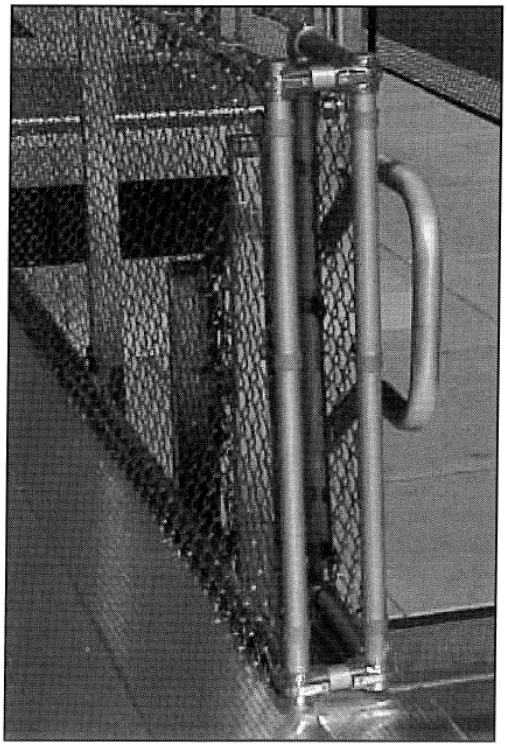
TYP. CLF CONNECTION AT FRONT OF END RAILINGS



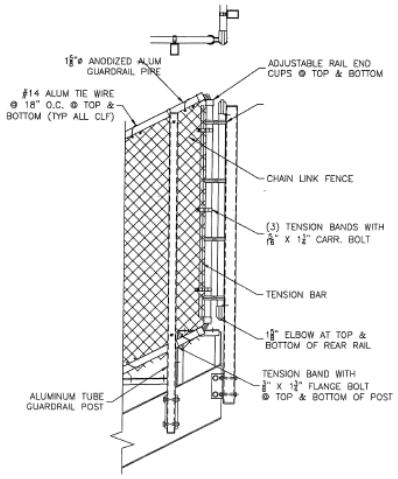
2 RAIL CLF CONNECTION AT REAR OF STAND



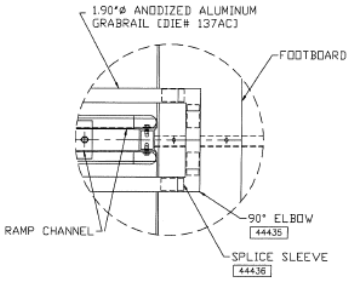
FILLER PANEL AT CROSS-AISLE &
HCAP SEATING SECTION



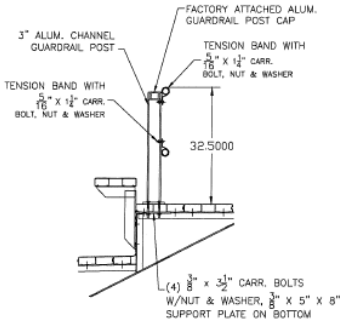
INSTALLED FILLER PANEL
(USED IF GREATER THAN 4")



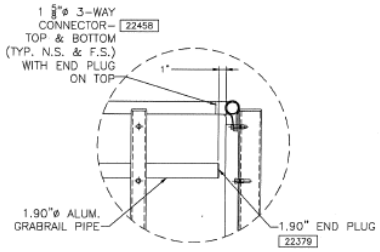
REAR CORNER GUARDRAIL DETAIL



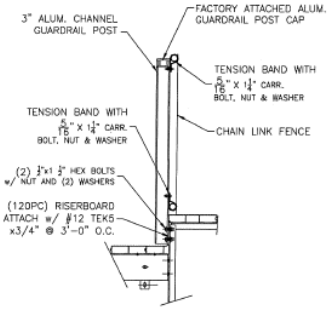
CONNECTION OF GRABRAIL AT INSIDE OF LANDING



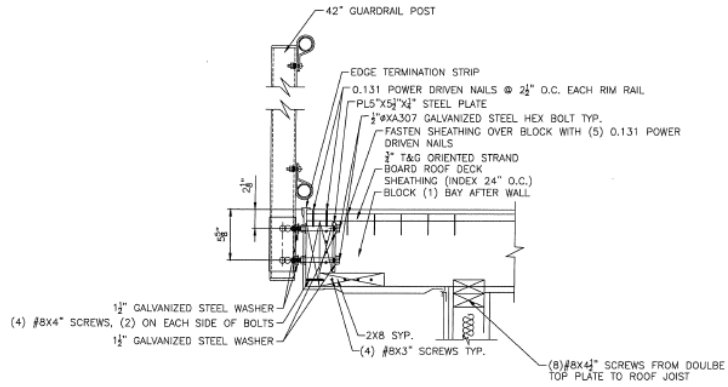
2-LINE RAIL AT CROSS AISLE



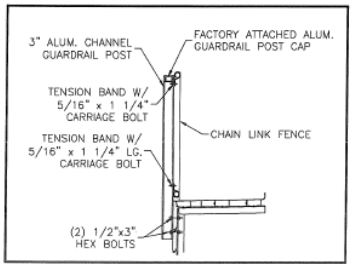
TERMINATION OF GRABRAIL AT



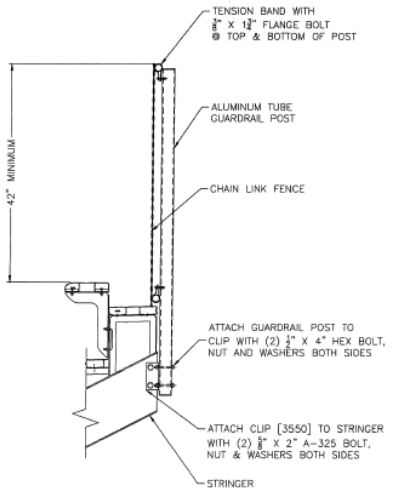
REAR GUARDRAIL POST AT HCAP AREA



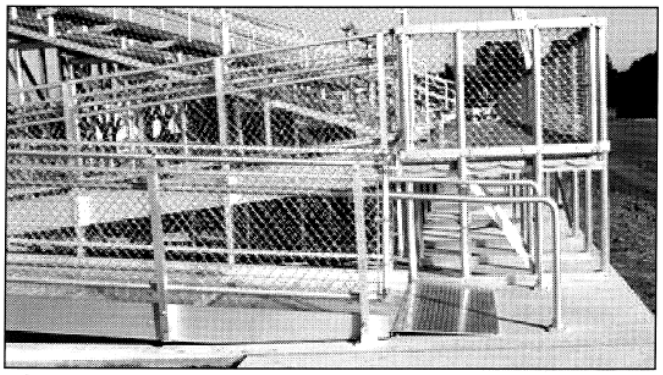
GUARDRAIL POST TO PRESS BOX FOR FILMING PLATFORM CONNECTION



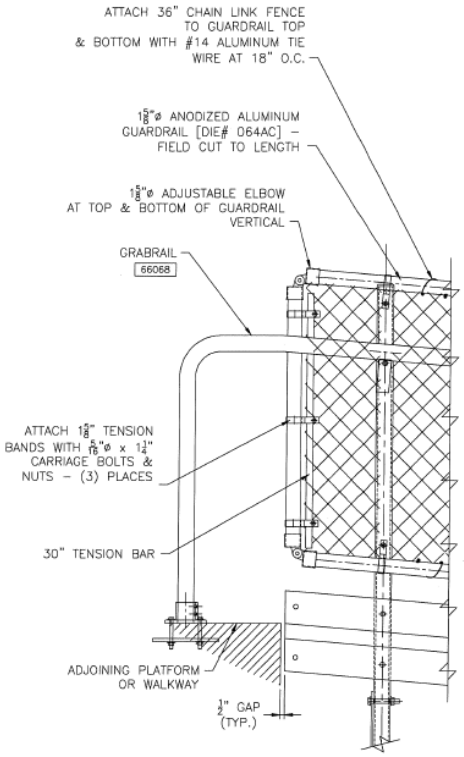
FRONT GUARDRAIL POST AT HC AREAS



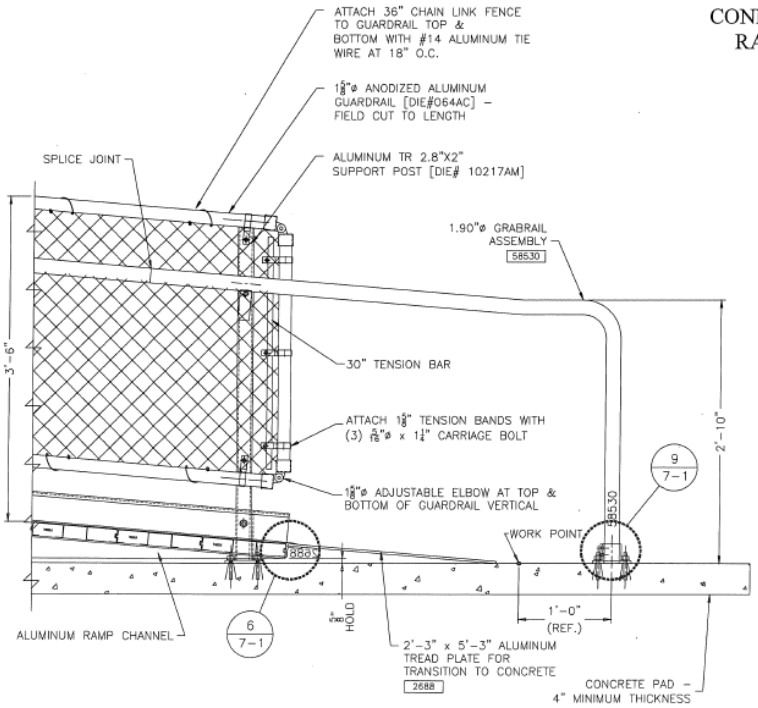
TYPICAL GUARDRAIL CONNECTION AT REAR OF STAND



GRABRAIL CONNECTION



CONNECTION OF FENCING AND RAILING AT TOP OF SLOPE

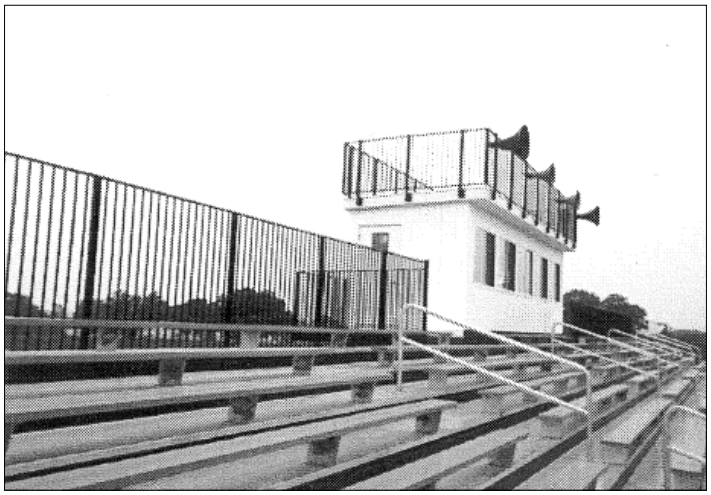


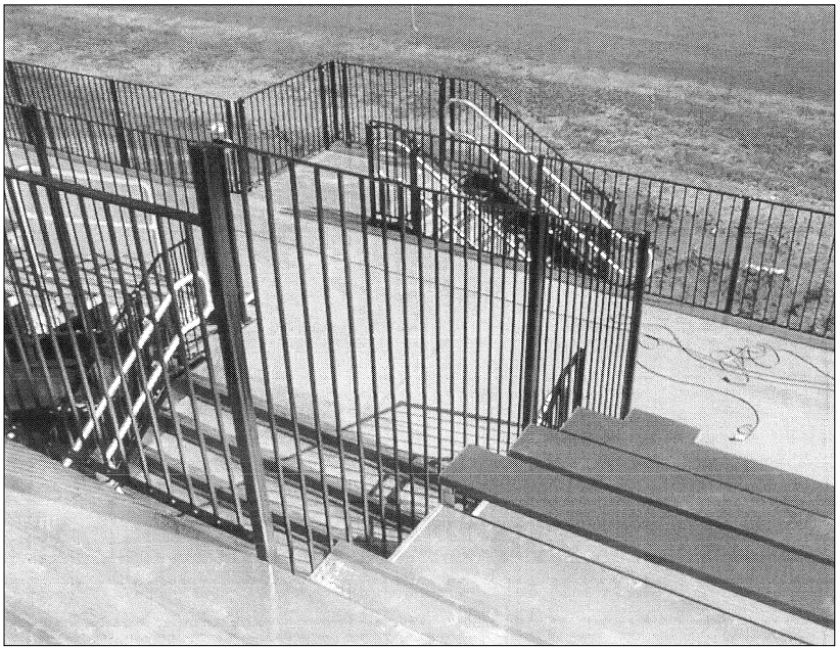
CONNECTION OF RENCING AND RAILING AT

Fencing — Vertical Picket Rail

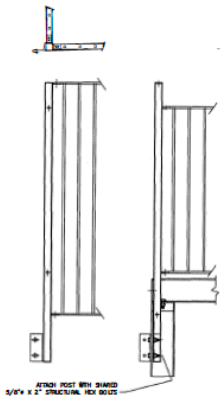
Install the vertical picket rail post starting at the top two comers of the structure. This can be done before the footboards are installed or after the footboard installation. This installation will require a man-lift. Distribute the VPR post, hardware and VPR panel. Layout the posts in the proper locations. Pre-hang the post at the top two comers. Set both post plumb and run string line between the post. Posts will accommodate side/side and up/down adjustments to VPR. Set the remainder of the post at the back. Repeat this process for the sides, front and all other locations (vomitories, HC pockets, walkways. . .). Install panels to posts.

Refer to section drawings on the following pages for detailed installation instructions.

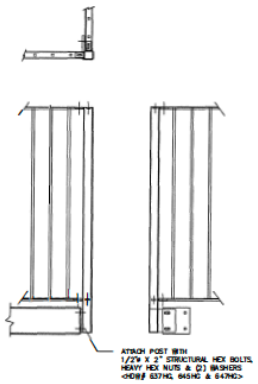




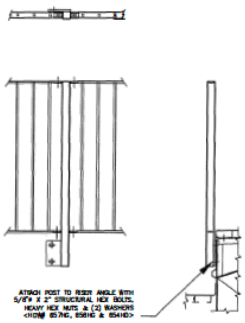
Picket Railing at Press Box Landing



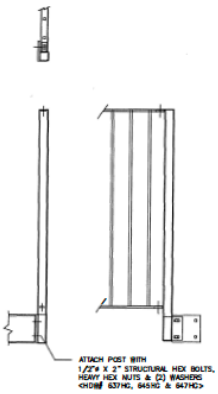
LEVEL PANELS AND CORNER POST AT REAR OF STAND



LEVEL PANELS TO CORNER POST AT REAR



LEVEL PANELS TO INT. POST AT SIDE



LEVEL PANELS TO END POST AT REAR

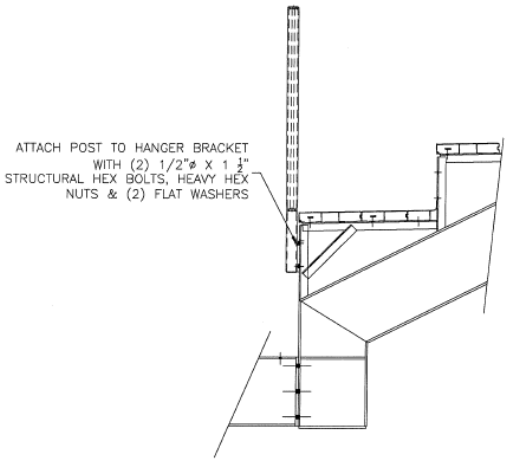
NOTES:
1) ALL PICKET RAILING PANELS ARE CONSTRUCTED WITH 1 1/2" x 1/2" STEEL CHANNEL FOR THE TOP & BOTTOM RAIL & 1/2" SQUARE BAR FOR THE PICKETS. THE PICKETS HAVE A TYPICAL SPACING OF 4" ON CENTER.

2) THE POSTS FOR THE PICKET RAILING ARE CONSTRUCTED OF 2" X 2" X 3/16" STEEL SQUARE TUBING.

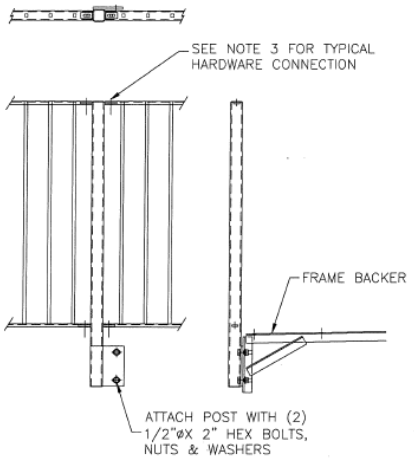
3) THE TOP & BOTTOM RAIL OF EACH PICKET RAIL PANEL ATTACHES TO A CLIP ON THE POST WITH A 3/8"ø X 1" CARRIAGE BOLT, HEX NUT & FLAT WASHER <HDW# 631HG, 630HG & 632HG>.

4) IN CASES WHERE OPPOSITE HAND CONDITIONS OCCUR, THE SAME CONNECTION DETAIL IS REFERENCED.

Picket Railing at Press Box Landing

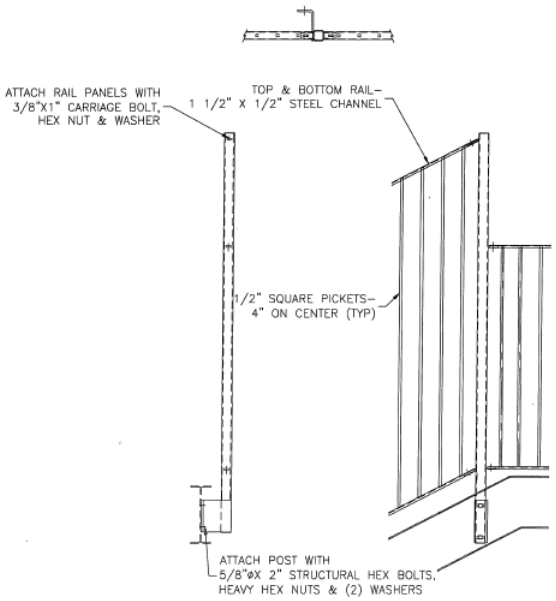


CONNECTION OF LEVEL PANEL & END POST AT REAR OF HC AREA



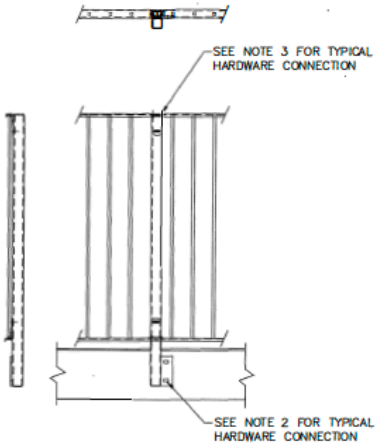
CONNECTION OF LEVEL PANEL & INT. POST AT REAR OF HC AREA

Picket Railing at Side of Stand (Sloped/Level)

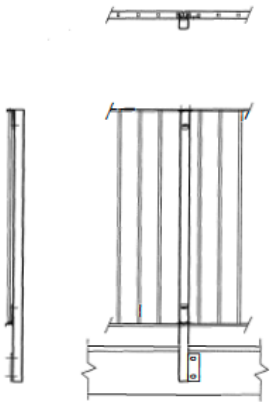


CONNECTION OF LEVEL AND SLOPED PANELS TO INT. POST AT SIDE

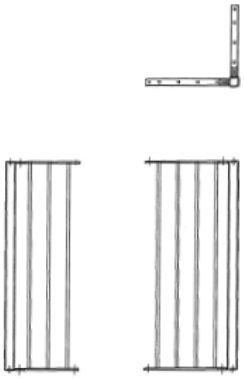
Picket Railing at Press Box Filming



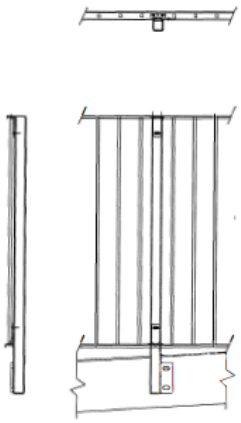
PANEL & POST AT FRONT



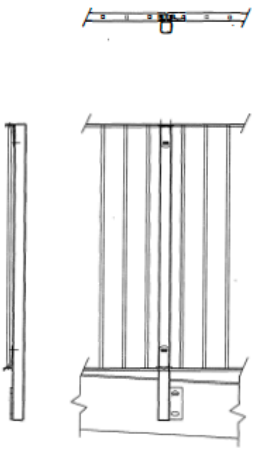
PANEL & POSTS AT REAR



PANELS & POST & CORNER POST

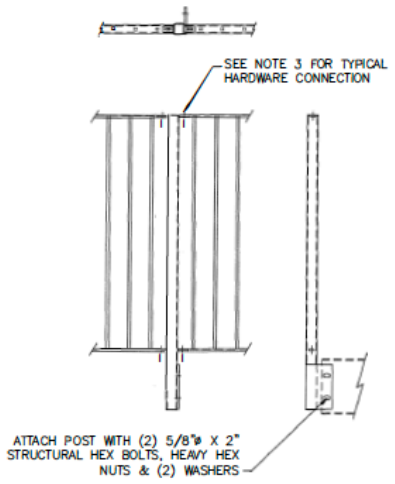


PANEL & POST AT LEFT SIDE

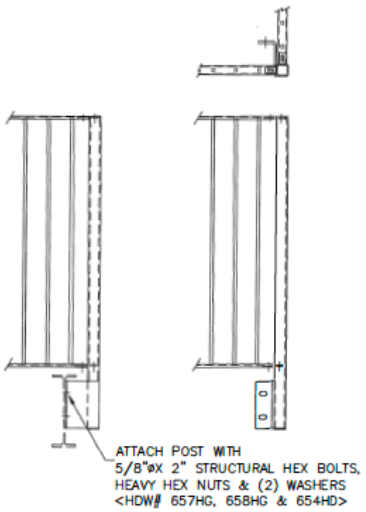


PANEL & INT. POST AT RIGHT SIDE

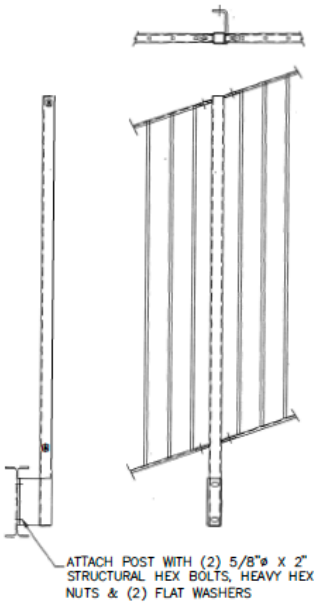
Picket Rail at Stand, Continued



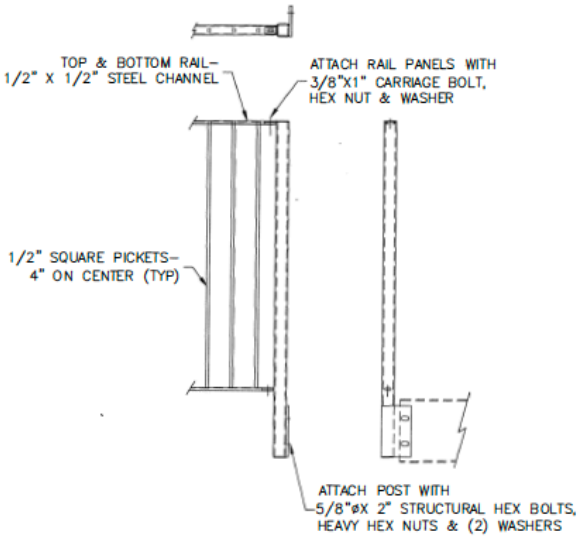
LEVEL PANELS & INT POST AT FRONT



LEVEL PANELS & CORNER AT FRONT/ SIDES

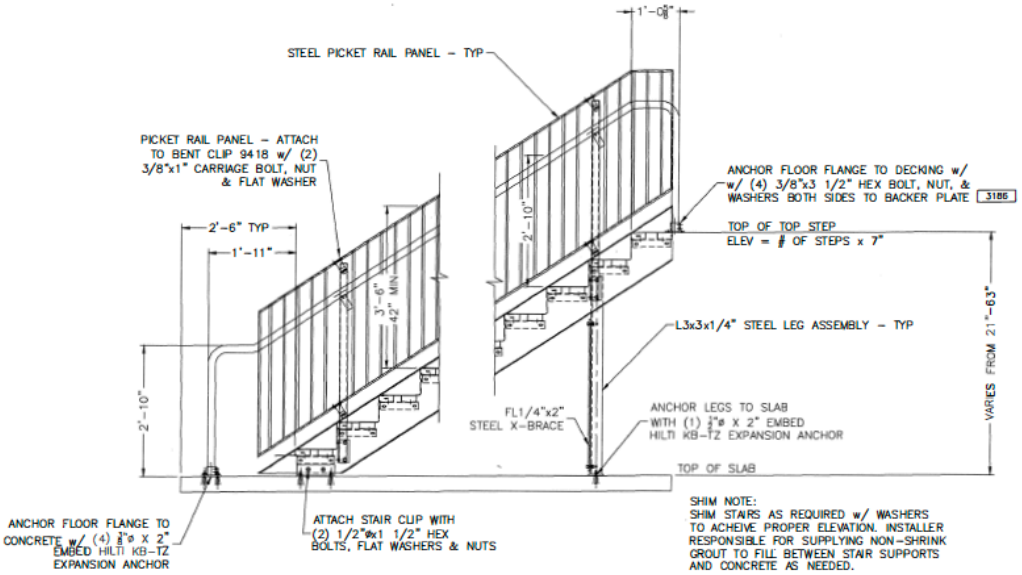


SLOPED PANEL & INT. POST AT SIDES

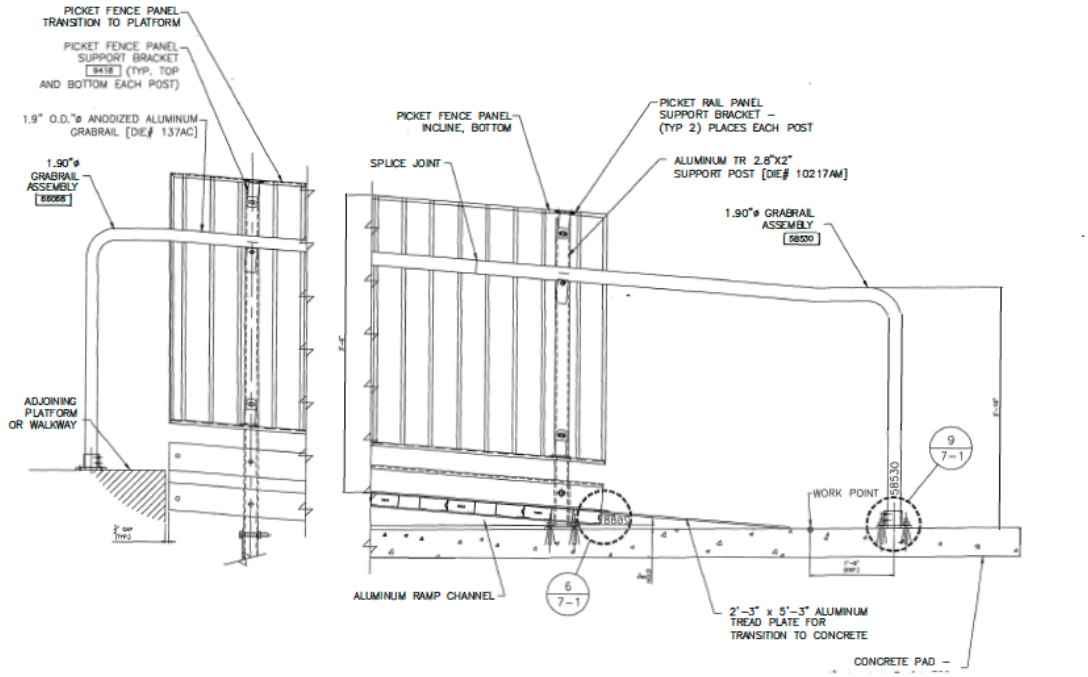


LEVEL PANEL & END POST A T FR0NT/ REAR

Picket Railing at Stairs and Ramps



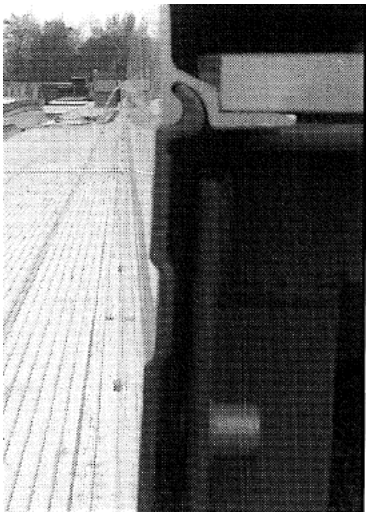
SIDE VIEW OF 21"-56" ELEVATED STAIRS



CONNECTION OF FENCING & RAILING AT TOP AND BOTTOM OF SLOPES

Riserboard Installation

Sort risers by size. Mark riser spacing for tek screws. Stack risers in square piles approximately 10 risers at a time. Pull tape to mark tek locations on bottom front of risers with a pencil or erasable ink (location of marks are describe in figures below). Distribute all risers in proper locations (according to size). Tek ¼ in from the bottom front. Hold riser flat. Insert the riser lip into keyway of footboard. Insert riser into footboard. Should the riser not fall into place easily, try to persuade the board by tapping into place with a rubber mallet. Tek screw riser at markings starting ¼" up from the bottom front (see Figures 1 and 2). Remove aluminum pigtail caused by tek screw.



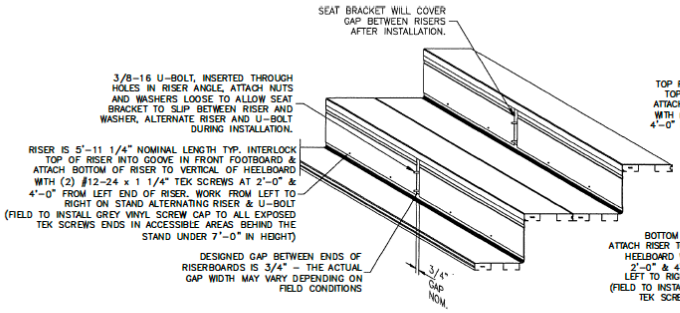


Figure 1
Riser Connection

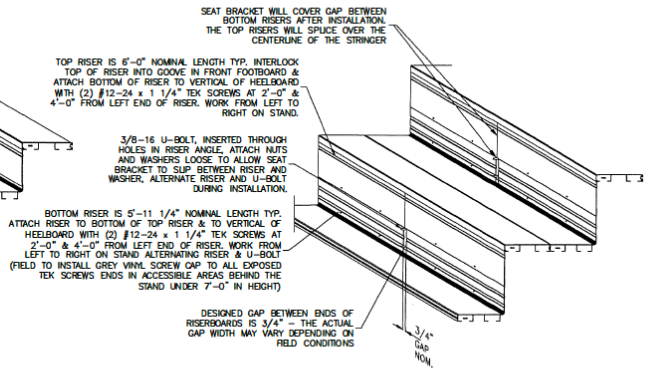
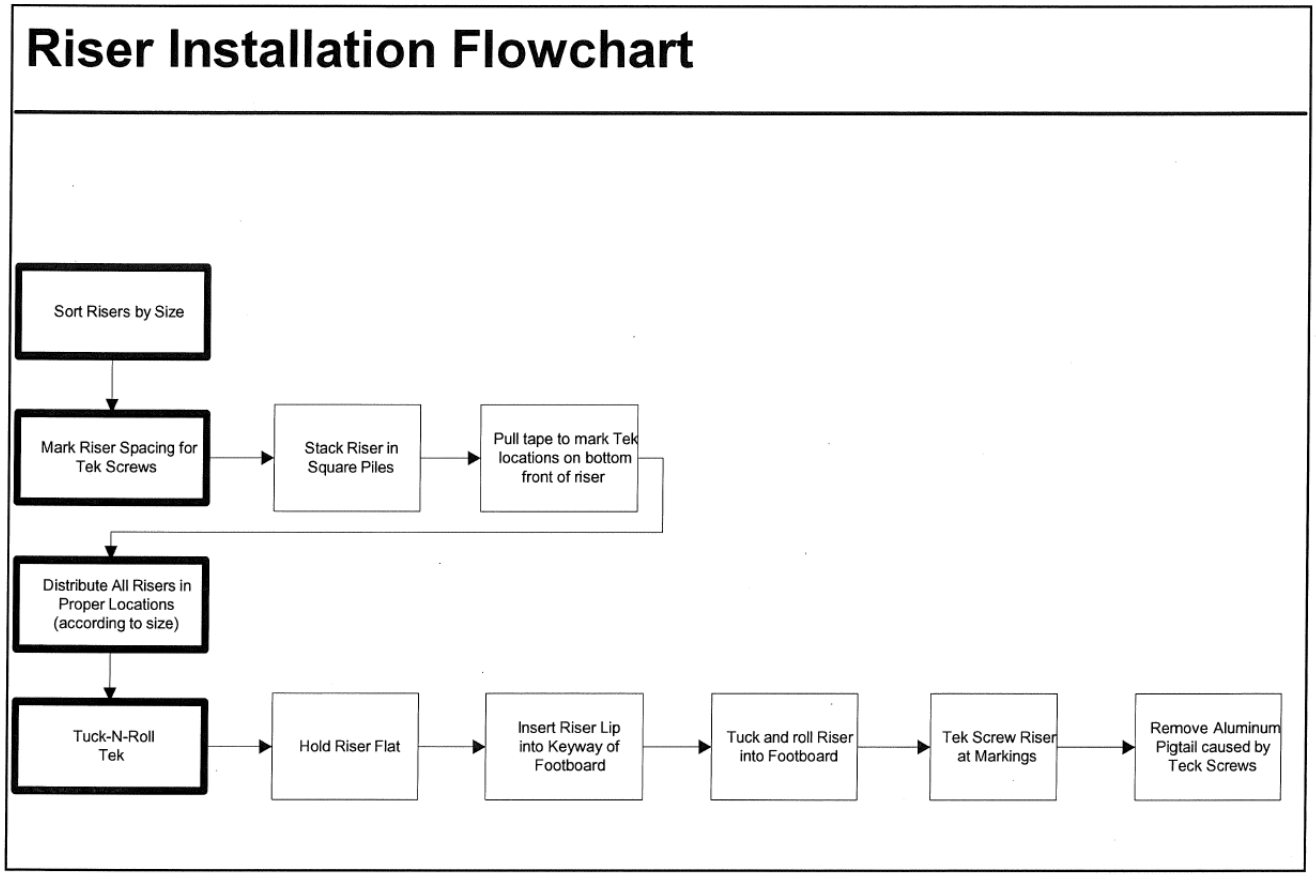


Figure 2
Riser to Decking Connection


Riser Installation Flowchart
Sort Risers by Size
Mark Riser Spacing for Tek Screws
Stack Riser in Square Piles
Pull tape to mark Tek locations on bottom front of riser
Distribute All Risers in Proper Locations (according to size)
Tuck-N-Roll Tek
Hold Riser Flat
Insert Riser Lip into Keyway of Footboard
Tuck and roll Riser into Footboard
Tek Screw Riser at Markings
Remove Aluminum Pigtail caused by Teck Screws

Eat Bracket, Seatboard, and Backrest Installation

Distribute seat brackets starting at one side going towards the other side or from the top to bottom. Begin layout for seat brackets. Mark a vertical center line on riser from bottom mark that has been placed on decking to the top mark on the decking. Do this with pencil so that it can be removed. Measure down from top footboard. Mark A VK horizontal center lines so that you know where to drill holes. Drill pilot hole (3⁄16" recommended). Drill larger hole with drill collar. Use 1 1⁄8" hole saw if gap between riser and frame. Hand install bracket with bolts into A VK (finger tight). Raise brackets at end of row to center of slot and tighten. Using a stringline, adjust height of bracket (see Figures 1 and 2). Preclip seat brackets for seat board installation. Set seatboard on brackets. Align seatboard at end brackets and tighten end bracket clips. Tighten intermediate clips. For each section of seating, stringline the end of the seatboards from the top to bottom of the stand and trim accordingly if required. Drive on endcap with a rubber mallet.

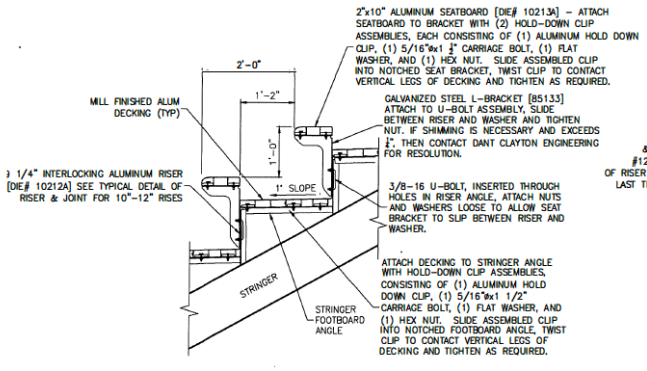


Figure 1
Seat Bracket to Stringer - L Bracket

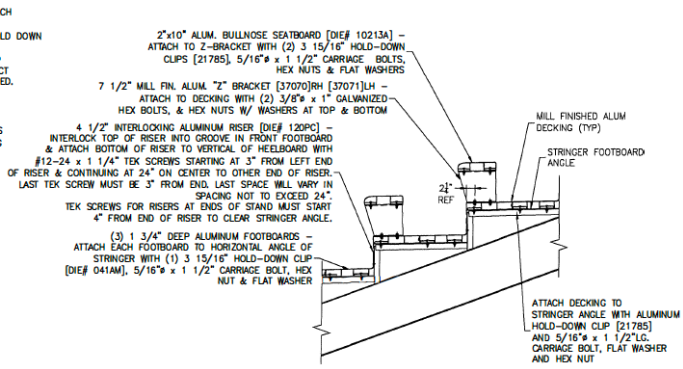
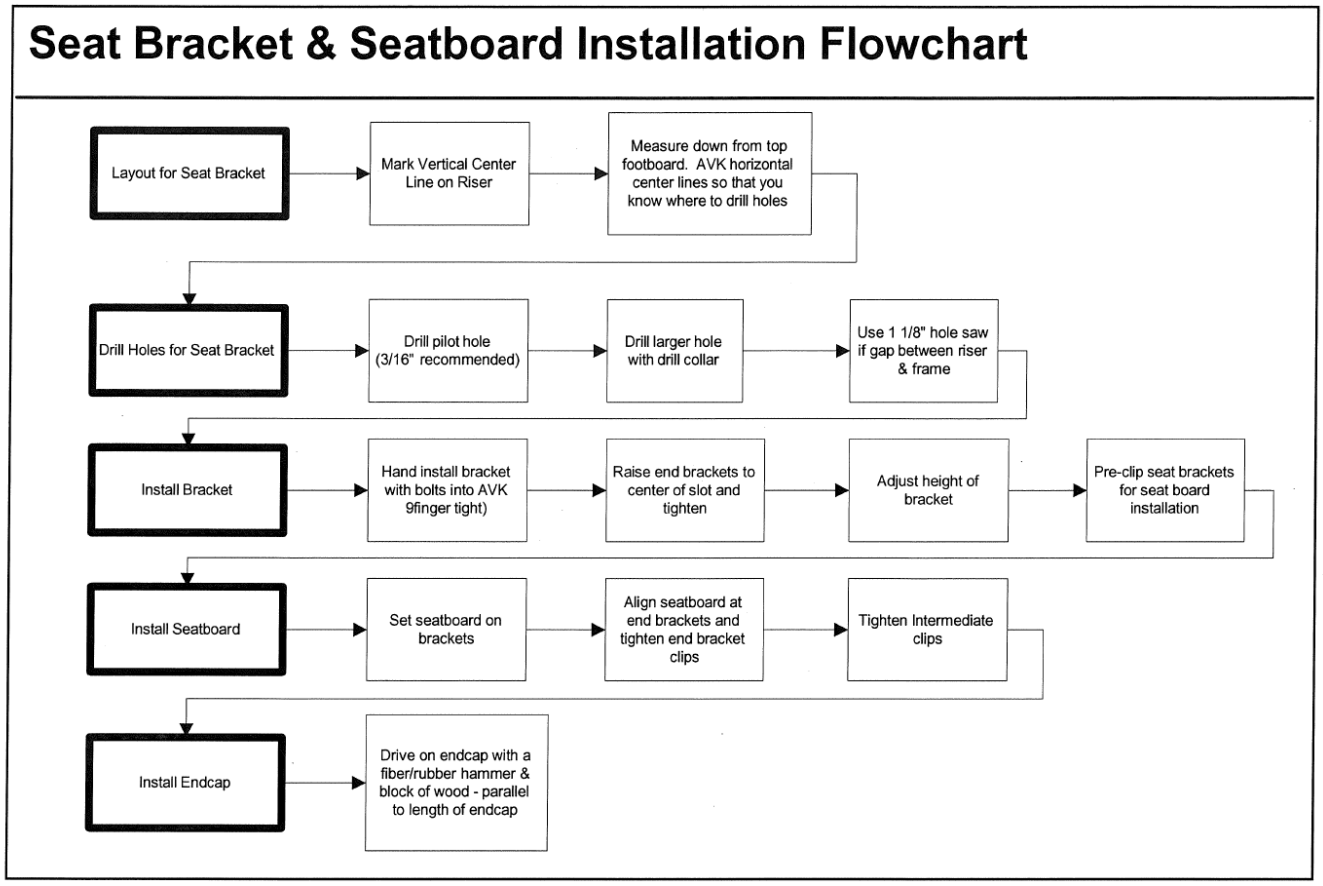
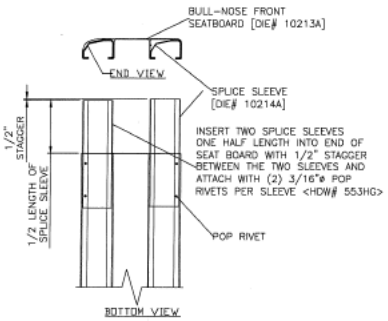
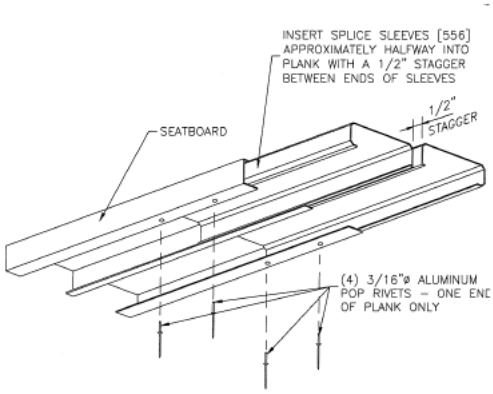


Figure 2
Seat Bracket to Stringer - Z Bracket

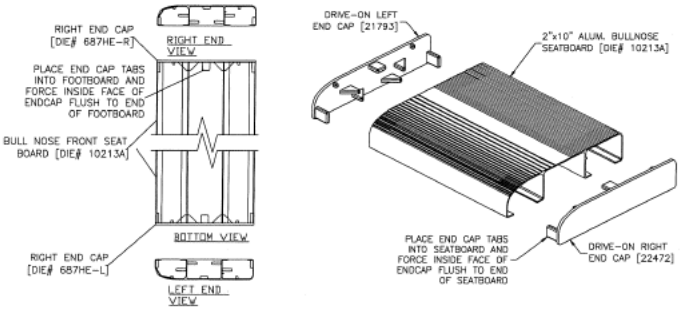

Seat Bracket & Seatboard Installation Flowchart
Layout for Seat Bracket
Mark Vertical Center Line on Riser
Measure down from top footboard. AVK horizontal center lines so that you know where to drill holes
Drill Holes for Seat Bracket
Drill pilot hole (3/16" recommended)
Drill larger hole with drill collar
Use 1 1/8" hole saw if gap between riser & frame
Install Bracket
Hand install bracket with bolts into AVK 9finger tight)
Raise end brackets to center of slot and tighten
Adjust height of bracket
Pre-clip seat brackets for seat board installation
Install Seatboard
Set seatboard on brackets
Align seatboard at end brackets and tighten end bracket clips
Tighten Intermediate clips
Install Endcap
Drive on endcap with a fiber/rubber hammer & block of wood - parallel to length of endcap



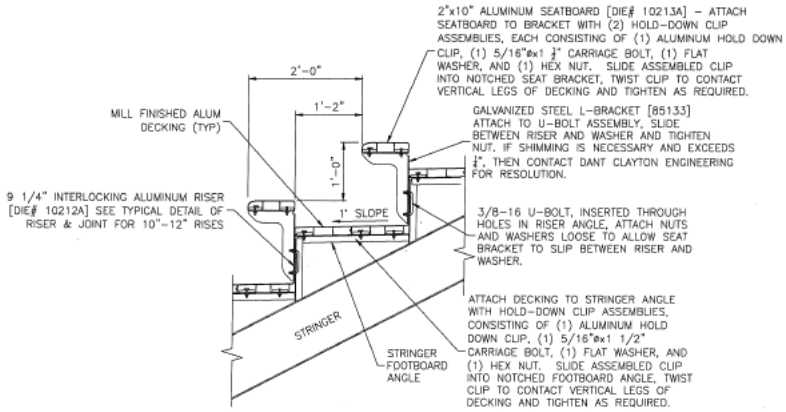
SPLICING OF SEATBOARD CONNECTION



SPLICING OF SEATBOARD BOTTOM VIEW



END CAP FOR SEATBOARD



SEAT BOARD TO SEAT BRACKET

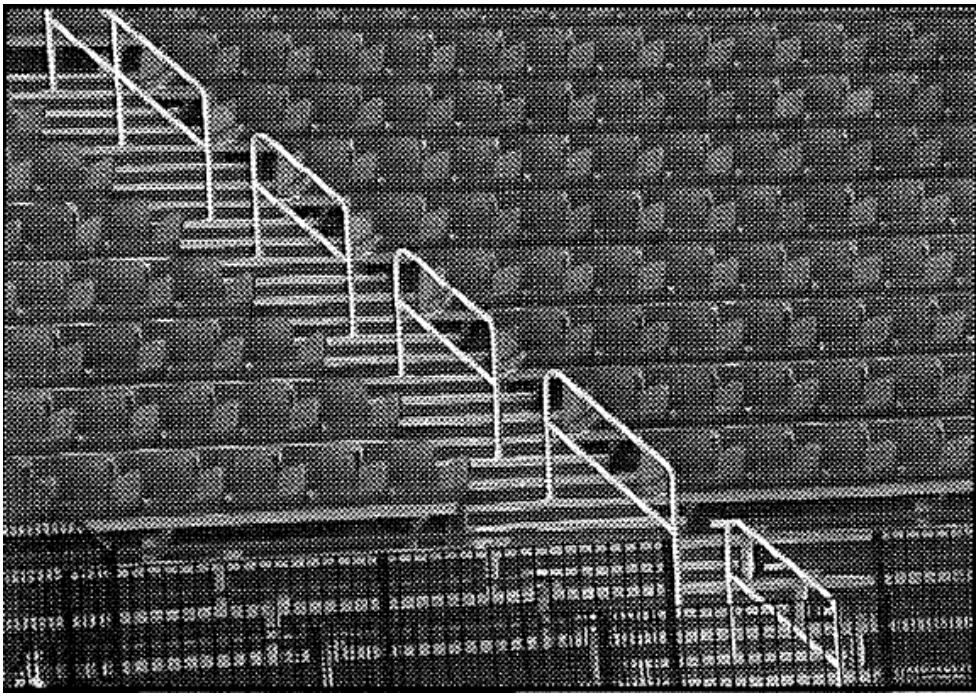
Colosseum I Chairs

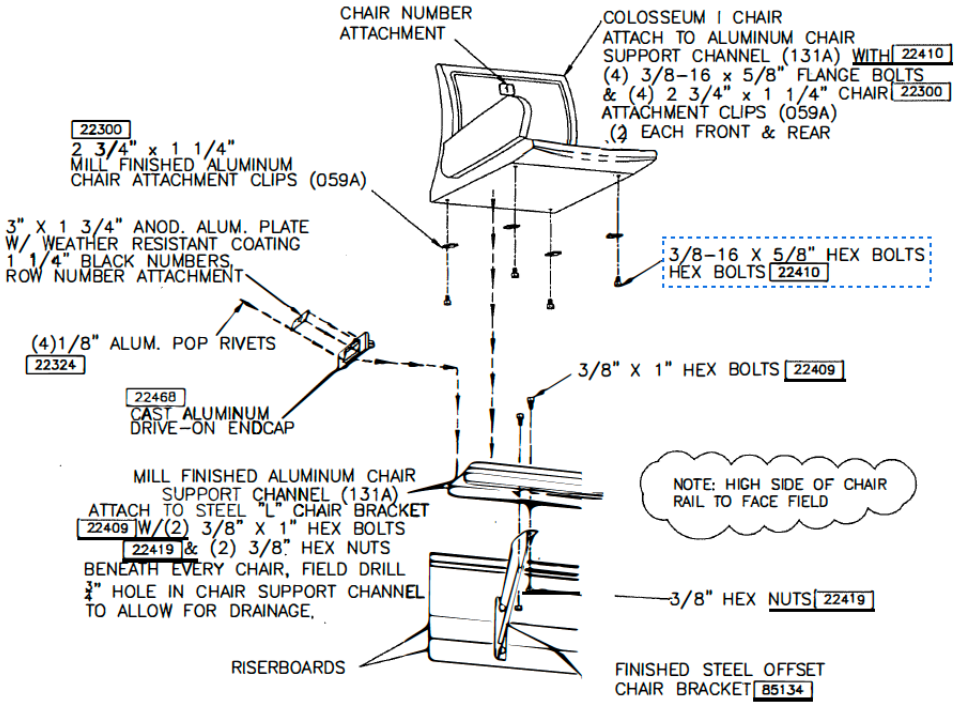
Verify that a seating manifest has been sent to the project . Begin sorting chairs (come in crates) by size and location. It is important to note on the drawings where different chair sizes are indicated per row and that they are laid out as shown.

Transport the chair brackets to the proper locations. Install the brackets using the same method as described under seatboard bracket installation. Brackets and hardware needs to be staged on the stand where used (every 6'). While drilling holes for the brackets, make sure to clean up any shavings that could rust and damage the decking. After the brackets are in place the chair support channel is installed. Place the first section of rail from top to bottom and then run a string line to align the rails. Fasten one end only if the row requires more than one channel length. If another channel length is required, take the second board, butt the next board against the previous, fastening on the next brackets following the first channel. Check alignment on the opposite end with a string line. Once aligned, attach the channel to all the brackets. Install all end caps on channels. Repeat this process for each row and section.

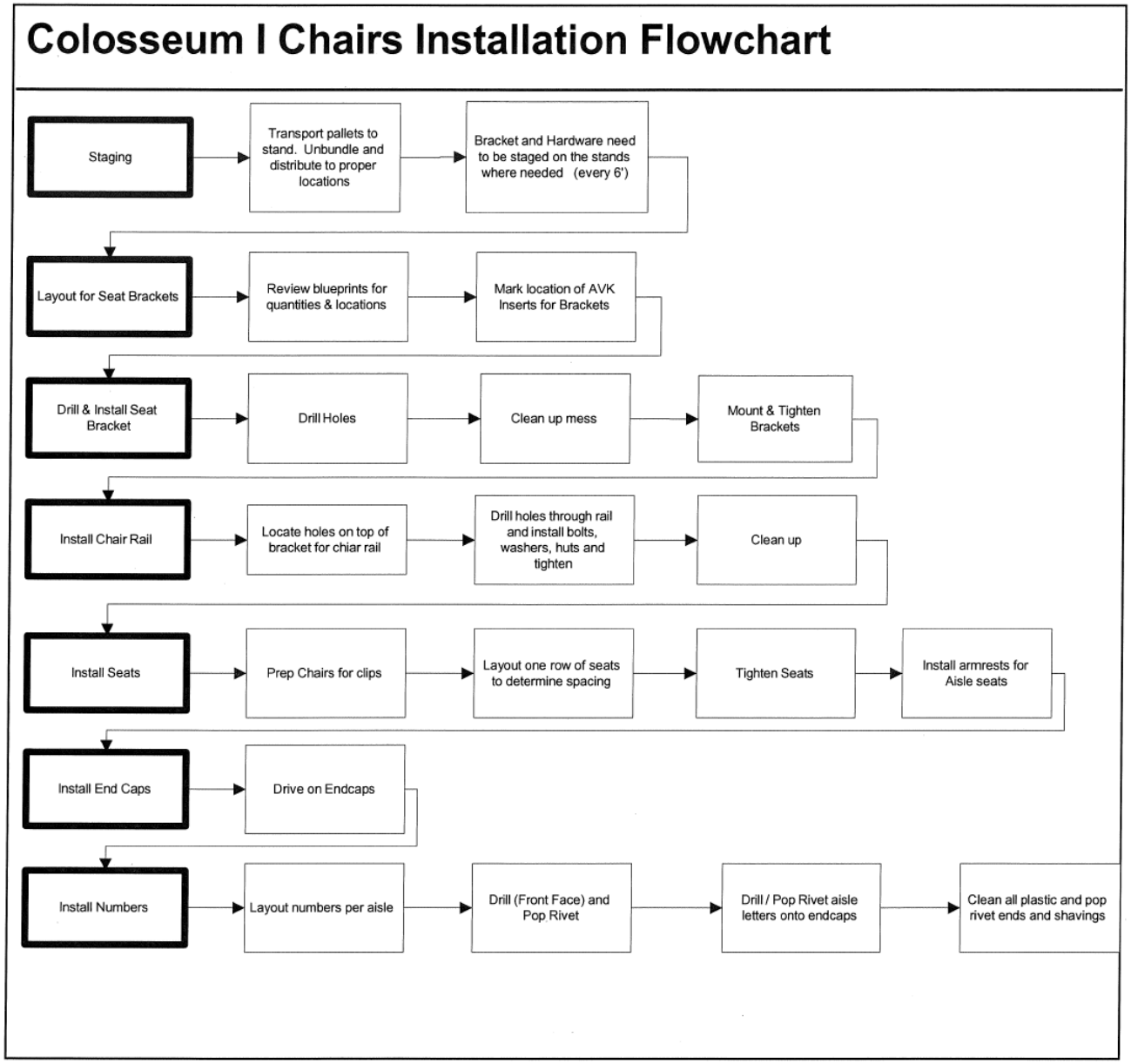
The structure is now ready for the Colosseum I chairs. Begin by distributing the chairs on the channels upside down to receive the chair clips. Make sure to check for completely open drainage holes. If holes are not completely open, scrape out the blockage with utility knife. Distribute the hardware and pre-clip all chairs. Layout one row of seats to determine the spacing. Begin installation of chairs by clipping down the end chair. Next, loosely place the bal-

ance of seats on the first row. Push all the seats together towards the 1st installed seat. Measure from one end of channel to the last chair. Take that measurement and divide by the total number of chairs in that row. This will be the spacing for expansion/contraction. (Gap not to exceed 5/8"). Note-Cut spacers to the exact width to increase the speed of installation. Tighten seats. Install armrests for aisle seats. Install end caps. Drive on endcaps. Install numbers. Layout numbers per aisle. Drill (Font Face) and pop rivet. Drill/ Pop Rivet aisle letters onto end caps. Clean all plastic and pop rivet ends and shavings.





COLOSSEUM I CHAIR INSTALLATION


Colosseum I Chairs Installation Flowchart
Staging
Transport pallets to stand. Unbundle and distribute to proper locations
Bracket and Hardware need to be staged on the stands where needed (every 6')
Layout for Seat Brackets
Review blueprints for quantities & locations
Mark location of AVK Inserts for Brackets
Drill & Install Seat Bracket
Drill Holes
Clean up mess
Mount & Tighten Brackets
Install Chair Rail
Locate holes on top of bracket for chiar rail
Drill holes through rail and install bolts, washers, huts and tighten
Clean up
Install Seats
Prep Chairs for clips
Layout one row of seats to determine spacing
Tighten Seats
Install armrests for Aisle seats
Install End Caps
Drive on Endcaps
Install Numbers
Layout numbers per aisle
Drill (Front Face) and Pop Rivet
Drill / Pop Rivet aisle letters onto endcaps
Clean all plastic and pop rivet ends and shavings

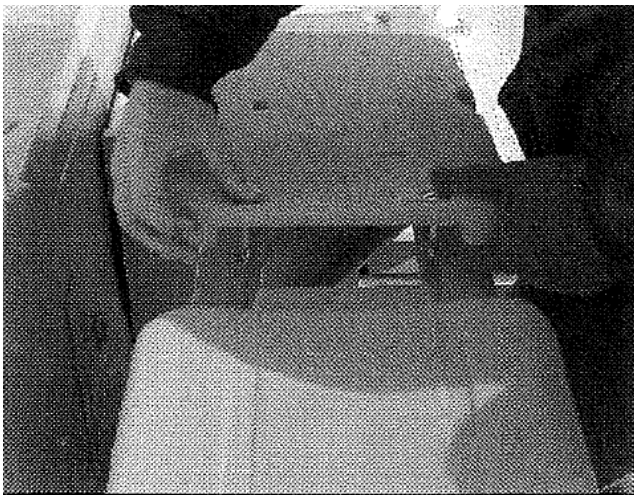
Colosseum II Chaffis

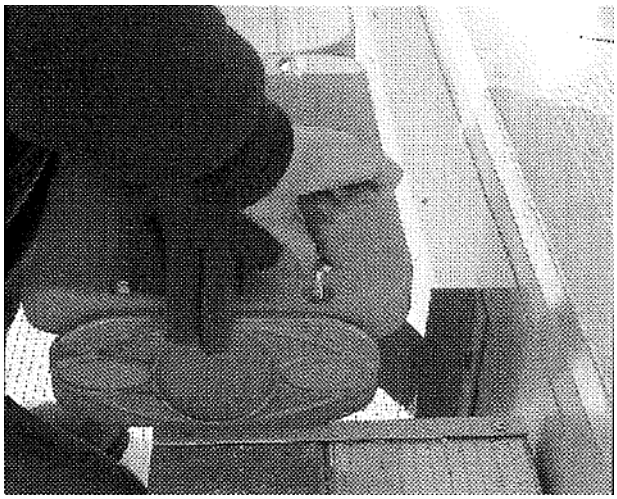
Transport pallets to stand. Un-bundle and distribute to proper locations. Bracket and hardware need to be staged on the stands where needed (every 6').

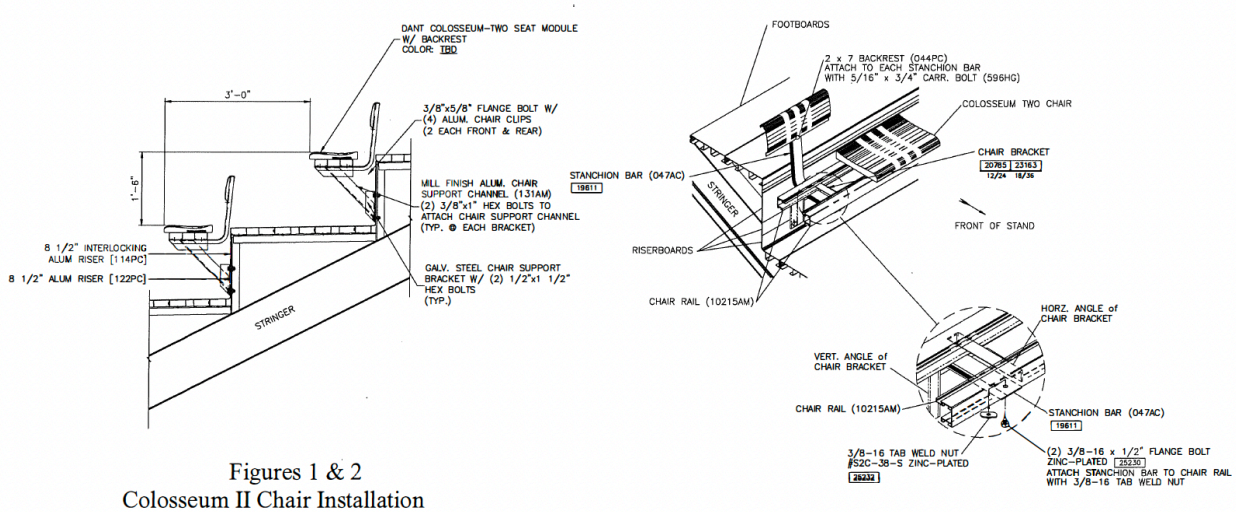
Layout for seat brackets. Review blueprints for size, quantities and locations.

Install chair rail. Locate holes on top of bracket for chair rail. Drill holes through rail and install bolts, washers, nuts, and tighten. Clean up.

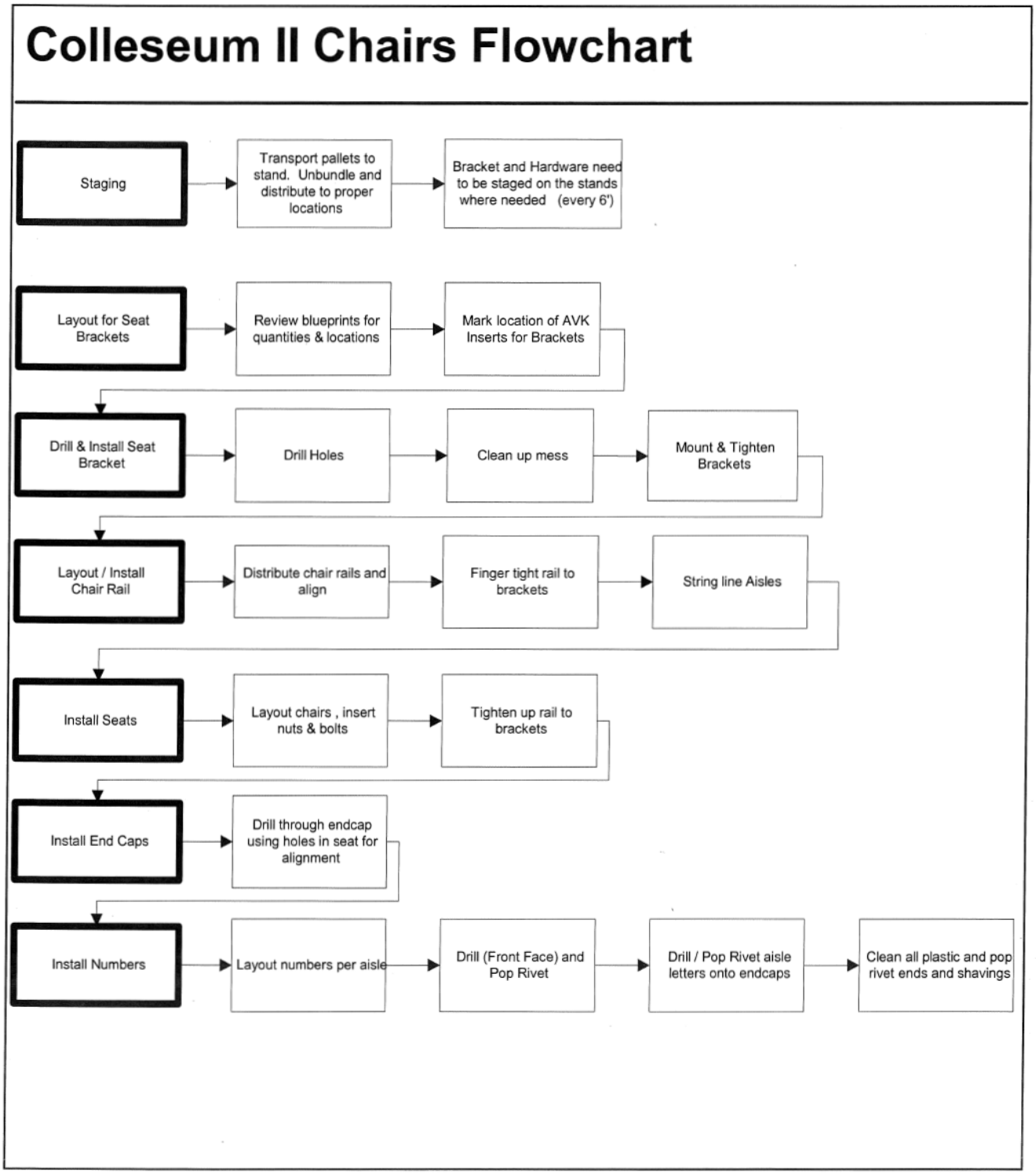
Install seats. Prep chairs for clips. Layout one row of seats to determine spacing. Tighten seats. Install armrests for aisle seats. Install endcaps. Drive on end caps. Install numbers. Layout numbers per aisle. Drill (Font Face) and pop rivet. Drill/Pop Rivet aisle letters onto endcaps. Clean all plastic and pop rivet ends and shavings (see Figures 1 and 2).





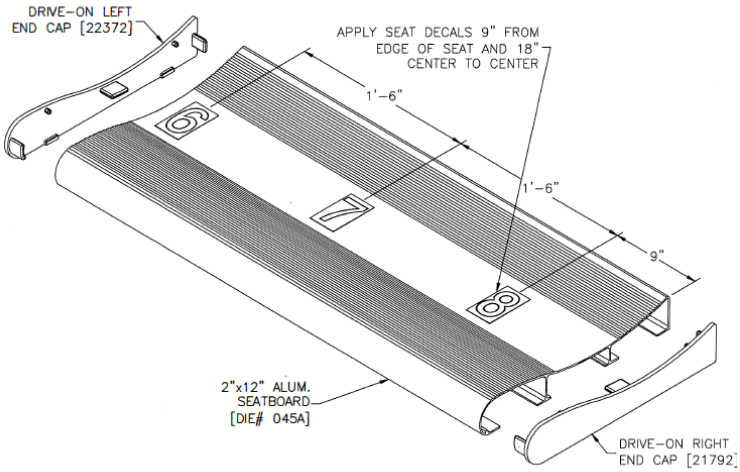


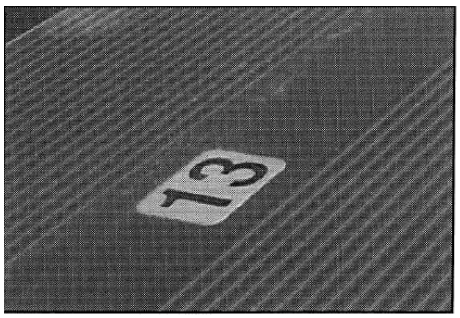
Figures 1 & 2
Colosseum II Chair Installation

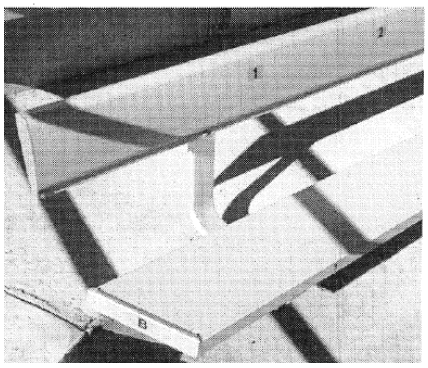

Colleseum II Chairs Flowchart
Staging
Transport pallets to stand. Unbundle and distribute to proper locations
Bracket and Hardware need to be staged on the stands where needed (every 6')
Layout for Seat Brackets
Review blueprints for quantities & locations
Mark location of AVK Inserts for Brackets
Drill & Install Seat Bracket
Drill Holes
Clean up mess
Mount & Tighten Brackets
Layout / Install Chair Rail
Distribute chair rails and align
Finger tight rail to brackets
String line Aisles
Install Seats
Layout chairs , insert nuts & bolts
Tighten up rail to brackets
Install End Caps
Drill through endcap using holes in seat for alignment
Install Numbers
Layout numbers per aisle
Drill (Front Face) and Pop Rivet
Drill / Pop Rivet aisle letters onto endcaps
Clean all plastic and pop rivet ends and shavings

Seat Number Installation (Decal)

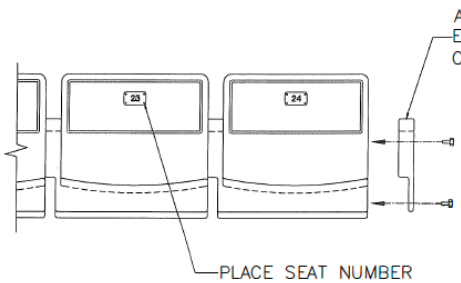
Wipe down seatboards or backrests receiving the decal. Use a string line from the first row to last row to center the decals across the stand. A square should be used for alignment on the seatboard or backrest. Place decals on column line of aisles using the same string line method.

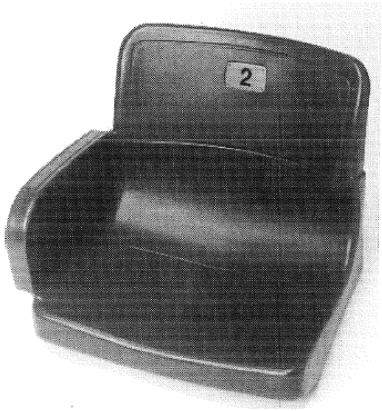






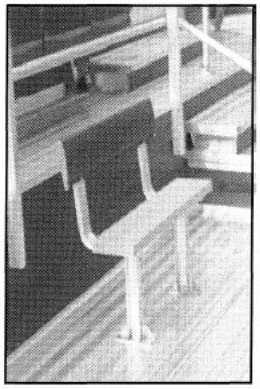
Seat Number Installation (Plates)

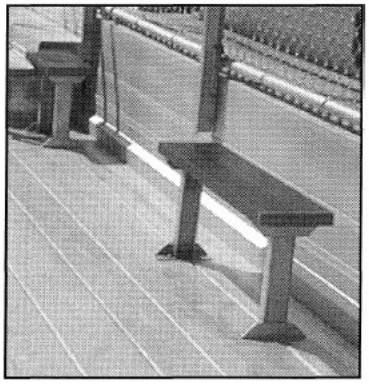




Handicap Pockets/Companion Seats

Gather parts for H-cap pockets (frames, seatboards, end caps, fasteners and backer plates). Assemble parts Per details. Lay out frame. Drill, deck and bolt down.





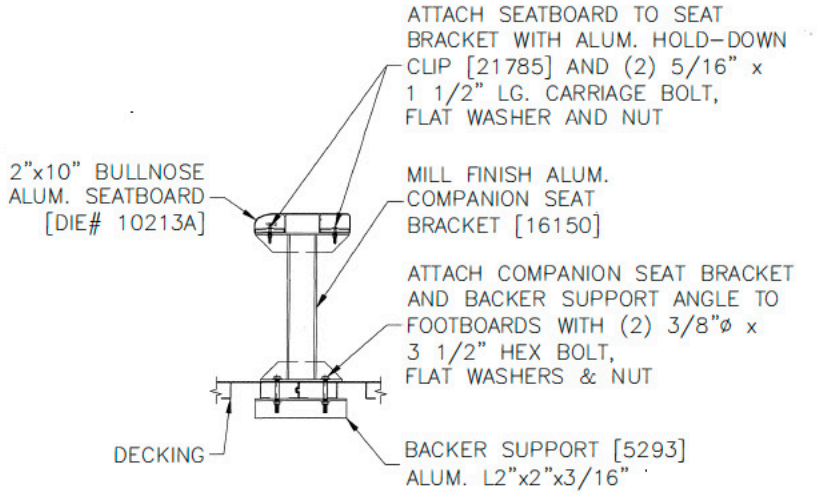


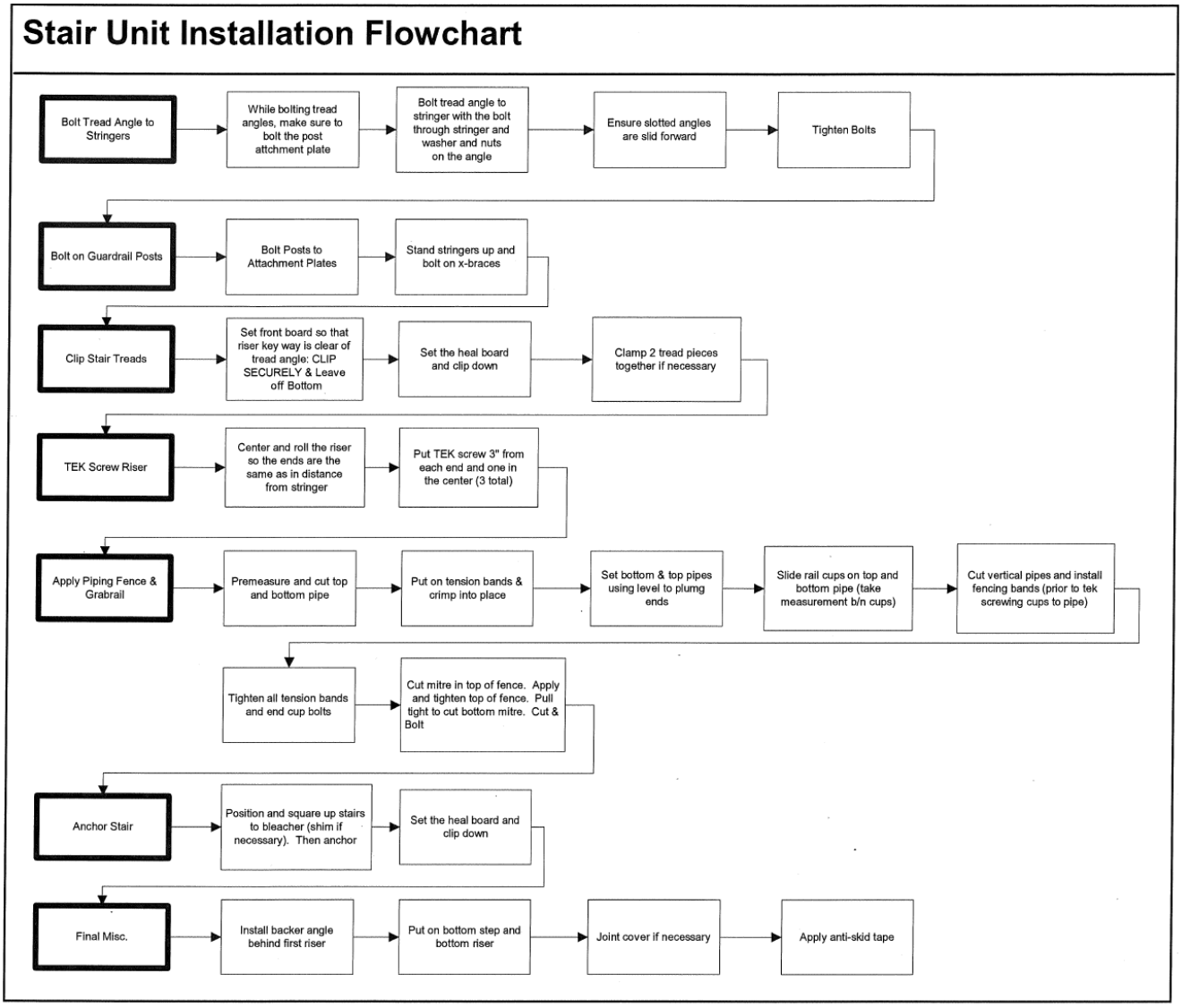
Figure 1
Companion Seat to Decking

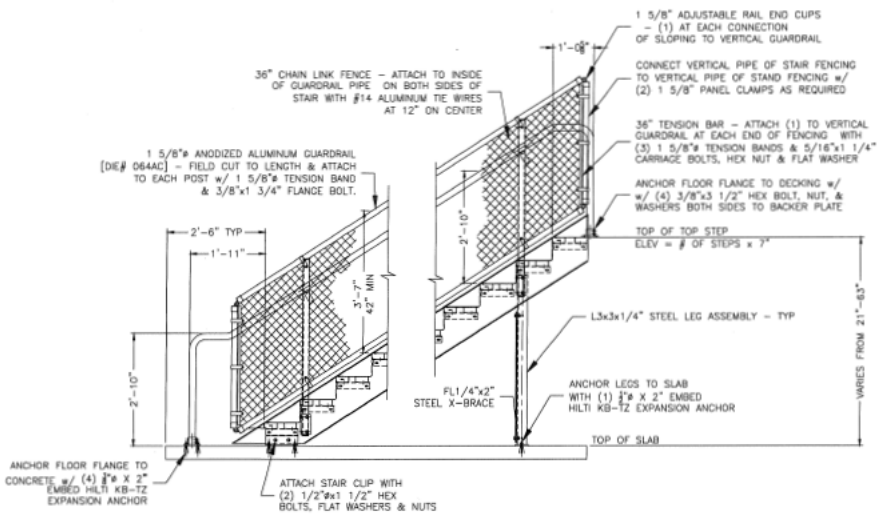
Stair Unit

Prior to assembly re-verify that all needed material is on site. Stage the parts at the install location. Bolt tread angles to stringers, making sure to bolt the post attachment plate at the same time because at each support post attachment plate, the front hole of the tread clip angle shares a hex bolt. Bolt the tread angle to the stringer with the bolt thru stringer and washer and nuts on the angle. Ensure that the slotted angles are slid forward. Tighten the bolts. Next bolt the guardrail posts to the attachment plates and then stand the stringers up and bolt on the x-braces. Clip stair treads by setting the front board so that the riser key Way is clear of tread angle. CLIP SECURELY and leave off bottom tread. Set the heal board and clip down. Clamp 2 tread pieces together if necessary. Begin installation of the riser by centering and rolling the riser so the ends are the same distance from stringer. Install tek screws 3" from each end and one in the center (3 total). Apply piping, fencing, and grabrail (see CLF section of this binder).

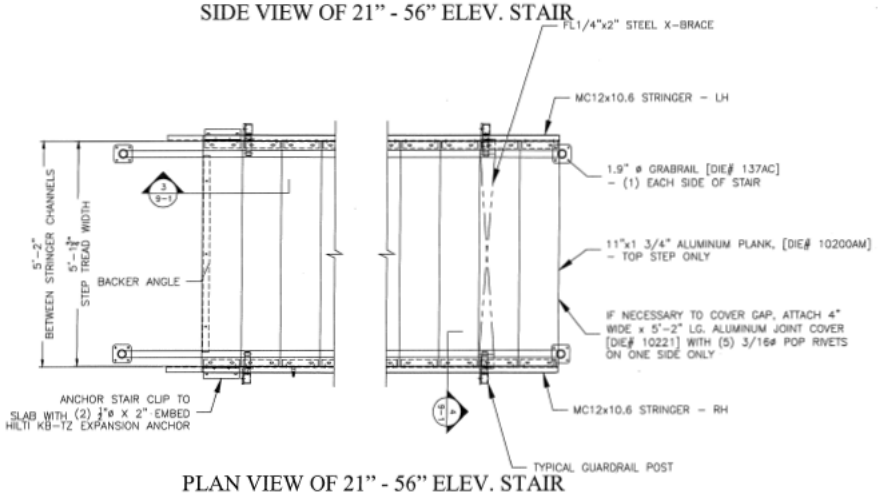
Once the above work has been completed (minus the bottom step), position and square up the stairs to the bleacher (shim if necessary) and then anchor the stair. Finish the bottom stair tread by setting the heal board and clipping down. Install the backer angle behind the first riser. Put on the bottom step and bottom riser. Install joint cover if necessary and apply anti skid nosing with the required number of pop-rivets.

Stair Unit Installation Flowchart

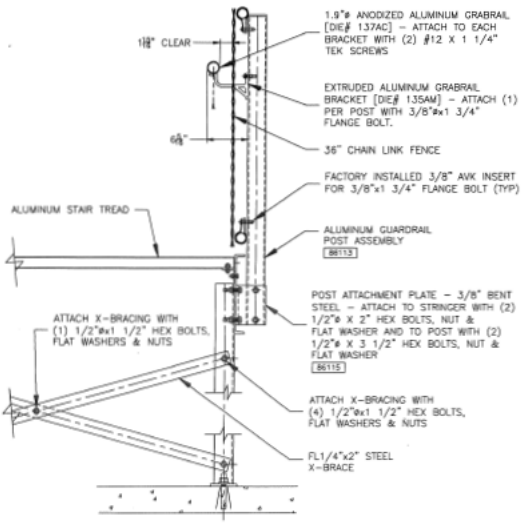




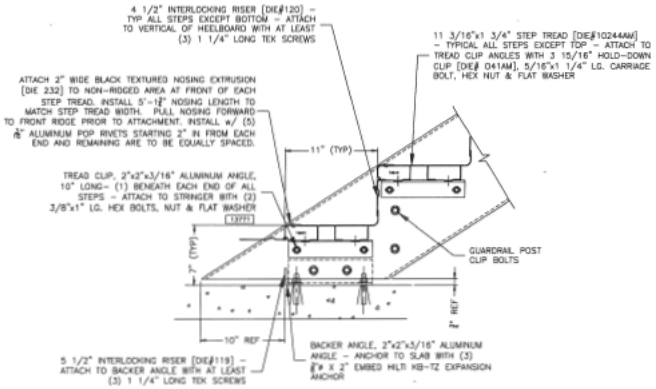
SIDE VIEW OF 21" - 56" ELEV. STAIR



PLAN VIEW OF 21" - 56" ELEV. STAIR



SECTION THRU STAIR STRINGER



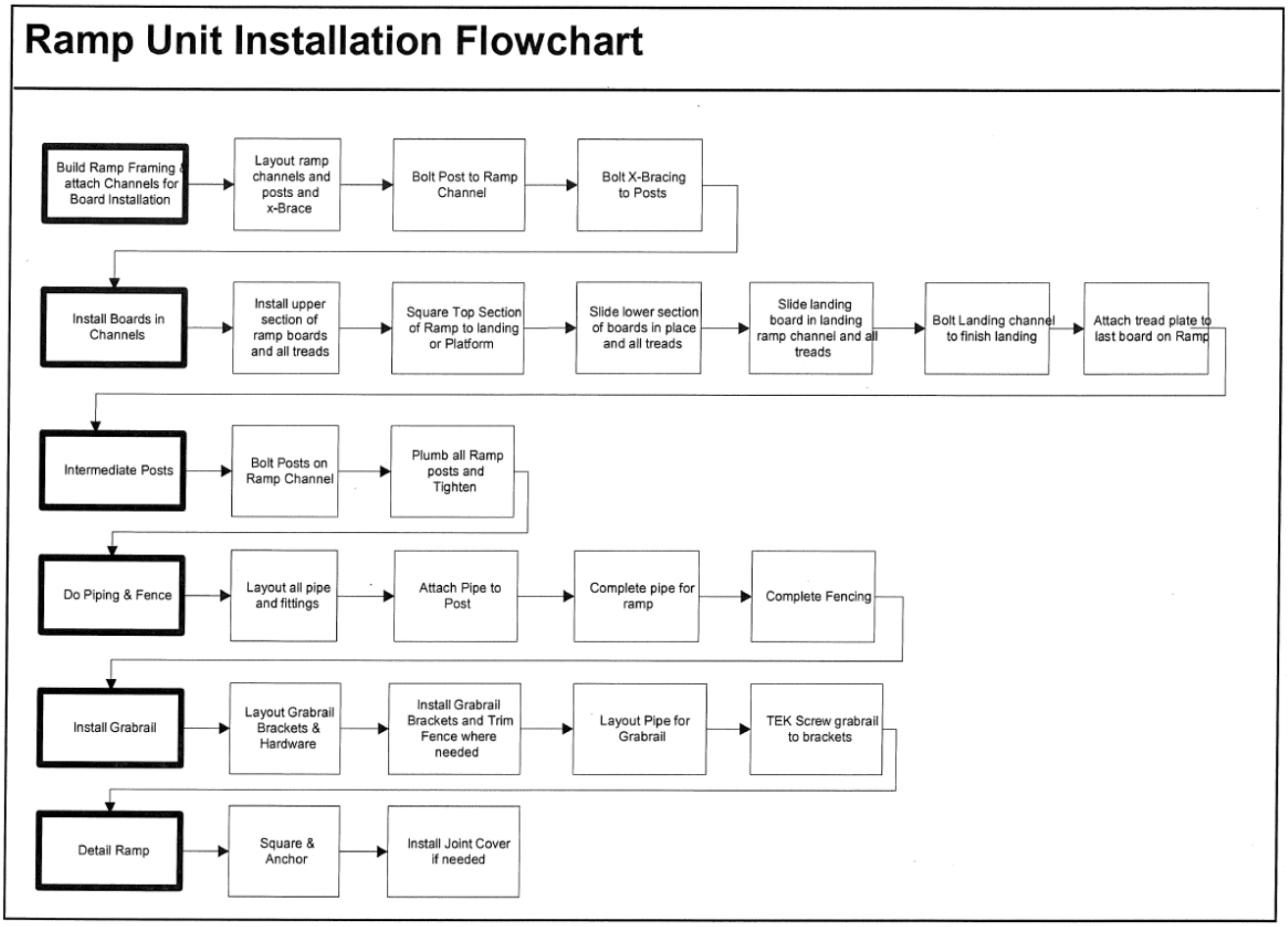
SECTION THRU BOTTOM STEPS

Ramp Unit

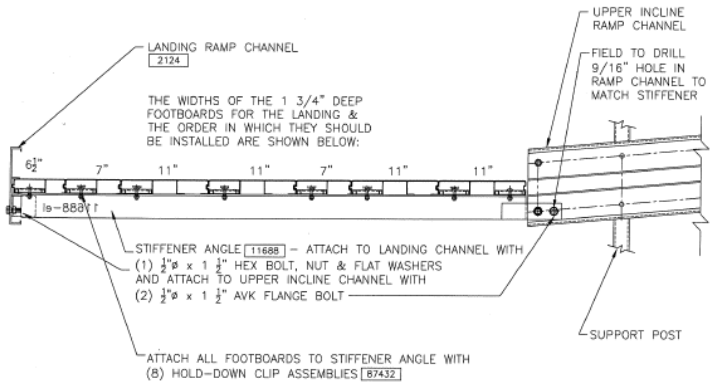
Verification of elevations should have already been completed during the site review. Layout the ramp channels, posts· and x-bracing. Bolt the post to the ramp channel. Bolt the x-bracing to the posts. The ramp is now ready for the board installation. Install the upper section of ramp boards and all treads. Square the top section of the ramp to the landing or platform. Slide the lower section of boards in place and all treads. Slide landing board in landing ramp channel and all treads. Bolt landing channel to finish landing. Attach the tread plates to the last board on the ramp. To begin installing the intermediate post, the first step will be bolting the post on the ramp channel. When this is complete, plumb the ramp posts and tighten. The ramp is now ready for piping and fencing. Layout all the pipe and fittings. Attach pipe to posts. Complete the pipe for the ramp and complete the fencing.

(This installation method can be found in the CLF section of this binder). Once the pipe and fabric has been installed the grabrails will be installed. To do this the fist step will be to layout the grabraill brackets and hardware. Install the grabrail brackets and trim the fence where needed. Layout the pipe for the grabrail. Tek screw the grabrail to the brackets. The last step of the ramp installation will be to square and anchor the ramp and install the joint cover as needed. Please refer to the ramp drawings and details in your drawing package for reference.

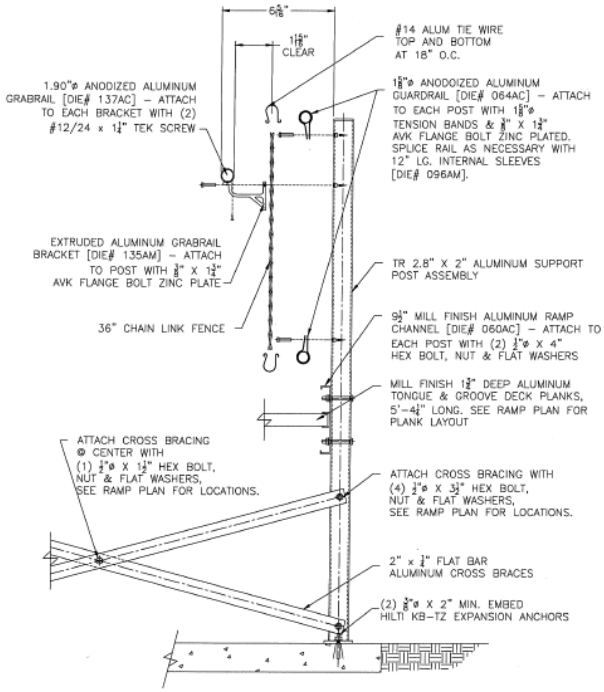
Ramp Unit Installation Flowchart



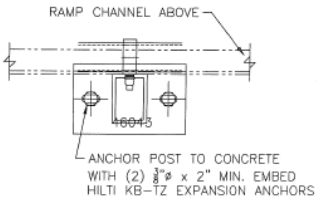
Typical Ramp Sections



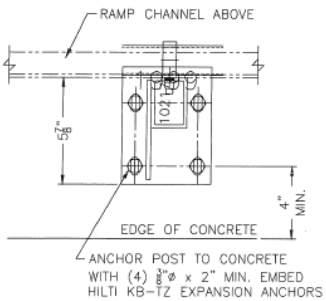
CONNECTION OF STIFFENER ANGLE



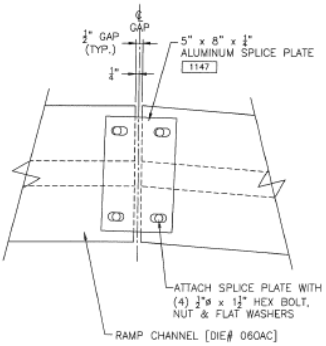
TYPICAL SECTION THRU RAMP



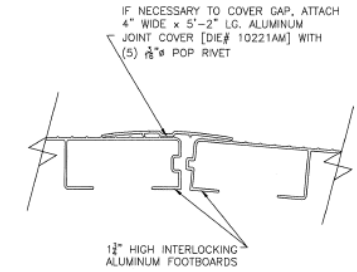
CONNECTION OF TYP SUPPORT POST TO CONCRETE SLAB



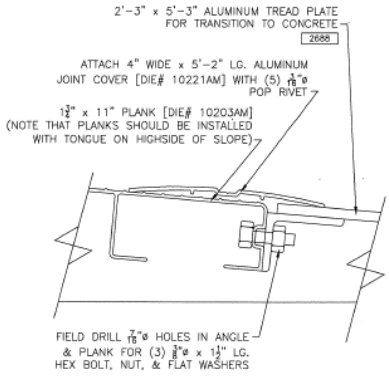
CONNECTION OF BOTTOM SUPPORT POST #1 TO CONCRETE SLAB



CONNECTION OF TYPICAL

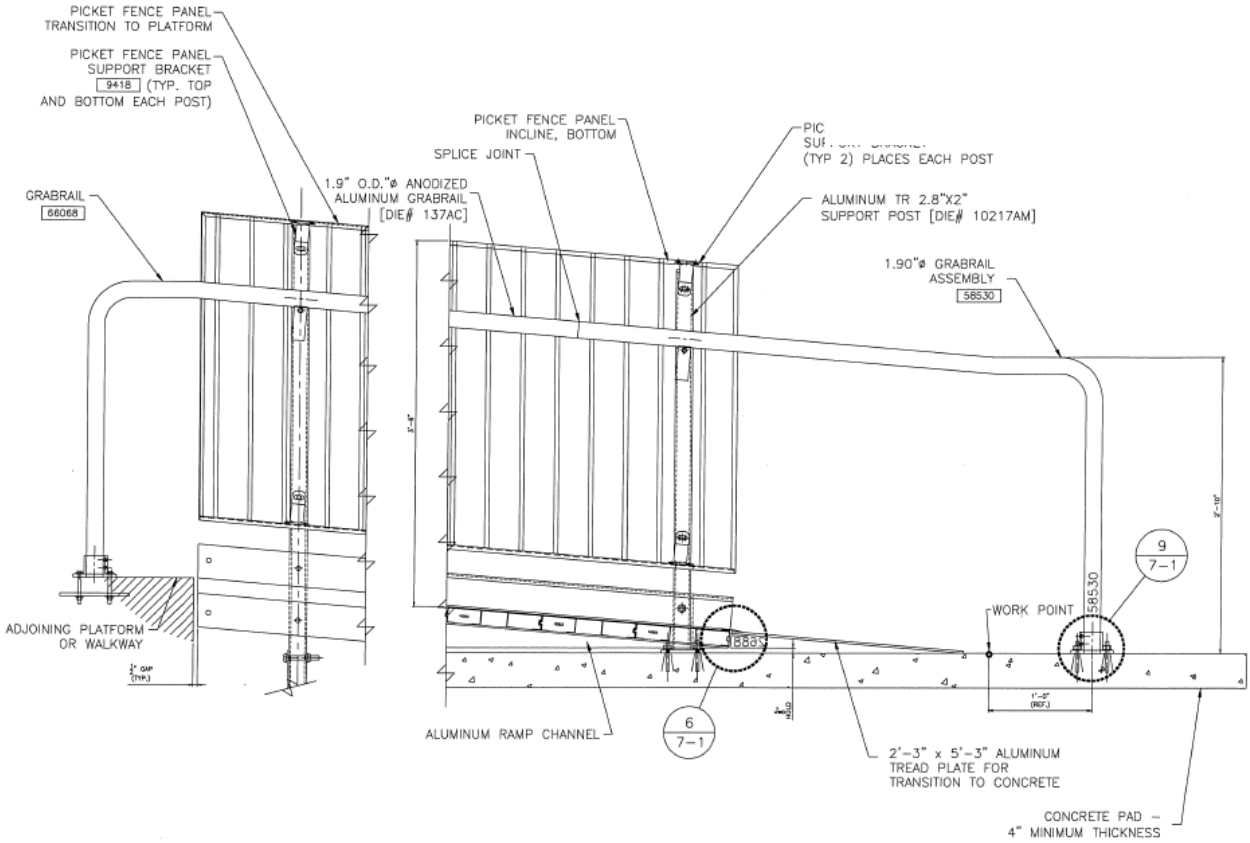


CONNECTION OF JOINT COVERS AT GAP BETWEEN RAMP SECTIONS

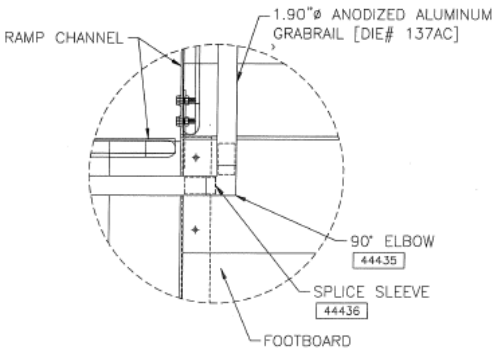


CONNECTION OF TREAD PLATE TO BOTTOM FOOTBOARD

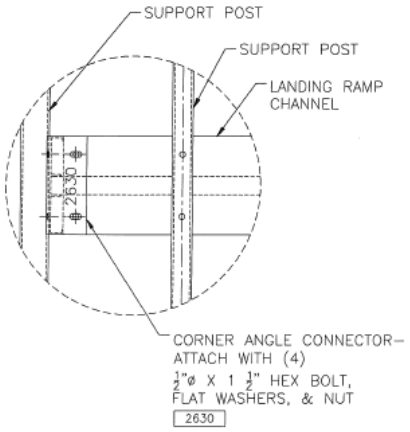
Typical Panel and Railing Sections at Ramps



CONNECTION OF FENCING AND RAILING AT TOP & BOTTOM OF SLOPE



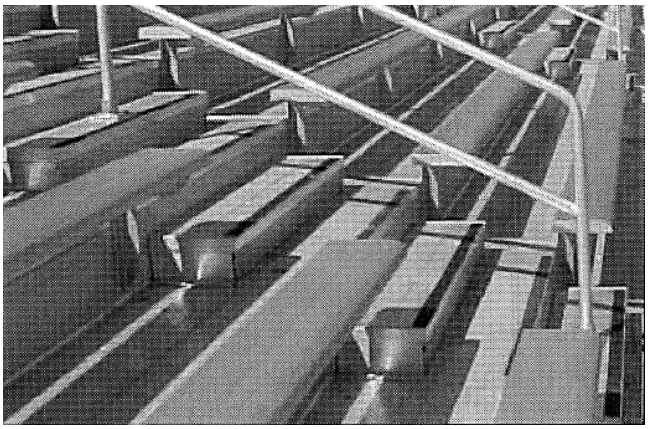
CONNECTION OF GRABRAIL AT CONRNER OF LANDING

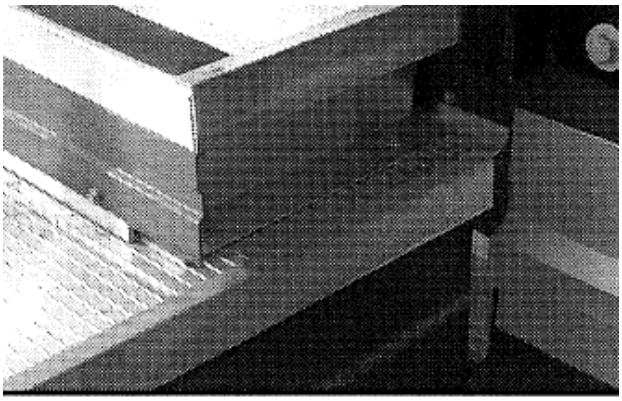


CONNECTION OF CORNER ANGLE CONNECTOR

Intermediate Steps

Layout stand and mark aisle ways using the string line method. Layout first and last row with aisles per drawings. Intermediate steps come to site assembled. Distribute assembled intermediate steps per layout. Mark holes for Z brackets and backer angle. Remove step assembly and drill holes for Z bracket. Replace assembled units and drive rivet into place. Install mid aisle rails. Install intermediate step riser. Distribute intermediate step riser and layout tek screw location. Tek screw riser in place (see Figures 1 and 2).





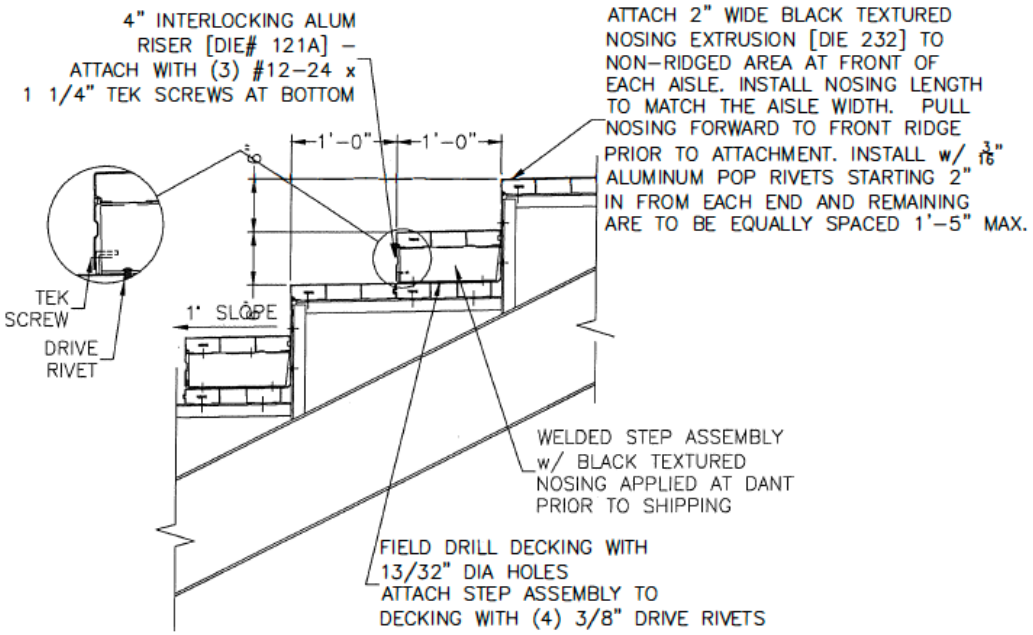
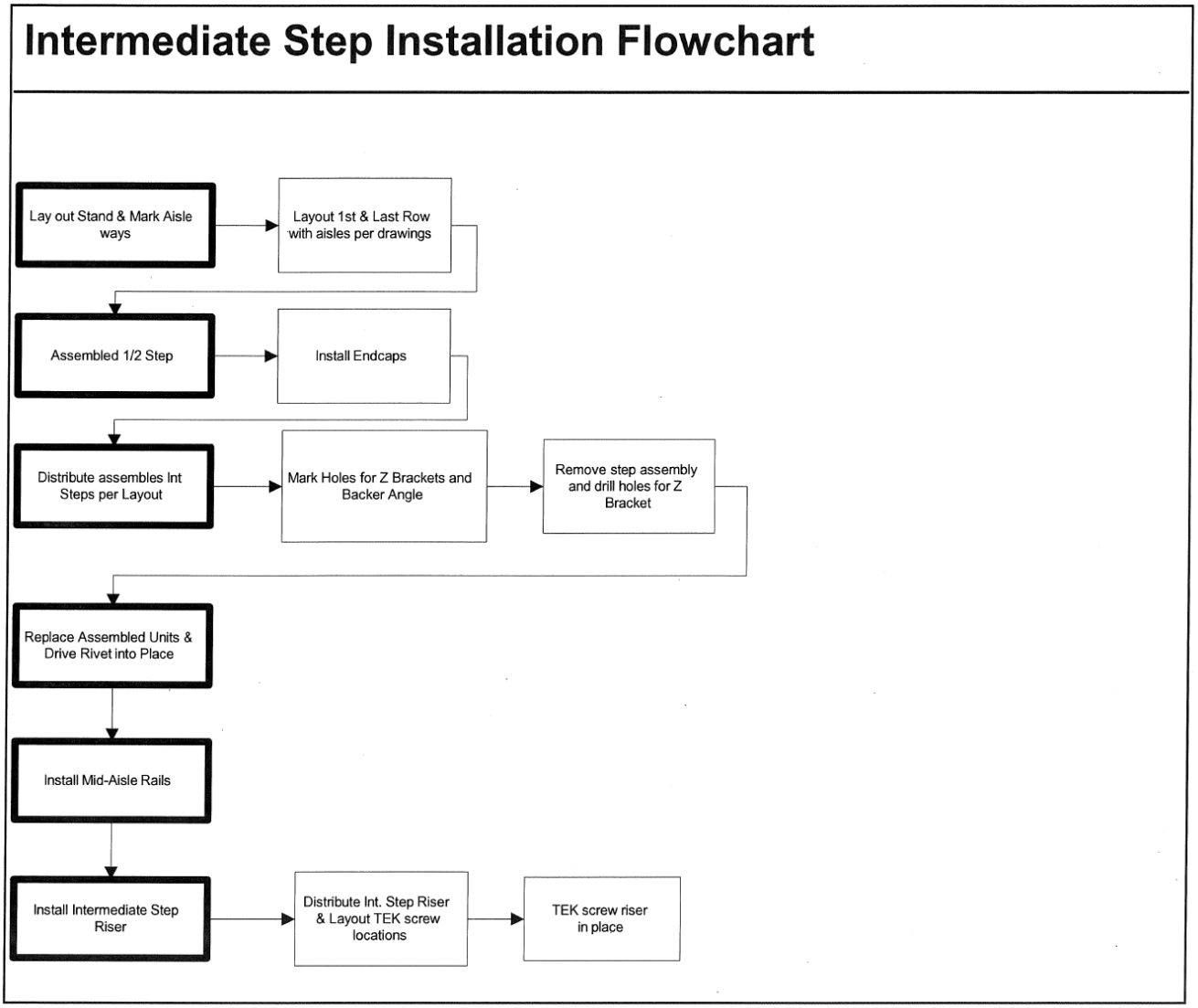


Figure 1
Welded Intermediate Step to Decking


Intermediate Step Installation Flowchart
Lay out Stand & Mark Aisle ways
Layout 1st & Last Row with aisles per drawings
Assembled 1/2 Step
Install Endcaps
Distribute assembles Int Steps per Layout
Mark Holes for Z Brackets and Backer Angle
Remove step assembly and drill holes for Z Bracket
Replace Assembled Units & Drive Rivet into Place
Install Mid-Aisle Rails
Install Intermediate Step Riser
Distribute Int. Step Riser & Layout TEK screw locations
TEK screw riser in place

Intermediate Step Installation for Rises Greater Than 14"

Gather all parts for the step assemblies.

Attach upper step tread to frames.

Install upper riser to upper step tread and frame.

Install step tread.

NOTE

Make sure upper riser is attached firmly to lower tread in several allocations. We recommend you use $^{3}/_{16}$" pop rivets at these locations. Issues have arisen where the risers were Tek screwed in the middle of the span and became loose from people kicking the riser face while walking up and down the aisles. If you do not attach the riser across the span and just at the ends, the riser will likely rattle and end up being a item on your punchlist.

Layout and mark aisles same as installation of intermediate step less than 14".

Layout and install lower riser backer angle.

NOTE

This will need to be done prior to installing the step frames as you will not be able to access the anchors after the frames are installed.

Attach frames to deck with drive rivets.

NOTE

Use a steel bar as an extension to help you reach the drive rivets that are under the frame where you do not have room to swing a hammer.

Install aisle rails.

NOTE

See installation sequence for aisle rails.

Install side cover plates and lower step front riser.

Install aisle nosing on treads.

Remove any burrs or tek screw tails after installation.

Anti-Skid Nosing Strip

NOTE

"Intermediate Steps" will have anti-skid nosing already applied when received in the field. Layout and install lower riser backer angle

NOSING GUIDELINES:

Standard Intermediate Step & Aisle Widths (Pop Rivet Counts)

3'-11" — (4) pop rivets required.

4'-6" — (4) pop rivets required.

5'-5" — (5) pop rivets required.

Standard Stair Widths (Pop Rivet Counts)

5'-2" Single Wide— (5) pop rivets required.

4'-'2" Single Wide Vomitory — (5) pop rivets required.

10'-2" Double Wide — (8) pop rivets required.

16-2" Triple Wide — (14) pop rivets required.

Aisle Nosing Notes

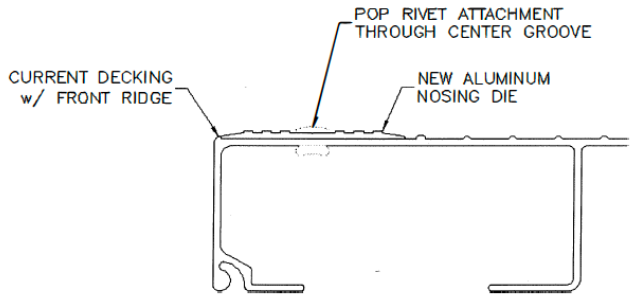
- Aisle nosing to be pulled forward to front ridge of decking prior to attachment.
- Any aisle widths shorter than 5'-5" to be field cut out of next longer stock length material (i.e., 3'-11" / 4'-6" / 5'-5"). Any aisle widths longer than 5'-5" to be field cut from 13'-6¾" stock piece.

Stair Nosing Notes

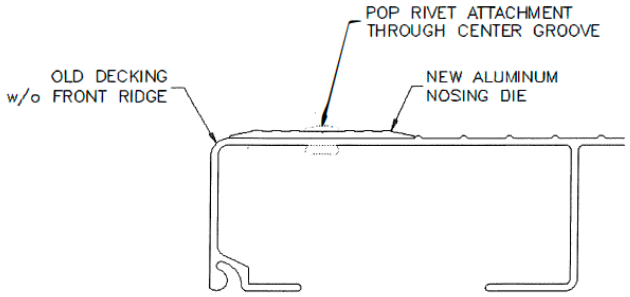
- Stair nosing to be pulled forward to front ridge of decking prior to attachment.
- Standard 4'-2" single wide vomitory stair nosing to be cut from 5'-1¾" stock piece per tread.
- Standard 10'-2" double wide stair nosing to be cut from 13'-6¾" stock piece per tread.
- Standard 16'-2" triple wide stair nosing to be cut from (2) 13'-6¾" stock pieces per tread equal lengths Any stair widths shorter than 5'-2" to be field cut out of 5'-1¾" stock piece.

Pop Rivet Spacing Notes

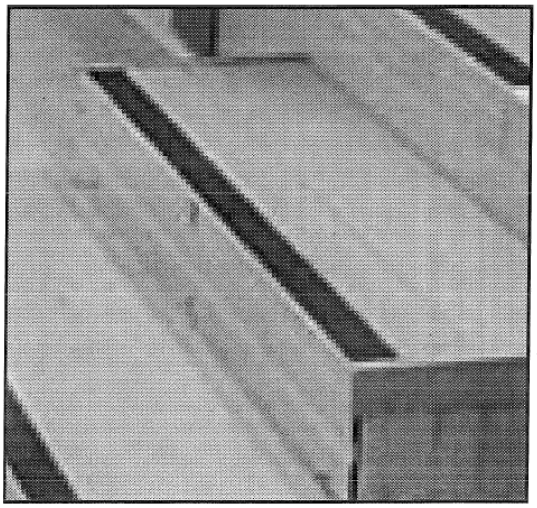
Pop rivet spacing is 2" in from each end and not to exceed 1'-5" CIC spacing on any non-standard aisle/stair widths.



PULL NOSING FORWARD TO FRONT RIDGE PRIOR TO ATTACHMENT



PUSH NOSING TO REAR RIDGE PRIOR TO ATTACHMENT (FOR OLDER STANDS ONLY)



NFPA Mid Aisle Rails

Locate center of aisles at top and bottom measuring from seatboard to seatboard. String a chalk line and mark center. Distribute the rails and mounting plates. Position the base plates in center of aisles at row locations shown on drawings. Mark holes and drill ⅜" holes through the footboards. Attach plates using ⅜" x 3½" bolts and a backing plate on the under side of the footboards. Do not tighten plates before rails are in. Align rails and tighten the set screws (see Figure 1).

NOTE

The manufacturer for the tightening of tek screws recommends tightening the screw "snug," backing off ½ turn and then turning a full rotation. Rail Height to be a minimum of 2'-10" (stair nosing to top).

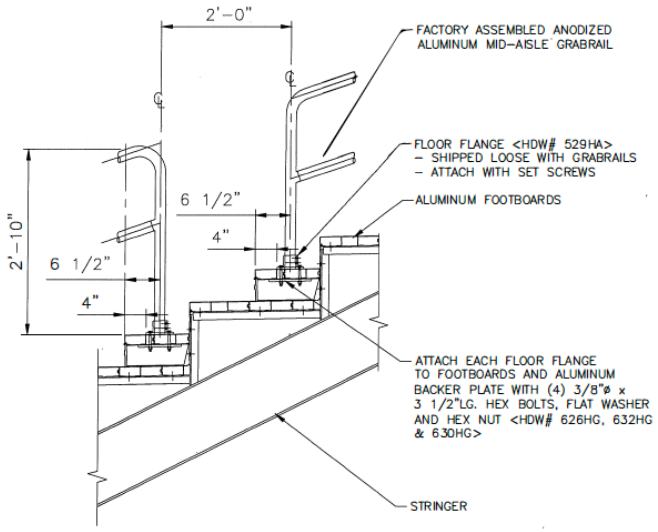
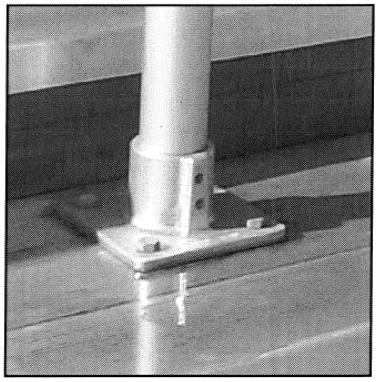
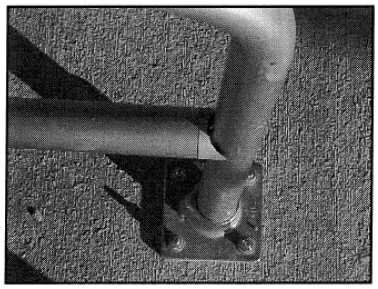
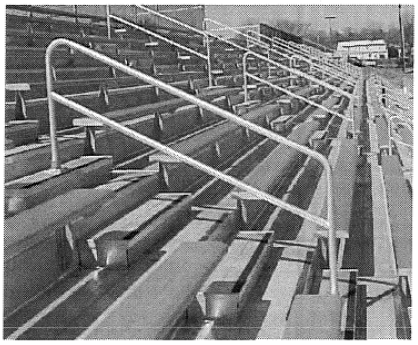
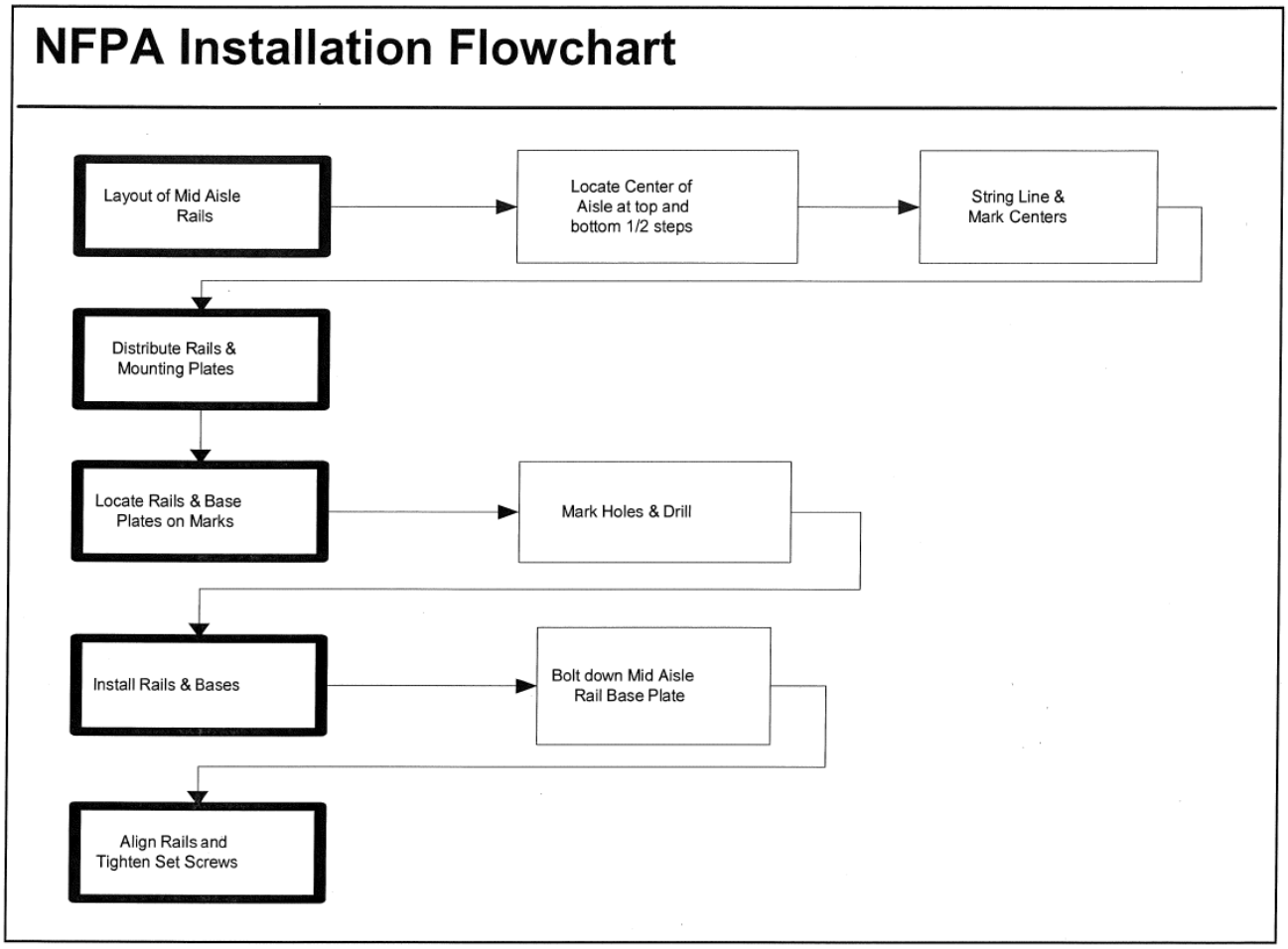


Figure 1
NFPA Installation of Intermediate Step (Side View)







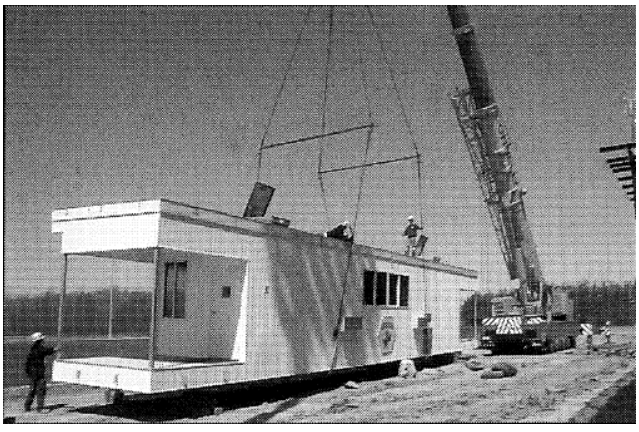

NFPA Installation Flowchart
Layout of Mid Aisle Rails
Locate Center of Aisle at top and bottom 1/2 steps
String Line & Mark Centers
Distribute Rails & Mounting Plates
Locate Rails & Base Plates on Marks
Mark Holes & Drill
Install Rails & Bases
Bolt down Mid Aisle Rail Base Plate
Align Rails and Tighten Set Screws

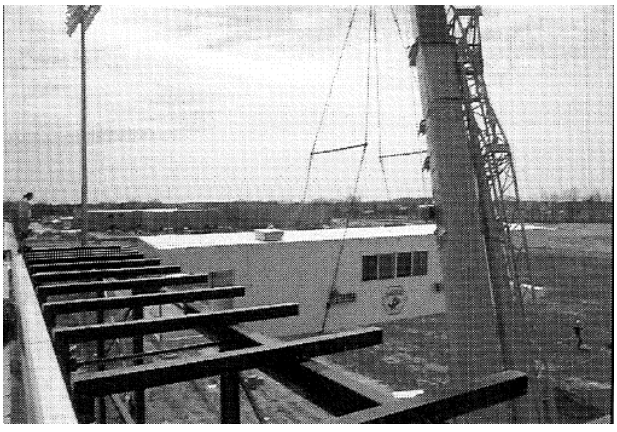
Press Box Installation

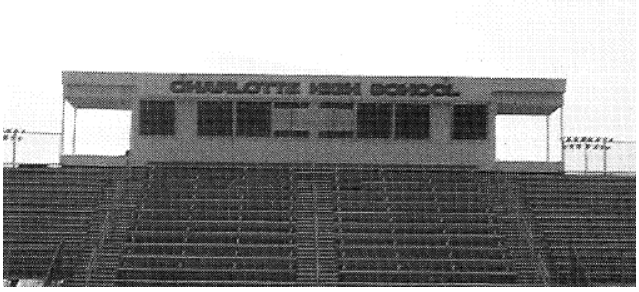
Alignment of press box steel has already been completed when steel was erected. Upon arrival of the press box to the site, inspect the press box, checking against the plans to assure correctness of dimension, size and door location. Also check for any damage to the box. Un-secure press box from shipping trailer. Remove boards from inside. Layout locations for rigging. Install lag plates at ends of structure. Rig press box. Inspect rigging. Assemble spreader beams and chokers. Position straps on box (50% of box should be between the straps) and hook to crane rigging. Install boards / beams under box. Make final rigging connections. Attach 2 tag lines. Test lift press box and adjust rigging as required. Position men at tag lines for raising of press box. Lift press box. Set box, aligning box using attachment plates at end of box. Dismantle connections and rigging. Attach press box using lag bolts and attachment plates. Begin work on filming platform. Crane railing and fencing onto roof. Install posts. Install railing. Install fence and tie.

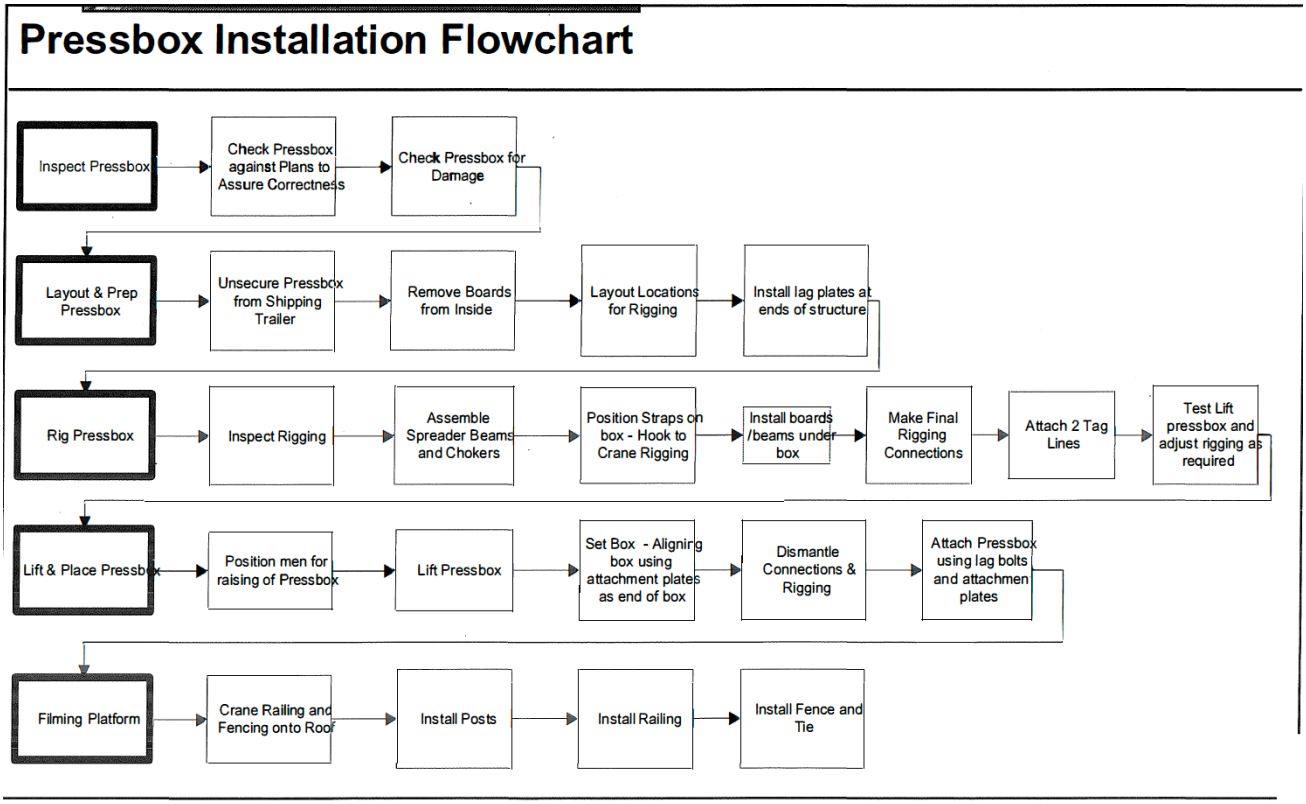
NOTE

When renting the crane make sure to give the crane rental company the tonnage of the press box (approx. 75 lbs./SF). Also make sure the crane company will provide the rigging and spreader bars required for lifting the box in place.








Pressbox Installation Flowchart
Inspect Pressbox
Check Pressbox against Plans to Assure Correctness
Check Pressbox for Damage
Layout & Prep Pressbox
Unsecure Pressbox from Shipping Trailer
Remove Boards from Inside
Layout Locations for Rigging
Install lag plates at ends of structure
Rig Pressbox
Inspect Rigging
Assemble Spreader Beams and Chokers
Position Straps on box - Hook to Crane Rigging
Install boards /beams under box
Make Final Rigging Connections
Attach 2 Tag Lines
Test Lift pressbox and adjust rigging as required
Lift & Place Pressbox
Position men for raising of Pressbox
Lift Pressbox
Set Box - Aligning box using attachment plates as end of box
Dismantle Connections & Rigging
Attach Pressbox using lag bolts and attachmen plates
Filming Platform
Crane Railing and Fencing onto Roof
Install Posts
Install Railing
Install Fence and Tie

Clean Up and Pressure Washing

The work area and the structure must be cleaned daily. At the end of the day remove trash from the work areas (packing material, scrap metal, etc.) Blow off the stand each day to remove steel shavings that can damage the stand if left. Sweep up ground around the stand so that work can be performed efficiently and safely.

When the structure is complete, the stand must be power washed. Make sure to plan ahead. Where is access to water, where are you renting the power washer . . . ? Begin on the top of the stand working down the rise. When the superstructure is complete move to the understructure and power wash this area.

Field Guidelines for Powder-Coated Material

1. **General**
   - **A.** The following document is to be followed by all installers, contracted or not by Dant Clayton Corporation when handling material supplied by Dant Clayton.
2. **Inspection of Material**
   - **A.** Powder-coated parts either aluminum or steel should be thoroughly inspected prior to unloading. Any damaged material should be noted. Significant damage should be reported to the Project Manager on the Materials Received Report. When a project manager doesn't apply this information needs to be given to Kim Martin in the manufacturing office. If possible pictures should be taken of all damaged parts. The truck driver should sign the material received report if there is significant damage.
3. **Inventory of Material**
   - **A.** All material must be inventoried within seven working days following delivery. This is adequate time to request a shortage of material. This also allows manufacturing to investigate the shortage, determine a cause and fix the problem.
4. **Handling of Powder-Coated Material**
   - **A.** No part is to be handled using steel chokers; only nylon chokers are to be used.
   - **B.** No part is to be picked up with a fork truck or any other type of picking equipment without protective covering being placed on the forks to prevent damage to the part. Example: Burlap bags on the forks.
   - **C.** While unloading powder-coated material you must touch up any and all nicks and scratches that occur during the process.
5. **Storage of Material**
   - **A.** When storing material on the job site, parts are to be stacked neatly off the ground with wooden dunnage beneath and between each part. This is to prevent damage to the powder coat coverage.
   - **B.** Powder-coated steel material must not be covered with a tarp, plastic, etc. This accelerates rust.
   - **C.** All powder-coated aluminum material may be covered with a tarp, plastic, etc. to keep the weather off.

6. Assembly of Material

A. All bolted connections between powder coated steel components should have (2) hardened flat washers — one on each side of the connection. Also, all bolts for connecting hold-down clips to stringer angles should have a flat washer. The washers are to prevent damage to the powder-coating surface during tightening of the nut.

B. When applying blunt force to assist in fitting up a powder coated part, a rubber mallet should be used. When it is necessary to use a steel hammer, a wood softener should be used against the·coated part to absorb the blow of the hammer to prevent chipping of the powder-coated surface.

C. When it is required to pry against a powder-coated part, a softener, such as a wood block must be employed to prevent chipping, scratching or any other damage to the powder-coated surface.

7. Modifications

A. Field modifications of powder coated steel or aluminum must be touched up daily. Also installation processes that break the surface of the powder coat finish must be touched up daily. Holes fro:in drilling must be touched up prior to fastening; also remaining shavings must be cleaned off the stand daily. The exposed shavings will rust and cause rust stains on the powder coated, anodized or mill finished materials.

B. Modifications such as welding, torching, grinding and drilling must be touched up that day. See procedure (8-B) for repairing the powder coat finish.

C. The recommended paint for wet painting over the powder-coated finish is (Rust-Oleum) type paint. If this is necessary to please the customer then procedure (8-C) needs to be followed. Dant Clayton Manufacturing does not recommend this due to the life of the wet paint.

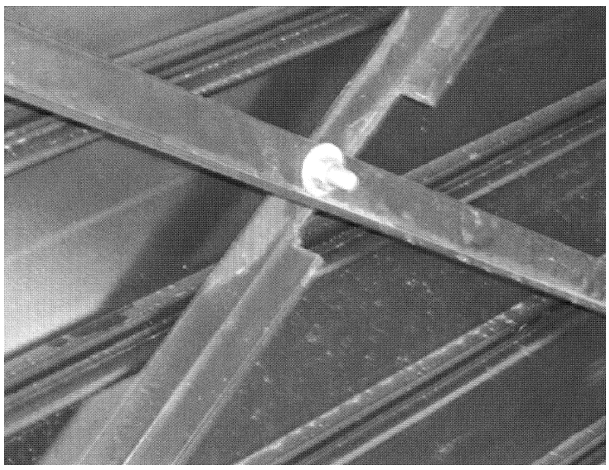
8. Touch Up

A. This section is to establish a standard method for repairs to the powder coated material. The problems that we have in the field can be separated into the three categories below. Please keep in mind that this is an on going procedure that needs to be done during the installation process. **This needs to be done on a day-to-day basis when the damage occurs, not at the end of the job.** The weather conditions are critical for the paint to bond to the part. **It is essential that the temperature be above 50 degrees F and the humidity be no greater than 60% RH for 24 hours after application. Do not attempt any of the following procedures if it is raining**

or threatening to rain. Once you determine what the problem is and the weather conditions are cooperating, you can follow the appropriate touchup procedure.

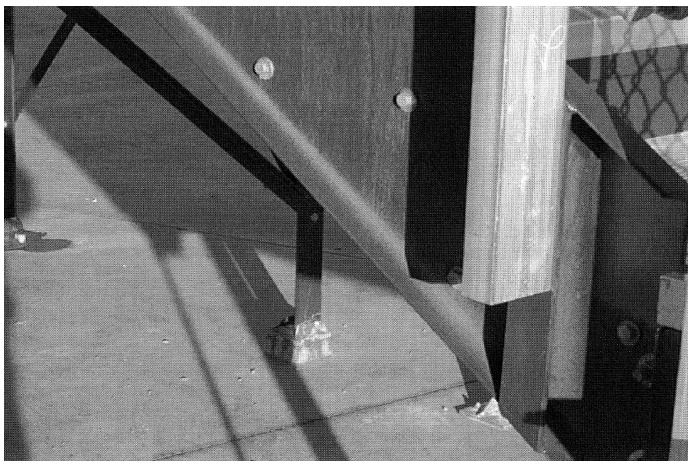
B. **Handling and Modification Damage** — This type of repair is needed when the powder is broken through to the raw substrate. The following are usually circumstances when this happens welding, torching, grinding, drilling, unloading trucks, and general material handling.

1. Surface Preparation — Surface must be clean, dry, and free of all dirt, dust, oil and any other contamination that would interfere with the adhesion of the touch-up paint. Sand to smooth out the wrinkled edges of the powder. Wipe area with cleaner solvent (MEK or Xylene). This is by far the mostimportant step to assuring good adhesion.
2. Primer — The primer (Rust Oleum Professional Primer pt. no. 7582838) coat should cover the entire prepared surface overlapping into the unaffected areas. Overlap into the unprepared area roughly 4 to 5 inches to give it a smooth consistent look and also to seal the entire area. Areas that don't show any visible damage and were not prepared should not be primed. Primer should be applied by spray can. Minimum of three coats need to be applied. Dry time between coats will vary depending on the weather. (See manufacturer's recommendations on label of can.)
3. Top Coat — Touch-up paint (supplied by Dant Clayton) should be applied as soon as the primer is dry. It is essential that the guidelines for the weather conditions in (8-A) be followed. Paint should be applied by brush. Minimum of two coats need to be applied. Dry time between coats will very depending on the weather. (See Manufacturers Recommendations).
4. Example of field modifications that were not touched-up after they were completed:



C. **Rust Blushing** — This type of repair is needed when the powder coating has a bleed through look. This type of defect is tricky to see due to staining on the part. The rust is showing up through the powder, but there is powder under it. This is usually seen in radiuses and tight comers such as the inside of the stool or a web in a beam. Surface preparation is important due to the fact that you don't want to damage the good powder coating although you need to remove the rust.

1. Surface Preparation — Surface must be clean, dry, and free of all dirt, dust, oil and any other contamination that would interfere with the adhesion of the touch-up paint. Lightly sand to remove the surface rust using a 3M-scotch brite pad (white #98) or 80 grit sand paper. Don't be to aggressive where you start to remove the powder coating. Don't expose any of the raw substrate. The powder coating that is left is much more durable than the touch-up paint. Wipe area with cleaner solvent (MEK or Xylene) and let dry. This is by far the most important step to assuring good adhesion.
2. Primer — The primer (Rust Oleum Professional Primer pf no. 7582838) coat should cover the entire prepared surface overlapping into the unaffected areas. Overlap into the unprepared area roughly 4 to 5 inches to give it a smooth consistent look and also to seal the entire area. Areas that don't show any visible damage and were not prepared should not be primed. Time between coats will vary depending on the weather. (See manufacturer's recommendations on label of can).
3. Top Coat — Touch-up paint (supplied by Dant Clayton) should be applied as soon as the primer is dry. It is essential that the guidelines for the weather conditions in (8-A) be followed. Paint should be applied by brush. Minimum of two coats need to be applied. Dry time between coats will very depending on the weather.
4. Example of surface rust blushing through the powder:



D. **Adhesion Failure** — This is when there is a problem with either the powder or the under substrate. This is when it is very brittle and peels away. This is not as often of a problem as (8-B and 8-C).

1. Surface Preparation — Surface must be clean, dry, and free of all dirt, dust, oil and any other contamination that would interfere with the adhesion of the touch-up paint. All loose powder coating must be stripped back till you locate coating that has good adhesion. Sand the exposed substrate to remove any signs of rust using a 3M-scotch brite pad (white #98) or 80 grit sand paper. Lightly sand the edges of the bonded coating to blend the touch-up with the powder coated surface. Wipe the exposed area with cleaner solvent (MEK or Xylene) to remove loose dirt and dust, and let dry. Wipe or brush on an iron phosphate product like A-Brite Steelcoat 1088. This is by far the most important step to assuring good adhesion.
2. Primer — The primer (Rust Oleum Professional Primer pt. no. 7582838) coat should cover the entire prepared surface overlapping into the unaffected areas. Overlap into the unprepared area roughly 4 to 5 inches to give it a smooth consistent look and also to seal the entire area. Areas that don't show any visible damage and were not prepared should not be primed. Primer should be applied by spray can. Minimum of two coats need to be applied. Dry time between coats will very depending on the weather. (See manufacturer's recommendations on label of can.)
3. Top Coat — Touch-up paint (supplied by Dant Clayton) should be applied as soon as the primer is dry. It is essential that the guidelines for the weather conditions in (8-A) be followed. Paint should be applied by brush. Minimum of two coats need to be applied. Dry time between coats will very depending on the weather.
4. Example of surface rust blushing through the powder:

E. **Recommended Touch-up Supplies** — The following list is what we feel you will have the best success with using to repair the different types of damage to the powder coating surface. Using equipment that is not recommended may cause more damage to the surface then can be repaired. Please remember this that the powder-coated surface that is on the part is much more durable then the touch-up paint. There may be special circumstances that the following equipment will not work for the particular job that you may be trying to fix. If this is the case, please feel free to contact with the Manufacturing Department and we can determine what is the best way to resolve the problem.

1. 3M Scotch Brite Pad — White # 98 — Great for surface preparation to remove rust blushing. Will remove the rust and doesn't damage the integrity of the powder-coated surface.
2. 3M Sanding Sponge — Medium Grit sponge works well in the radius of the beam.
3. 80 Grit Sand Paper — Good for removing rust that is on a damaged section to bare metal. Also works well on the powder coating that is wrinkled from being hit.
4. Jasco TSP Liquid Cleaner — One-step liquid concentrated cleaner for preparing the surface to be painted. This is needed when there is a large amount of repair work to be done.
5. Small Brass Wire Brush — Works well on the wrinkled edge of a damaged section. Can use this in tight areas such as the angle pieces of the stringers.
6. 1-Inch Paint Brush — Needed for the application of the topcoat.
7. Rust-Oleum Professional Primer pt. no. 7582838 (or equivalent) — Used for the priming of the prepared surface.
8. Water-Based Acrylic Enamel — Used for the topcoat. (Supplied by Dant Clayton).