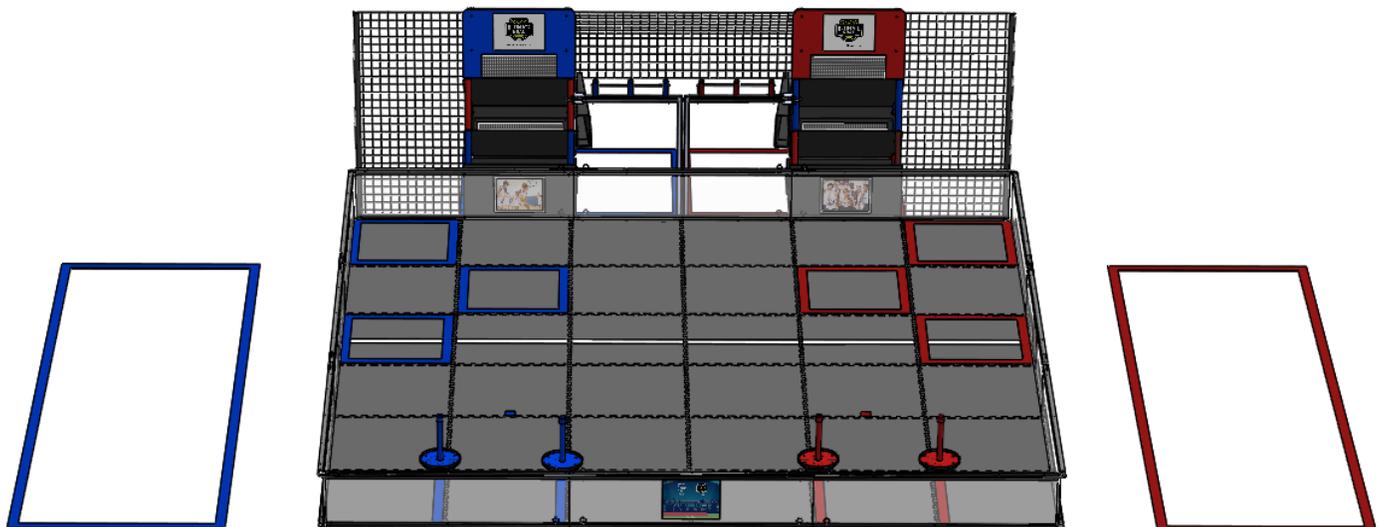




PRESENTED BY Qualcomm

2020-2021 *FIRST*® Tech Challenge Field Setup Guide

Rev 1.2



**This guide contains instructions for setting up the Field Elements for the
2020-2021 FIRST® Tech Challenge Game**

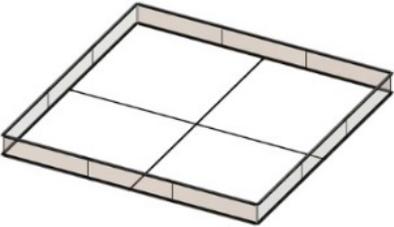
ULTIMATE GOALSM Presented by Qualcomm®

***Read through all the instructions and take a parts inventory before
you begin to assemble and setup the game elements!***

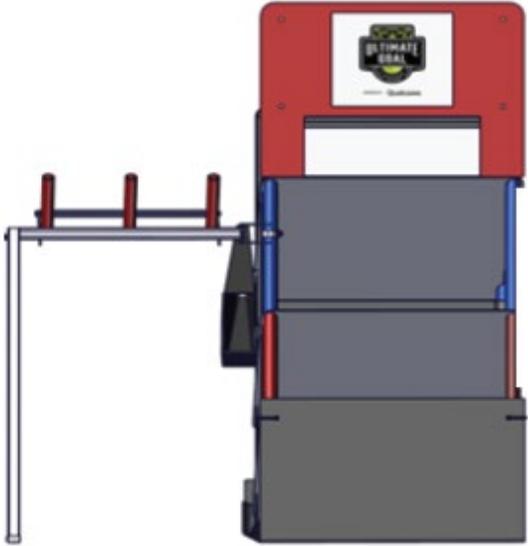
REVISION HISTORY		
Rev.	Date	Description
1.0	8/26/20	Initial Release
1.1	9/1/20	Added dimensions for vision images
1.2	9/4/20	Added pics of navigation image placement

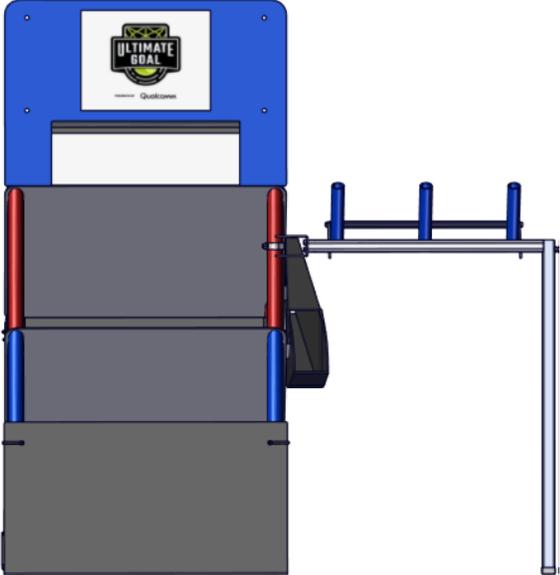
TOOLS NEEDED		
Component	QTY	Part Photo
Safety Equipment	As Needed	
Utility Knife	1	
File	1	
Scissors	1	
Diagonal Cutters	1	
Tape Measure	1	
Color Printer	1	

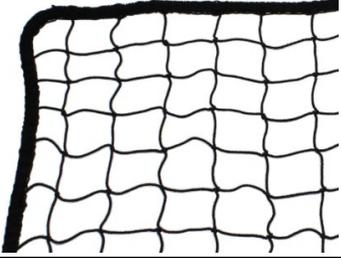
FULL FIELD REQUIREMENTS

Component	Part #	QTY	Part Photo
FIRST Tech Challenge Field Perimeter	am-0481b or similar	1	
5/8" Gray Soft Tiles	am-2499 or similar	36	

Competition Field Components

Component	Part #	QTY	Part Photo
Red Tower Goal with Power Shot	See Field Assembly Guide for assembly instructions.	1	

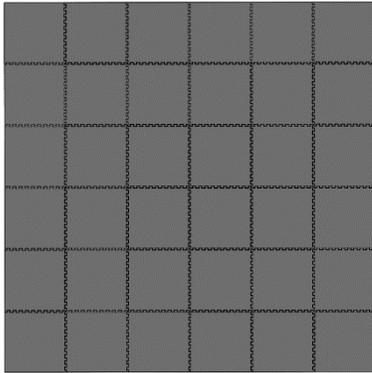
<p>Blue Tower Goal with Power Shot</p>	<p>See Field Assembly Guide for assembly instructions.</p>	<p>1</p>	
<p>Blue Wobble Goal</p>	<p>See Field Assembly Guide for assembly instructions.</p>	<p>2</p>	
<p>Red Wobble Goal</p>	<p>See Field Assembly Guide for assembly instructions.</p>	<p>2</p>	

Side Net	am-4292	3	
Side Net Pipe	am-4337	2	
Side Net Lower Clip	am-4275	2	
Side Net Cable Ties	am-1552	20	
Game Piece	am-4300	20	
2" "Red" Gaffers Tape	am-2946	as needed	
2" "Electric Blue" Gaffers Tape	am-2947	as needed	

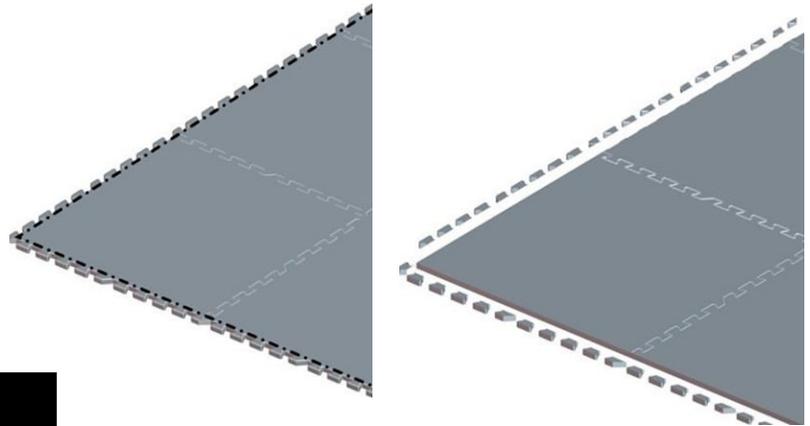
2" "White" Gaffers Tape	am-2945	as needed	
Cardstock for Navigation Image (Printed from FIRST Resource Library)	White 8.5x11" or A4 (international)	10	
Velcro® Dots	Roughly 3/4" diameter or larger	1 pack	
Clear Page Protection Sleeves	Similar to Staples P/N 40713	7	

Part 1: Setting up the Floor and Field Perimeter

Step 1-1: Lay the tiles with the *smooth* surface facing up in a 6x6 grid pattern.



Step 1-2: Critical Mandatory Step: Trim all outer tabs from the 20 Soft Tiles on the outside edges of the field.

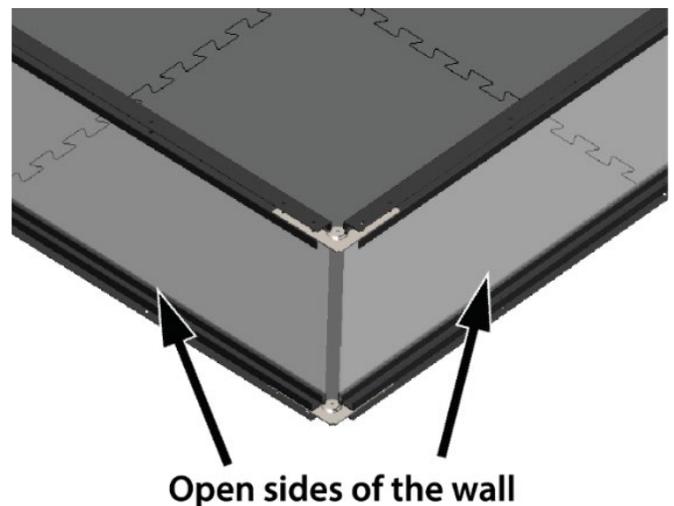
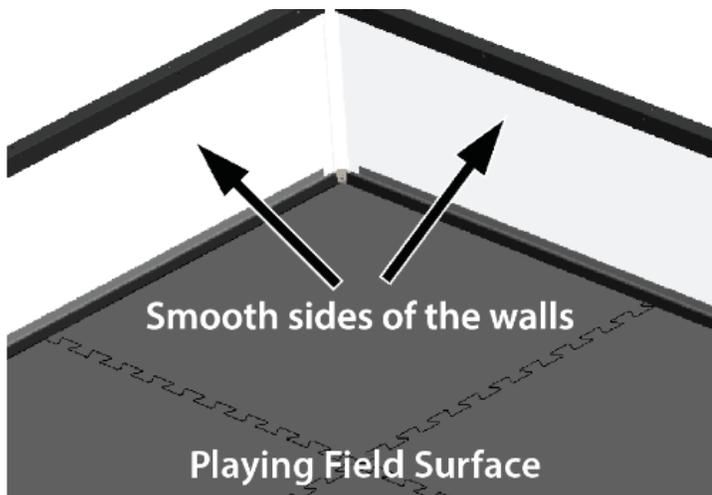


NOTE: Lay the tiles out and mark the outer edge to be cut. Use a sharp utility knife and a straight edge or a band saw (if available) to get a smooth clean edge.

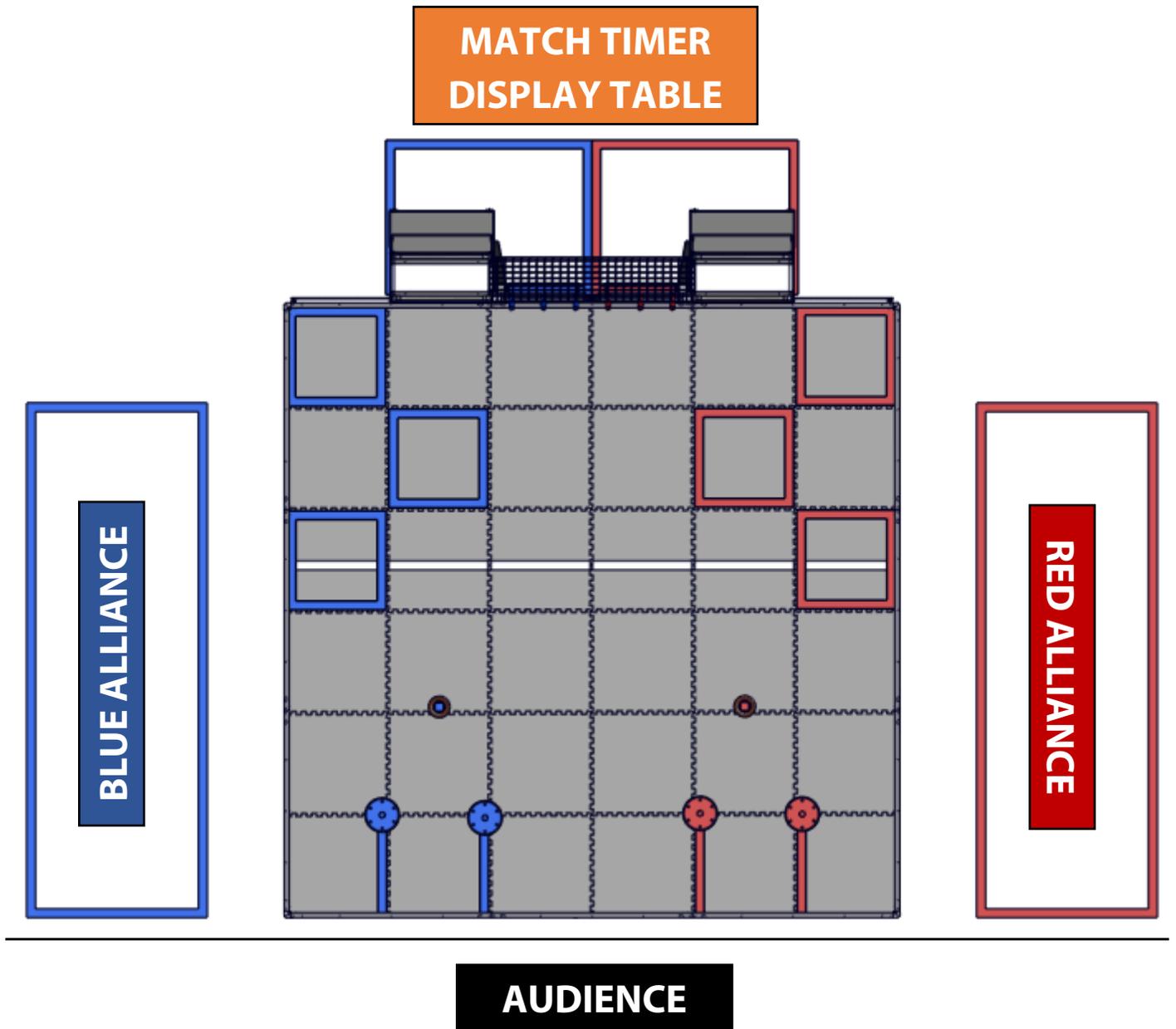
NOTE: If using the AndyMark Field Perimeter, ensure that straps are installed to keep walls in place during game play.

Step 1-3: Note that there are several *FIRST* Tech Challenge Perimeter wall designs. The wall designs fall into two categories. The smooth/non-cavity sides should face towards the inside of the Playing Field as shown in the illustration.

Perimeter	Wall Design Categories	Wall Height
AndyMark (current)	Smooth on one side and an open cavity on the other side	12.125"
IFI Perimeter	Smooth on one side and an open cavity on the other side	11.5"
Logo Loc Perimeter	Symmetrical inside and outside surfaces	12.375"

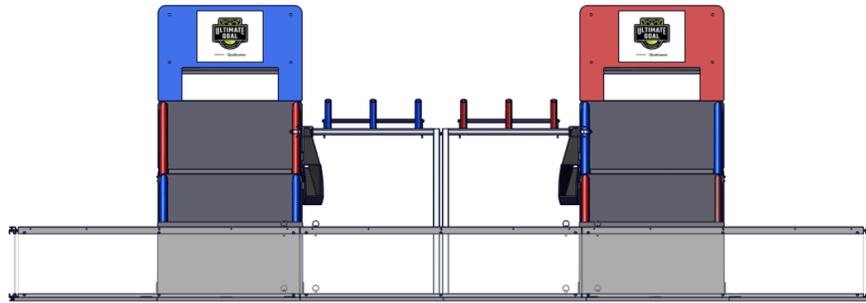


Part 2: General Layout and Orientation



Part 3: Tower Goal Placement

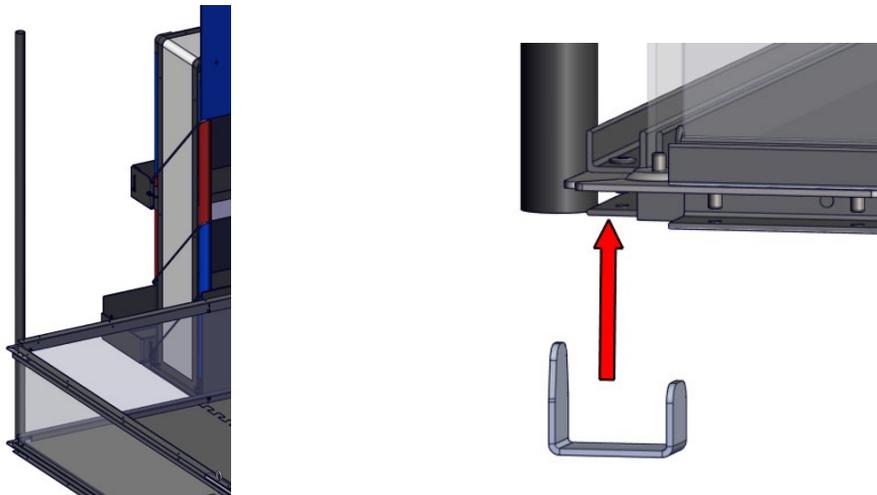
On the official playing field, the Blue and Red Tower Goals are located outside the perimeter wall opposite the audience. The two Power Shot Assemblies meet at the center of the rear perimeter wall. Both Power Shot Assemblies and Return Racks should be on the side of the Tower Goal closest to the center.



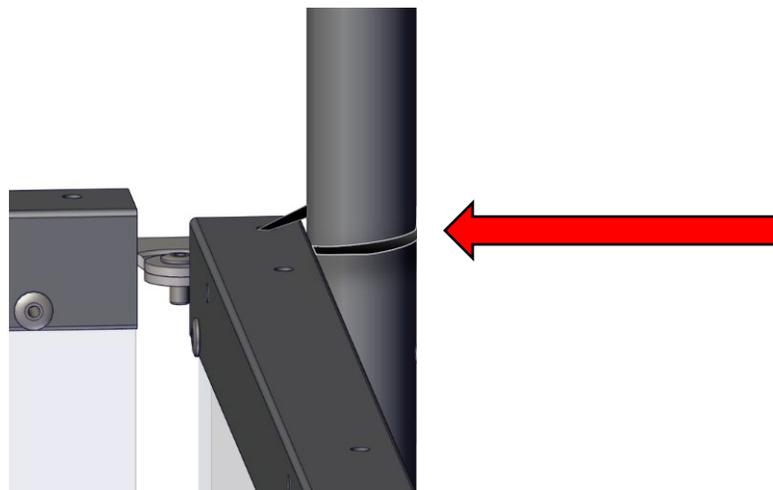
Protective Net Installation

Each field requires two net poles and clips, and 3 Side Nets.

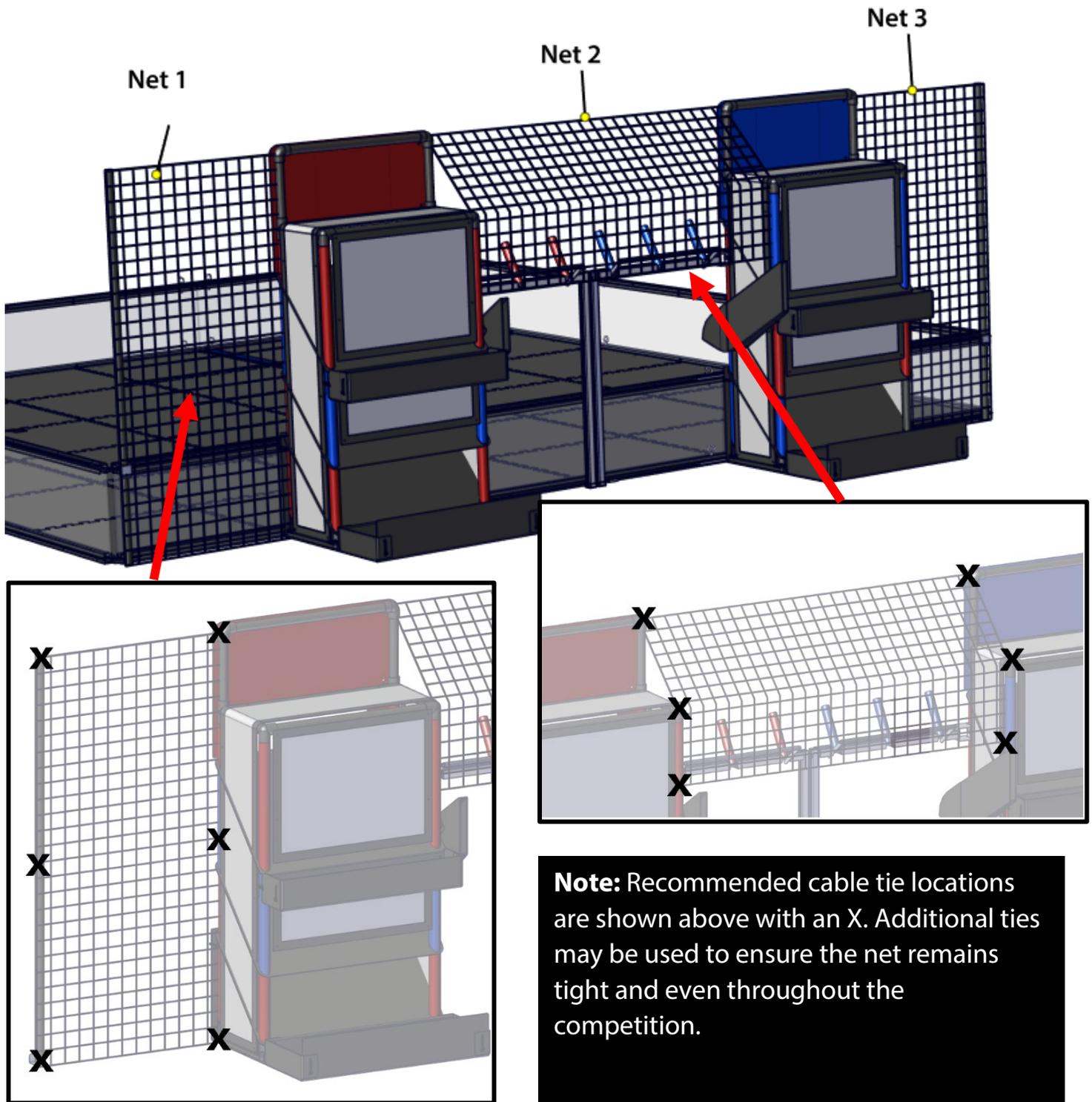
Attach two poles on the far corner of the field. The Net Clip sits under the field perimeter and the long end will go inside the pole.



Use a cable tie to secure each pole to the top rail.



Use cable ties to secure each of the 3 nets to the poles and Tower Goal Structure. The net should be tight and not allow Rings to pass through any gaps.

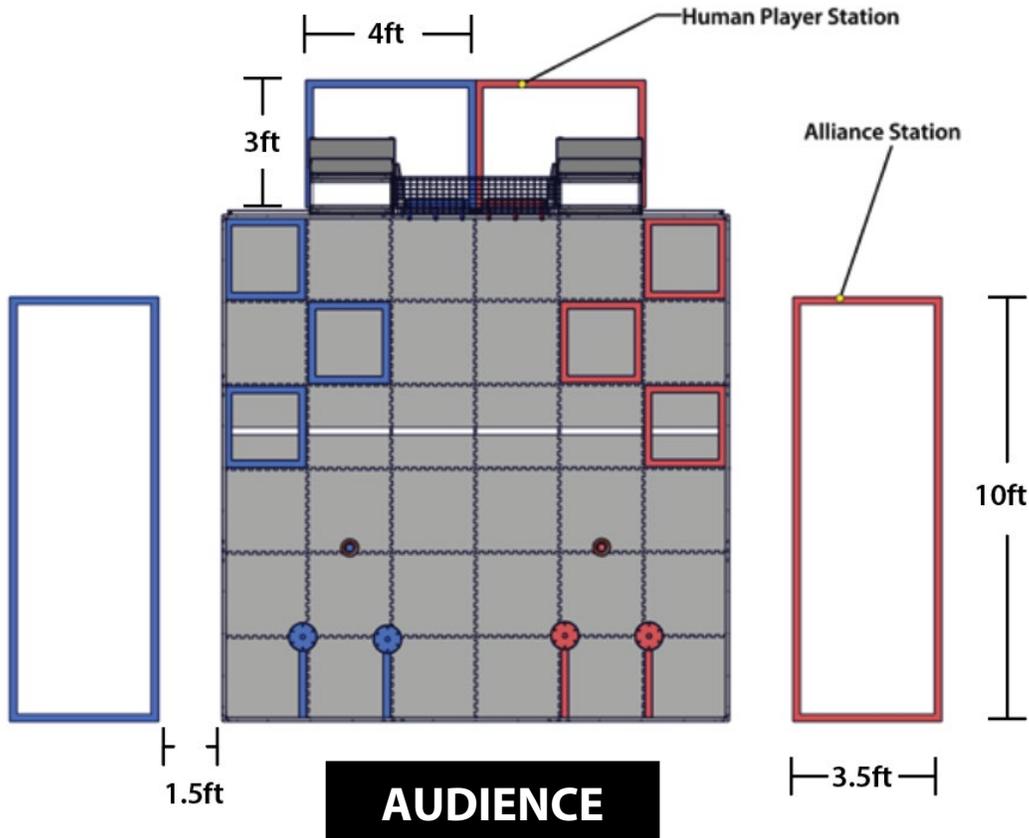


Part 4: Tape Lines

Tape lines for the field are as shown. There is also a need for a Referee Question Box close to the field area.

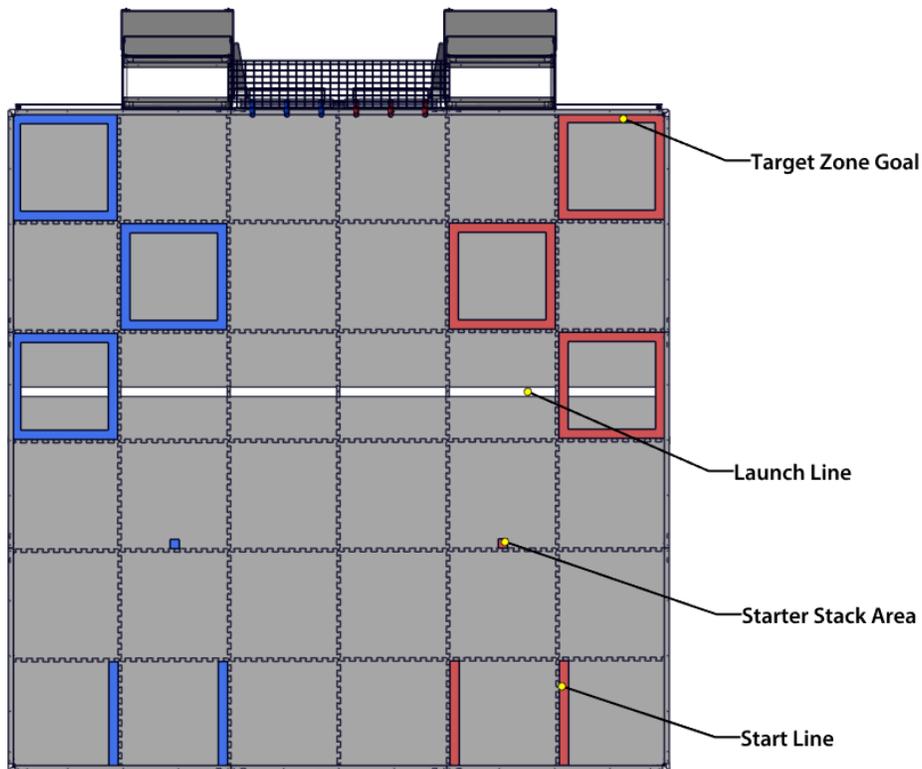
Drivers & Human Player Stations

Drivers Stations are 10ft wide x 3.5ft deep and the Human Player Stations are 4ft wide by 3ft deep. When viewed from the audience, the Blue Driver Station and the Blue Human Player Station are on the left side. The Driver Stations are located 1.5ft (18 inches) away from the field perimeter and the Human Player Station is directly behind the Tower Goal.



On-Field Lines

All lines on and around the field are made with 2" wide white, red or blue Gaffers Tape.

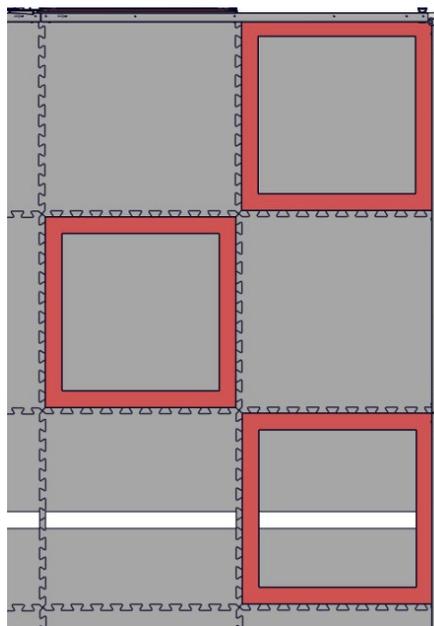


Launch Line

The Launch Line is a 2" wide white gaffers tape line extending from the Blue Alliance wall to the Red Alliance wall. The line can be a continuous line or have breaks at each tile section. The front edge of the Launch Line should measure approximately 80" to the Audience Perimeter Wall

Target Zone Goals

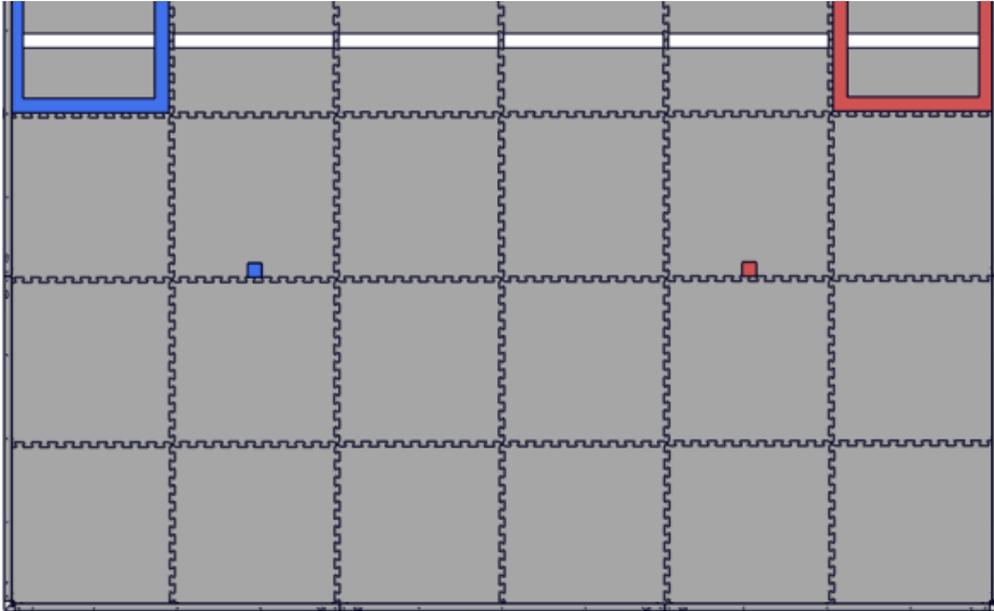
The Target Zone Goals are approximately 22.75" by 22.75" square areas of the field marked by 2" wide Red or Blue Gaffers tape on the inside edge of the tile square. Red squares are closest to the Red Alliance and Blue squares are closest to the Blue Alliance.



Starter Stack Areas

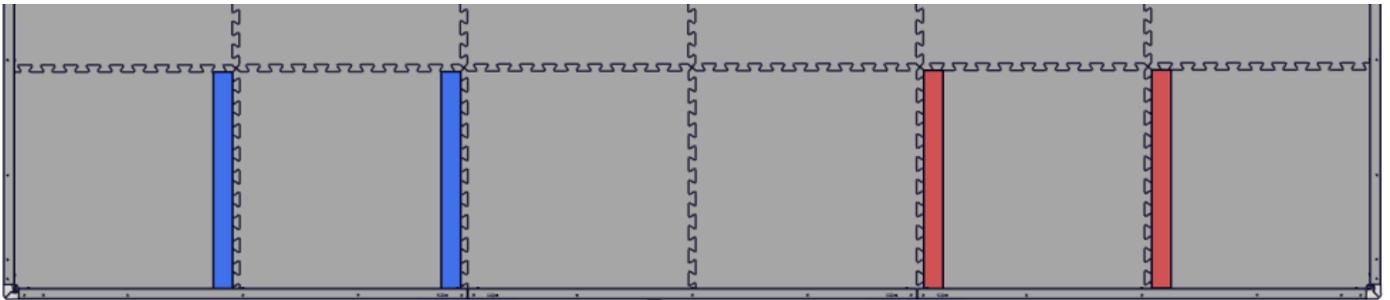
The starter stack areas are to be marked with an approximately 2x2" square piece of Red or Blue Gaffers Tape.

The markers are located on the front edge of the tile in the 3rd row back and 2nd column from the side wall. The marker is centered on the tile. The Red marker will be located on the side closest to the Red Alliance Station and the Blue marker will be located closest to the Blue Alliance Station.



Start Line

The Start Lines are approximately 22.75" long marked by 2" wide Red or Blue Gaffers tape on the edge of the perimeter square. Red lines are placed on the inside tile edges closest to the Red Alliance and Blue lines are placed on the inside tile edges closest to the Blue Alliance.



Referee Question Box

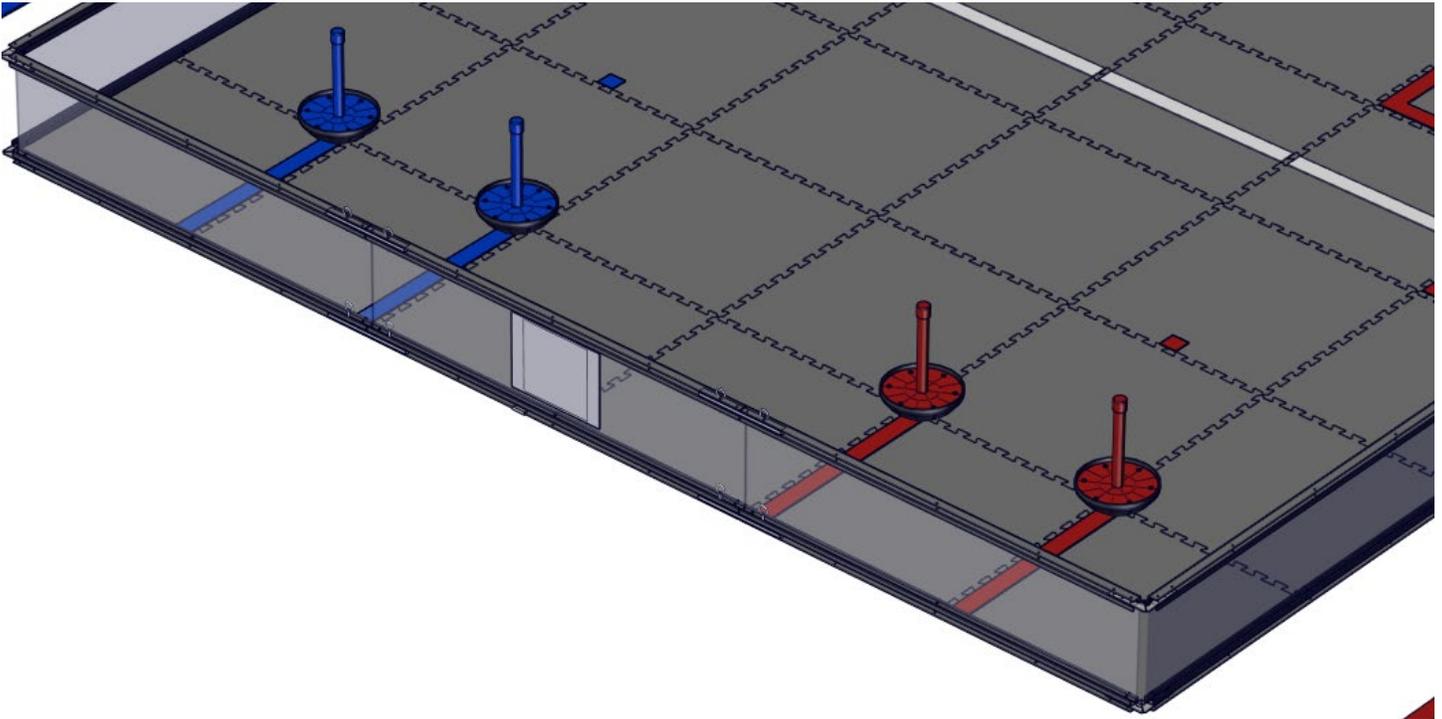


The Referee Question Box is a place where Teams can ask questions of the Referees after a Match.

The Referee Question Box must be placed in the Competition Area in a location where it will not interfere with the current running Matches, but close enough that the Referees will be able to see a student waiting at the Question Box. The Question Box can be as simple as a 3ft Gaffers Tape square on the floor.

Part 5: Wobble Goal Placement

For pre-match setup, the Wobble Goals are placed on the field as shown. Each goal will be located at the end of a Start Line.



Part 6: Navigation Image Placement

Step 6-1: Download the Navigation Image file, along with ULTIMATE GOAL logo template. found on the *FIRST* Tech Challenge Game and Season Info Page: <https://www.firstinspires.org/resource-library/ftc/game-and-season-info>



Step 6-3: Place the navigation images in the plastic sleeves. The image with the logos will face outward, while the navigation target image will face inward.



Step 6-2: Print the downloaded images in color, not greyscale, on 8.5x11" or A4 White Cardstock. The Print resolution must be at least 300DPI.



Step 6-4: Use Velcro dots in the top corners of the navigation target to secure to the field perimeter.



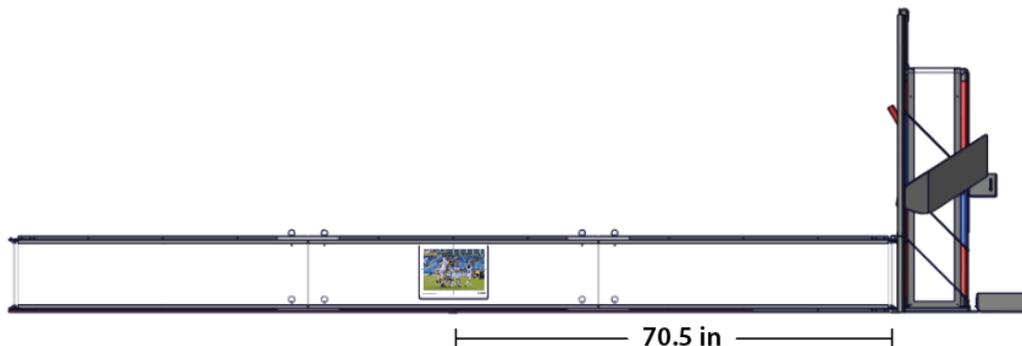
Step 6-5: There are 5 Navigation Images are placed around the field as shown. Each image has lines around the edge indicating vertical and horizontal center. Each image also has text with its placement location. The Front and Side images will have a Game Changers graphic on the reverse side.



Step 6-6: The field perimeter should measure approximately 141 inches from inside wall to inside wall. Navigation Images should always be placed as follows:

Images on the Sides Walls

- The Navigation Image vertical center line should be centered on the field perimeter approximately 70.5 inches from the inside face of the far wall.



- The Navigation Image horizontal center line should measure 6.375 inches to the floor (5.75 inches from the top of the tile).

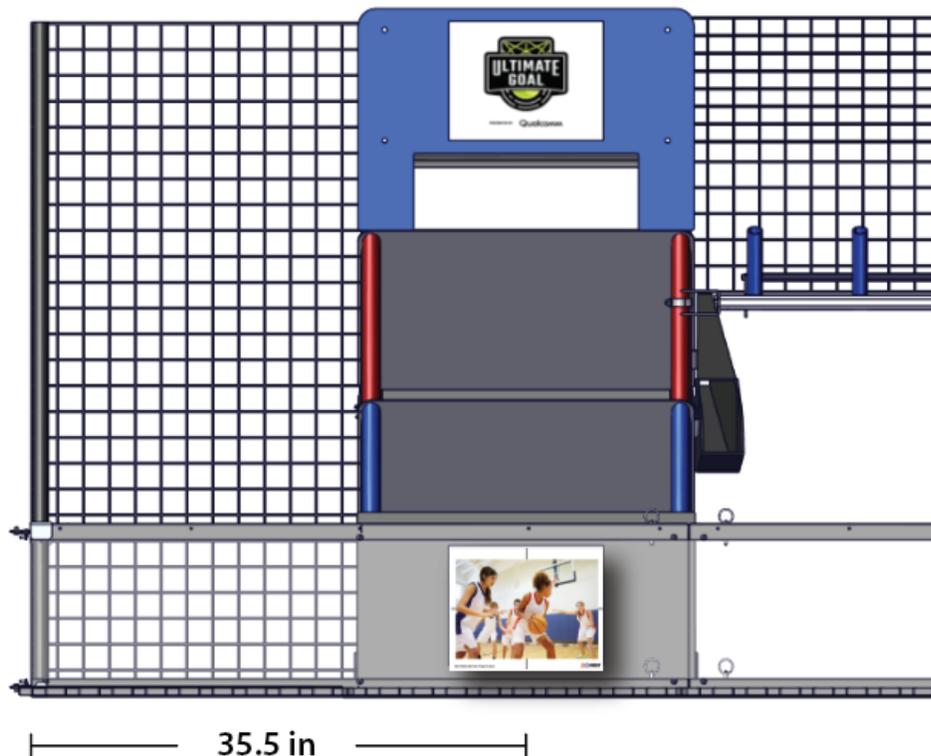


Images on the Tower Goal

- Images are placed in sleeves directly on the front face of the Tower Goal.
- The Navigation Image vertical center line should be centered on the Tower Goal approximately 12 inches from the edge of the front flap of the Corral
- The Navigation Image horizontal center line measure 6.375 inches to the floor.

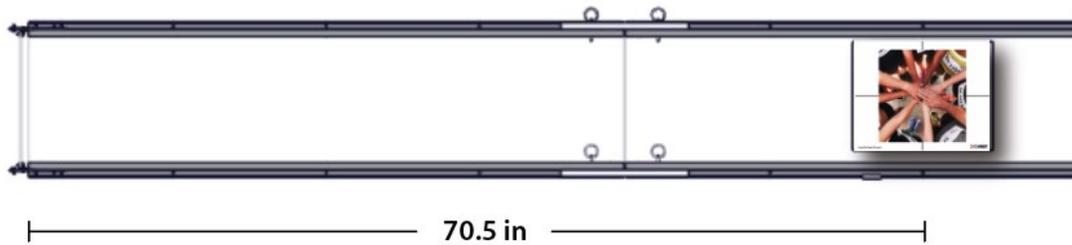


- The Navigation Image vertical center line should measure approximately 35.5" to the inside of the side wall.



Images on the Audience Wall

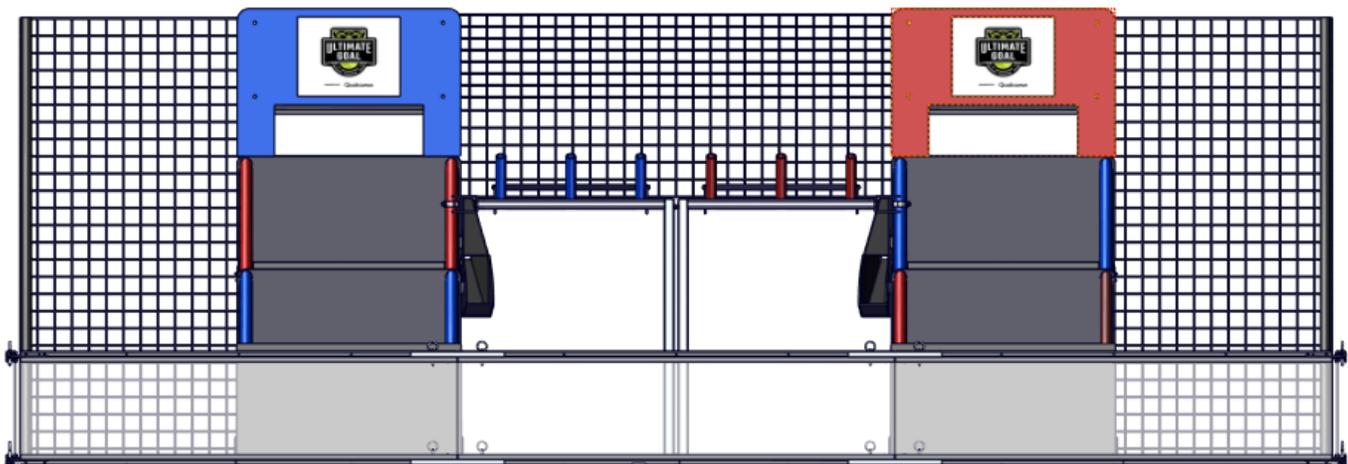
- The Navigation Image vertical center line should be centered on the field perimeter approximately 70.5 inches from the driver station wall.



- The Navigation Image horizontal center line measure 6.375 inches to the floor.

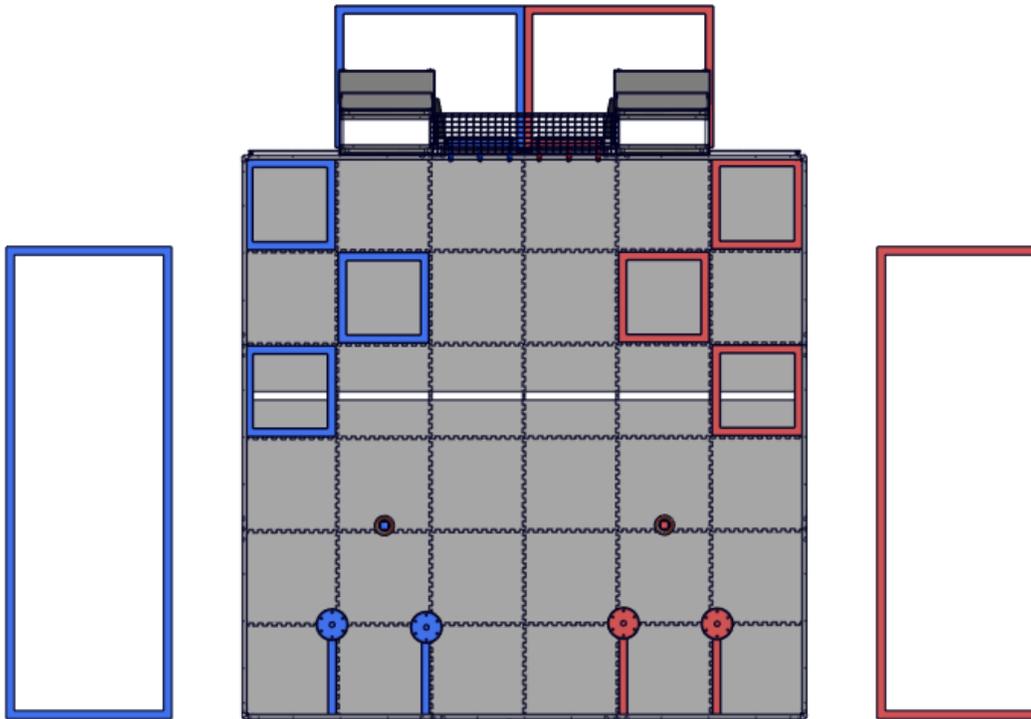


Step 6-7: The game logo is placed centered both horizontally and vertically at the Top of each Tower Goal.



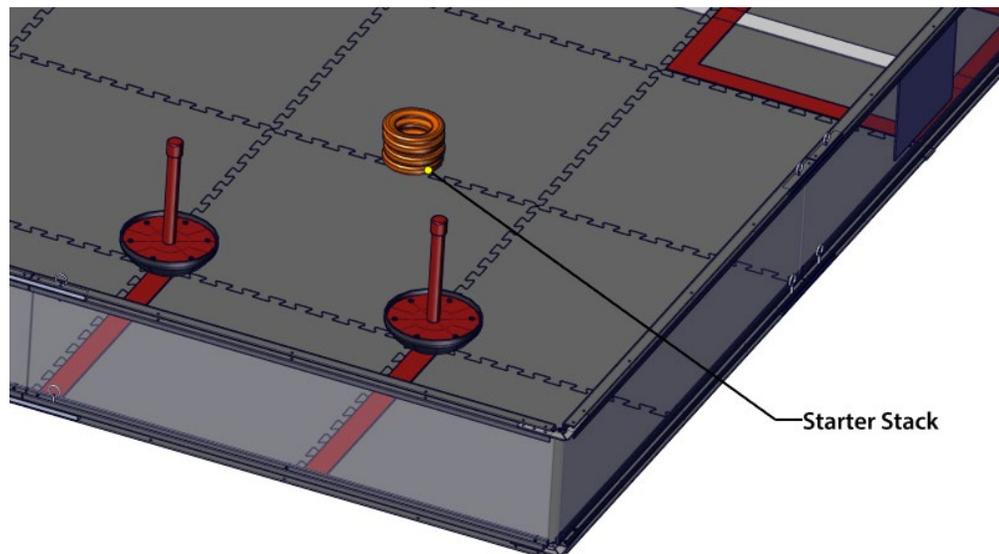
Part 7: Game Piece Placement

Prior to the start of the match, there are 8 rings on the field. 4 Rings start in each "Starter Stack Area". 4 stacks of 3 Rings are located off the field lined up with each start line.



Starter Stack Area

4 Rings are placed on the Starter Stack indicators on the field. After Randomization, any unused rings get placed in the Low Goal of the respective Alliance Tower Goal.



Off-field Stacks

Stacks of 3 Rings are located off the field lined up with each start line.

