

# Appendix A – Field Overview and Specifications



## Game Field Introduction

This document will provide BOM information and detailed specifications for the Official Competition Field.

Teams who do not need an “official” field should refer to the separate low-cost field guide for cost-reduction options. Teams assembling the full field should refer to the separate VEX Robotics Competition Tipping Point Field Build Instructions.

Please note: this field utilizes the VEX Competition Field Perimeter (278-1501) developed by VEX Robotics. Instructions and specifications for this field perimeter are available in a separate document and are important for the field assembly.

This document is divided up into three sections:

1. Field Overview
2. Field Bill of Materials
3. Field Specifications

There is also an accompanying STEP file which can be imported into most 3D modeling programs (i.e. Inventor, Sketchup, Solidworks, etc). This 3D model shows the “official” setup of a VEX Robotics Competition – Tipping Point competition field, as well as detailed models of individual field elements.

For additional game-play detail, please refer to the VEX Robotics Competition – Tipping Point competition manual.

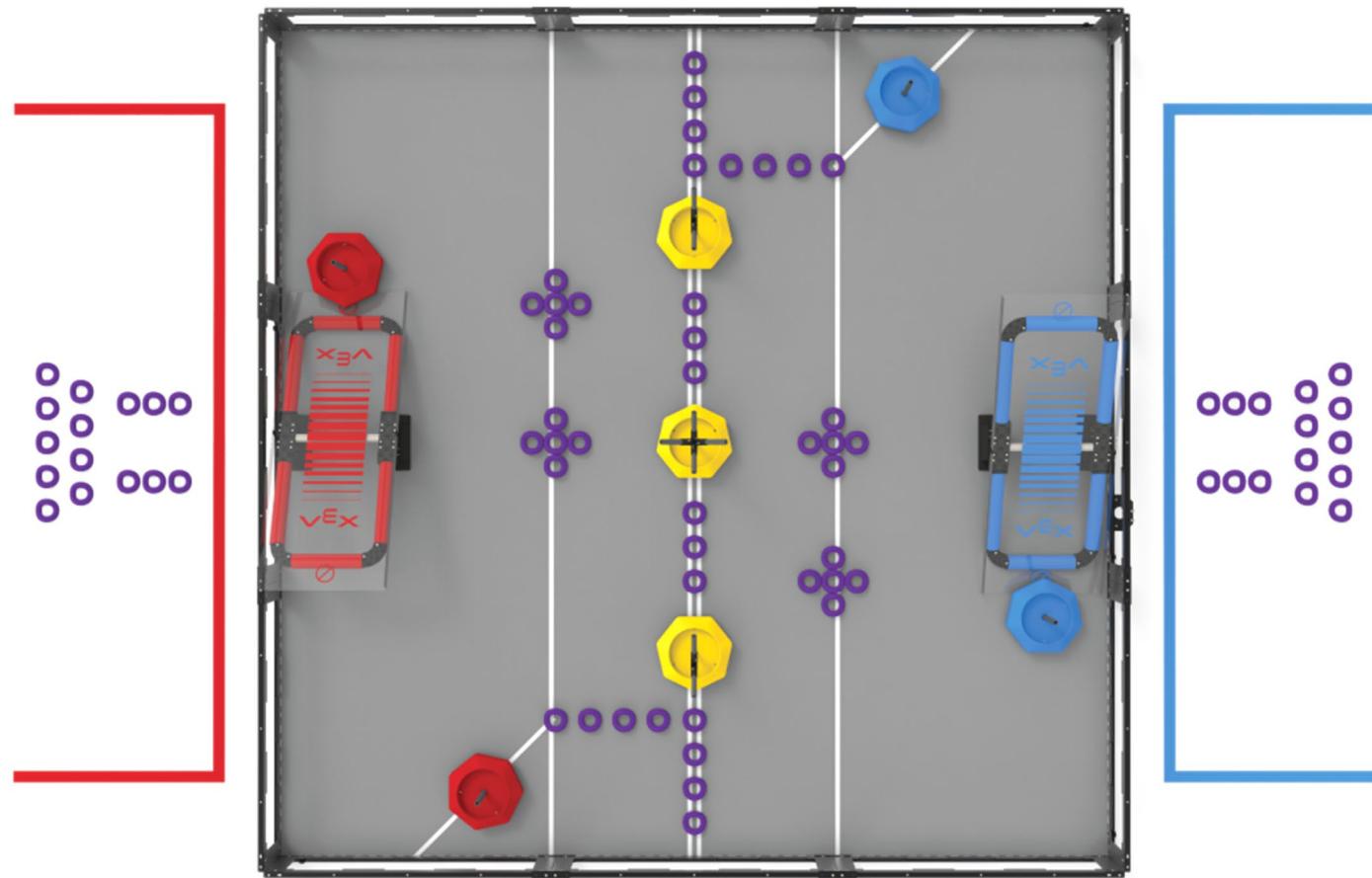
For more information on reducing costs on unofficial field construction, refer to the accompanying “Low Cost Field” section located online at [vexrobotics.com](http://vexrobotics.com).

## VEX Robotics Competition Tipping Point – Appendix A

### Field Overview

The game VEX Robotics Competition – Tipping Point is played on a 12ft x 12ft foam mat, surrounded by a sheet metal and polycarbonate perimeter, and divided into thirds by tape lines. The VRC Tipping Point field consists of 72 *Rings* and 7 *Mobile Goals*. Each *Alliance* has 2 *Alliance Mobile Goals*, with the remaining three Goals being Neutral. Each *Alliance* also has a *Platform* located in their *Home Zone*.

For more details and specific gameplay rules, please refer to the [VEX Robotics Competition – Tipping Point Game Manual](#).



## VEX Robotics Competition Tipping Point – Appendix A

### Game Objects & Field Bill of Materials

All of these items are available for purchase from: [www.vexrobotics.com](http://www.vexrobotics.com).

#### Generic Field Elements – Reusable Each Year

Part Number	Description
278-1501	VRC Field Perimeter Frame & Hardware
276-6905	VRC Anti-Static Field Tiles (18-pack)
275-1401	VRC VEXnet Field Controller

#### Official VEX Robotics Competition – Tipping Point Specific Elements

Part Number	Description	Quantity per Full Field
276-7048	VRC 2021-2022 Full Field & Game Element Kit	
276-7049	VRC 2021-2022 Game Element Kit	1
276-7051	VRC 2021-2022 Field Element Kit 1	1
276-7052	VRC 2021-2022 Field Element Kit 2	1

#### Practice Elements

Part Number	Description
276-7049	VRC 2021-2022 Game Element Kit
276-7188	VRC 2021-2022 Scoring Element Kit

## VEX Robotics Competition Tipping Point – Appendix A

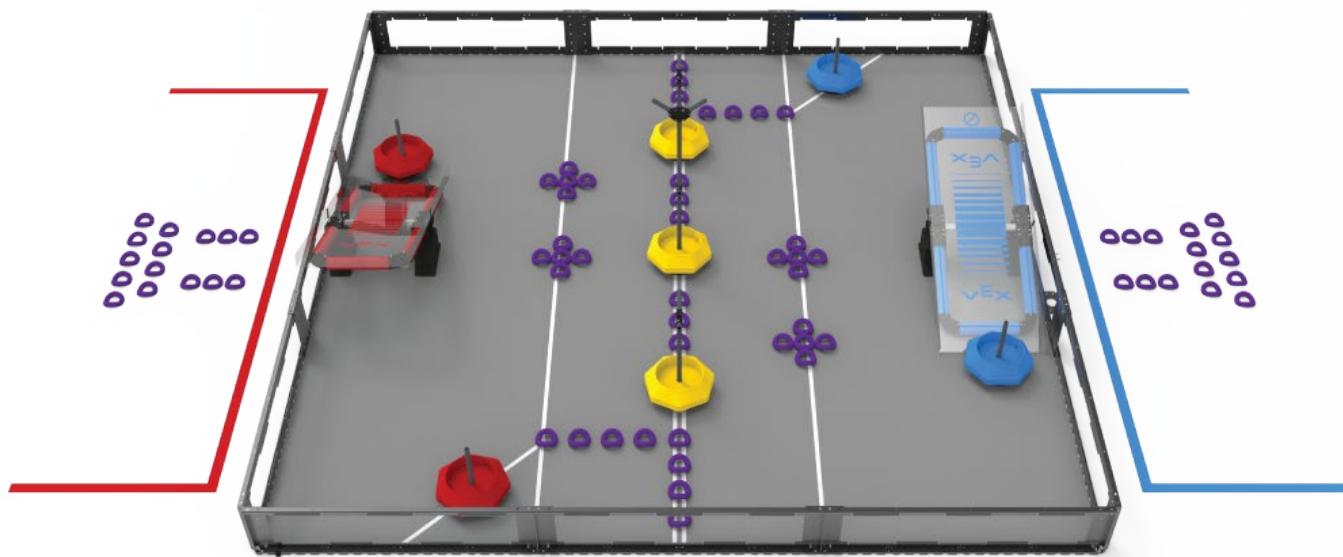
### Field Specifications Introduction

This section will outline the specifications that are most important to teams designing a robot to compete in the VEX Robotics Competition – Tipping Point. Though many of the critical dimensions are included in this section, it may be necessary to consult the separate assembly guide and 3D CAD models of the field for an additional level of detail. If you can't find a dimension in the specifications, we include a full model of the field to "virtually" measure whatever dimension is necessary.

Field components may vary slightly from event to event. This is to be expected; teams will need to adapt accordingly. It is good design practice to create mechanisms capable of accommodating variances in the field and game pieces.

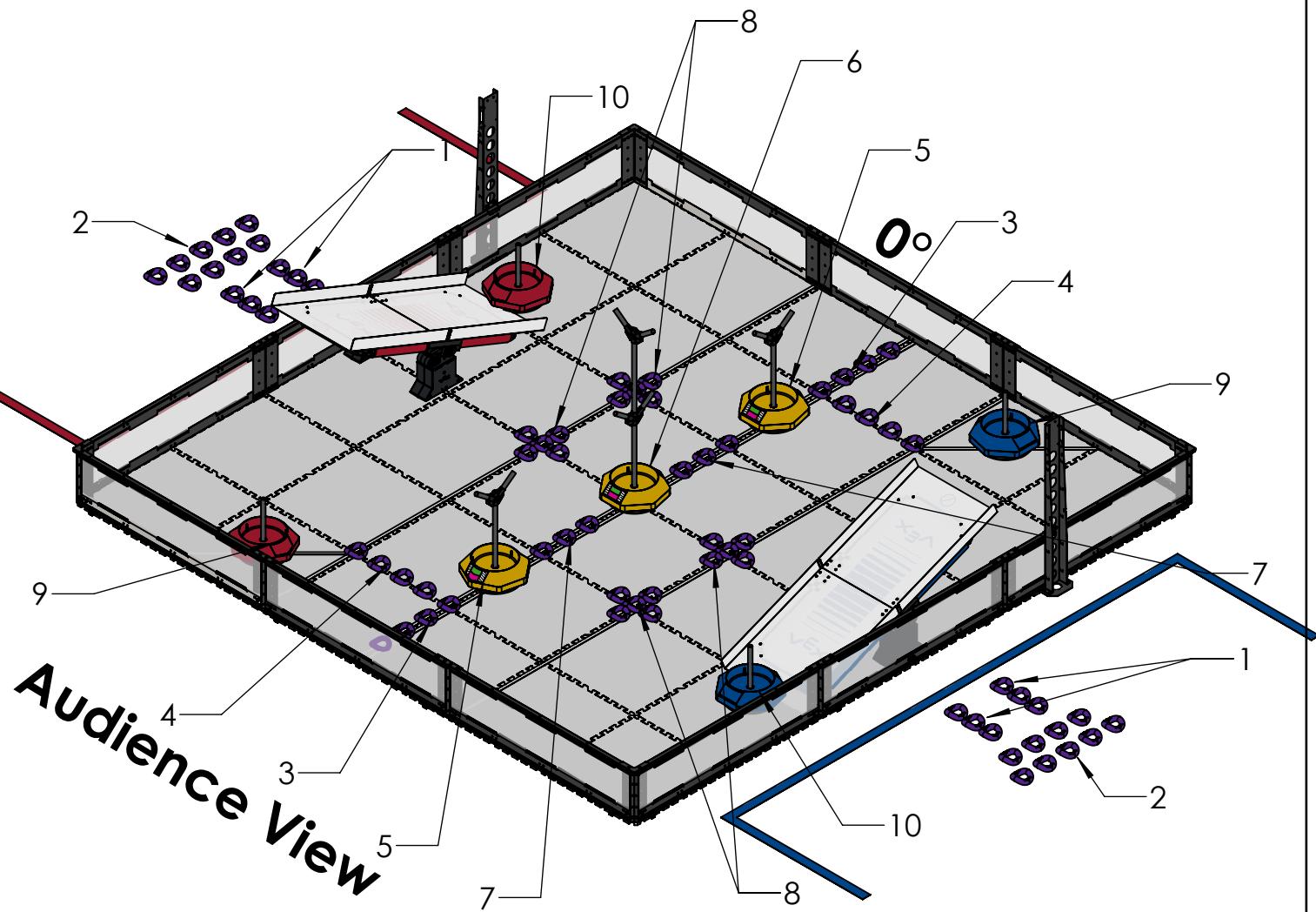
Note: Minor field repairs are permissible, provided that the repairs do not affect gameplay.

Examples of minor field repairs include (but are not limited to) replacing broken PVC pipes or taping cracked plastic. Be sure to check the [Official Q&A](#) for specific examples or to get an official clarification.



## Scoring Objects are placed as follows before the start of each Match:

1. (3x) Rings for Preload into each Robot
2. (9x) Rings outside the field for Alliance Match Loads
3. (4x) Rings placed in a row on the Autonomous Line starting near the field wall
4. (4x) Rings placed in a row between the AWP Line and last Ring in the row of (3)
5. (1x) Short Yellow Mobile Goal centered on the Autonomous Line and the center of the 2nd tile from the wall
6. (1x) Tall Yellow Mobile Goal centered on the middle tile junction
7. (3x) Rings placed in a row on the Autonomous Line between the Tall Yellow Mobile Goal and the Short Yellow Mobile Goal
8. (5x) Rings placed in a plus (+) pattern centered on a tile junction adjacent to the Neutral Zone tape line
9. (1x) Alliance colored Mobile Goal centered on the AWP Line
10. (1x) Alliance colored Mobile Goal centered on the edge of the Alliance Platform holding the Platform in a non-Balanced orientation

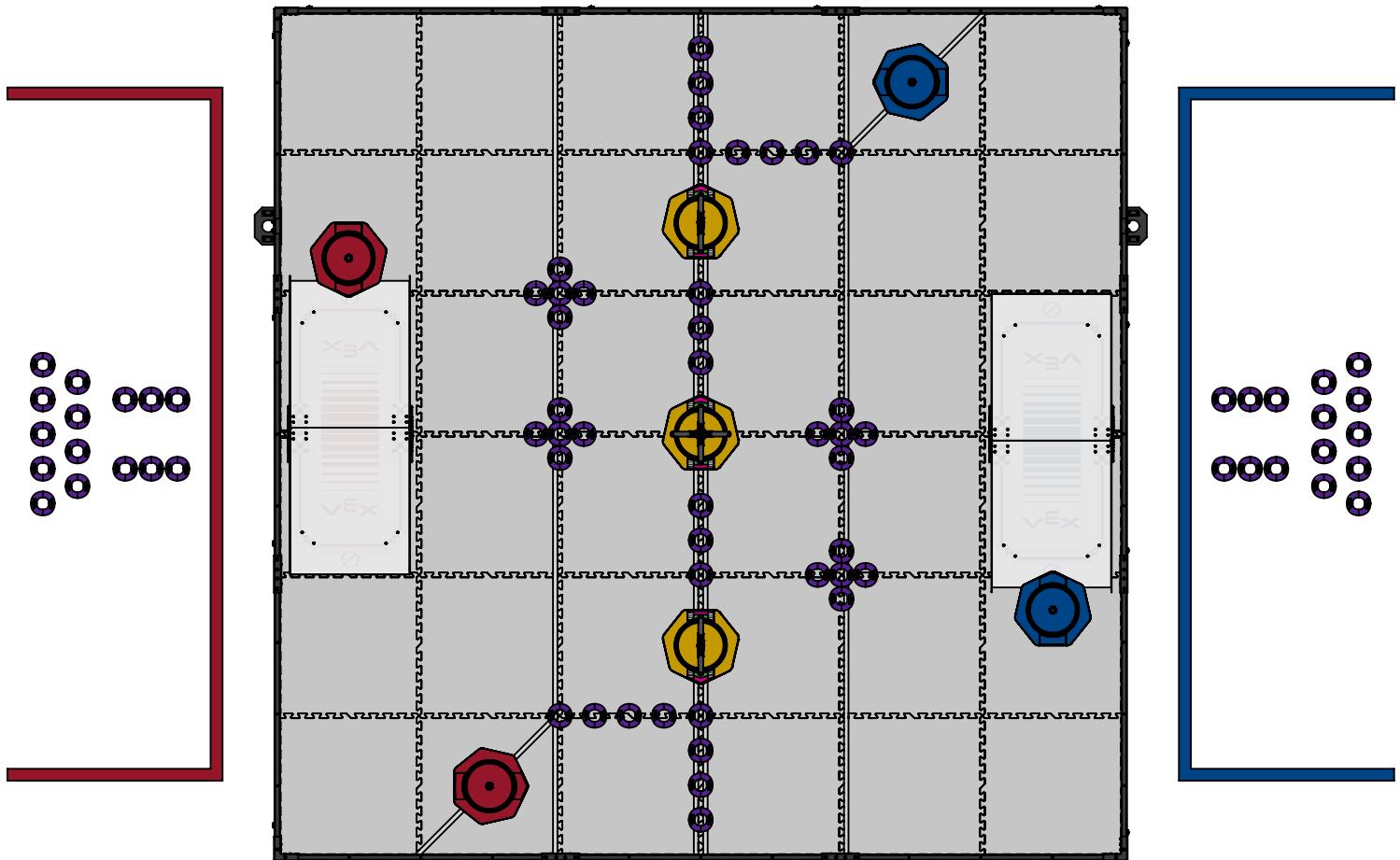


<b>VEX</b> <b>ROBOTICS</b> <b>COMPETITION</b>	Description	2021-2022 Game Object Placement	
	Dwg No	276-7048-000 Field Specifications	
	Competition	VRC 2021-2022	Sheet 1 of 13
	Release	12/6/2021	ALL DIMENSIONS ARE IN INCHES.
		<a href="http://www.VEXROBOTICS.COM">www.VEXROBOTICS.COM</a>	

## Reference Object Placement Image:

Note: Mobile Goal orientation is specifically defined as shown in this figure. This is the only acceptable orientation, and takes precedent over any other materials released prior to December 2021. See rule <G19> for more details.

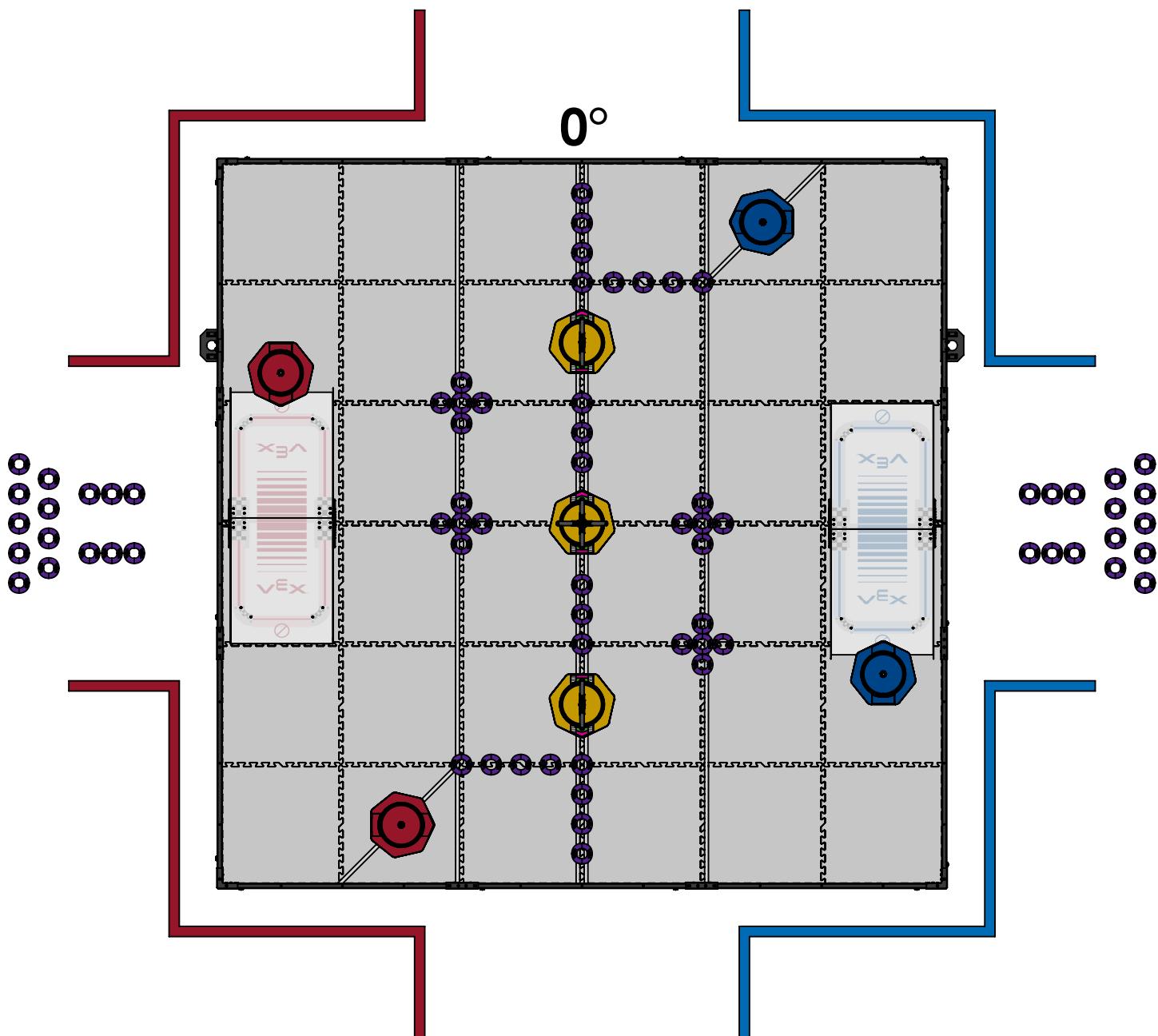
0°



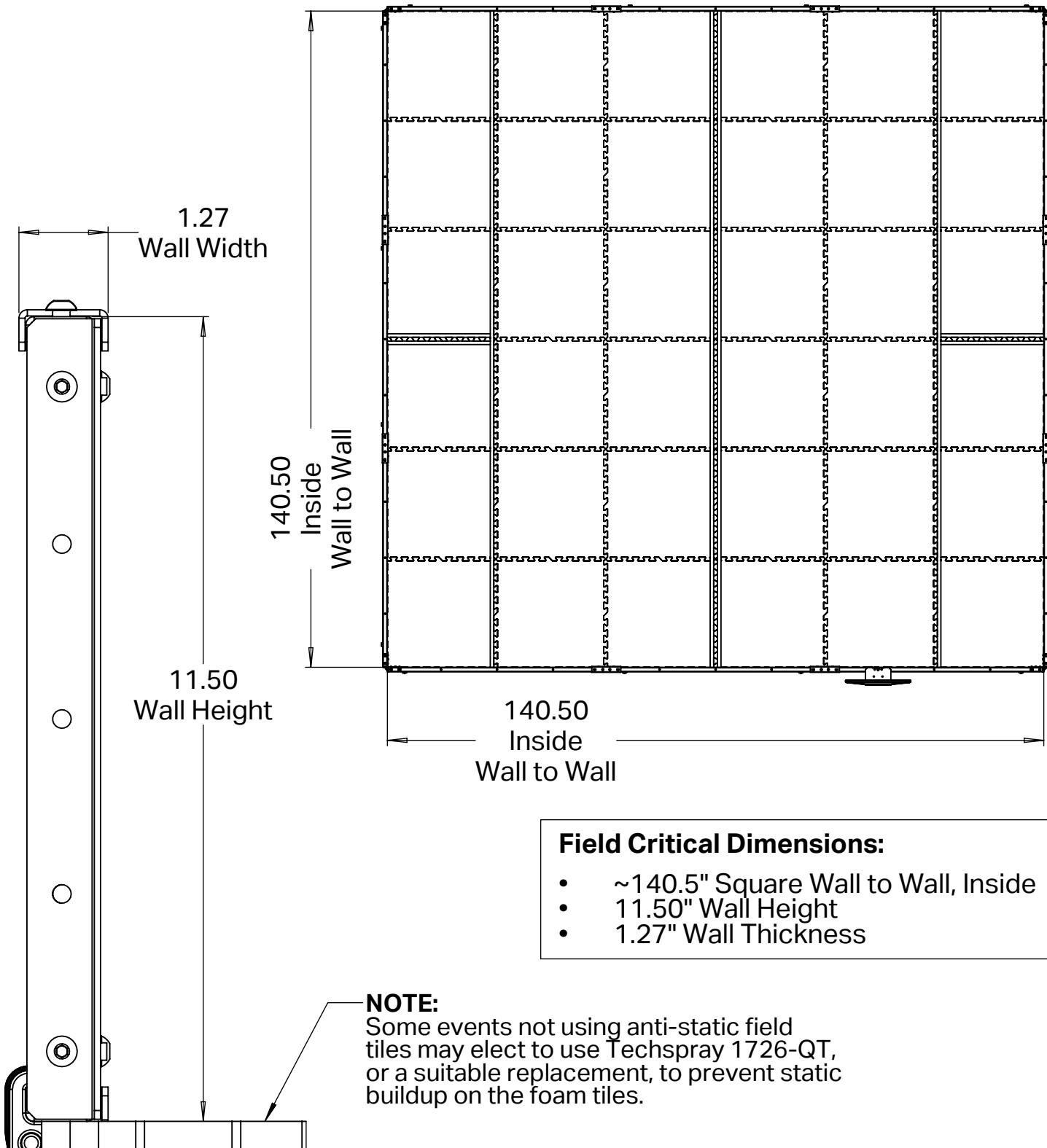
Audience View

## Reference Object Placement Image:

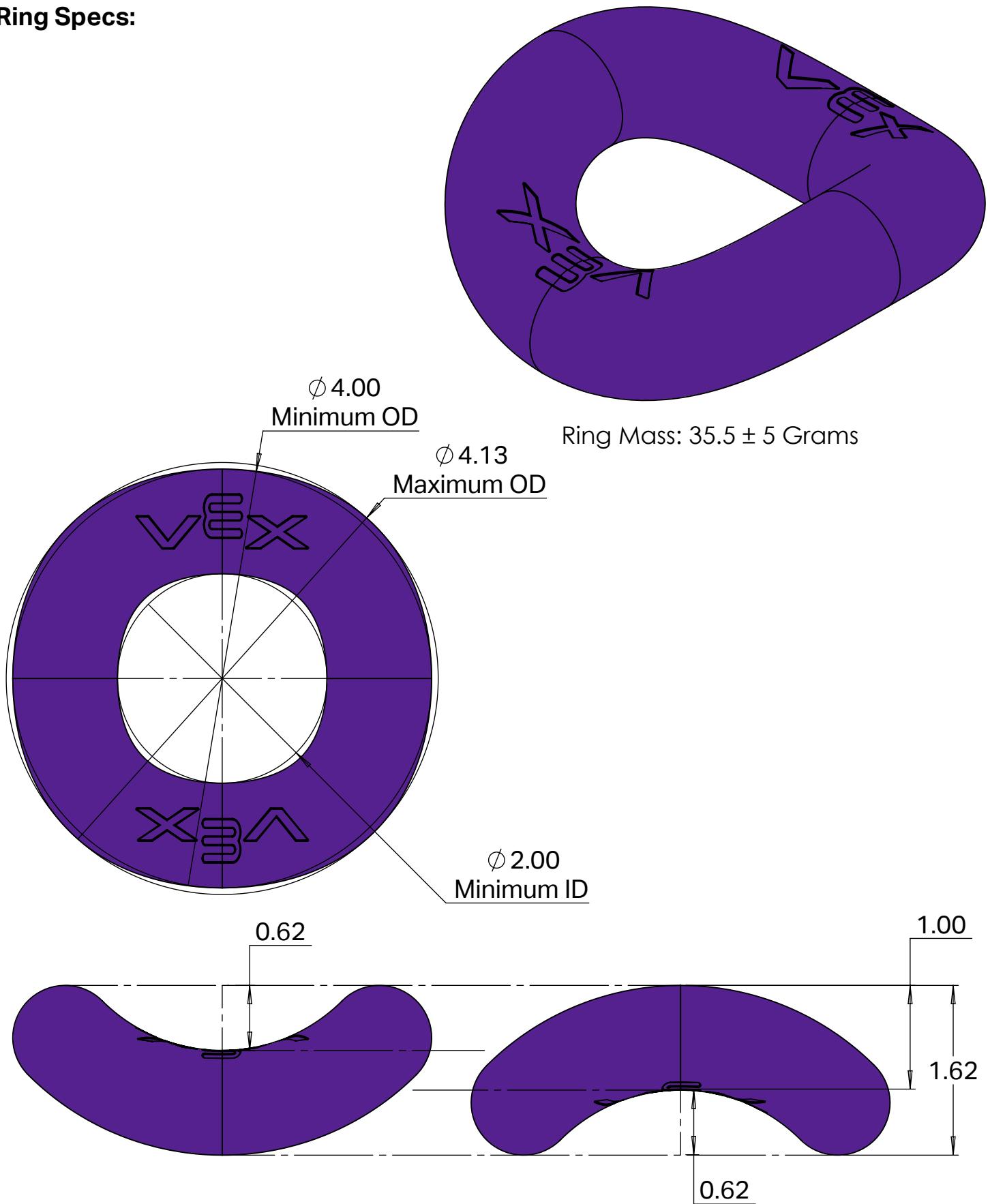
Note: Mobile Goal orientation is specifically defined as shown in this figure. This is the only acceptable orientation, and takes precedent over any other materials released prior to December 2021. See rule <G19> for more details.



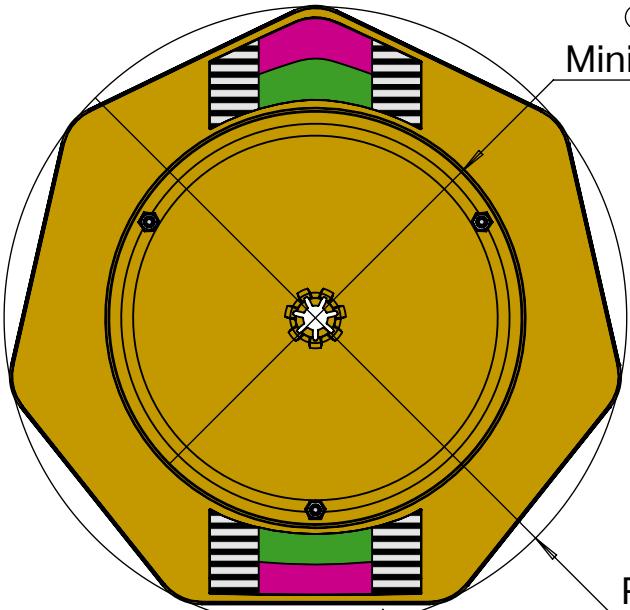
## Field Critical Specs:



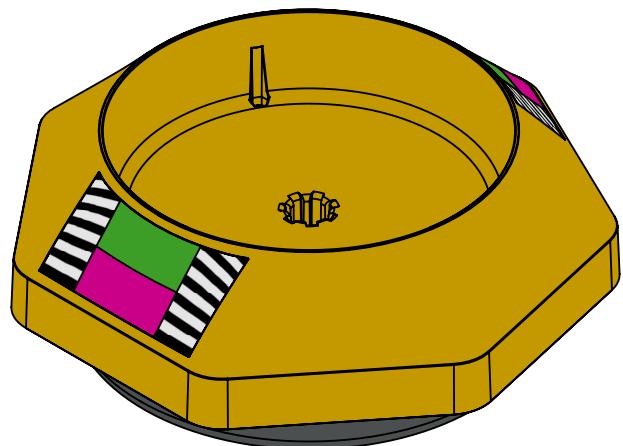
## Ring Specs:



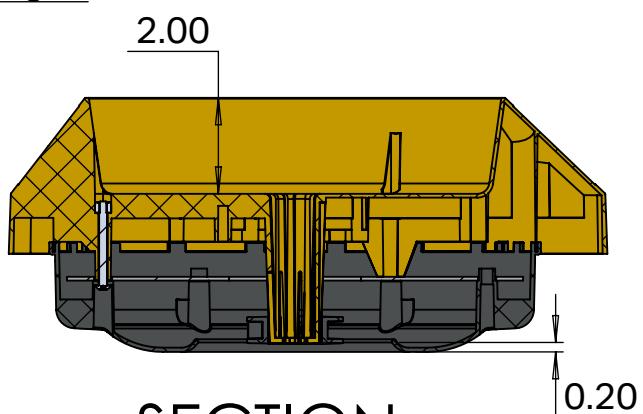
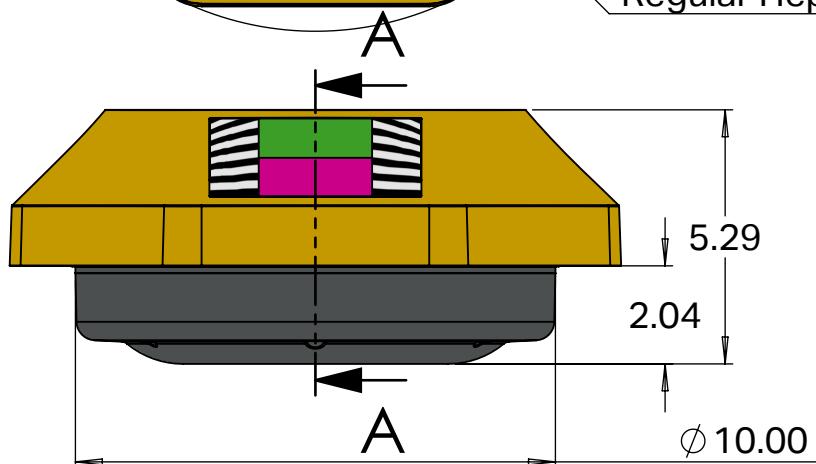
## Mobile Goal Base Specs:



$\phi$  8.63  
Minimum OD

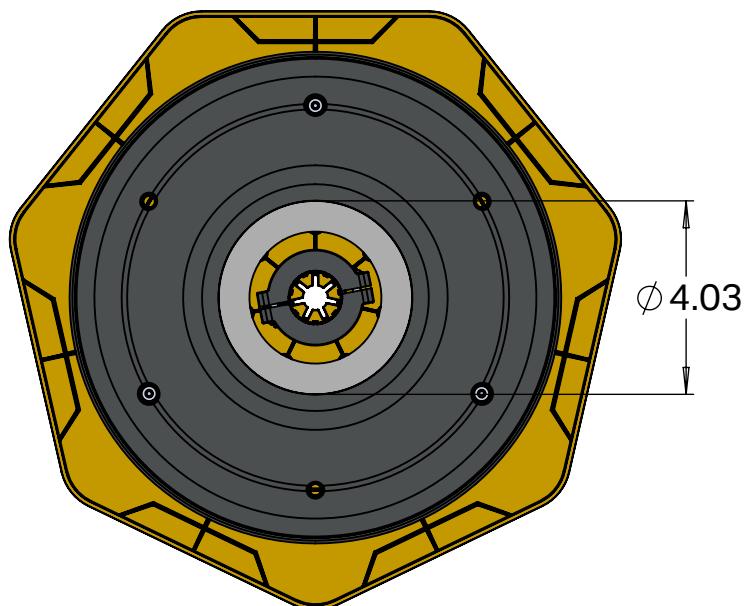


$\phi$  12.97  
Effective OD  
of Rounded  
Regular Heptagon



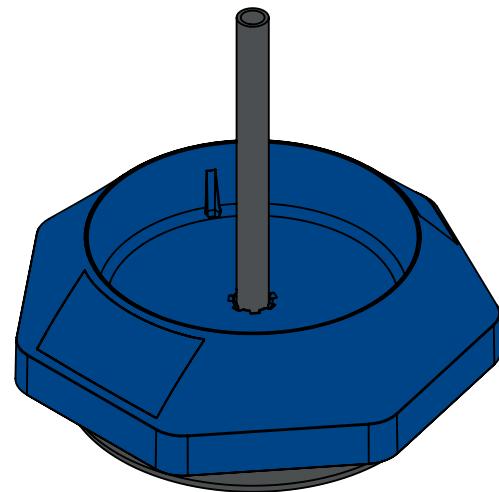
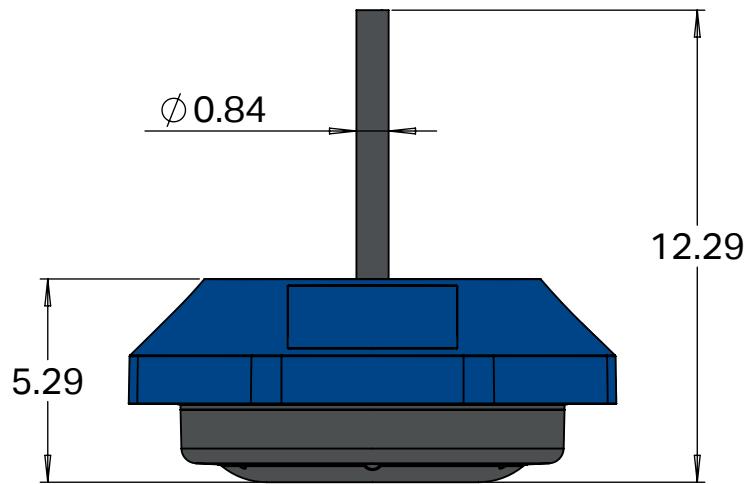
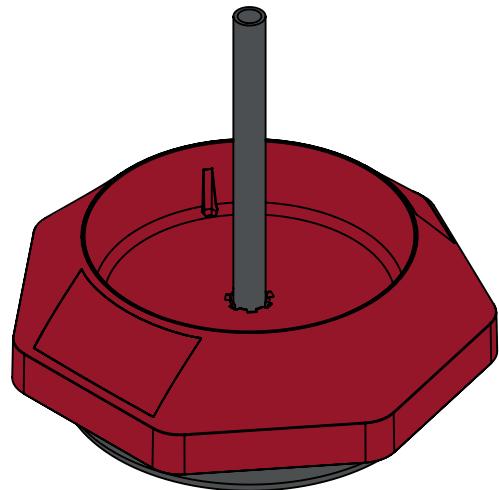
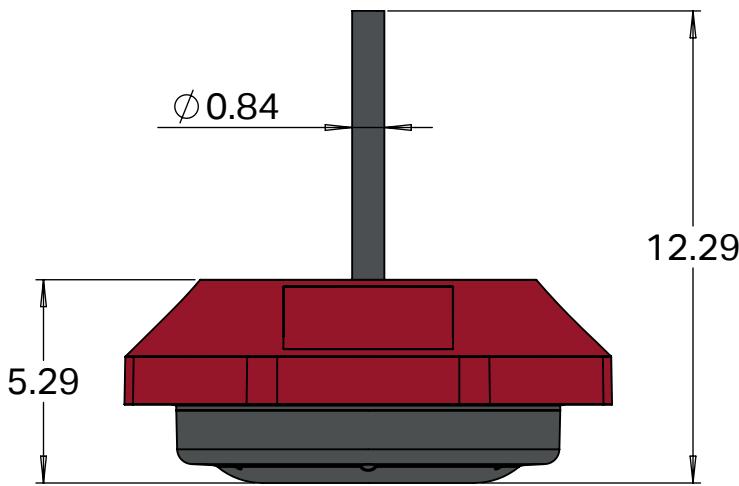
SECTION A-A

SCALE 1 : 4



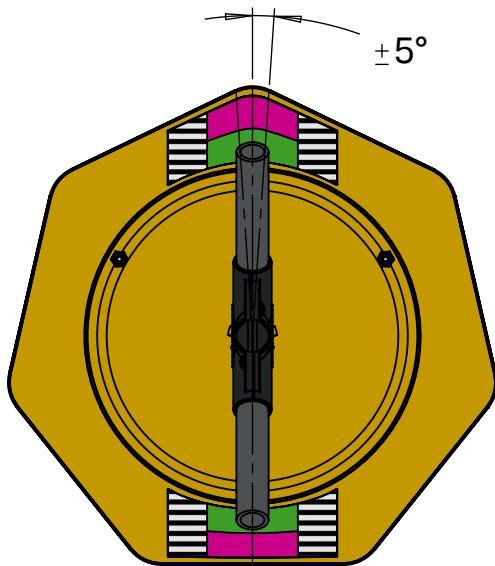
$\phi$  4.03

## Alliance Goal Specs:



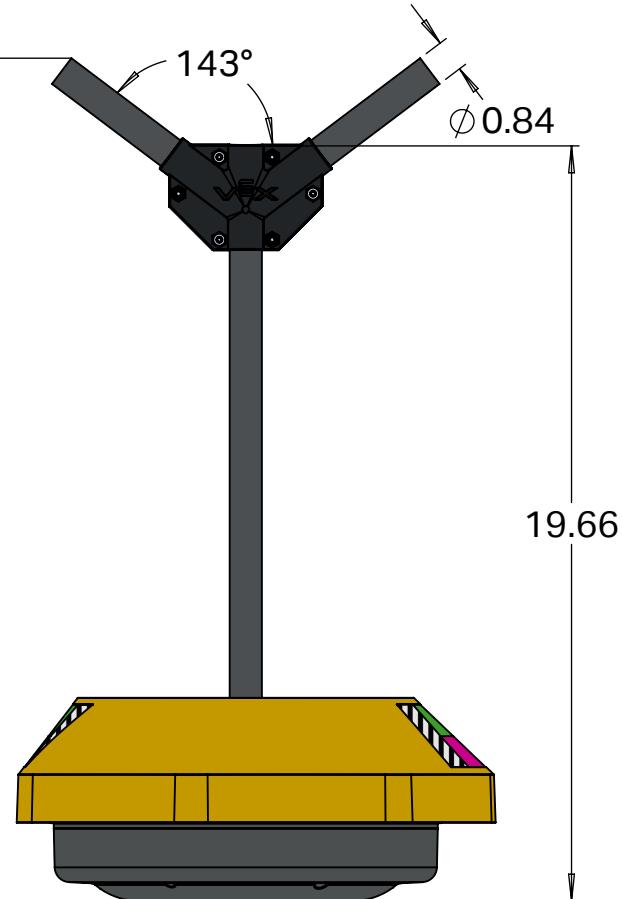
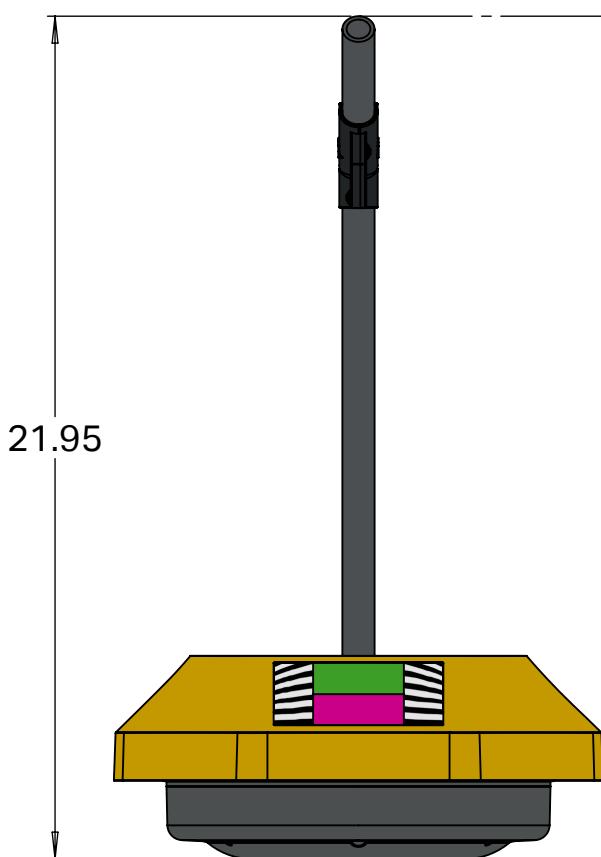
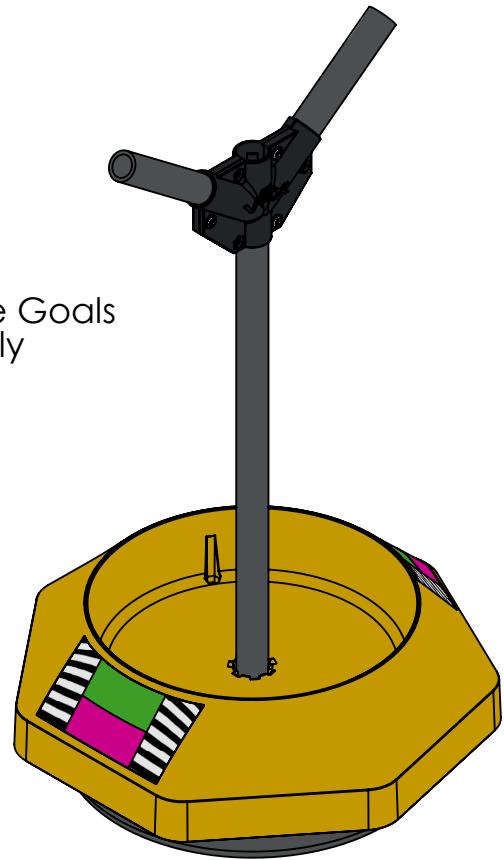
Alliance Mobile Goals  
weigh approximately  
3.35lb (1520g)

## Yellow Mobile Goal Specs:

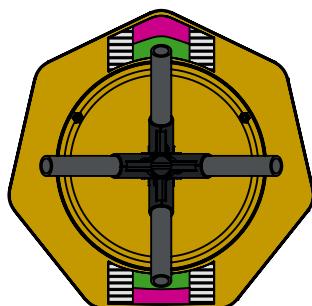


Short Neutral Mobile Goals  
weigh approximately  
3.43lb (1560g)

Note: Branches must be  
aligned with vision target

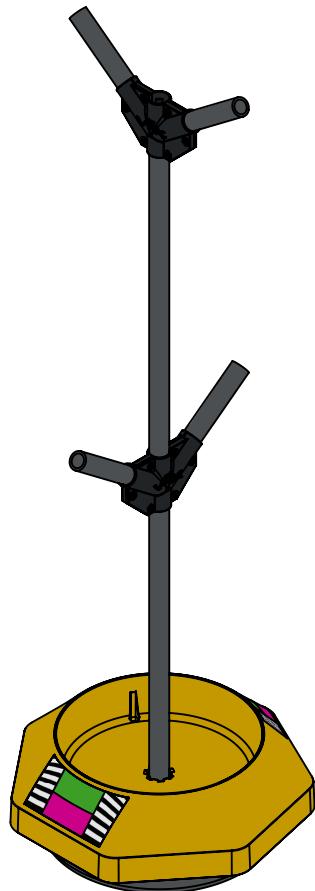
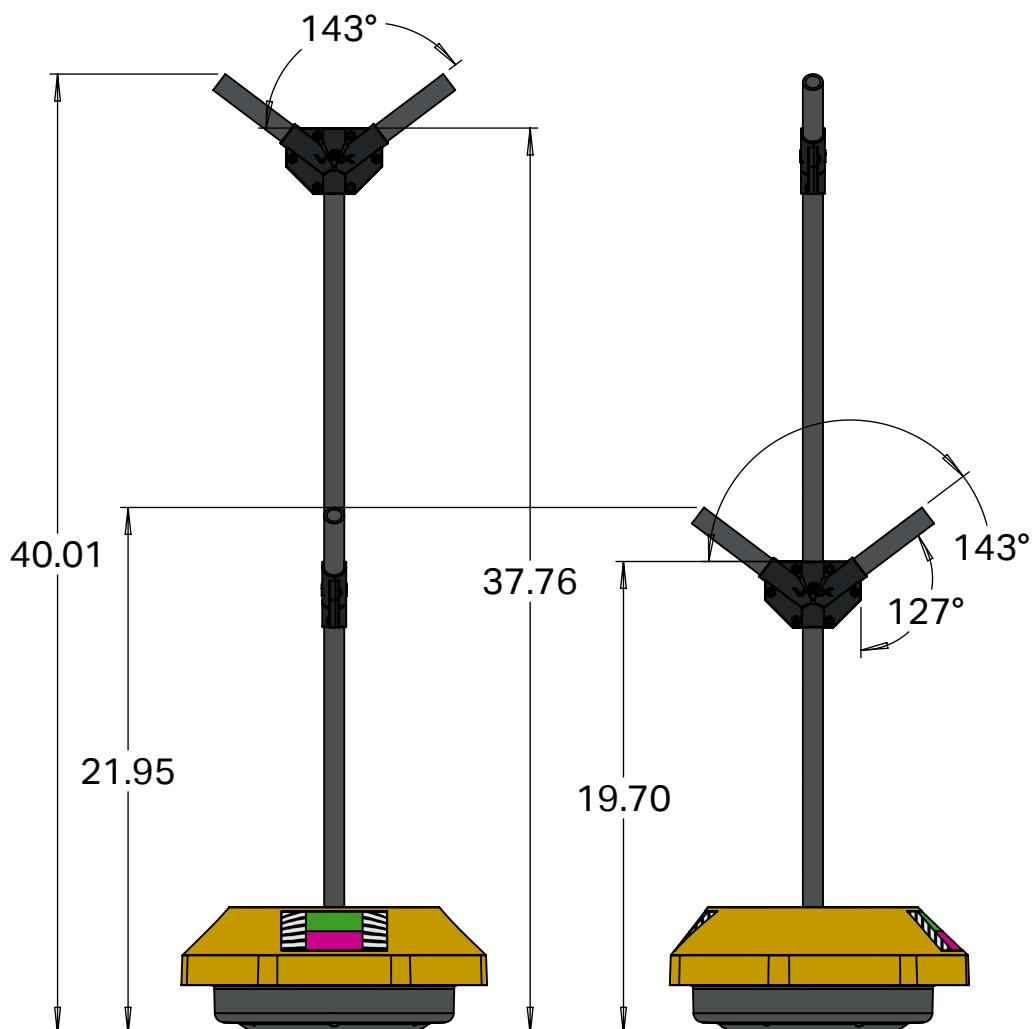


## Yellow Mobile Goal Specs cont'd:

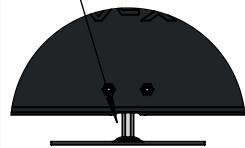
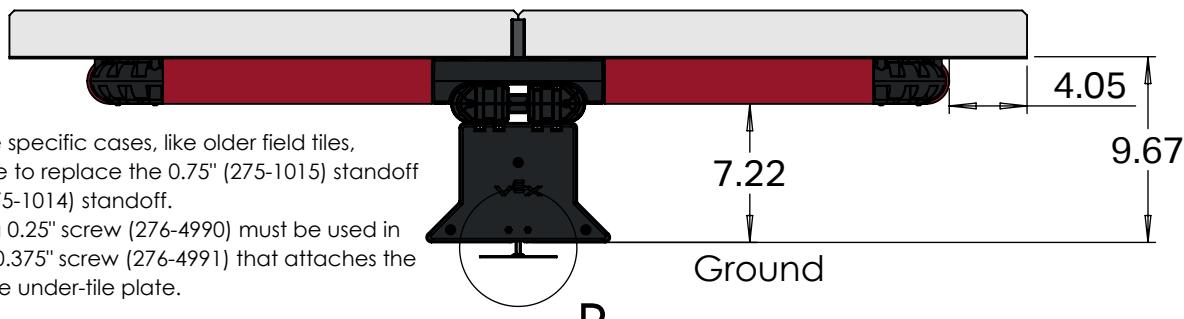
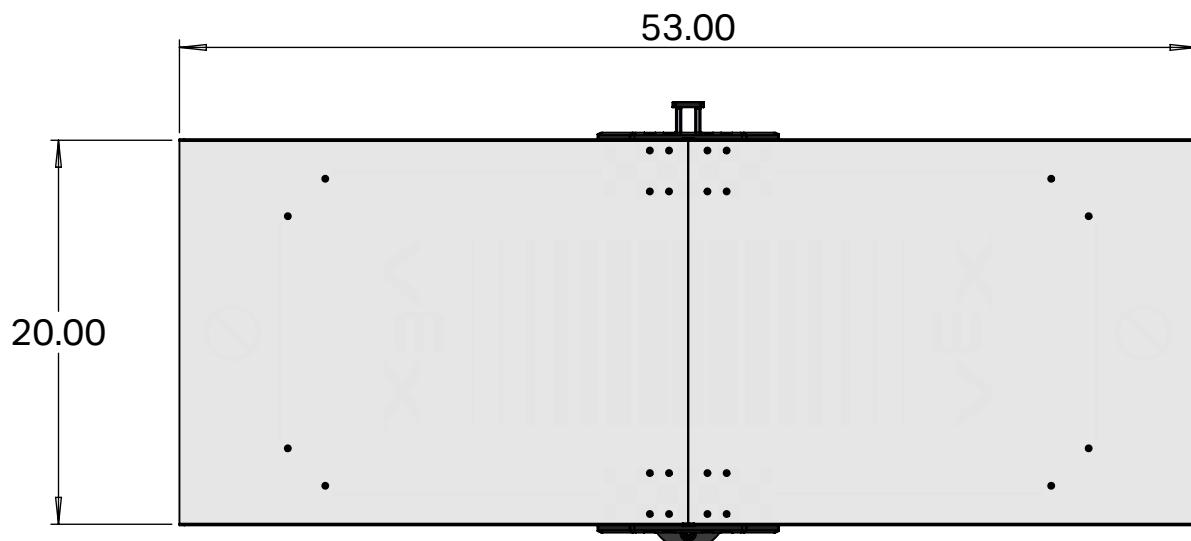


Tall Neutral Mobile Goals weigh approximately 3.99lb (1810g)

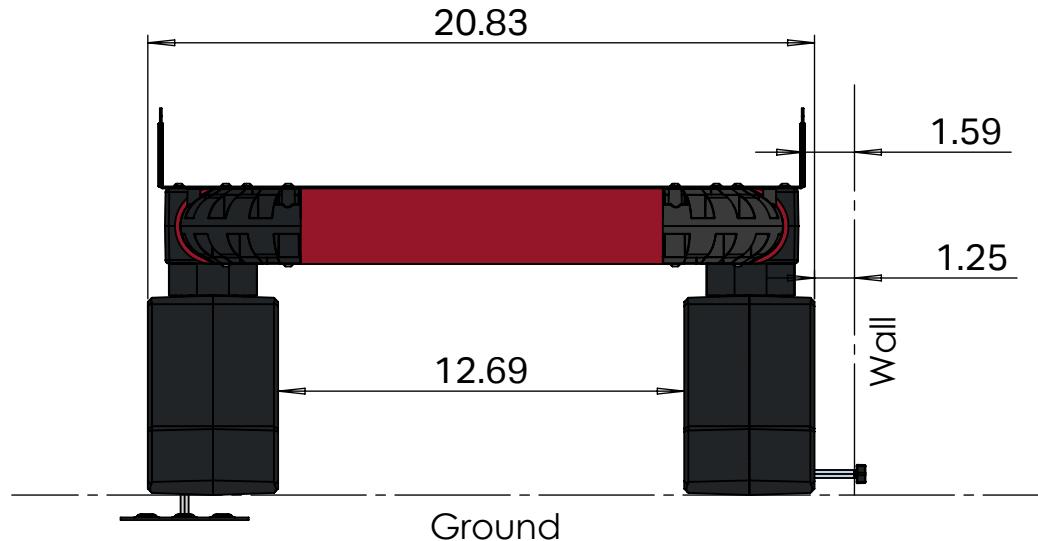
Note: Bottom branches must be aligned with vision target. Top branches must be 90° from bottom branches



## Platform Specs:

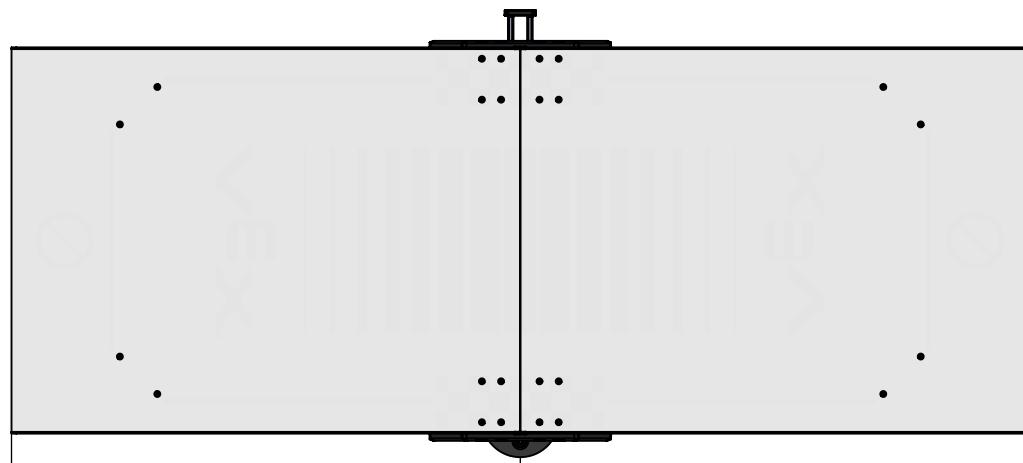


DETAIL B  
SCALE 1 : 5

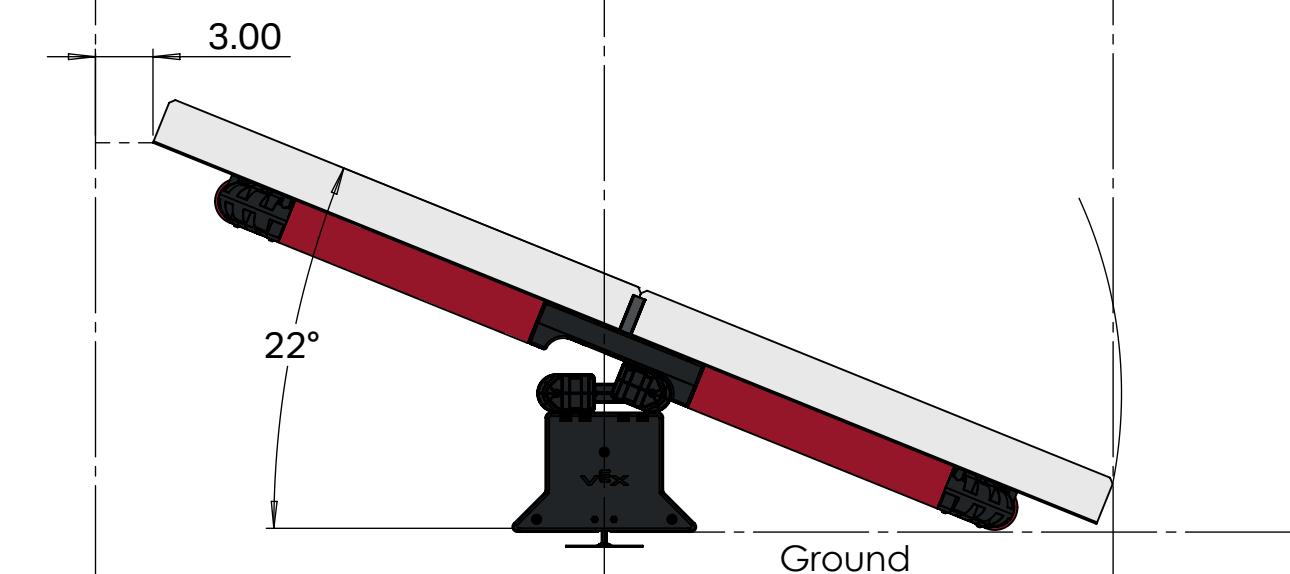


## Platform Specs cont'd:

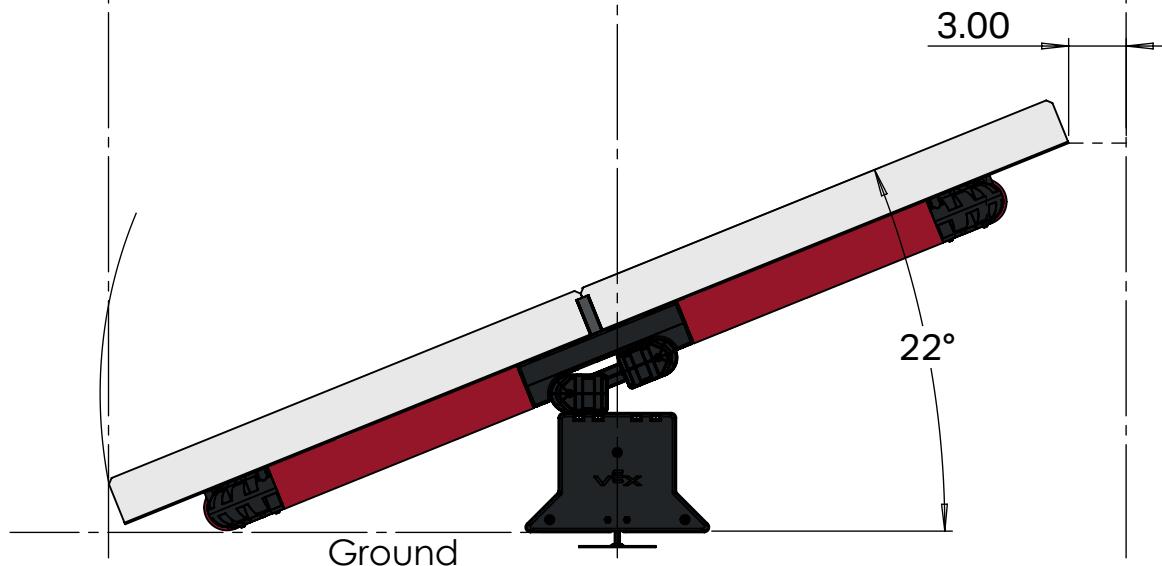
Balanced:



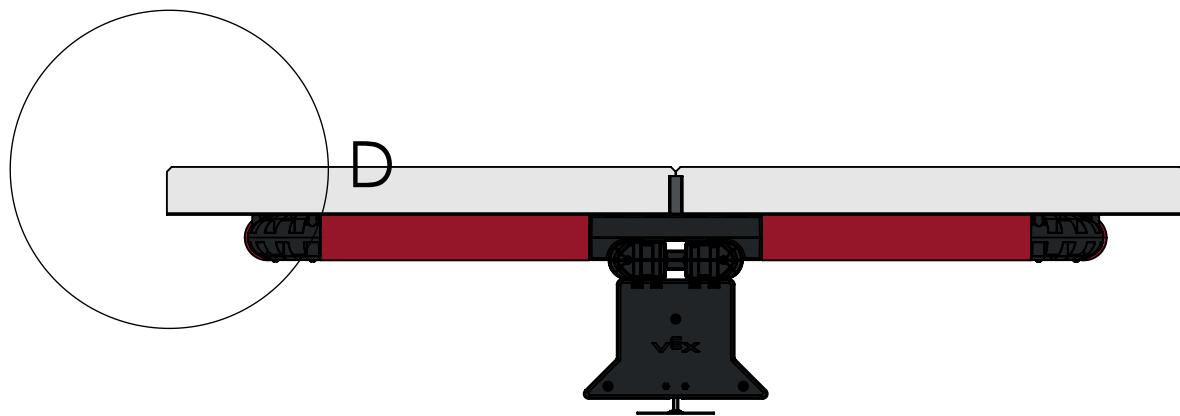
Tilt 1:



Tilt 2:

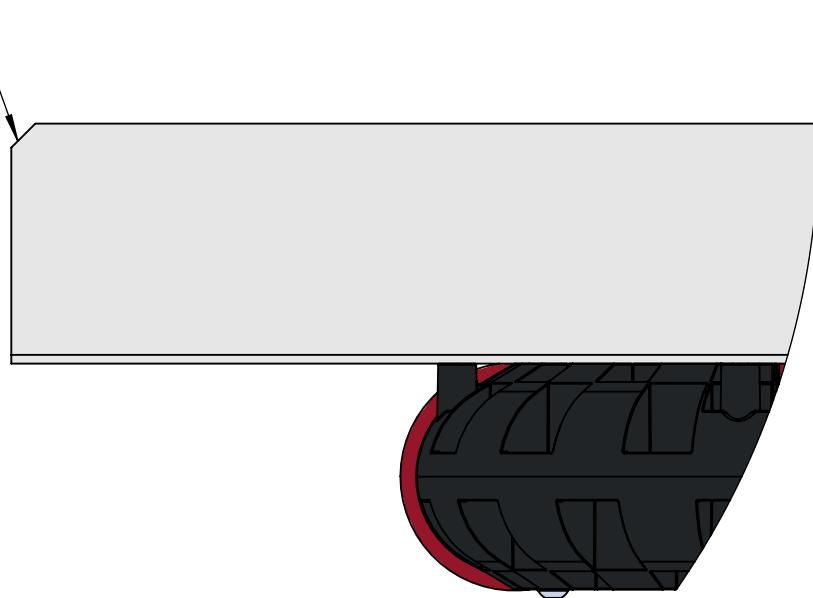


## Platform Specs cont'd:



Some Platforms may have corners that could be sharp.  
If you feel it appropriate to chamfer or round off the corners,  
you may do so. We recommend a 0.25"(6.35mm) 45° chamfer.  
Although this modification is preferred, either version is  
permissible for gameplay.

This modification does not impact  
the function of the Platform.



DETAIL D  
SCALE 1 : 2

## Field Reference Specs:

