

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 Change Up 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 – Change Up competition field, and also includes detailed models of individual field elements.

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

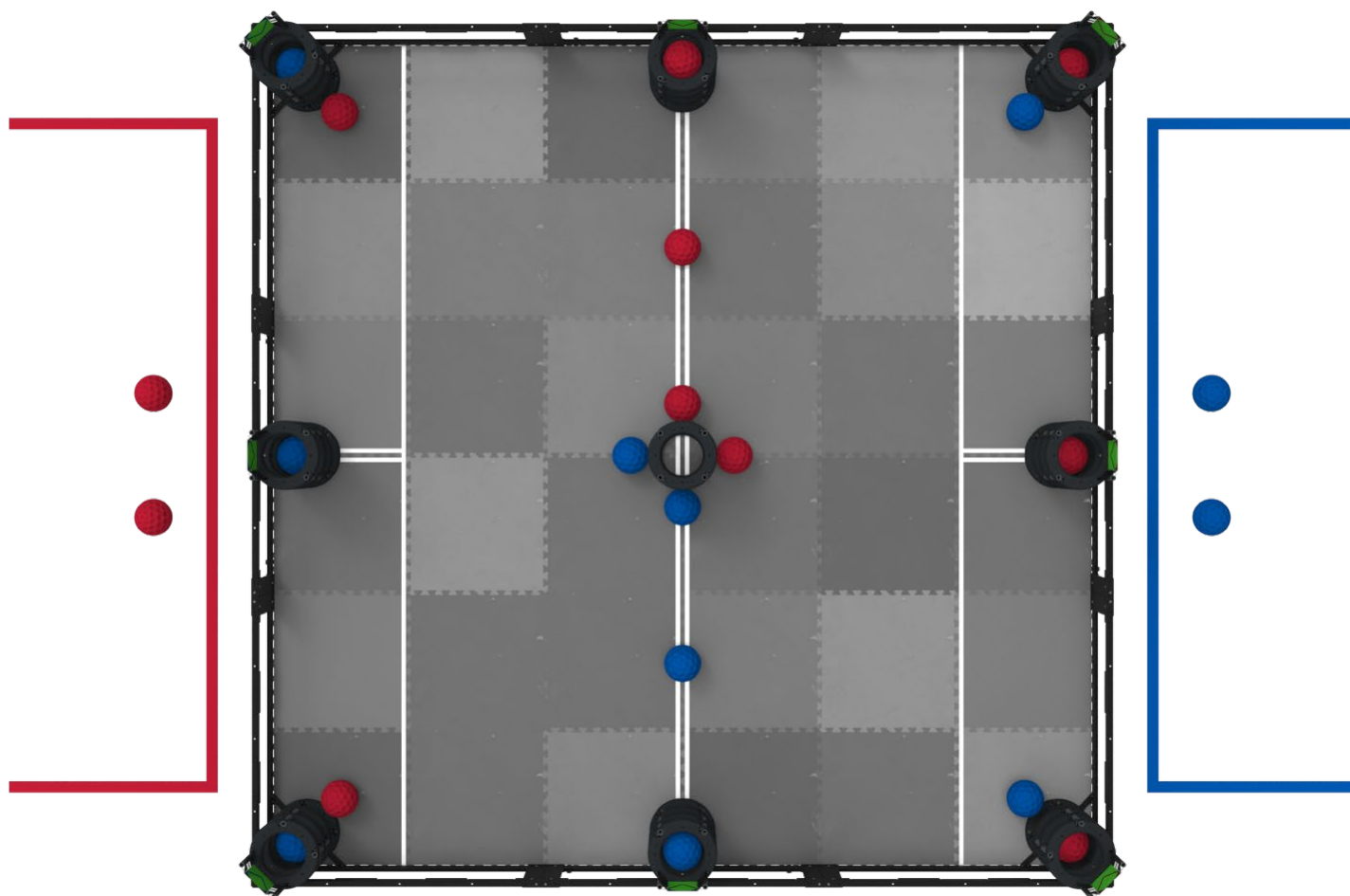
For more information on reducing costs on unofficial field construction, refer to the accompanying “Low Cost Field” section located online at vexrobotics.com.

VEX Robotics Competition Change Up – Appendix A

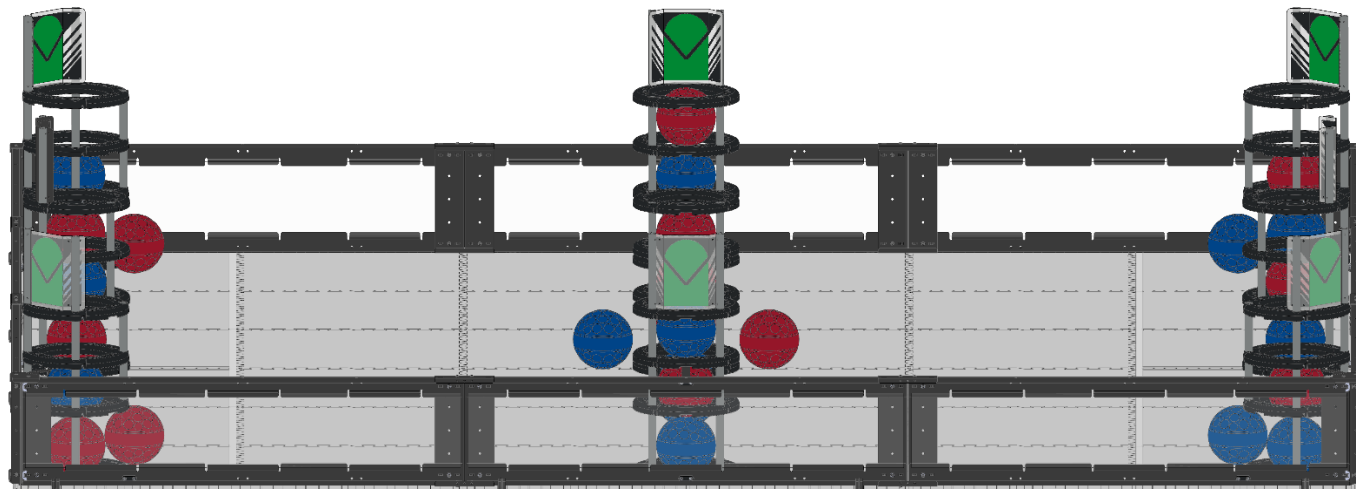
Field Overview

The game VEX Robotics Competition – Change Up is played on a 12ft x 12ft foam mat, surrounded by a sheet metal and polycarbonate perimeter, and divided in half by the tape *Autonomous Line*. Nine *Goals* are evenly spaced around the field perimeter and in the center of the field. Sixteen red and sixteen blue *Balls* are located around the field for use by *Robots*.

For more details and specific gameplay rules, please refer to the VEX Robotics Competition – Change Up competition manual.



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Game Objects & Field Bill of Materials

All of these items are available for purchase from: 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 – Change Up Specific Elements

Part Number	Description	Quantity per Full Field
276-6498	VRC 2020-2021 Game Element Kit	2
276-6499	VRC 2020-2021 Field Element Kit	2

Practice Elements

Part Number	Description
276-6498	VRC 2020-2021 Game Element Kit
276-6639	VRC 2020-2021 Scoring Element Kit

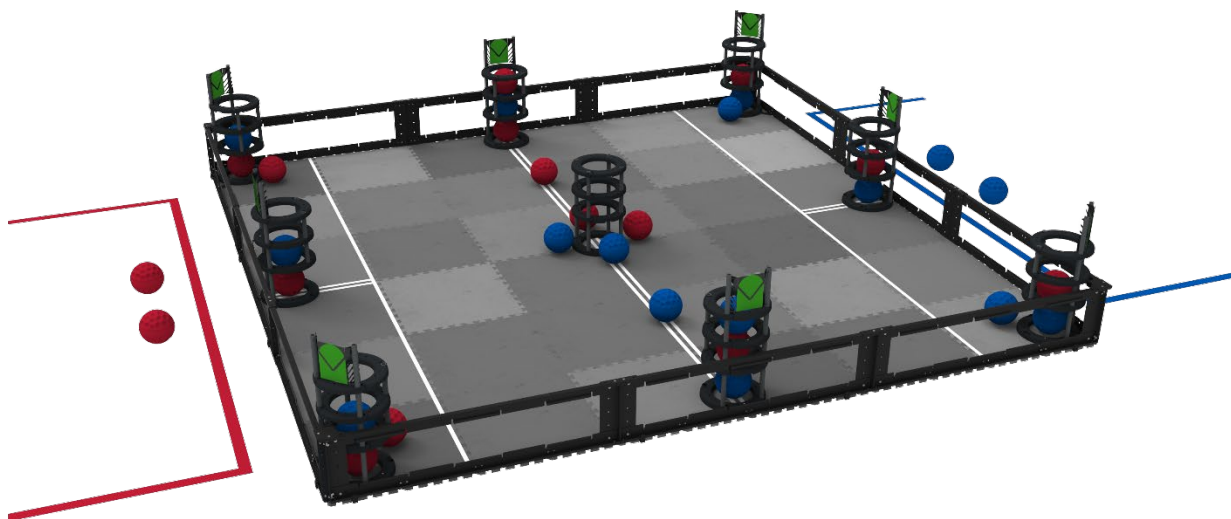
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Field Specifications Introduction

This section will outline the specifications that are most important to teams designing a robot to compete in the VEX Robotics Competition – Change Up. 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.

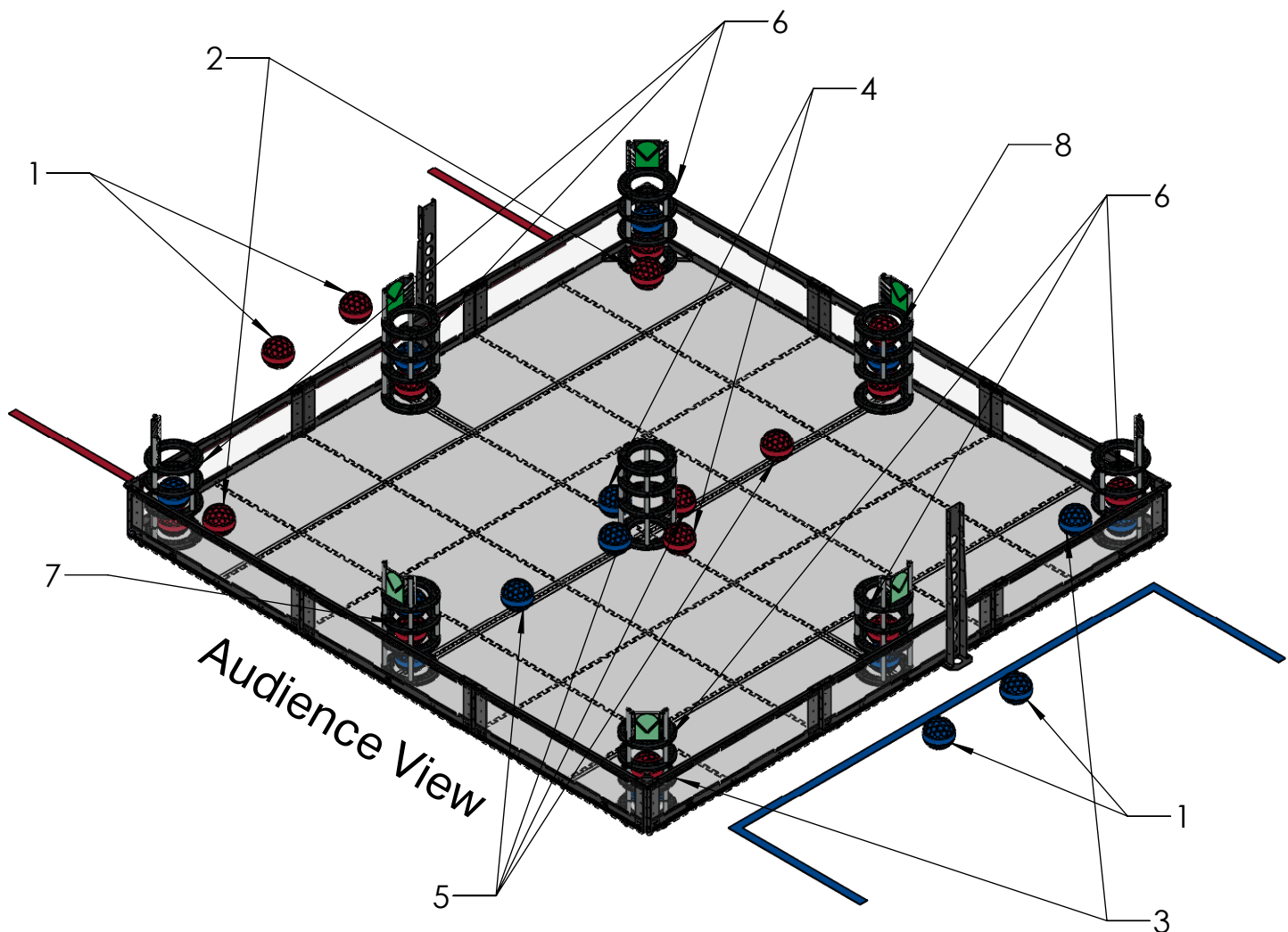
Field components may vary slightly from event to event. This is to be expected; teams will need to adapt accordingly. It is good design practice to create mechanisms capable of accommodating variances in the field and game pieces.

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.

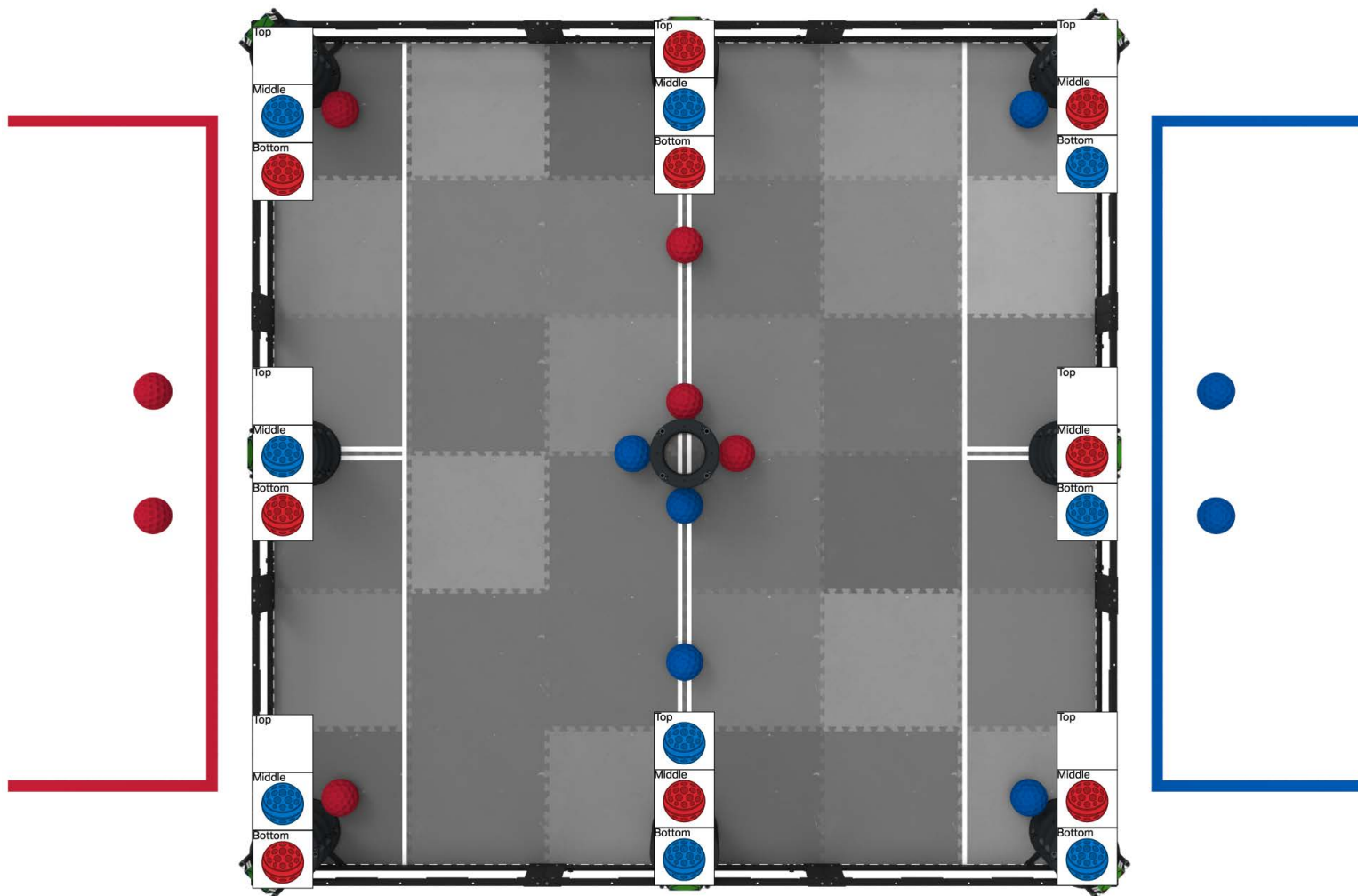


Balls are placed as follows before the start of each Match:

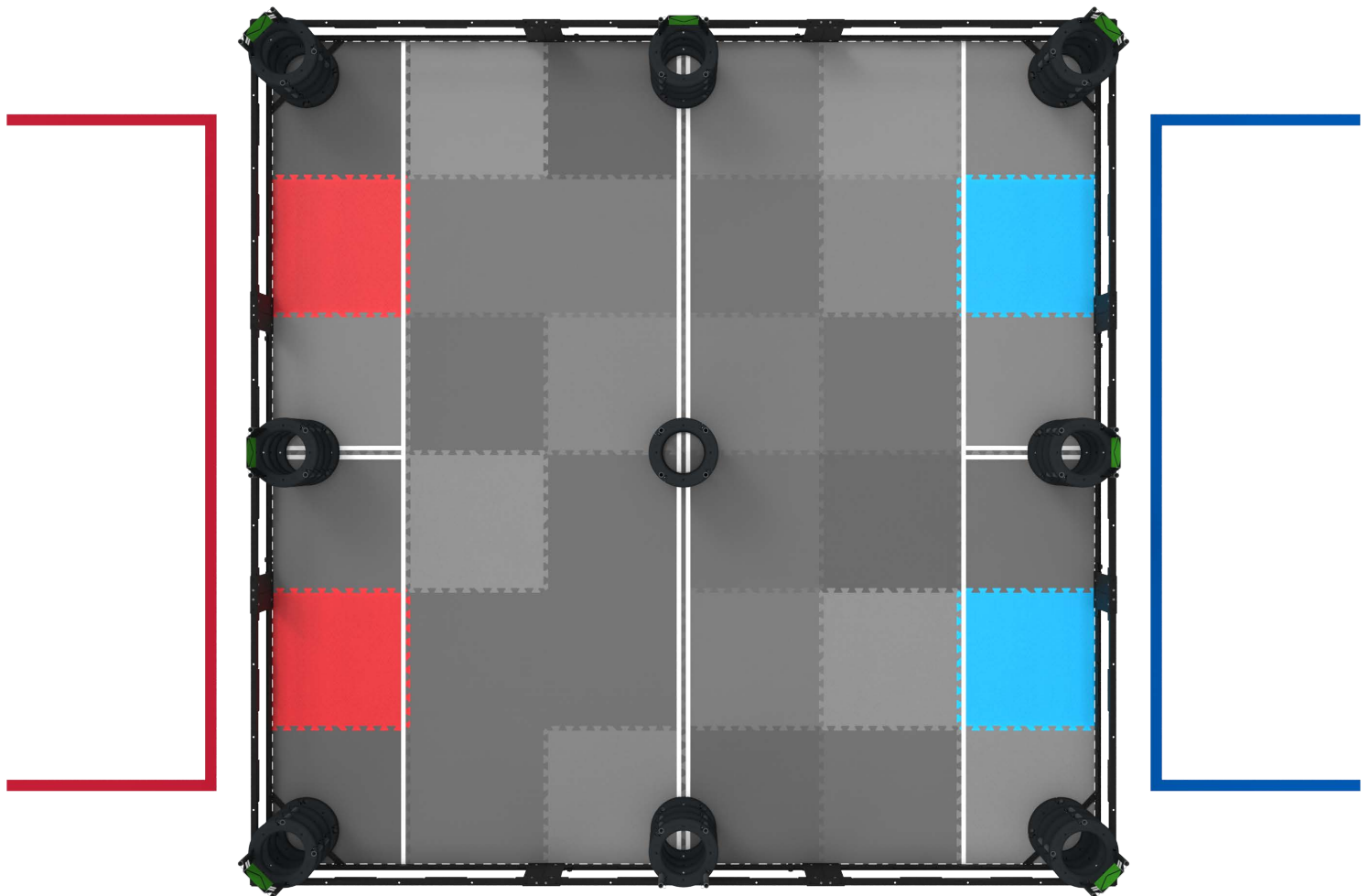
1. (1X) Red or Blue Ball for Preload into each Robot
2. (2X) Red balls placed adjacent to the Corner Goals on the Blue Alliance side of the field and placed at a diagonal towards the Middle Goal
3. (2X) Blue balls placed adjacent to the corner goals on the Blue Alliance side of the field and placed at a diagonal towards the Middle Goal
4. (2X) Balls centered between the tiles on either side placed adjacent to the middle Goal
5. (4X) Balls along the Autonomous Line
6. (3X) Opposing color Balls placed inside the Home Row Wall Goals placed with the opposing alliance color on top
7. (3X) Balls placed in the Wall goal on Audience View side with the pattern Blue, Red, Blue
8. (3X) Balls placed in the Wall goal opposite the Audience View side with the pattern Red, Blue, Red



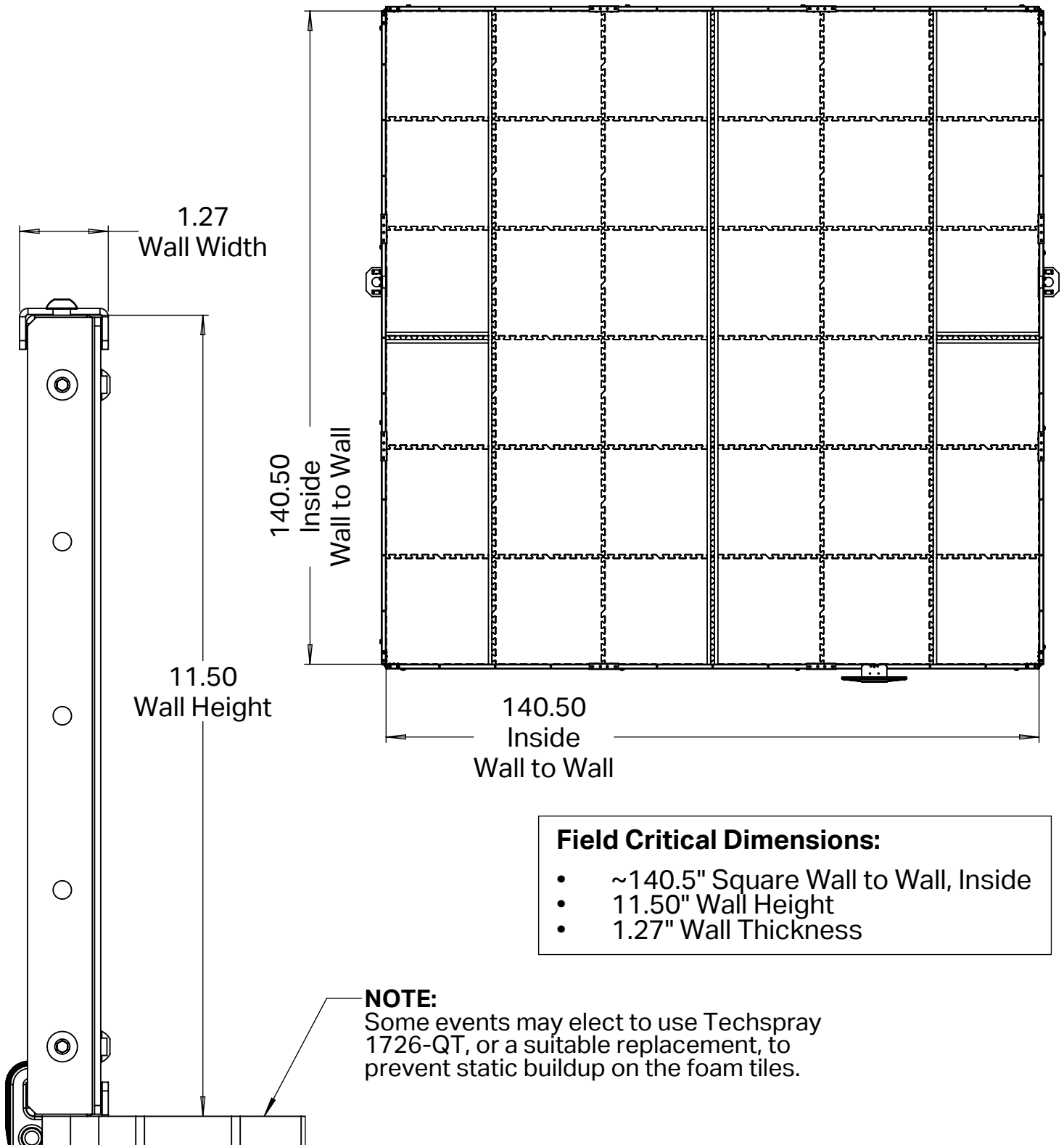
Reference Object Placement Image:



Alternate Field Tile Layout (with Colored Tiles)



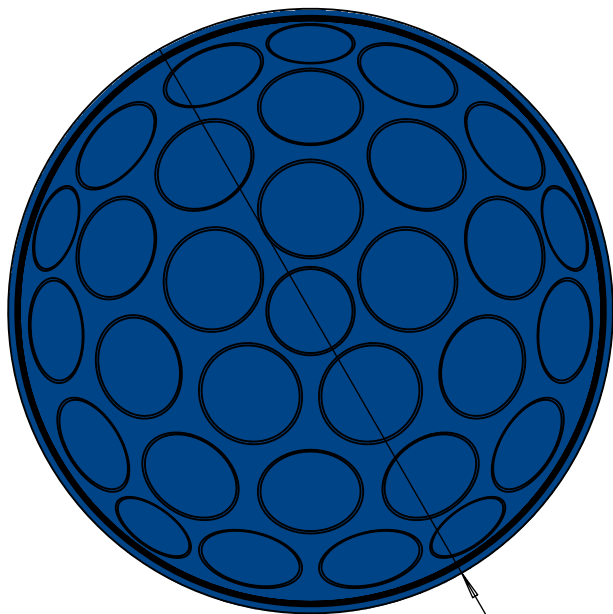
Field Critical Specs:



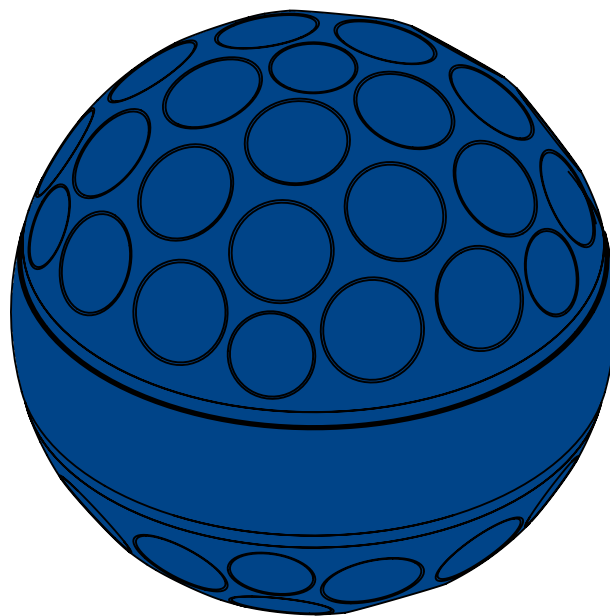
Field Critical Dimensions:

- ~140.5" Square Wall to Wall, Inside
- 11.50" Wall Height
- 1.27" Wall Thickness

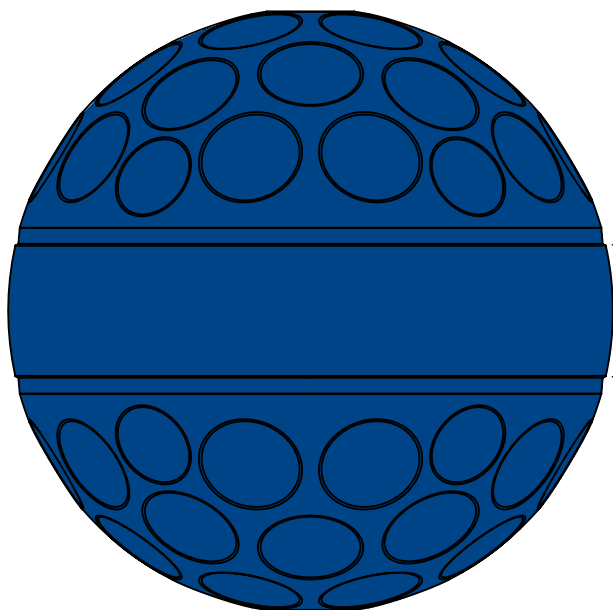
Ball Specs:



$\phi 6.30 \pm 0.1$

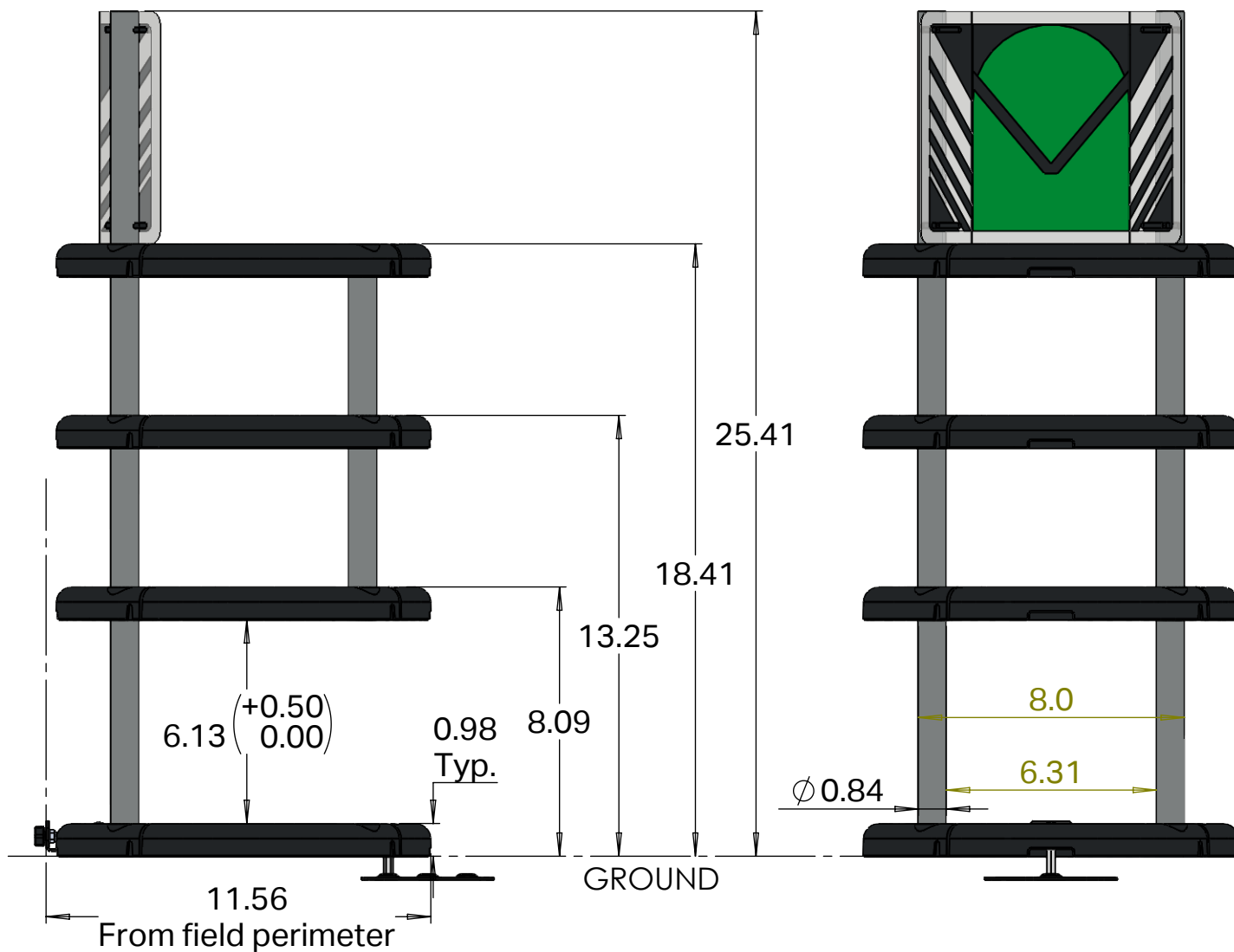
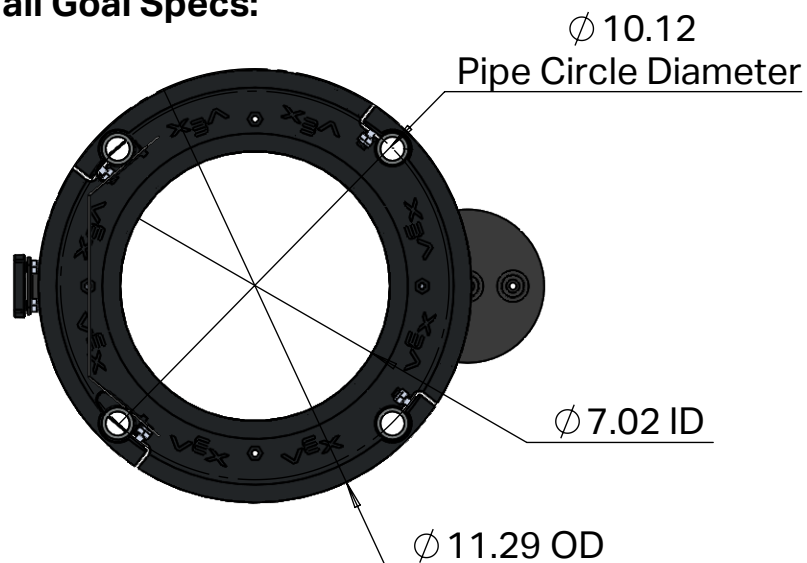


Ball Mass: 168 ± 10 Grams

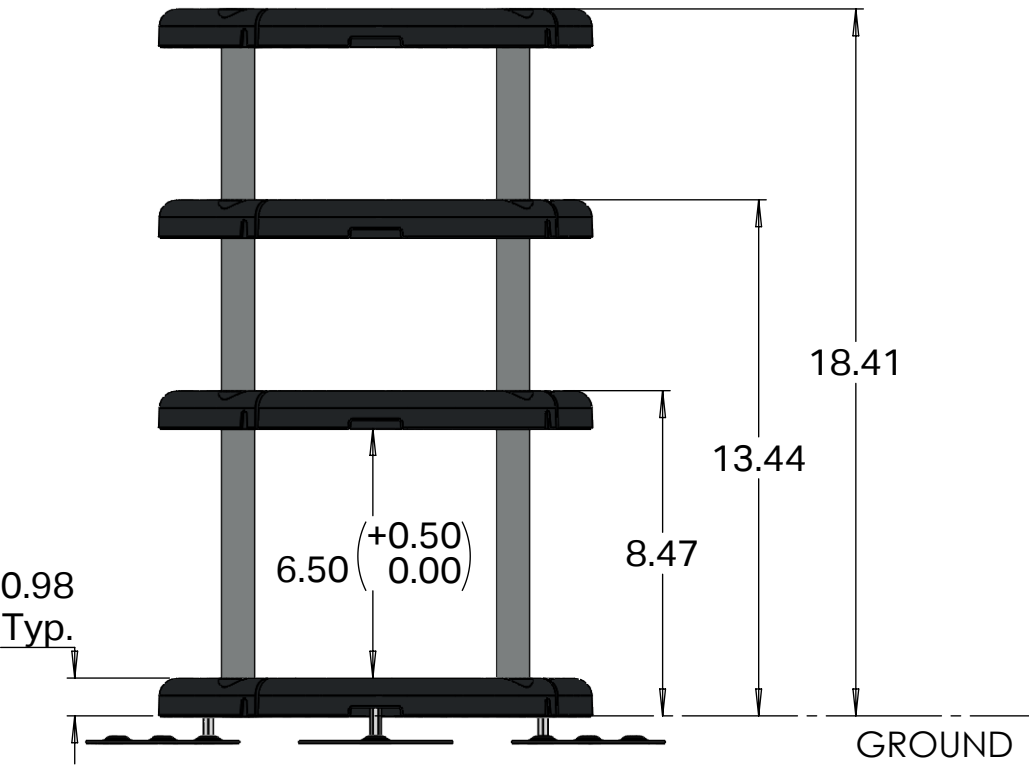
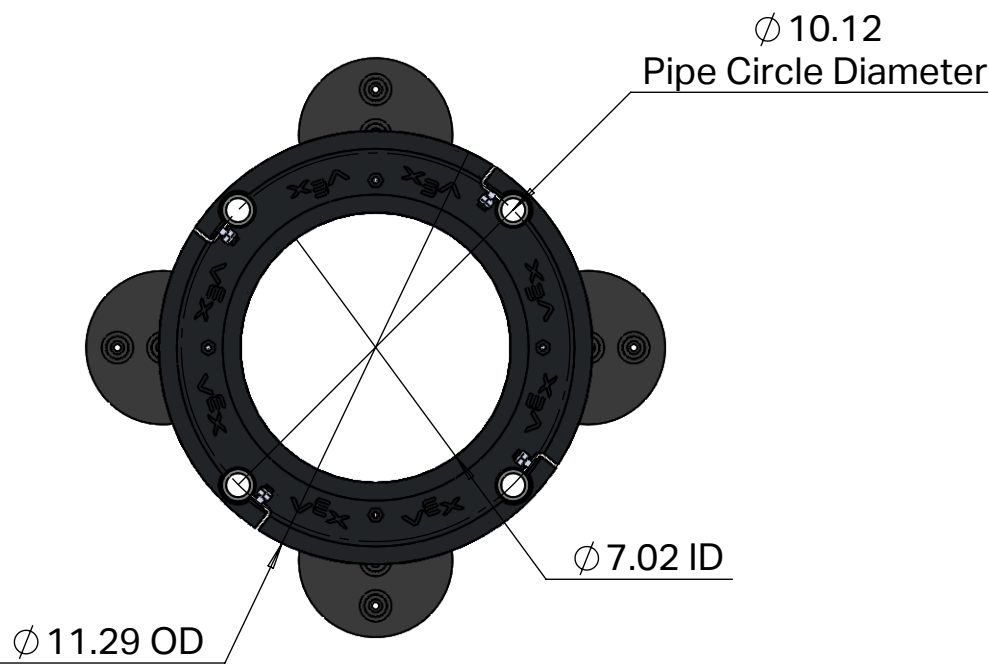


1.37

Wall Goal Specs:

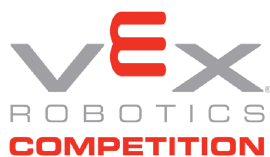
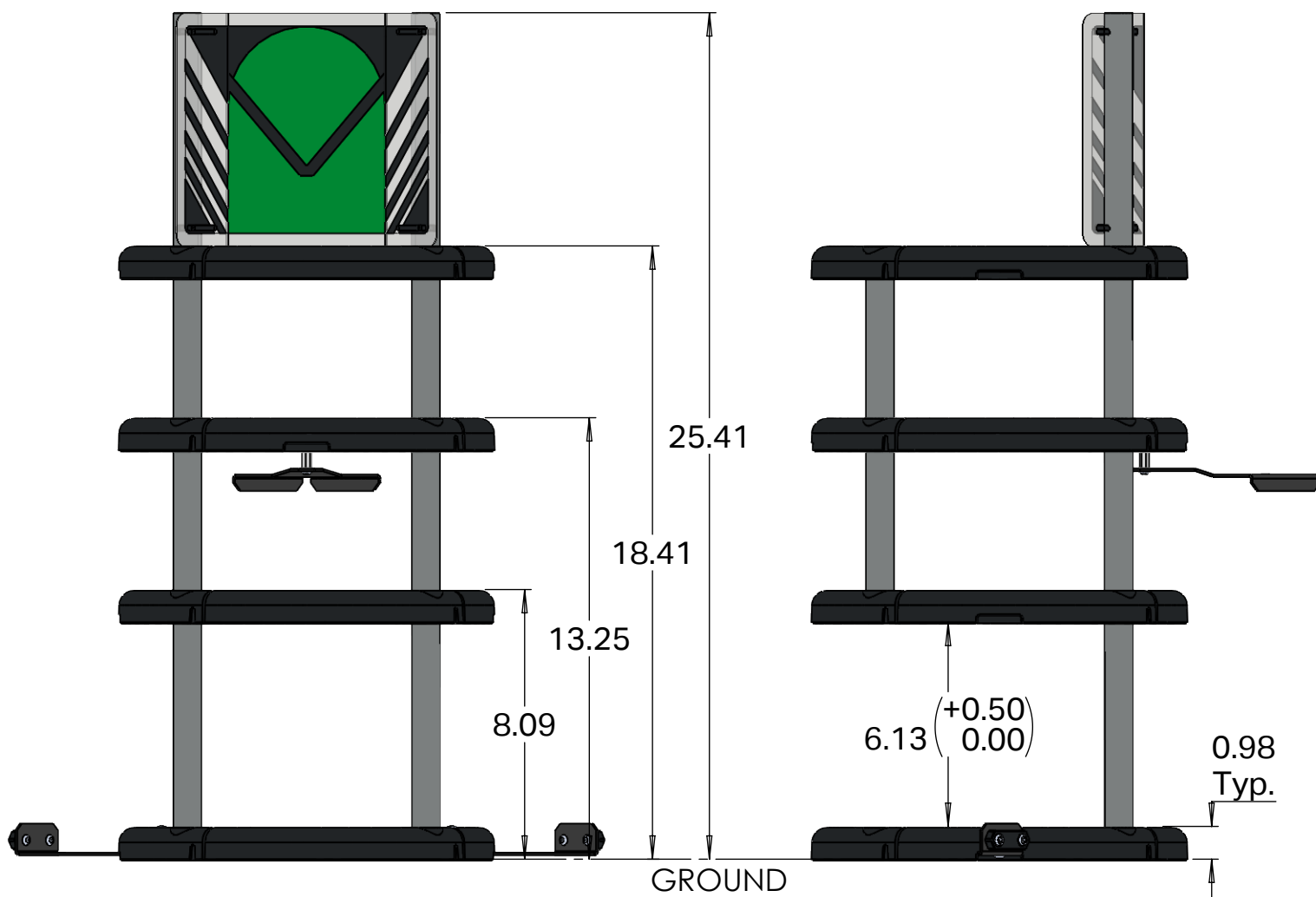
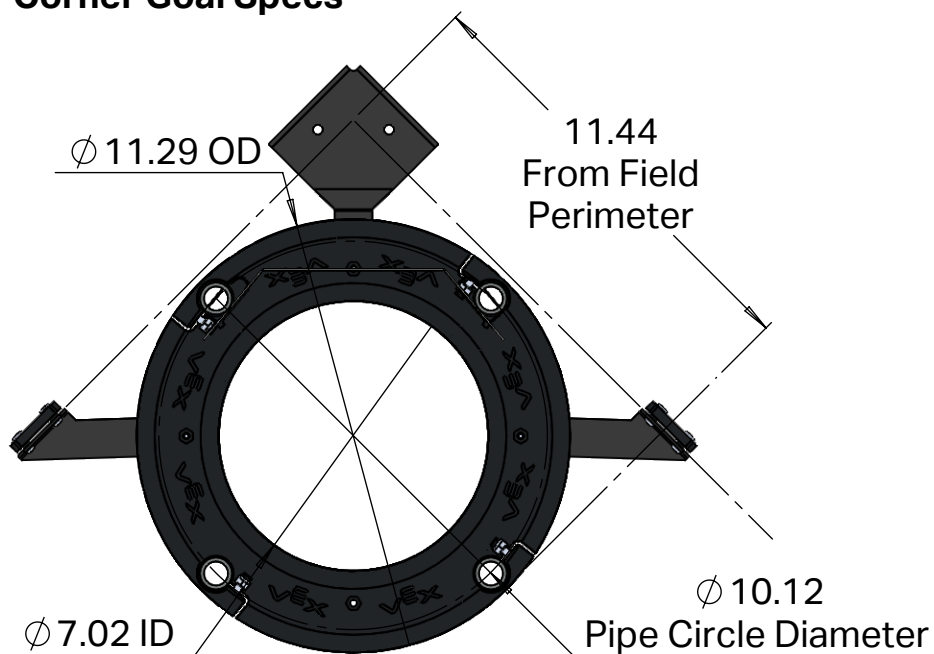


Middle Goal Specs:



	Description 2020-2021 Game Specs (3)	
	Dwg No 276-6498-000 Rev4 Field Specifications	
	Competition VRC 2020-2021	Sheet 7 of 10
	Release 5/20/2020	ALL DIMENSIONS ARE IN INCHES.

Corner Goal Specs



Description	2020-2021 Game Specs (4)		
Dwg No	276-6498-000 Rev4 Field Specifications		
Competition	VRC 2020-2021	Sheet 8 of 10	
Release	5/20/2020	ALL DIMENSIONS ARE IN INCHES.	

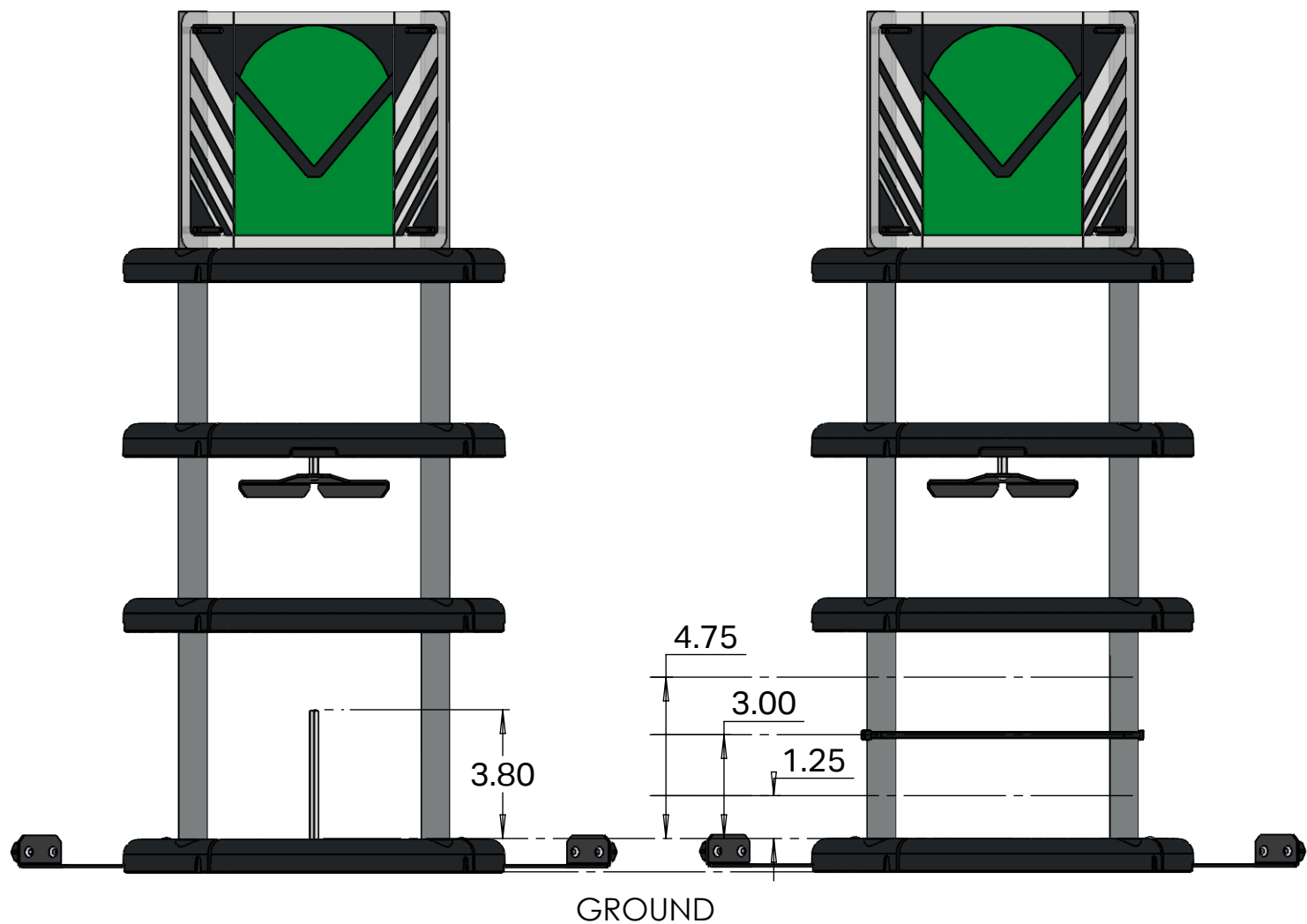
Corner Goal Specs

Note: Option A: 1x 4" Standoff (276-1021)
or Option B: 2x 11" Zipties (275-0125) are
added to aid in proper function of the goal.


As per the May 25th Game Manual Update,
either option A or B is required, with
option A being preferred.

OPTION A

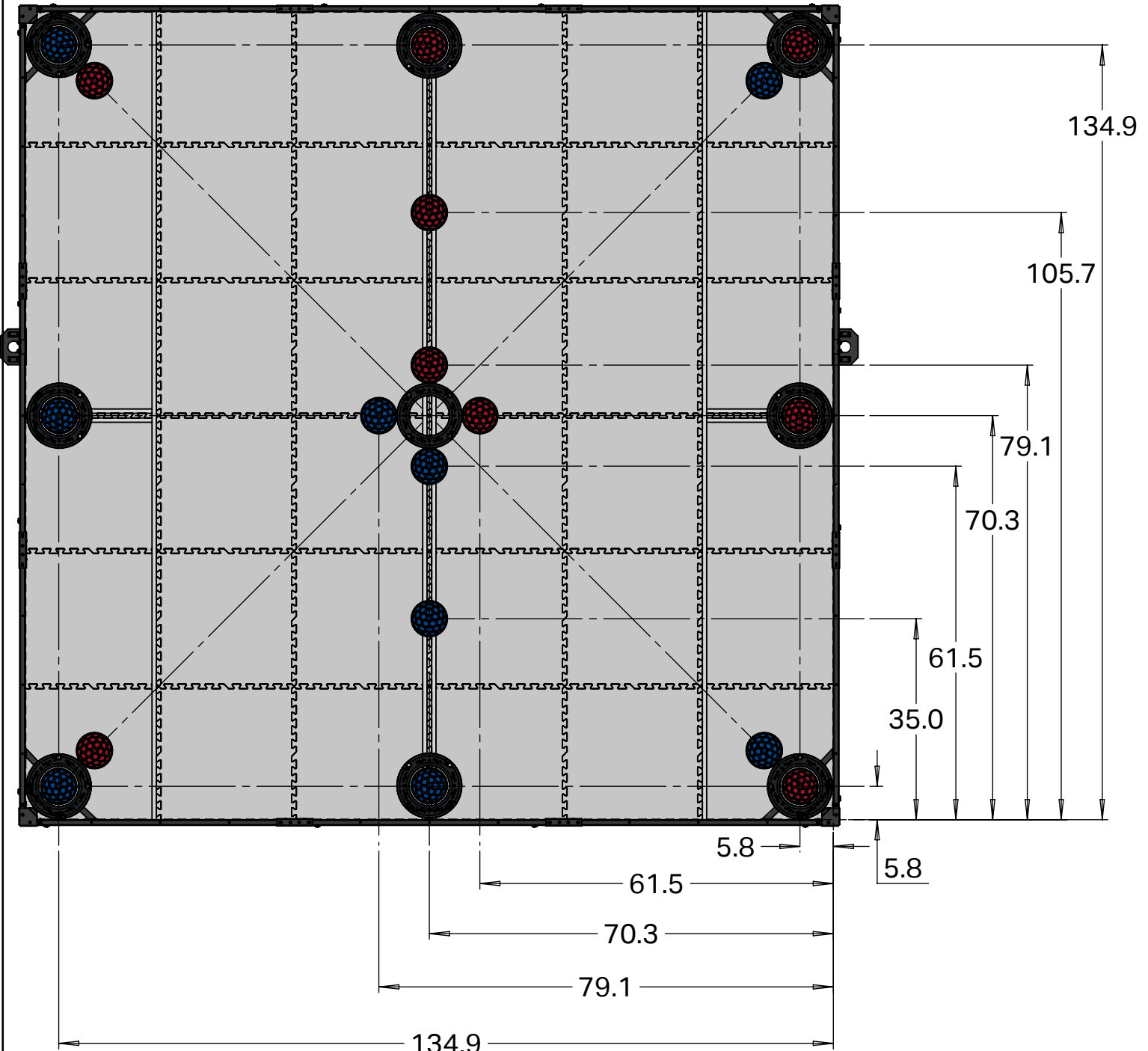
OPTION B




Note: Shown is the acceptable range
of the 2x 11" Zipties.

	Description 2020-2021 Game Specs (5)	
	Dwg No 276-6498-000 Rev4 Field Specifications	
	Competition VRC 2020-2021	Sheet 9 of 10
	Release 5/20/2020	ALL DIMENSIONS ARE IN INCHES.

Field Reference Specs



	Description 2020-2021 Game Specs (6)	
	Dwg No 276-6498-000 Rev4 Field Specifications	
	Competition VRC 2020-2021	Sheet 10 of 10
	Release 5/20/2020	ALL DIMENSIONS ARE IN INCHES.