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 Turning 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 four 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. Autodesk Inventor). This 3D model not only shows the "official" setup of a *VEX Robotics Competition – Turning Point* competition field, but it also includes detailed models of all the individual field elements.

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

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

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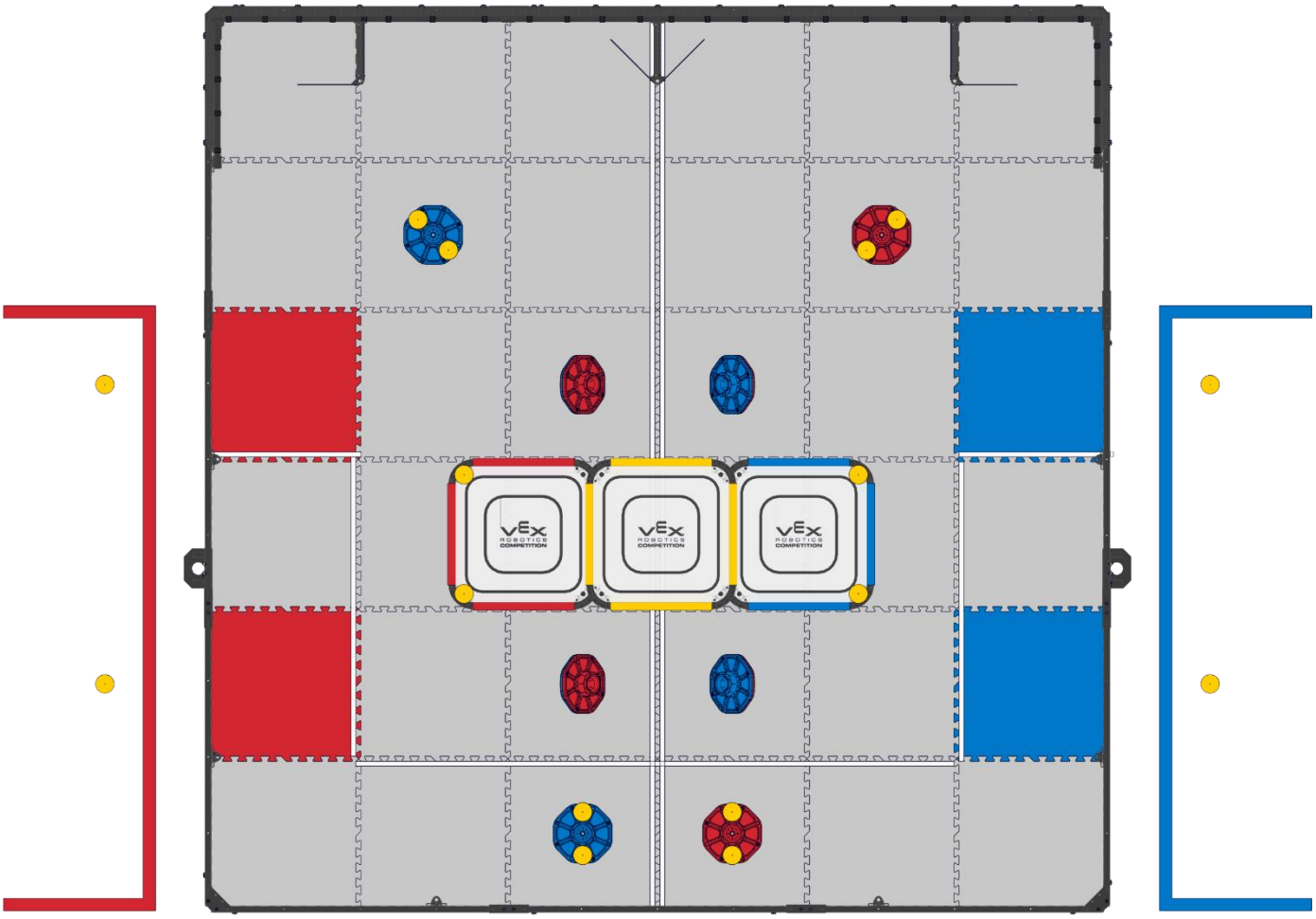
VEX Robotics Competition Turning Point – Appendix A

Field Overview

The game *VEX Robotics Competition – Turning Point* 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*. In the center of the field are two *Alliance Platforms* and one *Center Platform* that can be climbed by *Robots.* Nine *Flags* which can be *Toggled* between red and blue are located in a vertical three by three grid that is attached to one side of the field perimeter. Six *Posts* are attached to the remaining three sides of the field perimeter. These three sides are also bound by tape lines to create the *Expansion Zone*. Plastic *Caps* and *Balls* are placed on either side of this line.

For more details and specific game-play rules, please refer to the *VEX Robotics Competition – Turning Point* competition manual.



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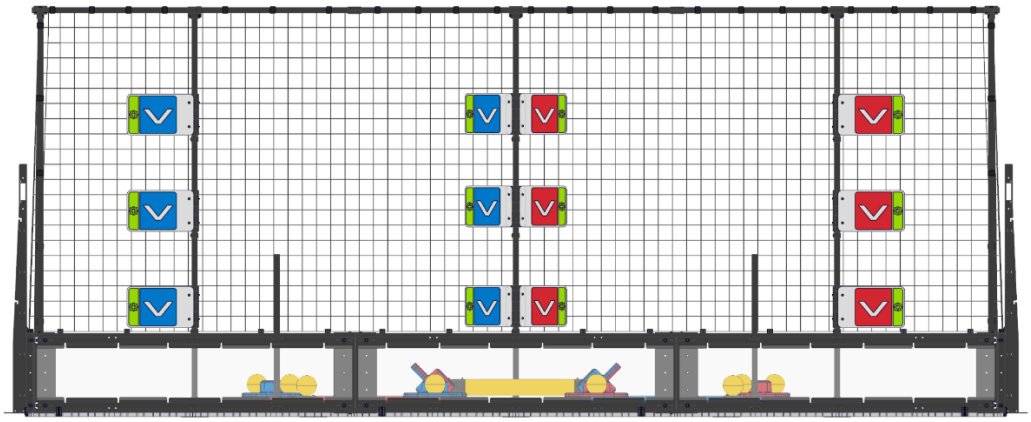
VEX Robotics Competition Turning Point – Appendix A



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
278-1502	VRC Foam Field Surface – *(36) Grey, (2) Red, (2) Blue Tiles*
275-1401	VRC VEXnet Field Controller

Official *VEX Robotics Competition – Turning Point* Specific Elements

Part Number	Description	Quantity per Full Field
276-5678	VRC 2018-2019 Game Element Kit	2
276-5679	VRC 2018-2019 Field Element Kit 1	1
276-5681	VRC 2018-2019 Pipe Kit	1
276-6115	VRC 2018-2019 Field Element Kit 2	1

Practice Elements

Part Number	Description
276-5678	VRC 2018-2019 Game Element Kit
276-5680	VRC 2018-2019 Scoring Element Kit

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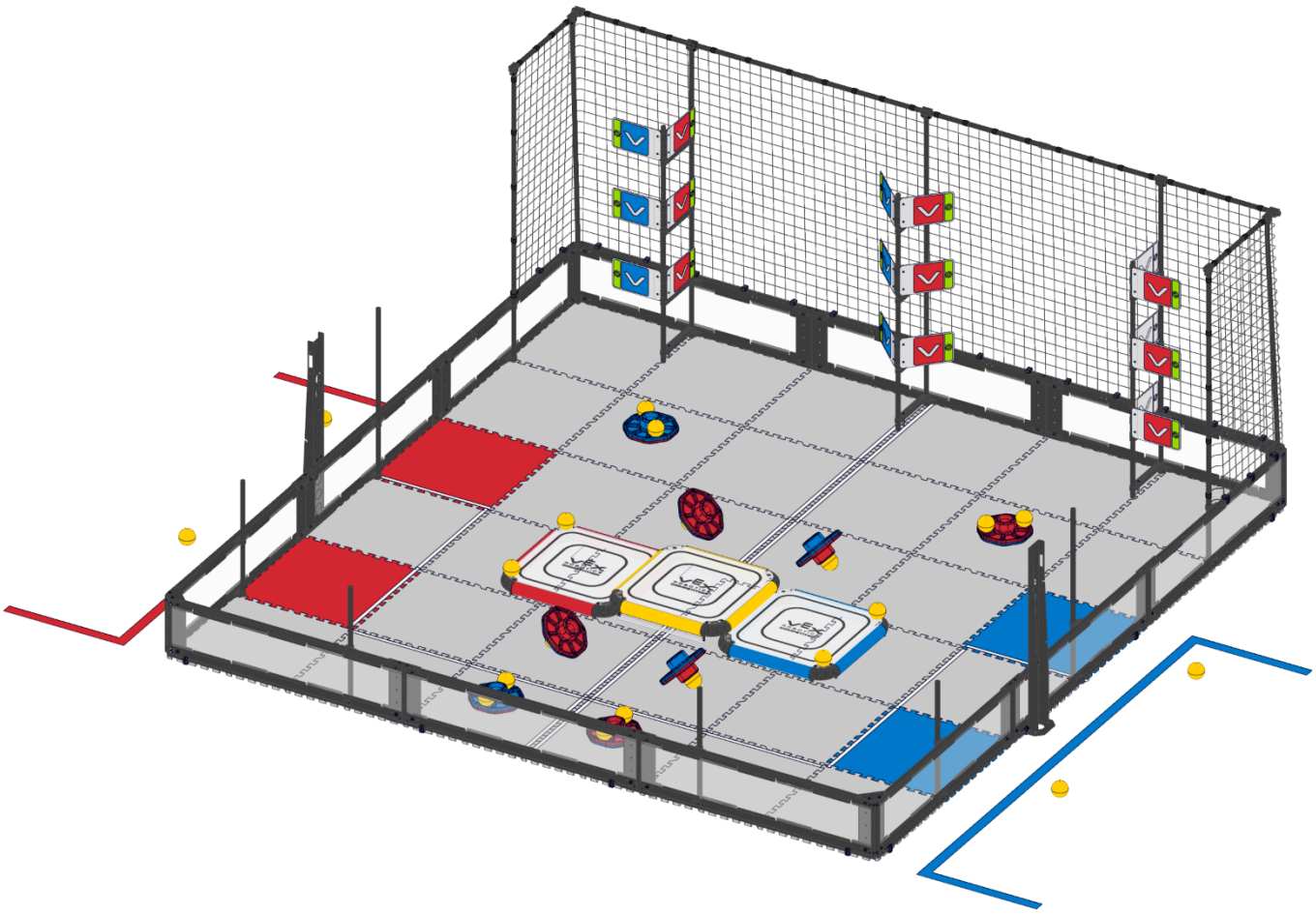
VEX Robotics Competition Turning Point – Appendix A

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 – Turning 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.



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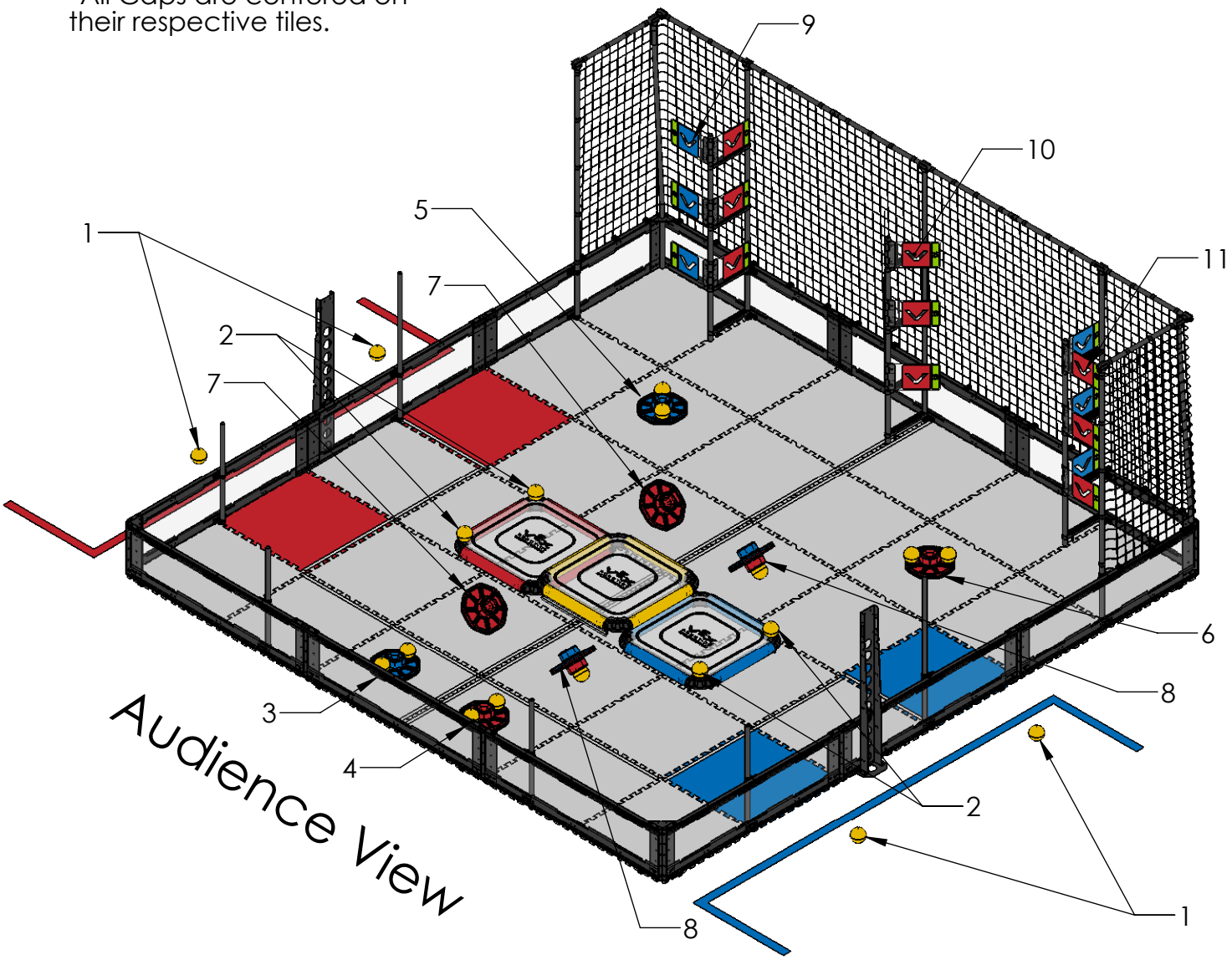
The Caps and Balls and Flags are placed as follows before the start of each match.

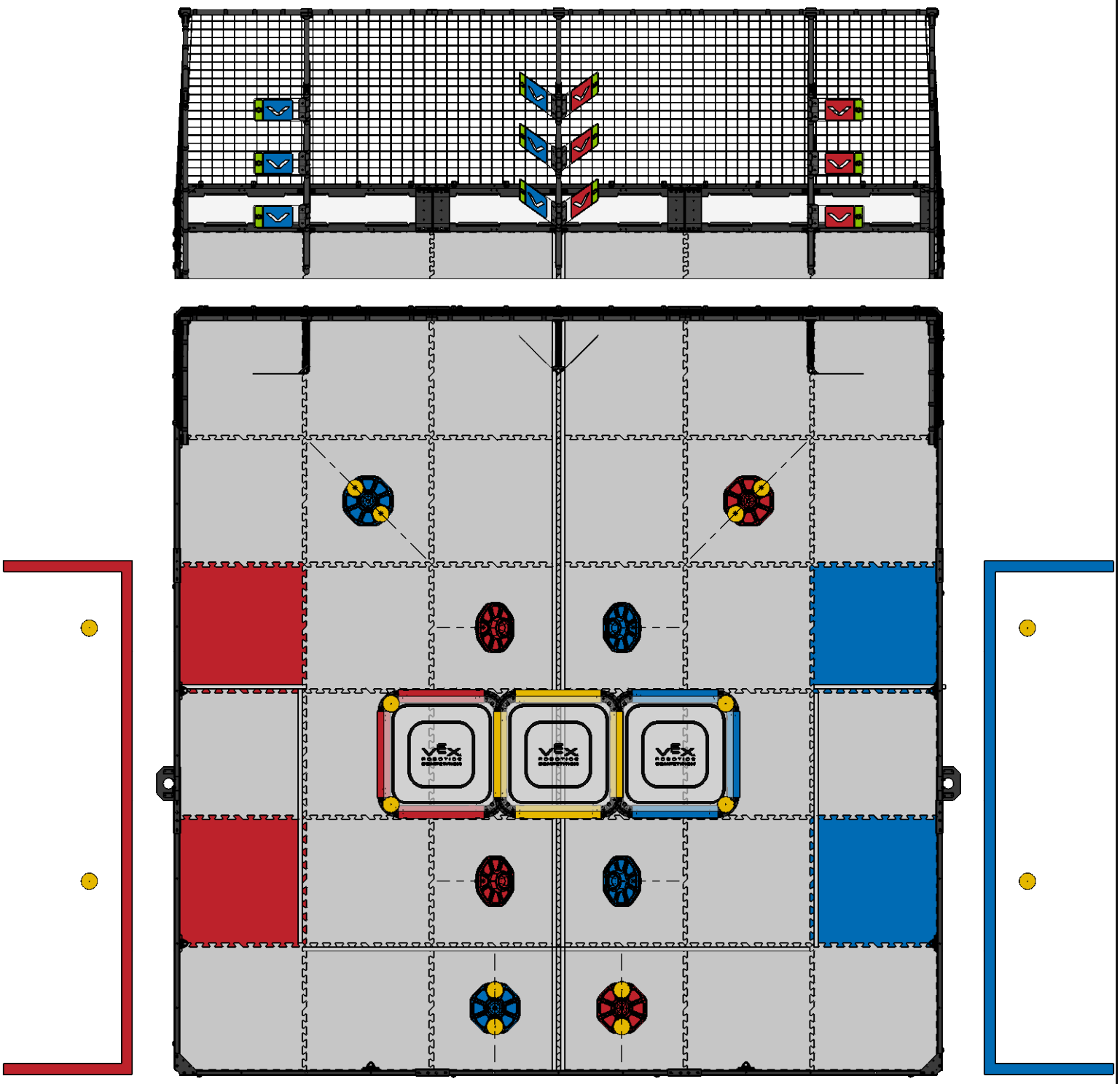
1. (1X) Ball for Preload into each Robot.
2. (4X) Balls placed in the corner cutouts on the Alliance Platforms.
3. (1X) Blue-up Cap* with (2X) balls opposite each other on top of the Cap forming a line perpendicular to the field perimeter wall.
4. (1X) Red-up Cap* with (2X) balls opposite each other on top of the Cap forming a line perpendicular to the field perimeter wall.
5. (1X) Blue-up Cap* with (2X) balls opposite each other on top of the Cap forming a line to the closest field perimeter corner.
6. (1X) Red-up Cap* with (2X) balls opposite each other on top of the Cap forming a line to the closest field perimeter corner.
7. (2X) Red-up Caps* tilted away from the Red Starting Tiles, each with (1X) ball underneath.
8. (2X) Blue-up Caps* tilted away from the Blue Starting Tiles, each with (1X) ball underneath.
9. (3X) Flags closest to the Red Starting Tiles are toggled to scored Blue (Blue-out).
10. (3X) Flags in the center of the field are toggled to neutral (centered).
11. (3X) Flags closest to the Blue Starting Tile are toggled to scored Red (Red-out).

*All Caps are centered on their respective tiles.



VEX ROBOTICS COMPETITION	Description	2018-2019 Game Object Placement (1)	
	Dwg No	276-5677-000 Rev5_Field Specifications	
	Project	VRC 2018-2019	Sheet 1 of 9
	Release	7/13/2018	**ALL DIMENSIONS ARE IN INCHES.**

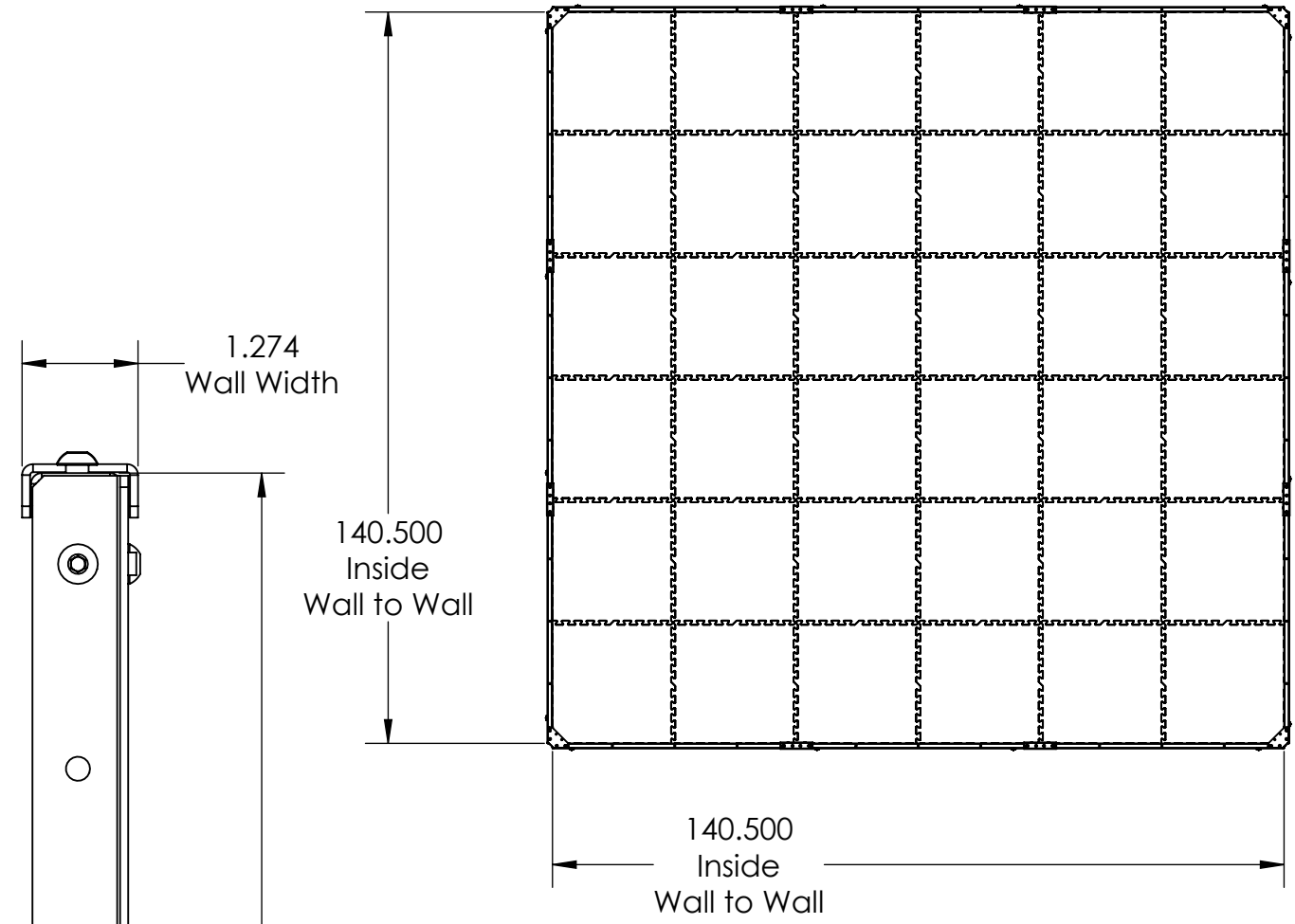
Reference Object Placement Image:



Audience View

Description	2018-2019 Game Object Placement (2)		
Dwg No	276-5677-000 Rev5_Field Specifications		
Project	VRC 2018-2019	Sheet 2 of 9	
Release	7/13/2018	**ALL DIMENSIONS ARE IN INCHES.**	

Field Critical Specs:

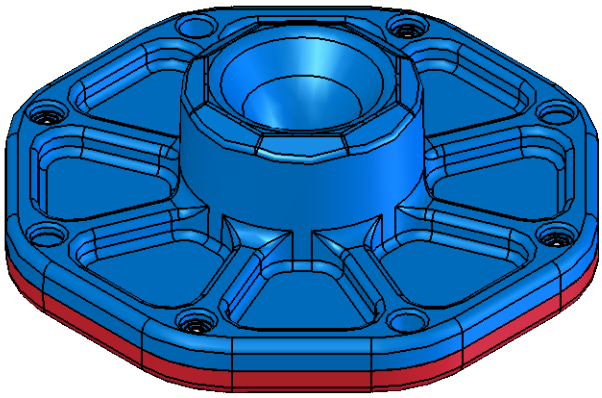


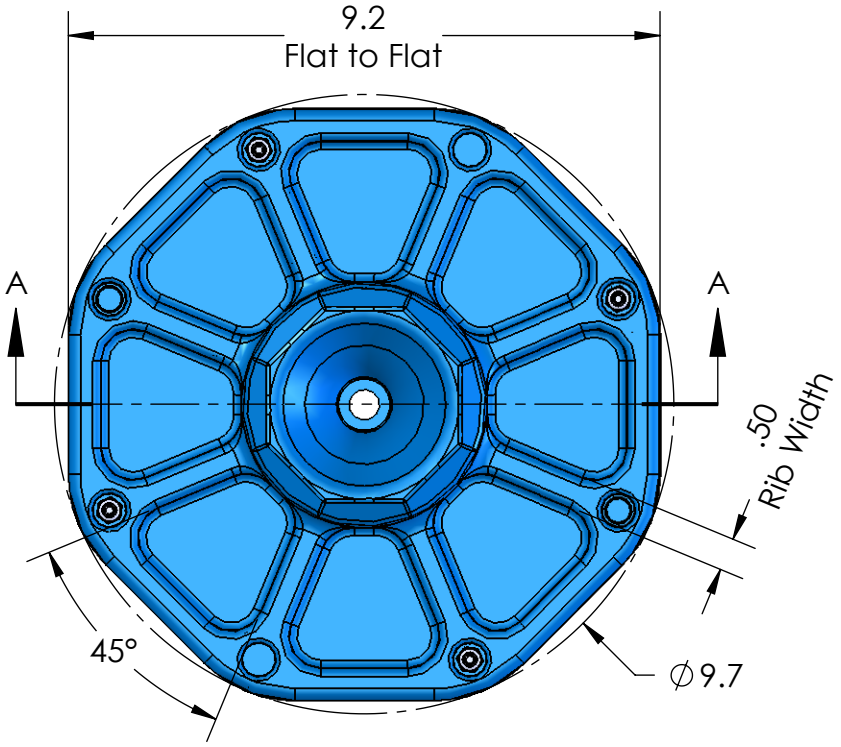
FIELD Critical Dimensions:

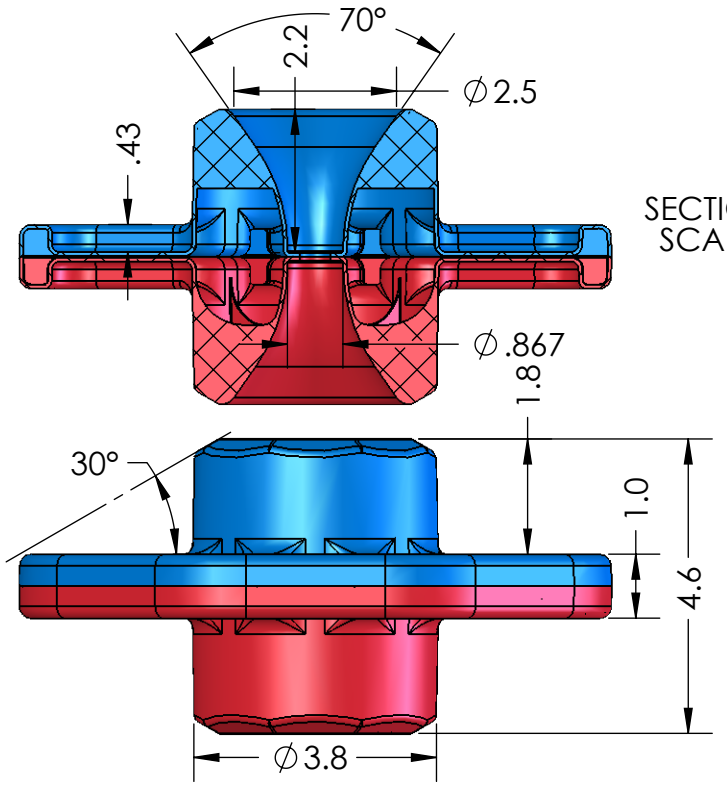
- ~140.5" Square Wall to Wall, Inside
- 11.50" Wall Height
- 1.27" Wall Thickness

NOTE:
Some events may elect to use Techspray 1726-QT, or a suitable replacement, to prevent static buildup on the foam tiles.

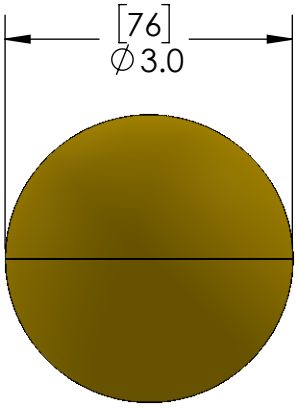
Cap and Ball Specs:

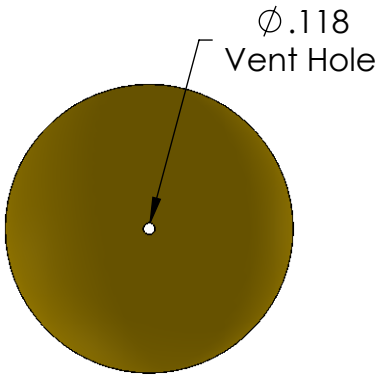






SECTION A-A
SCALE 1 : 3





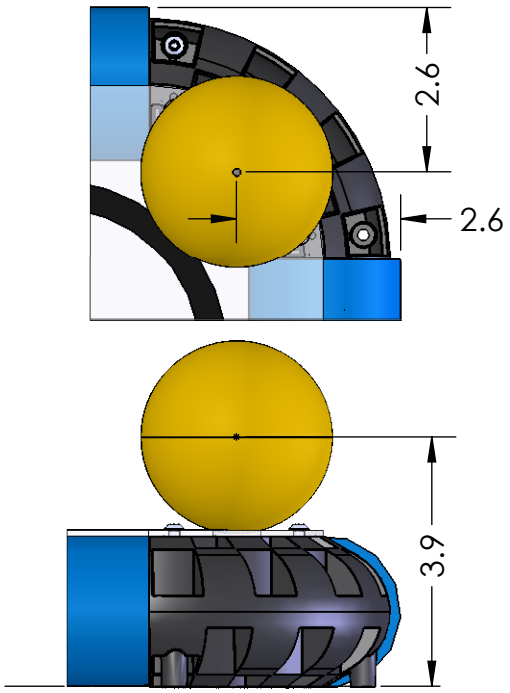
Cap Mass: 335 grams ± 10 grams

Ball Mass: 55 grams ± 10 grams

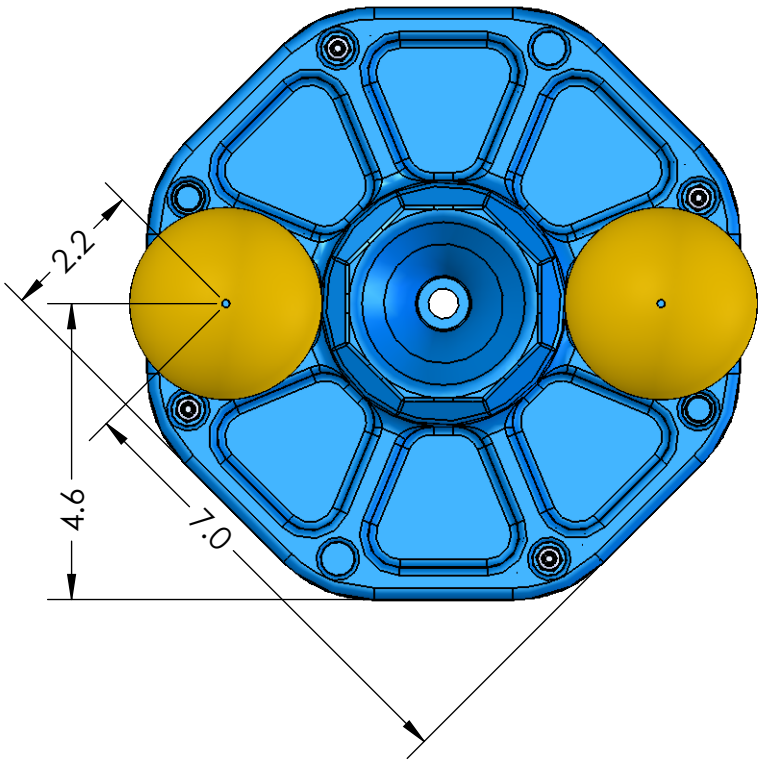
VEX ROBOTICS COMPETITION	Description	2018-2019 Game Specs (1)	
	Dwg No	276-5677-000 Rev5_Field Specifications	
	Project	VRC 2018-2019	Sheet 4 of 9
	Release	7/13/2018	ALL DIMENSIONS ARE IN INCHES.

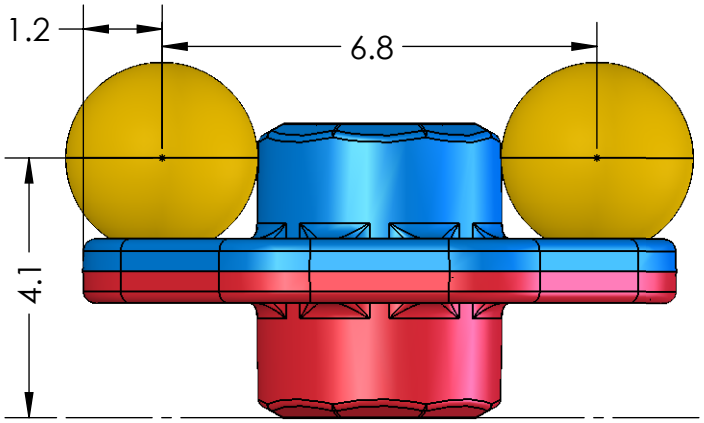
Object Starting Orientation Specs:

Ball on Platform Corner

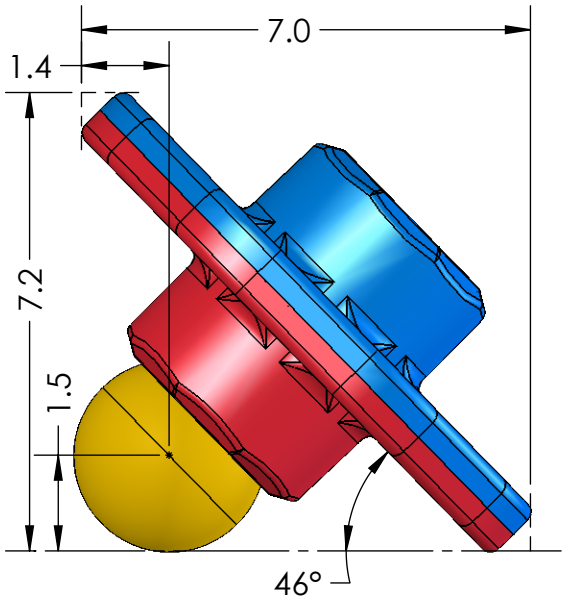


Flat Cap



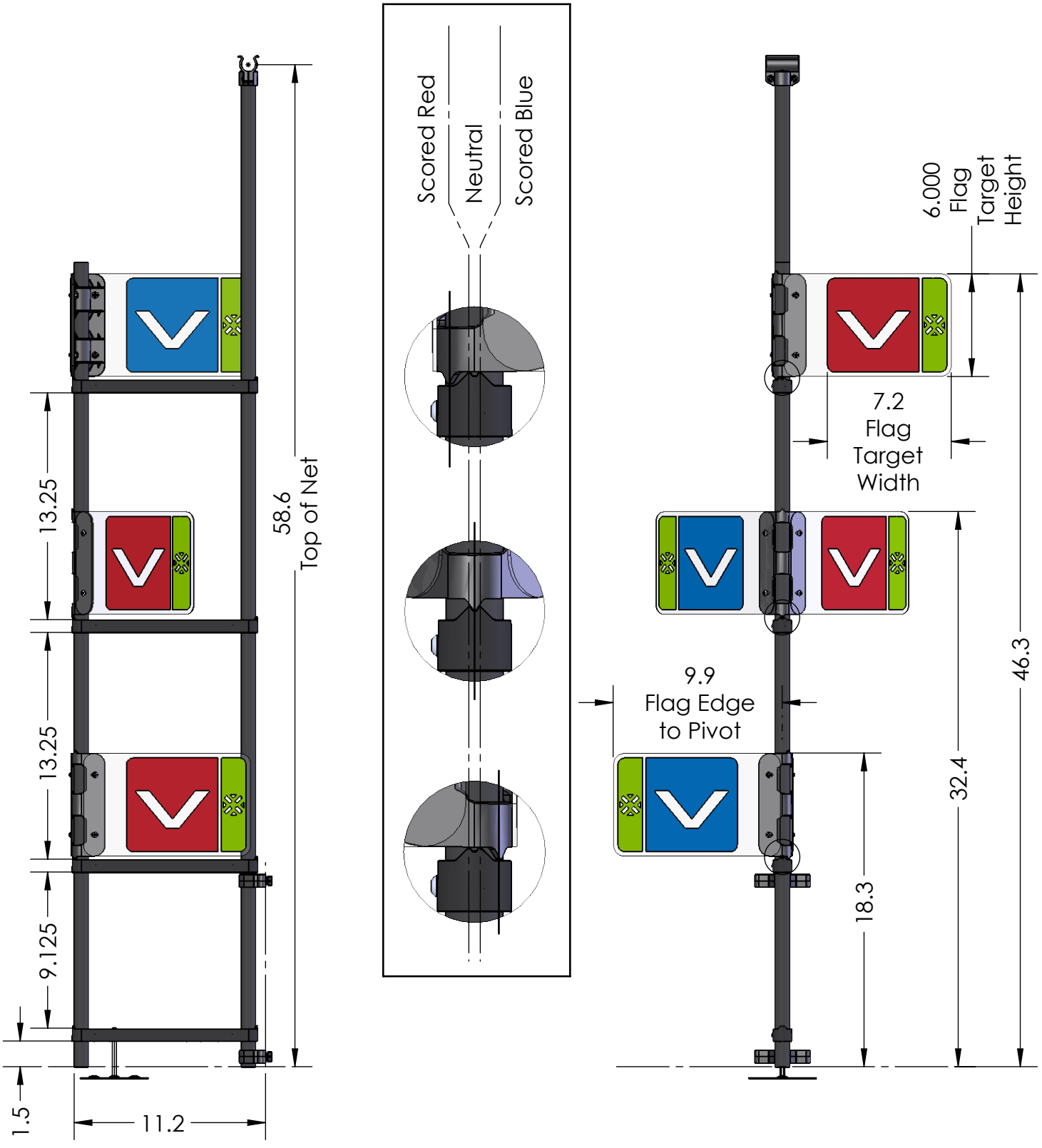


Tilted Cap



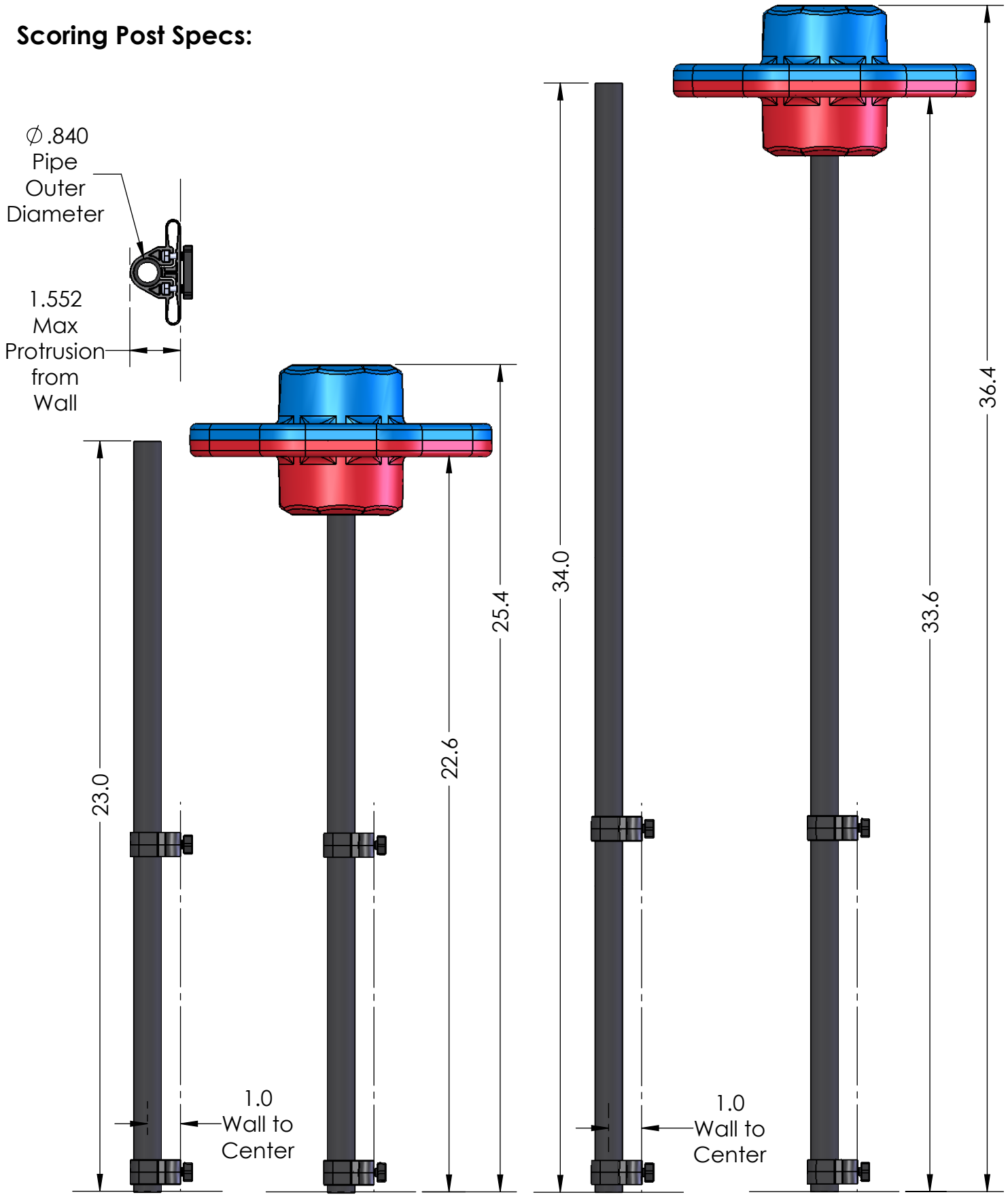
VEX ROBOTICS COMPETITION	Description	2018-2019 Game Specs (2)	
	Dwg No	276-5677-000 Rev5_Field Specifications	
	Project	VRC 2018-2019	Sheet 5 of 9
	Release	7/13/2018	**ALL DIMENSIONS ARE IN INCHES.**

Flag Tower Specs:



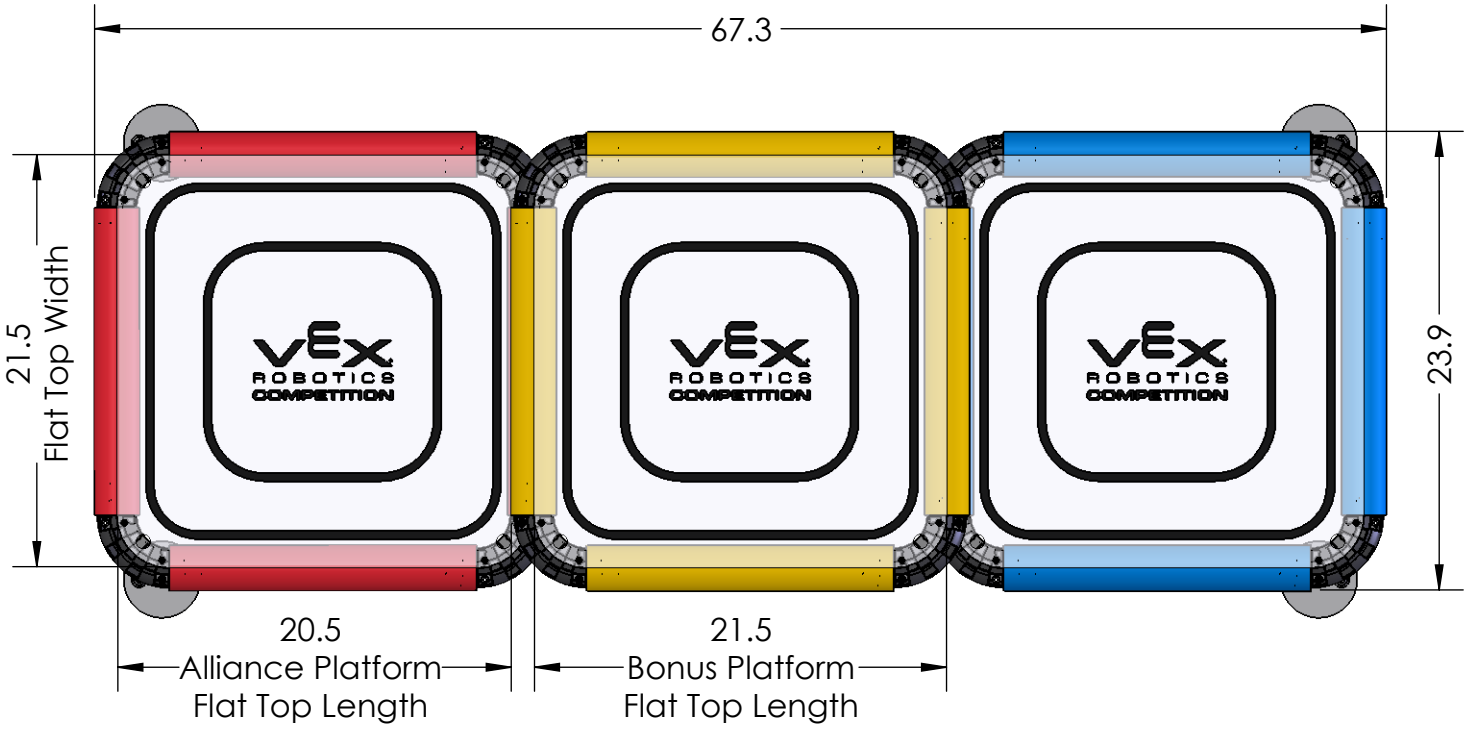
VEX ROBOTICS COMPETITION	Description	2018-2019 Game Specs (3)	
	Dwg No	276-5677-000 Rev5_Field Specifications	
	Project	VRC 2018-2019	Sheet 6 of 9
	Release	7/13/2018	**ALL DIMENSIONS ARE IN INCHES.**

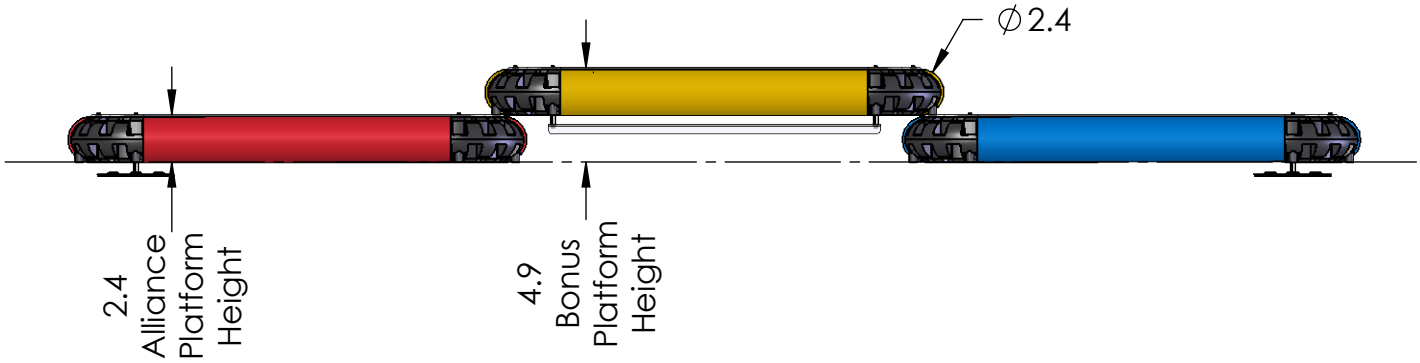
Scoring Post Specs:



VEX ROBOTICS COMPETITION	Description	2018-2019 Game Specs (4)	
	Dwg No	276-5677-000 Rev5_Field Specifications	
	Project	VRC 2018-2019	Sheet 7 of 9
	Release	7/13/2018	**ALL DIMENSIONS ARE IN INCHES.**

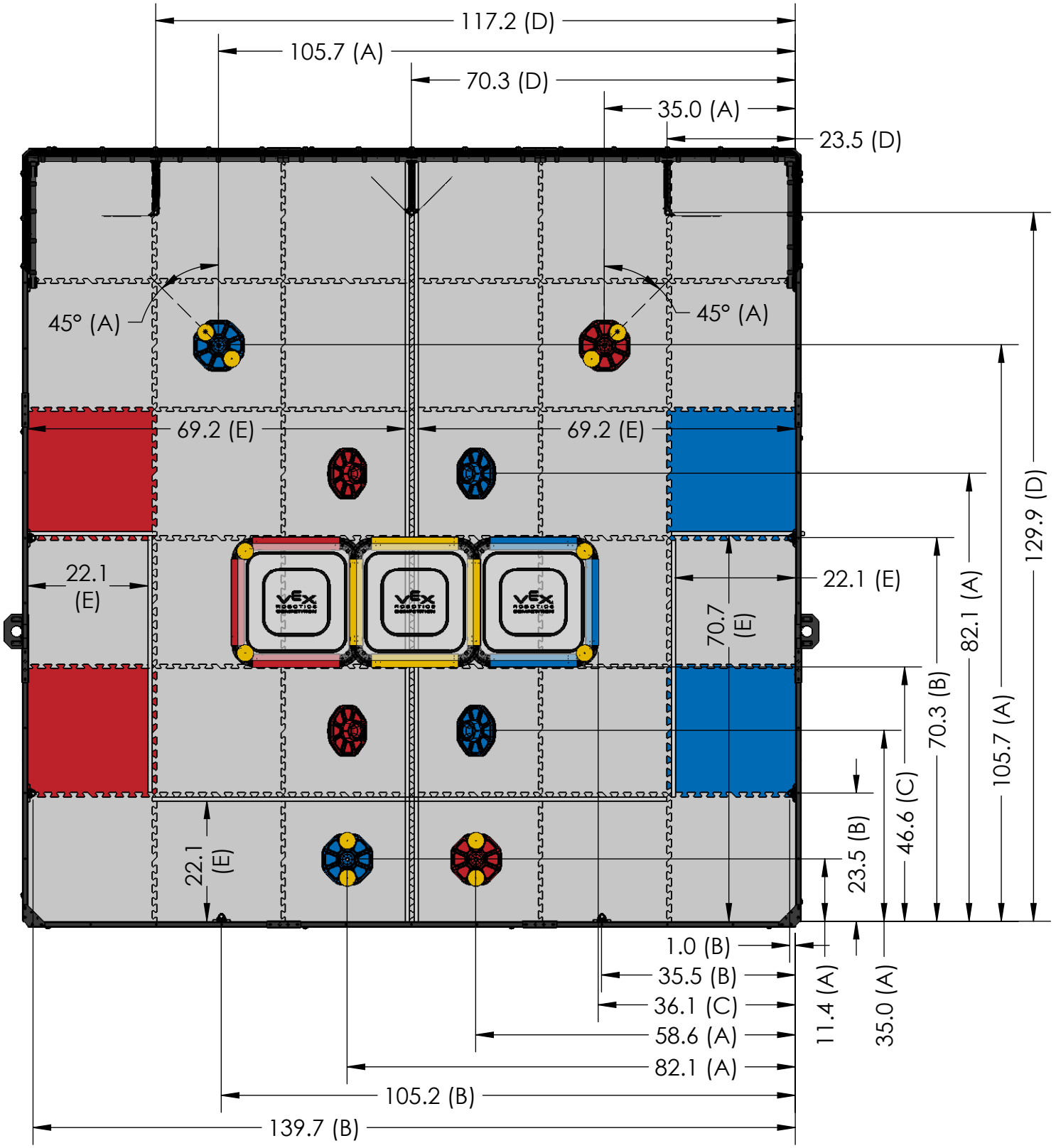
Platform Specs:





Description	2018-2019 Game Specs (5)		
Dwg No	276-5677-000 Rev5_Field Specifications		
Project	VRC 2018-2019	Sheet 8 of 9	
Release	7/13/2018	ALL DIMENSIONS ARE IN INCHES.	

Field Reference Specs:



NOTE: A. Class dimensions subject to ±1.5in tolerance
B. C. D. and E. Class dimensions subject to ± 1.0in tolerance

KEY

A.	Object Starting Position
B.	Scoring Post
C.	Platform
D.	Flag Pivot
E.	Tape

VEX ROBOTICS COMPETITION

Description	2018-2019 Game Specs (6)	
Dwg No	276-5677-000 Rev5_Field Specifications	
Project	VRC 2018-2019	Sheet 9 of 9
Release	7/13/2018	**ALL DIMENSIONS ARE IN INCHES.**