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.
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.
Game Objects & Field Bill of Materials
All of these items are available for purchase from: www.vexrobotics.com.

Generic Field Elements – Reusable Each Year

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>278-1501</td>
<td>VRC Field Perimeter Frame &amp; Hardware</td>
</tr>
<tr>
<td>278-1502</td>
<td>VRC Foam Field Surface – (36) Grey, (2) Red, (2) Blue Tiles</td>
</tr>
<tr>
<td>275-1401</td>
<td>VRC VEXnet Field Controller</td>
</tr>
</tbody>
</table>

Official VEX Robotics Competition – Turning Point Specific Elements

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Quantity per Full Field</th>
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<tbody>
<tr>
<td>276-5678</td>
<td>VRC 2018-2019 Game Element Kit</td>
<td>2</td>
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<tr>
<td>276-5679</td>
<td>VRC 2018-2019 Field Element Kit 1</td>
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<tr>
<td>276-5681</td>
<td>VRC 2018-2019 Pipe Kit</td>
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</tr>
<tr>
<td>276-6115</td>
<td>VRC 2018-2019 Field Element Kit 2</td>
<td>1</td>
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</table>

Practice Elements

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>276-5678</td>
<td>VRC 2018-2019 Game Element Kit</td>
</tr>
<tr>
<td>276-5680</td>
<td>VRC 2018-2019 Scoring Element Kit</td>
</tr>
</tbody>
</table>
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.
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.
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

Release: 7/13/2018

ALL DIMENSIONS ARE IN INCHES.

www.VEXRobotics.com
Field Critical Specs:

- Inside Wall to Wall: 140.500
- Wall Width: 1.274
- Wall Height: 11.500
- 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:

Cap Mass: 335 grams ± 10 grams

Ball Mass: 55 grams ± 10 grams
Object Starting Orientation Specs:

Flat Cap

Ball on Platform Corner

Tilted Cap
Flag Tower Specs:

Scored Red
Neutral
Scored Blue

6.000 Flag Target Height
7.2 Flag Target Width
9.9 Flag Edge to Pivot

Top of Net
58.6

9.125  13.25  13.25

11.2

1.5

13.25

276-5677-000 Rev5_Field Specifications

ALL DIMENSIONS ARE IN INCHES.
Scoring Post Specs:

- **Pipe Outer Diameter**: 0.840
- **Max Protrusion from Wall**: 1.552

**Dimensions (inches):**
- Wall to Center: 22.6
- Wall to Center: 25.4
- Wall to Center: 34.0
- Wall to Center: 33.6
- Total Height: 36.4

**Notes:**
- ALL DIMENSIONS ARE IN INCHES.

**Document Information:**
- Description: 2018-2019 Game Specs (4)
- Dwg No: 276-5677-000 Rev5_Field Specifications
- Project: VRC 2018-2019
- Release: 7/13/2018

**Website:** www.VEXROBOTICS.com
Platform Specs:

- Flat Top Width: 21.5 inches
- Flat Top Length: 21.5 inches
- Flat Top Length: 20.5 inches
- Flat Top Length: 23.9 inches
- Alliance Platform Height: 4.9 inches
- Bonus Platform Height: 2.4 inches
- Alliance Platform Height: 2.4 inches
- Bonus Platform Height: 4.9 inches

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