Introduction

This document will provide detailed specifications and a bill of materials (BOM) for the Official Competition Field.

Please note that this field utilizes the VEX IQ Challenge – Full Field Perimeter & Tiles kit (228-2550) developed by VEX Robotics. Instructions and specifications for this field perimeter are available in a separate document, and are also important for field assembly.

This document is divided up into three sections:

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

Please note that the Field Assembly Instructions are also available for individual download. The Instructions are broken down by major field element and correspond to a colored polybag included in the VEX IQ Challenge – Squared Away Game Elements Kit (228-6095).

There is also an accompanying STEP file which can be imported into most 3D modeling programs. This 3D model not only shows the “official” setup of a VEX IQ Challenge Squared Away Challenge field, but also includes detailed models of all individual field elements.

For additional game play detail, please refer to the VEX IQ Challenge Squared Away Challenge manual.
Field Overview

The game VEX IQ Challenge Squared Away is played on a 4ft x 8ft playing field, surrounded by 2-1/2 inch walls. The playing field floor tiles and walls are modular plastic tiles from the VEX IQ Challenge Field Perimeter & Tiles Kit (228-2550) with integrated mounting holes for VEX IQ structural elements. (35x) Balls start spread across the field in different starting orientations, as well as (3x) Green Cubes, (2x) Blue Cubes, and (2x) Red Cubes for use as scoring objects. (2x) Red Corner Goals and (2x) Blue Corner Goals are situated in the two corners on opposite sides of the field that provide places for Robots to place and stack Balls and Red or Blue Cubes for points. Centered on the field is (1x) tall Platform as well as (2x) short Platforms offset equally from center on the opposite side of the field.

For more details and specific game-play rules, please refer to the VEX IQ Challenge Squared Away manual.
Game Objects & Field Bill of Materials

All items are available for purchase from www.vexiq.com.

Standard Playing Field – Reusable Each Year

There are two options available for the official playing field. The field is sold as a half field option and as a full field option. Two Half Field kits can be combined to equal a Full Field kit. Individual field tiles and wall sections are also available as replacements.

<table>
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<tr>
<th>Part Number</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>228-2550</td>
<td>VEX IQ Challenge – Full Field Perimeter &amp; Tiles</td>
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<tr>
<td>228-3051</td>
<td>VEX IQ Challenge – Half Field Perimeter &amp; Tiles</td>
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<td>228-4832</td>
<td>VEX IQ Field Tile</td>
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<td>228-4833</td>
<td>VEX IQ Field Perimeter Wall</td>
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<tr>
<td>228-4834</td>
<td>VEX IQ Field Corner Wall</td>
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Official VEX IQ Challenge - Squared Away Specific Elements

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<th>Part Number</th>
<th>Product Name</th>
<th>Quantity per Full Field</th>
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<tr>
<td>228-6096</td>
<td>VEX IQ Challenge – 2019-2020 Scoring Element Kit</td>
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<td>228-6095</td>
<td>VEX IQ Challenge – 2019-2020 Game Element Kit 1</td>
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<tr>
<td>228-6356</td>
<td>VEX IQ Challenge – 2019-2020 Game Element Kit 2</td>
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Detailed Bill of Materials for each Game Element Kit can be found at the beginning of each Field Assembly Instruction Manual.

- **Scoring Element Kit** consists of (1x) Ball and all parts needed to make (1x) Blue Cube.
- **Game Element Kit 1** consists of all parts needed to make the (2x) Red Cubes, (3x) Green Cubes, (2x) Blue Cubes, (1x) Tall Platform, (2x) Short Platform, and (4x) Corner Goals and Scoring Markers.
- **Game Element Kit 2** consists of (36x) Balls.
Field Specifications

Introduction
This section will outline the specifications which are most important to teams when designing a robot to compete in VEX IQ Challenge Squared Away.

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.
Field Element Dimensions

The standard VEX IQ Challenge playing field is composed of (32x) floor tiles, (20x) straight wall segments, and (4x) corner wall segments. Each floor tile is 1 foot (305mm) square and molded in a very light grey plastic. Black lines 1 inch (25mm) wide create a “+” sign over the top of the tile. These lines are used to mark areas of the field such as starting or scoring zones, and can be read by sensors on your robot to aid autonomous navigation. Metric dimensions in millimeters are shown in [brackets].

**Floor Tile Dimensions**

![Floor Tile Dimensions Diagram]

**Perimeter Dimensions (Side View)**

![Perimeter Dimensions Diagram]
Assembled Field Dimensions

The standard VEX IQ Challenge playing field is composed of (32x) 1ft square tiles. These tiles are arranged in a rectangle that is (4x) tiles wide by (8x) tiles long. A 2-1/2” (64mm) high wall is assembled onto the outside of these tiles. All floor tiles and wall sections easily and quickly snap together.
Game Element Locations
Ball Specifications

The Balls in VEX IQ Challenge Squared Away are hollow plastic spheres, 3” (76.2mm) in diameter and weigh approximately 0.05 pounds (22 grams). Balls are placed on the field in 3 unique starting configurations.

Ball Dimensions:
Cube Specifications
The *Cubes* in VEX IQ Challenge Squared Away consist of VEX IQ pieces assembled as shown in the Field Assembly Instructions with dimensions of 7”x7” (177.8mm).

**Cube Dimensions:**

![Cube Diagram](image-url)
Corner Goal Specifications

The Corner Goal in VEX IQ Challenge Squared Away consists of multiple VEX IQ pieces assembled as shown in the Field Assembly Instructions and serves as one of four areas to place Cubes to score points. The Corner Goals are four 6” (152.4mm) square areas in the corners of the field bounded by the inside edges of the black lines.

Corner Goal Dimensions:
**Platform Specifications**

The Platforms in VEX IQ Challenge Squared Away consist of VEX IQ pieces assembled as shown in the Field Assembly Instructions and serve as places to place Balls and Cubes to score points. There are three Platforms in VEX IQ Challenge Squared Away: two short Platforms and one tall Platform.

**Platform Dimensions:**