Low Cost Field Options

Introduction
The official field components and game objects used in VEX Robotics Competition – Change Up are all available for purchase from www.vexrobotics.com (P/N 278-1501), however not every team needs the exact objects which will be used at official VEX Robotics Competition tournaments. This section will outline some options for teams wishing to use lower-cost substitutes for field objects.

Field Perimeter Cost Reduction
VEX Robotics Competition – Change Up utilizes the VEX Competition Field Perimeter (278-1501) as the outer edge of the playing area. This custom sheet-metal and polycarbonate frame is robust and designed to be a high-end solution for anyone holding a VEX Robotics Competition. In some cases, however, having a high-end perimeter wall is not important. Some teams may wish to practice with something as simple as a perimeter of tape laid out on the floor. For information on cost reducing the field perimeter and for detailed plans to construct one example of a low-cost perimeter consult the Low-Cost Field Perimeter Guide.

Field Object Cost Reduction
The field elements specific to playing VEX Robotics Competition – Change Up are available from www.vexrobotics.com. These objects include the Balls, Goals, and hardware.

The key things to think about when cost reducing these field objects are the following two questions:

1. What field functionality do I actually need?
2. How can I achieve this functionality with the minimum effort and cost?

The simplest way to reduce cost is to use less. Does every team need a full set of Balls? Maybe a handful is enough for prototyping and practicing.

There are a variety of reasons to build or purchase field objects, in many of these cases the official “spec” field components are unnecessary. By analyzing the functionality needed for an application, one can build a “stand-in” object which will interact with robots in the same manner as an ‘official’ component. These "stand-in" objects can be extremely useful during the prototyping phase of the design process.
Example Prototyping Ideas

As discussed above, when considering building unofficial field objects, consider the functionality required. Mock-up Goals could be as simple as some wood and PVC pipes fastened together. It may be possible to build the entire field out of wood and successfully simulate robot functions – it just depends what is being tested.

Detailed specifications for the “official” pieces are included in Appendix A – a team must determine which dimensions are important for their mockups and build them accordingly.

Every Welcome Kit will include one Ball. This sample should help teams learn about the nature of the objects, but also to find things they can use to simulate objects. The sample will provide a good benchmark as teams look for “placebo” objects.

.STL files are available on www.vexrobotics.com for the Ball. Teams can use most 3D printers or 3D printing services to create a higher-fidelity prototype game object from these files. Despite coming from an official source, teams should remember that there will be differences between a 3D printed object and the official object.

VRC Change Up Practice Kit

VEX Robotics is happy to offer lower-cost kits to VEX Robotics Competition participants who do not wish to purchase a full field. The Scoring Element Kit includes a Ball. With this kit, some PVC pipe, and some wood, teams can build enough for their robot to test its scoring abilities.

More information on these kits is available in the VEX Robotics Competition – Change Up section of www.vexrobotics.com.

Further Questions

For official game manual clarifications, please go to www.roboevents.com/VRC/2020-2021/QA. The Q&A allows teams to ask for official rulings from the VEX Robotics Competition Game Design Committee. Each question will receive an answer from the GDC. Non-clarification questions should be directed to the VEX Technical Support & Community Forum at www.vexforum.com where all VEX related questions and discussion is welcome.