



AERIAL **DRONE**
COMPETITION

PRO >>



MISSION 2026 - 2027

OFF GRID

FIELD ASSEMBLY & LAYOUT INSTRUCTIONS

Version 2.0



DRONE
COMPETITIONS



RECF Aerial Drone Competition Pro Mission 2026-2027: Off Grid

Game Element Assembly & Layout Instructions Version 2.0

September 29, 2026

Copyright 2026, Robotics Education & Competition Foundation



Table of Contents

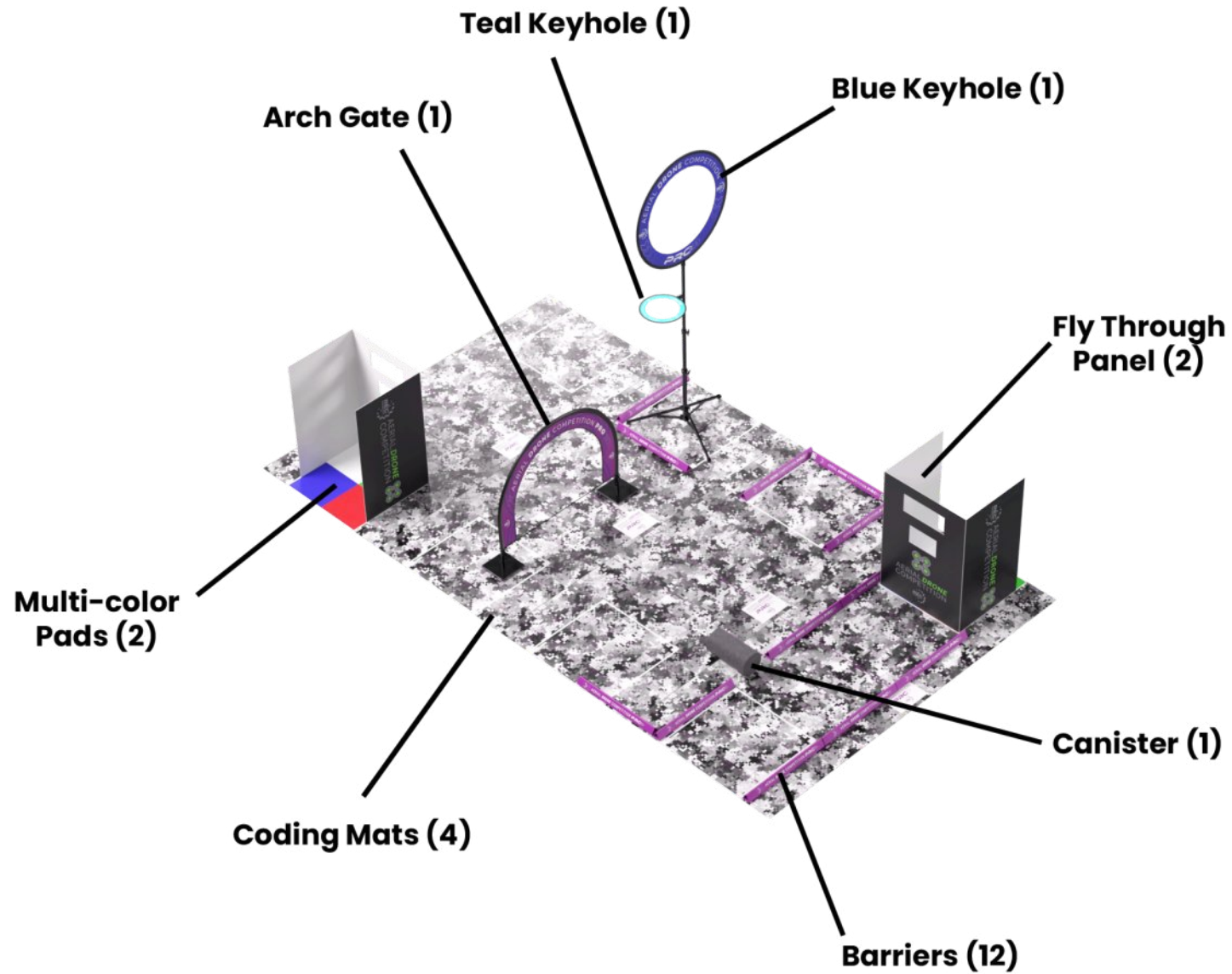
Overview	5
Section 1: Setting up the Solo Mission Field	6
1.1 Solo Mission Field Setup Step 1: Place the Mats	7
1.2 Solo Mission Field Setup Step 2: Place the Arch Gate	8
1.3 Solo Mission Field Setup Step 3: Place Supports for the Keyhole Assembly	9
1.4 Solo Mission Field Setup Step 4: Add Blue & Teal Keyhole Gates	10
1.5 Solo Mission Field Setup Step 5: Position the Fly-Through Panels and Multi-Color Pads	11
1.6 Solo Mission Field Setup Step 6: Assemble the Barriers (12 total)	12
1.7 Solo Mission Field Setup Step 7: Place the Barriers and Canister	13
1.8 Solo Mission Field Setup Step 8: Place AprilTag Stickers on Fly-Through Panel 1	14
1.9 Solo Mission Field Setup Step 9: Place AprilTag Stickers on Barrier & Canisters	15
1.10 Solo Mission Field Setup Step 10: Place AprilTag Stickers in Containment Bay	16
Section 2: Setting up the Alliance/Teamwork Mission Field	17
2.1 Alliance/Teamwork Mission Field Layout Step 1: Build the Perimeter	18
2.2 Alliance/Teamwork Mission Field Layout Step 2: Build and Place the Comms Towers	19
2.3 Alliance/Teamwork Mission Field Layout Step 3: Build and Place the Cooling Pools	20
2.4 Alliance/Teamwork Mission Field Layout Step 4: Adjust Cooling Pool & Net Positions	21
2.5 Alliance/Teamwork Mission Field Layout Step 5: Build and Place the Pumps	22
2.6 Alliance/Teamwork Mission Field Layout Step 6: Build and Place the Recovery Pads	23
2.7 Alliance/Teamwork Mission Field Layout Step 7: Assemble and Place the Power Cells	24
2.8 Alliance/Teamwork Mission Field Layout Step 8: Place the Fuel	25

Overview

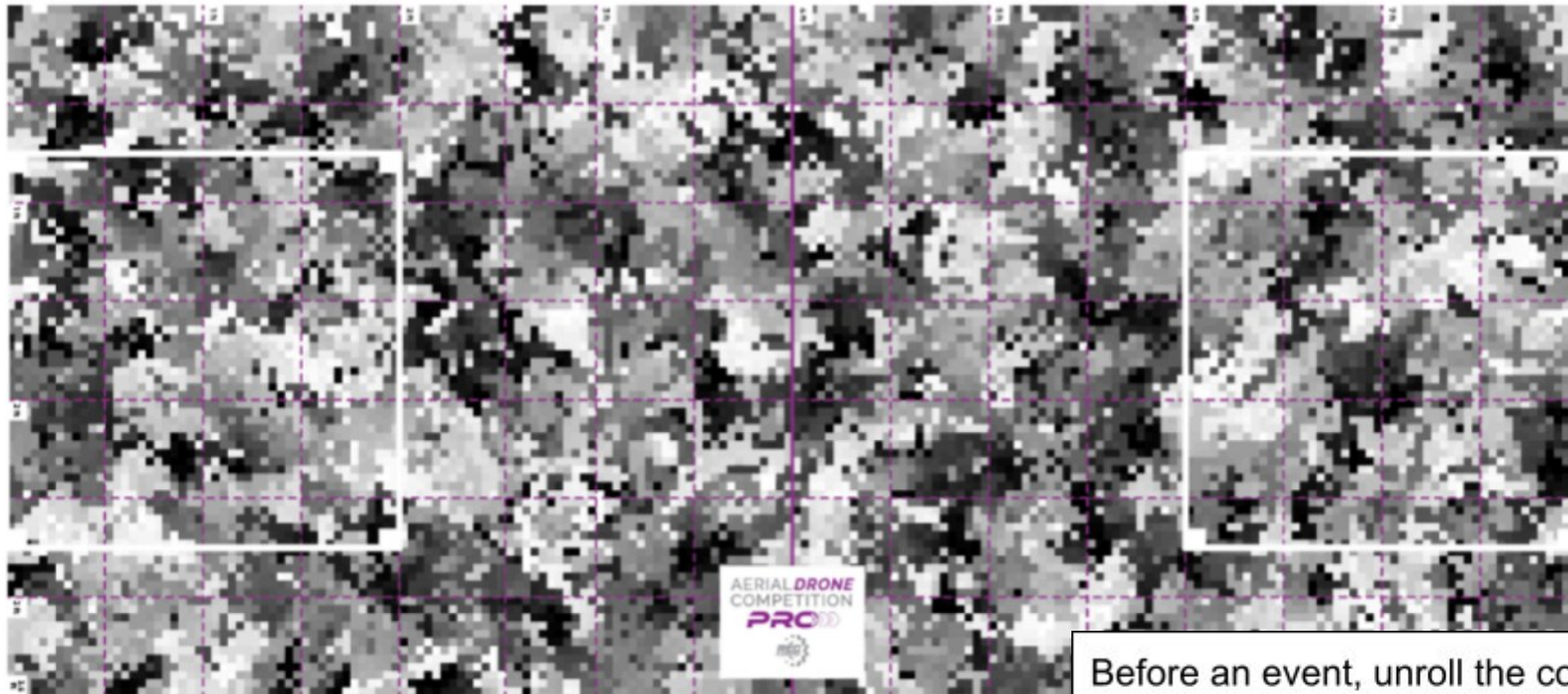
Additional assembly instructions and tips are available in the following resources.

- [ADC Pro Skills Field Assembly Guides](#)
- [ADC Pro Teamwork Field Assembly Guides](#)
- [Instructions for Assembling the ADC Pro Teamwork Field Perimeter](#)
 - [PVC Pipes & Connectors \(½ field\)](#)
- [Instructions for Assembling an ADC Pro Off Grid Comms Tower](#)
- [Instructions for Assembling an ADC Pro Off Grid Cooling Pool](#)
- [Instructions for Assembling an ADC Pro Off Grid Pump](#)

Section 1: Setting up the Solo Mission Field

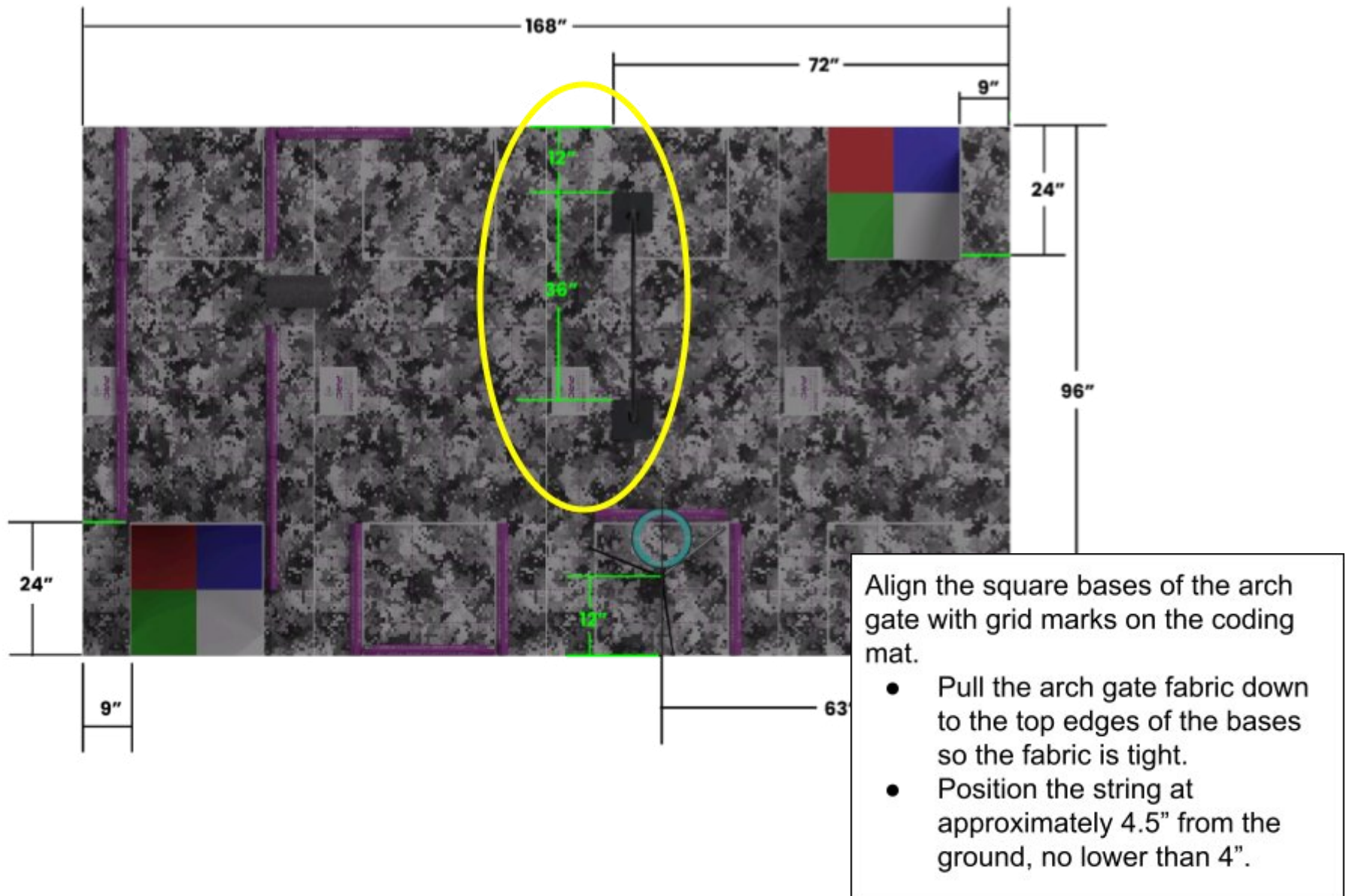


1.1 Solo Mission Field Setup Step 1: Place the Mats

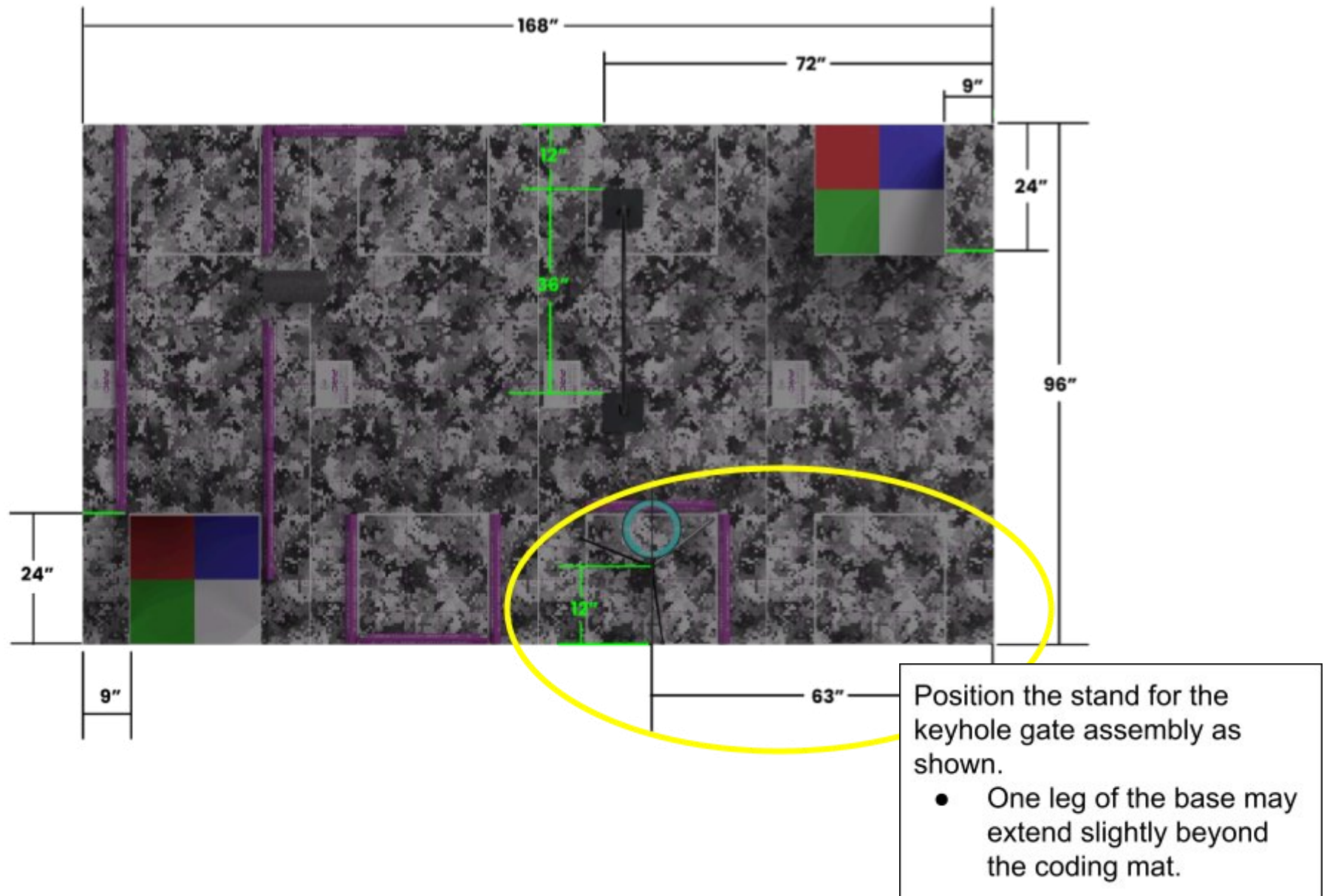


Before an event, unroll the coding mats and use weights on the end so that the mats lay flat during the competition. Place the four sections of coding mat in order, with long sides adjacent, and attach them together with gaffer's tape (or other tape) on the back side. Use additional tape as needed to secure the edges of the mat to the venue floor if the corners are curling.

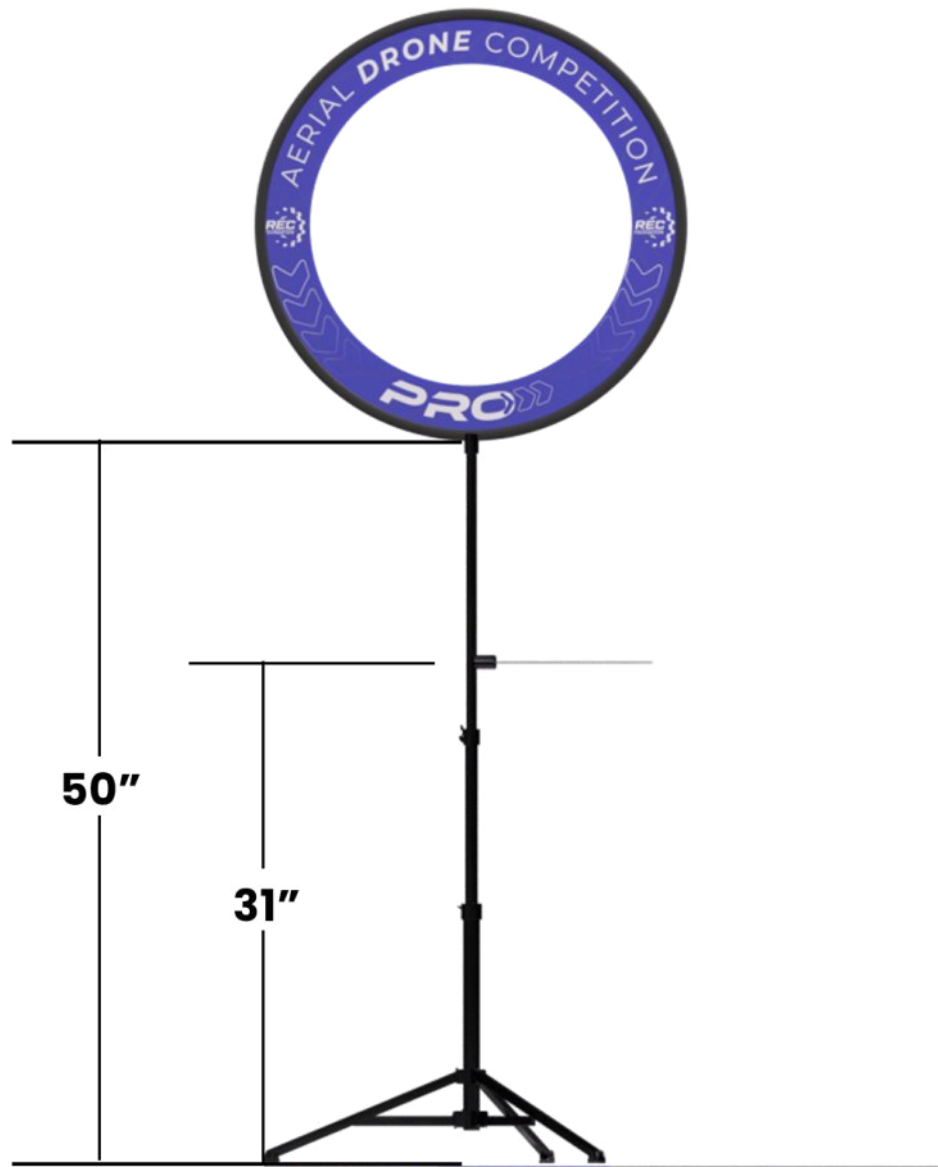
1.2 Solo Mission Field Setup Step 2: Place the Arch Gate



1.3 Solo Mission Field Setup Step 3: Place Supports for the Keyhole Assembly



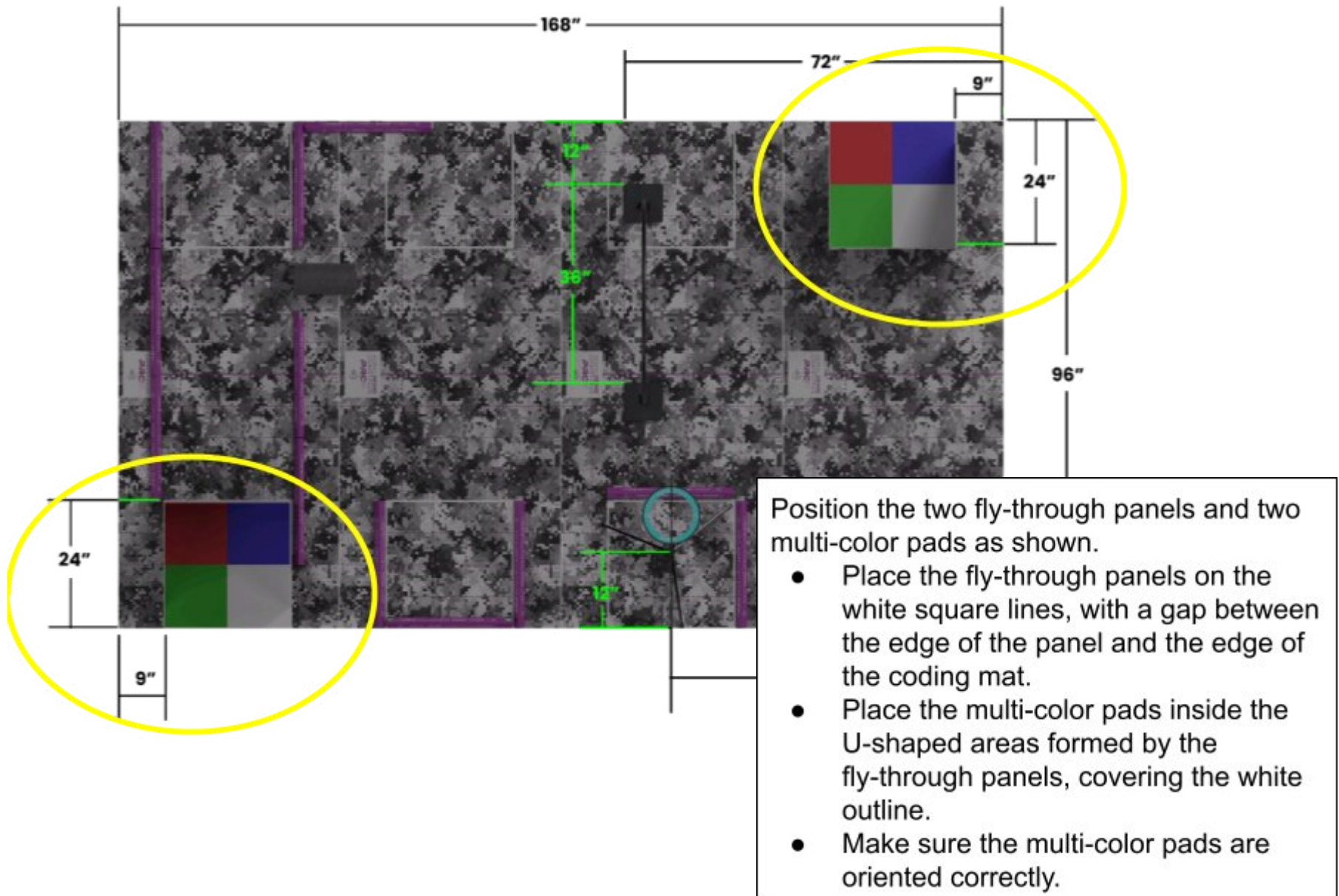
1.4 Solo Mission Field Setup Step 4: Add Blue & Teal Keyhole Gates



Attach the keyhole gates.

- Attach the blue keyhole gate and adjust it so the bottom of the blue keyhole is 50" above the mat.
- Attach the teal keyhole gate using a metal T-bracket and adjust it so the bottom of the teal keyhole is 31" above the mat.

1.5 Solo Mission Field Setup Step 5: Position the Fly-Through Panels and Multi-Color Pads

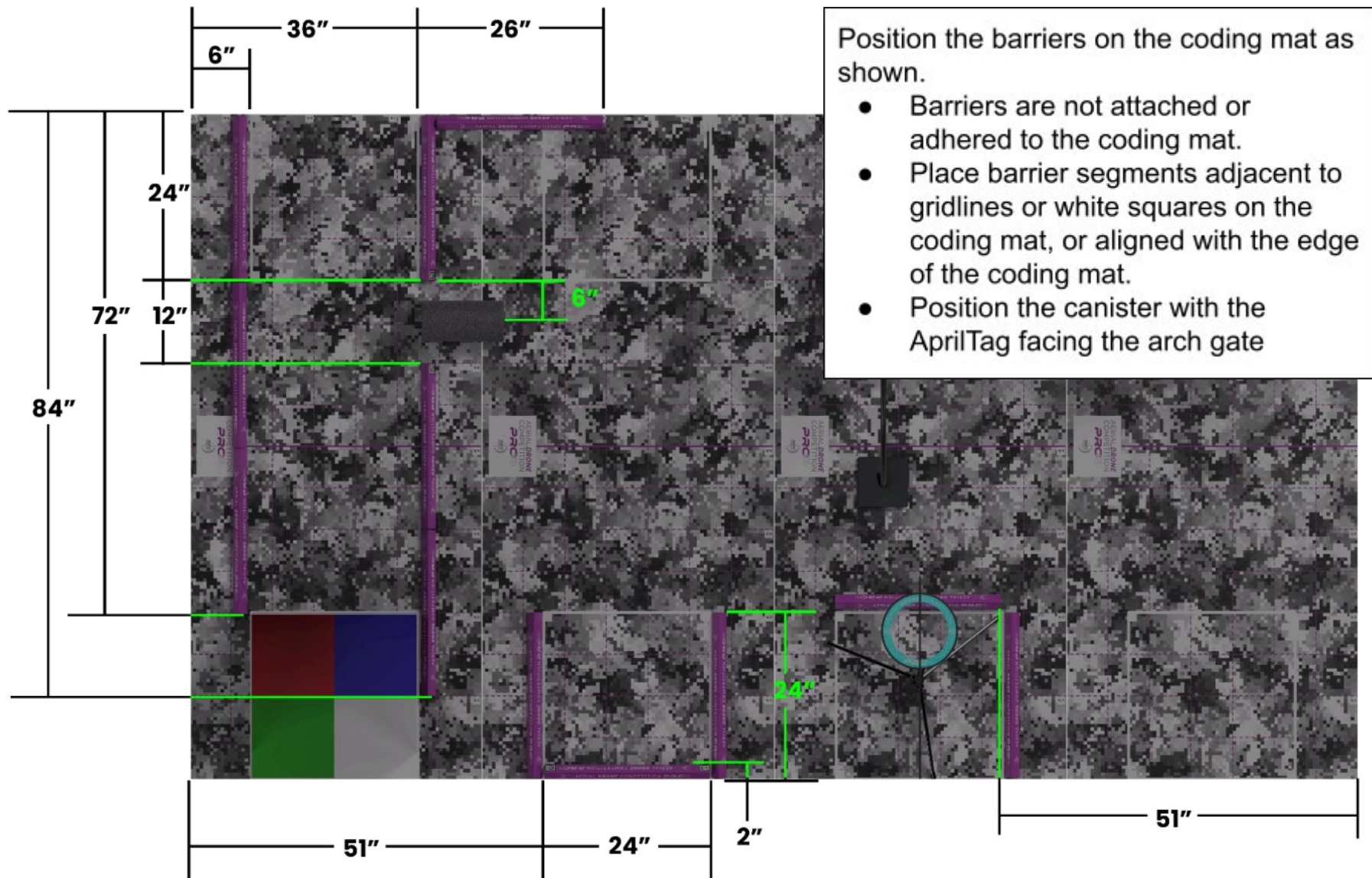


1.6 Solo Mission Field Setup Step 6: Assemble the Barriers (12 total)



- Fold and secure all of the barrier segments.
- Fold the barrier at the crease lines with strong pressure.
 - Fold the shorter panel in first, then continue folding into a triangular shape.
 - Secure both ends with clear tape.
 - Secure the long edge with clear tape.

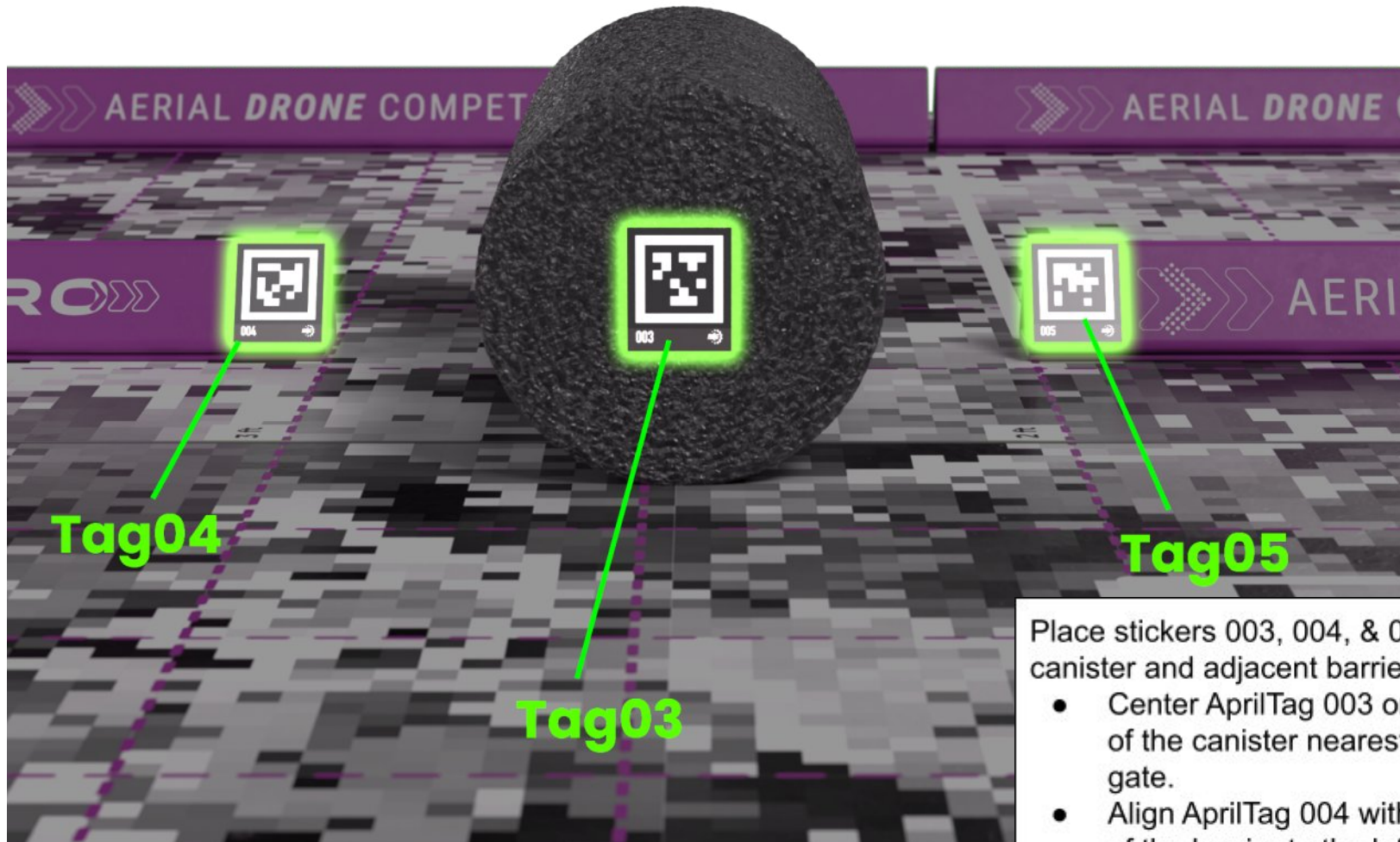
1.7 Solo Mission Field Setup Step 7: Place the Barriers and Canister



1.8 Solo Mission Field Setup Step 8: Place AprilTag Stickers on Fly-Through Panel 1



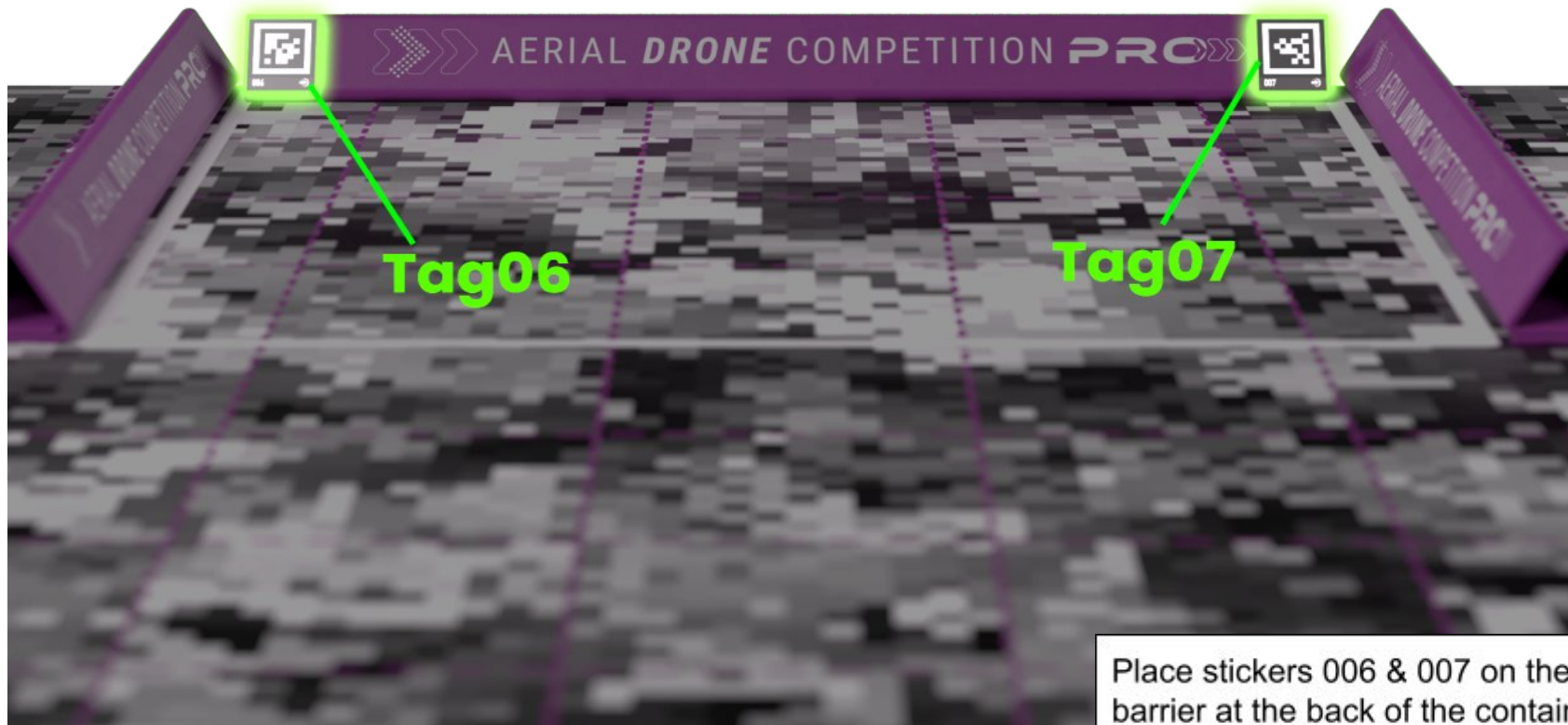
1.9 Solo Mission Field Setup Step 9: Place AprilTag Stickers on Barrier & Canisters



Place stickers 003, 004, & 005 on the canister and adjacent barriers.

- Center AprilTag 003 on the end of the canister nearest the arch gate.
- Align AprilTag 004 with the end of the barrier to the left of the canister.
- Align AprilTag 005 with the end of the barrier to the left of the canister.

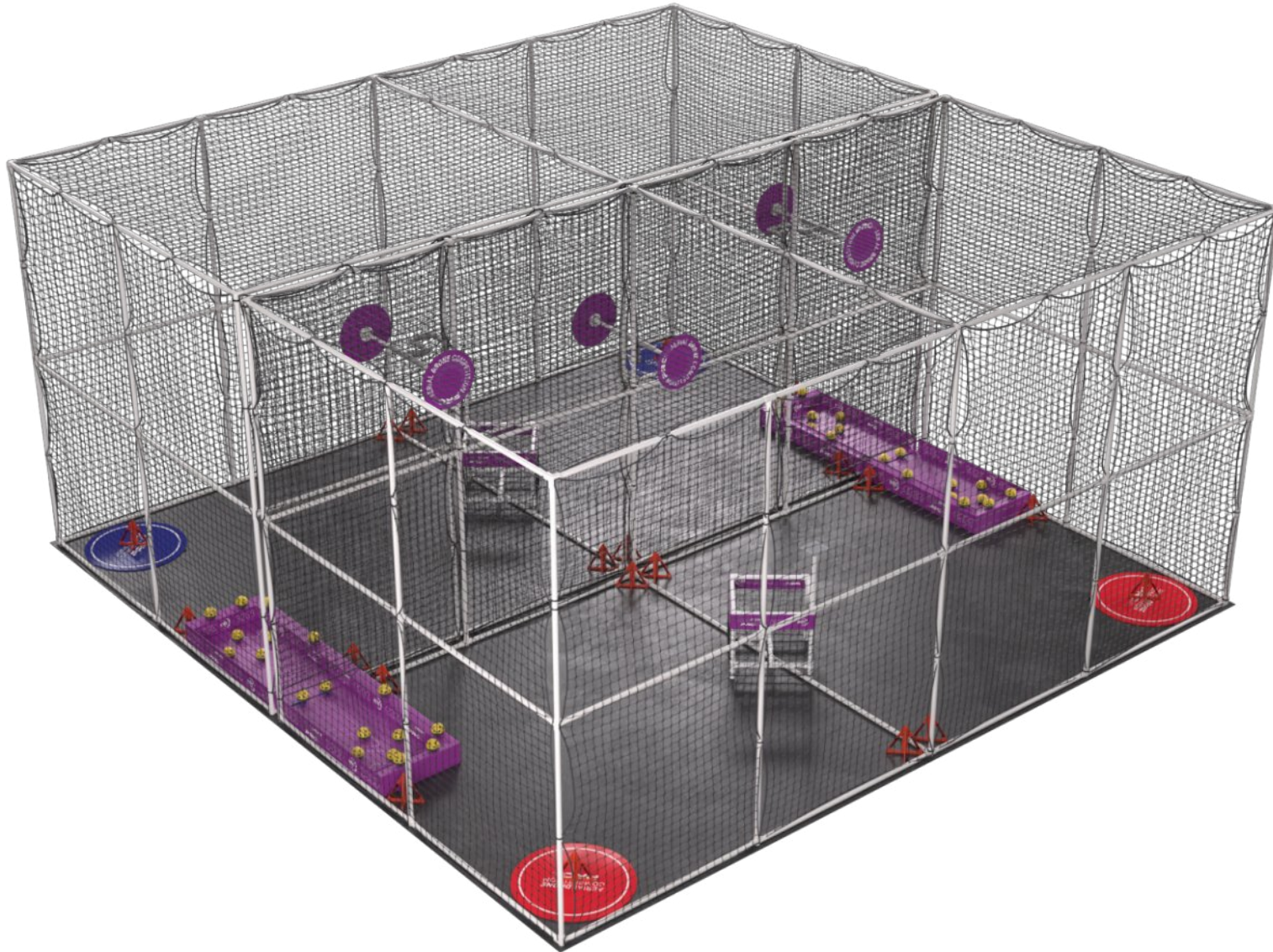
1.10 Solo Mission Field Setup Step 10: Place AprilTag Stickers in Containment Bay



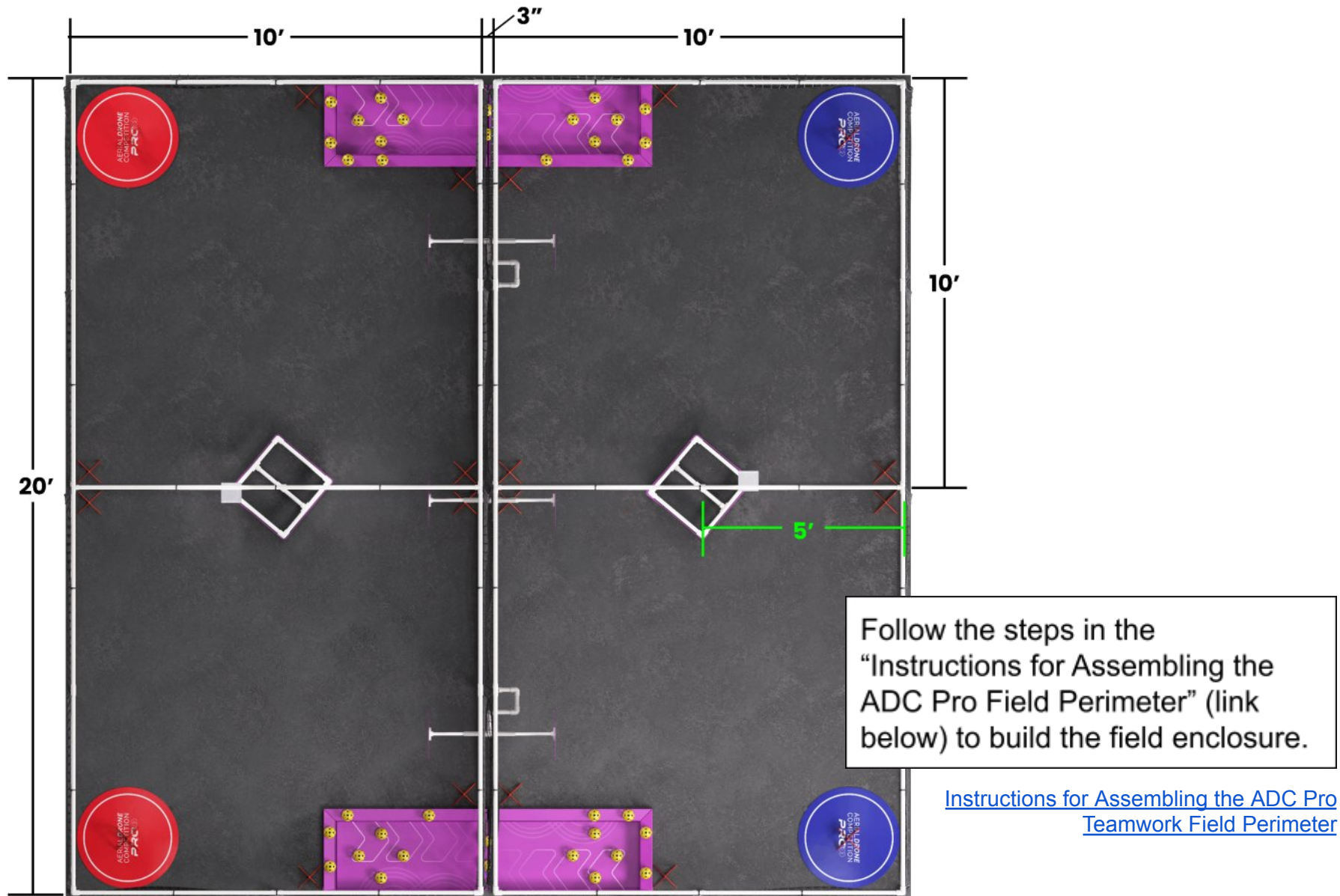
Place stickers 006 & 007 on the barrier at the back of the containment zone, as shown.

- Align AprilTag 006 with the left end of the barrier.
- Align AprilTag 007 with the right end of the barrier.

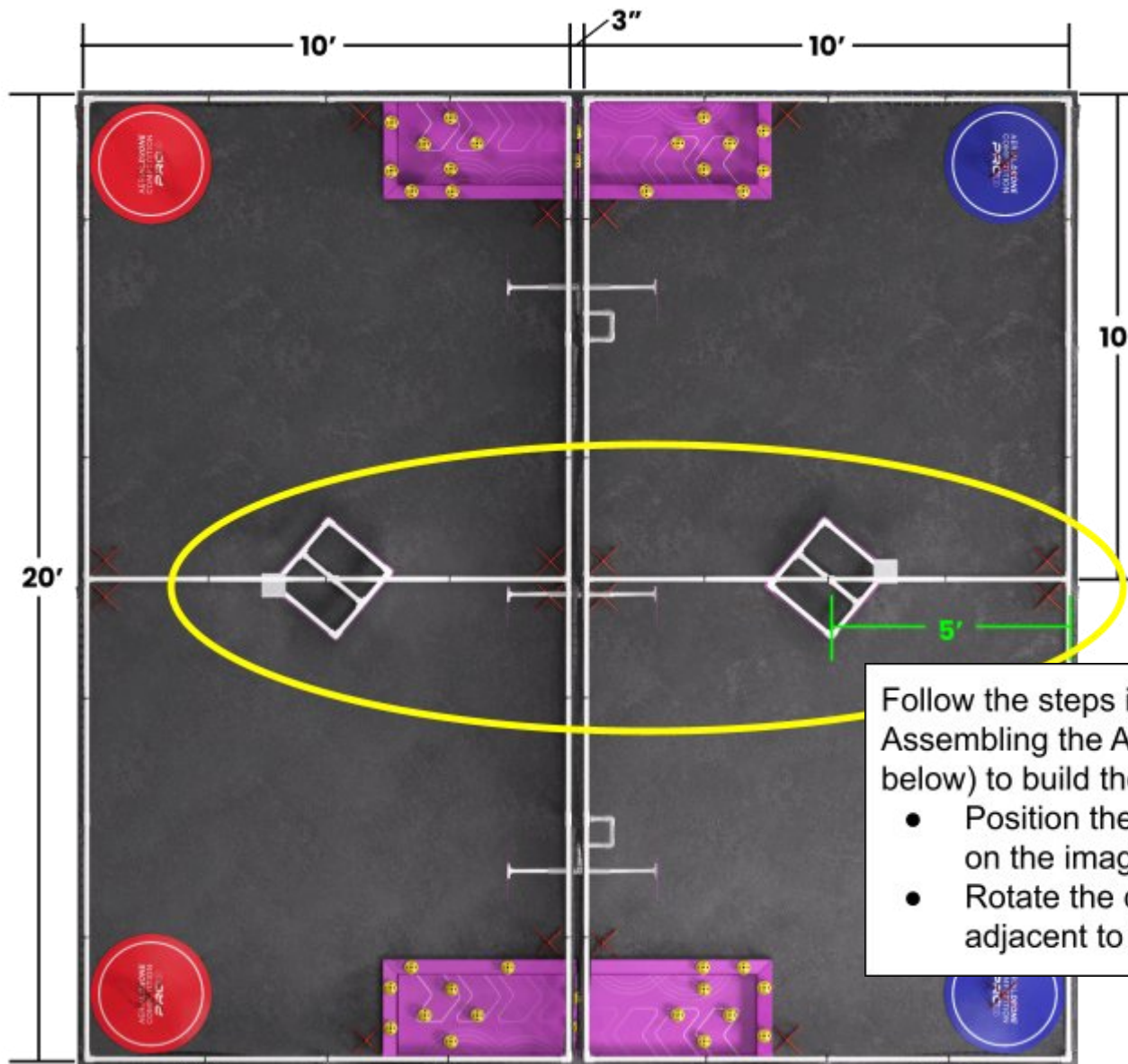
Section 2: Setting up the Alliance/Teamwork Mission Field



2.1 Alliance/Teamwork Mission Field Layout Step 1: Build the Perimeter



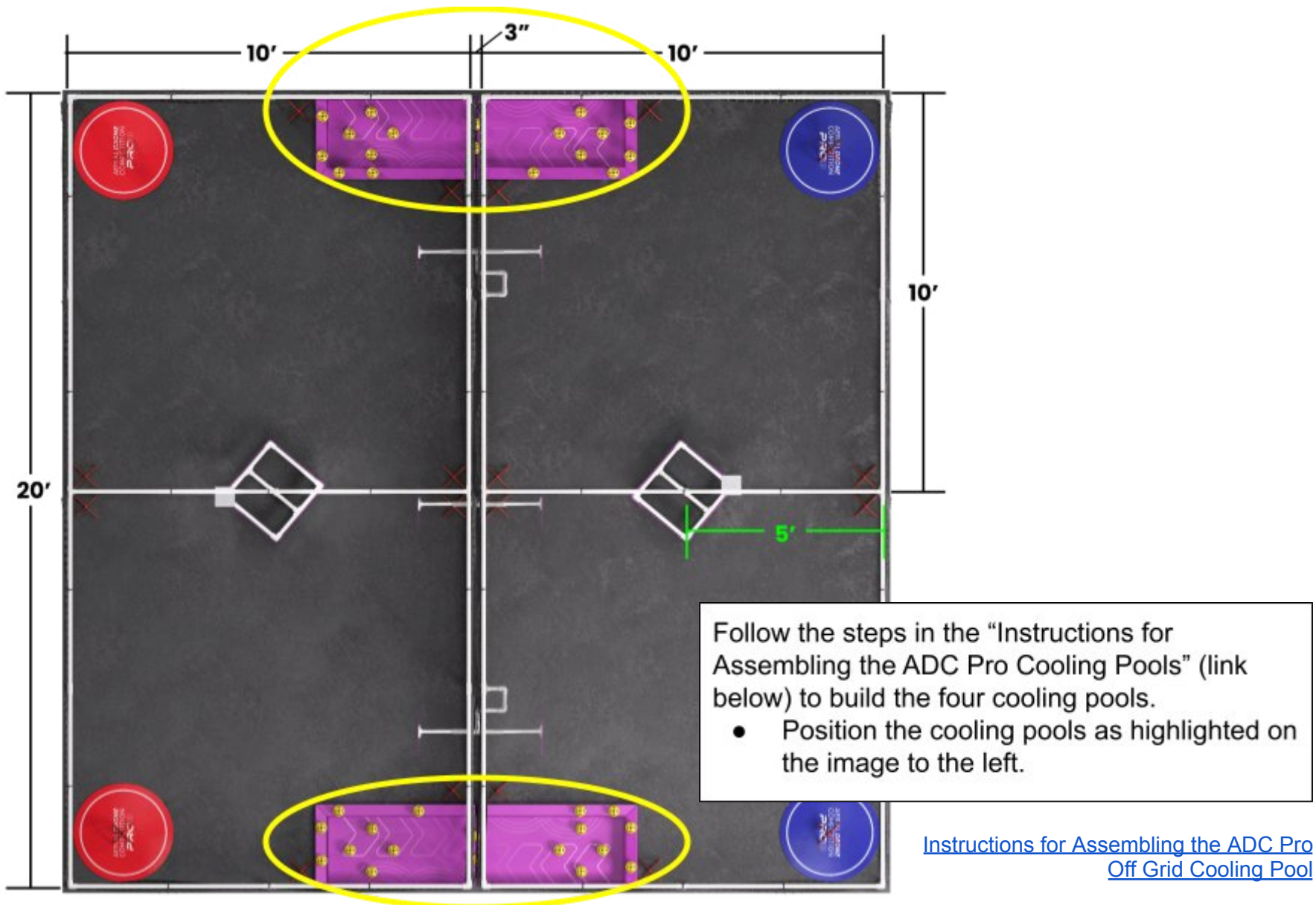
2.2 Alliance/Teamwork Mission Field Layout Step 2: Build and Place the Comms Towers



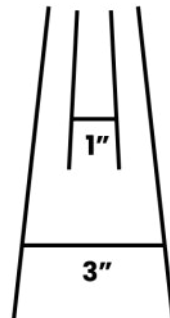
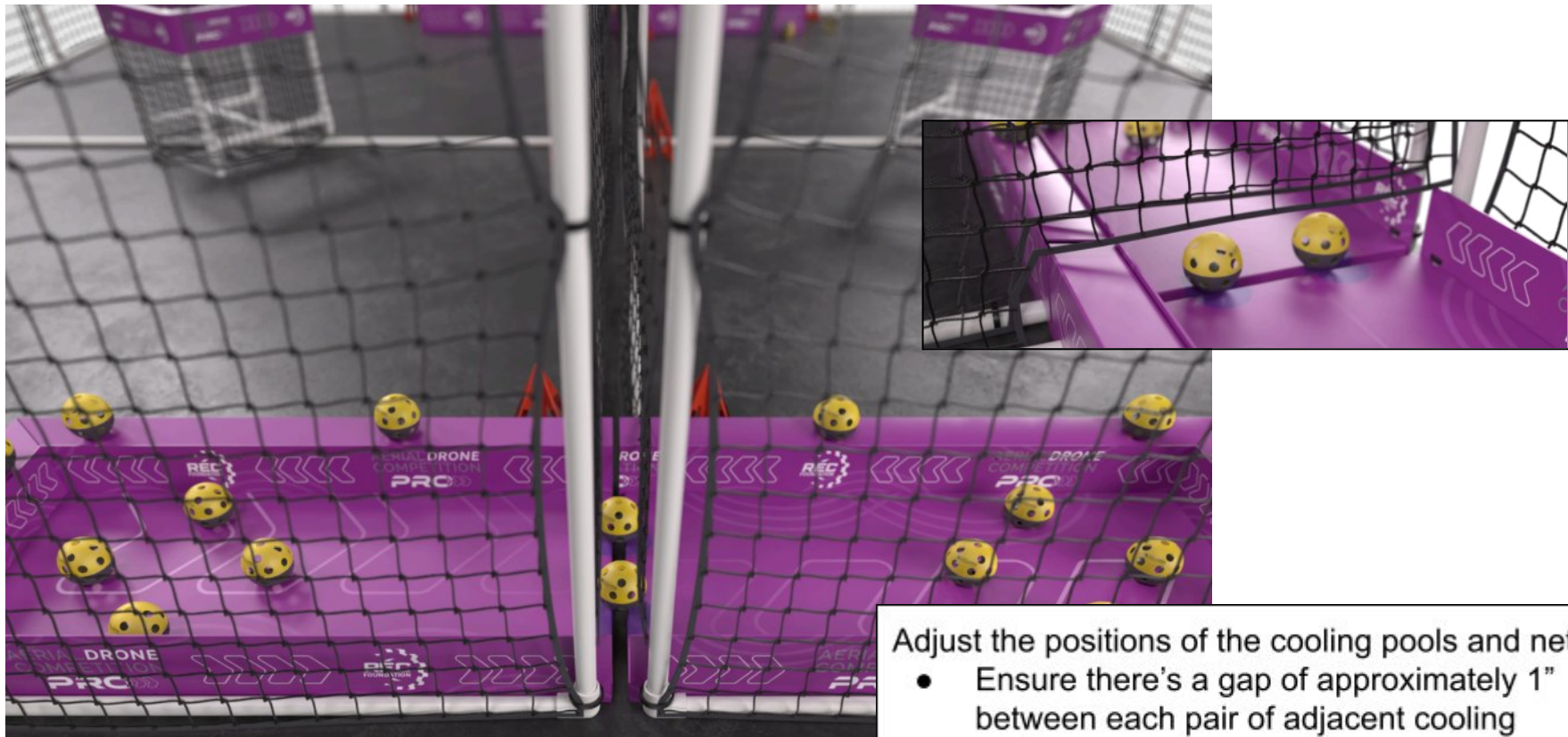
- Follow the steps in the “Instructions for Assembling the ADC Pro Comms Tower” (link below) to build the two comms towers.
- Position the comms towers as highlighted on the image to the left.
 - Rotate the comms towers so the legs are adjacent to the field perimeter.

[Instructions for Assembling the ADC Pro Off Grid Comms Tower](#)

2.3 Alliance/Teamwork Mission Field Layout Step 3: Build and Place the Cooling Pools



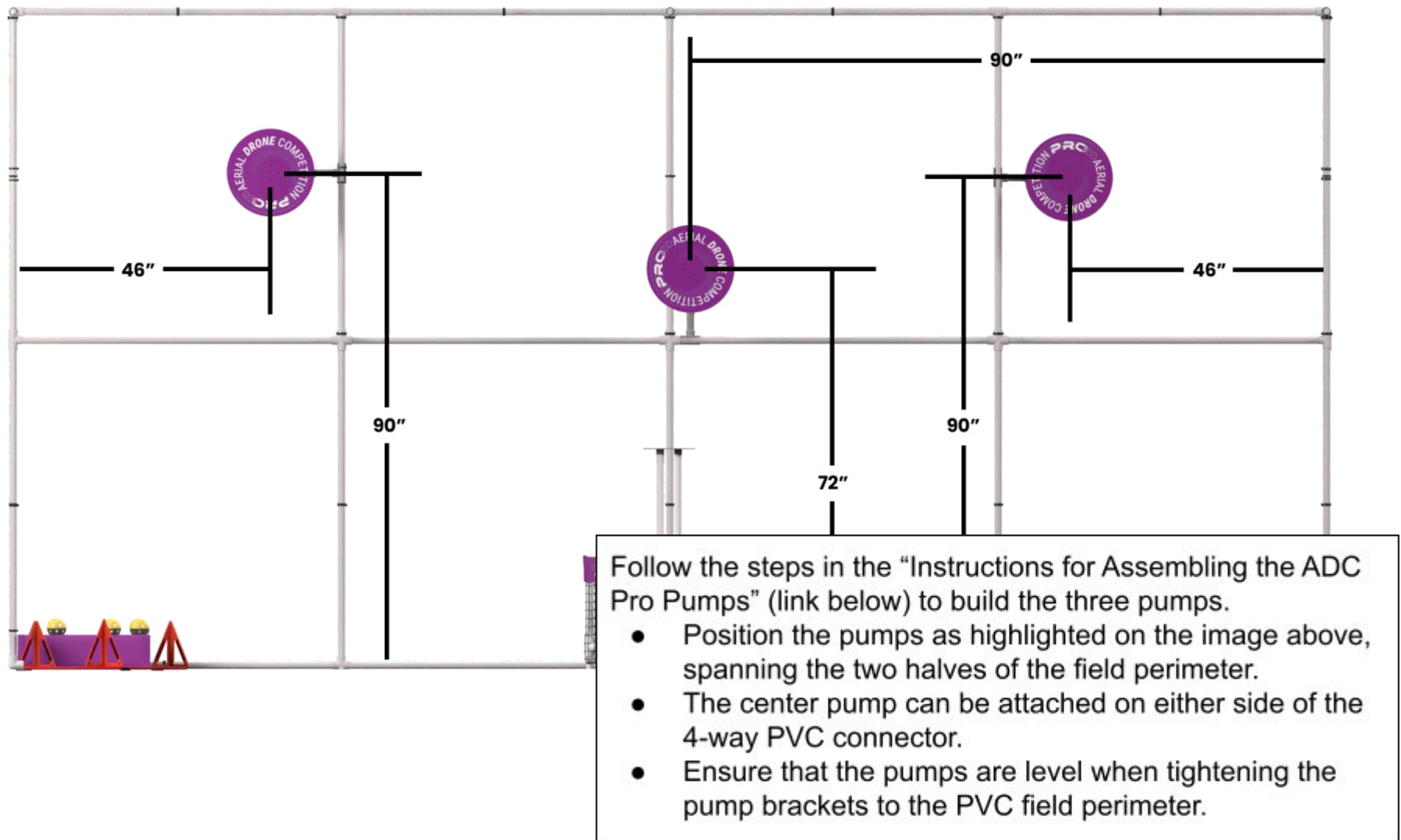
2.4 Alliance/Teamwork Mission Field Layout Step 4: Adjust Cooling Pool & Net Positions



Adjust the positions of the cooling pools and net.

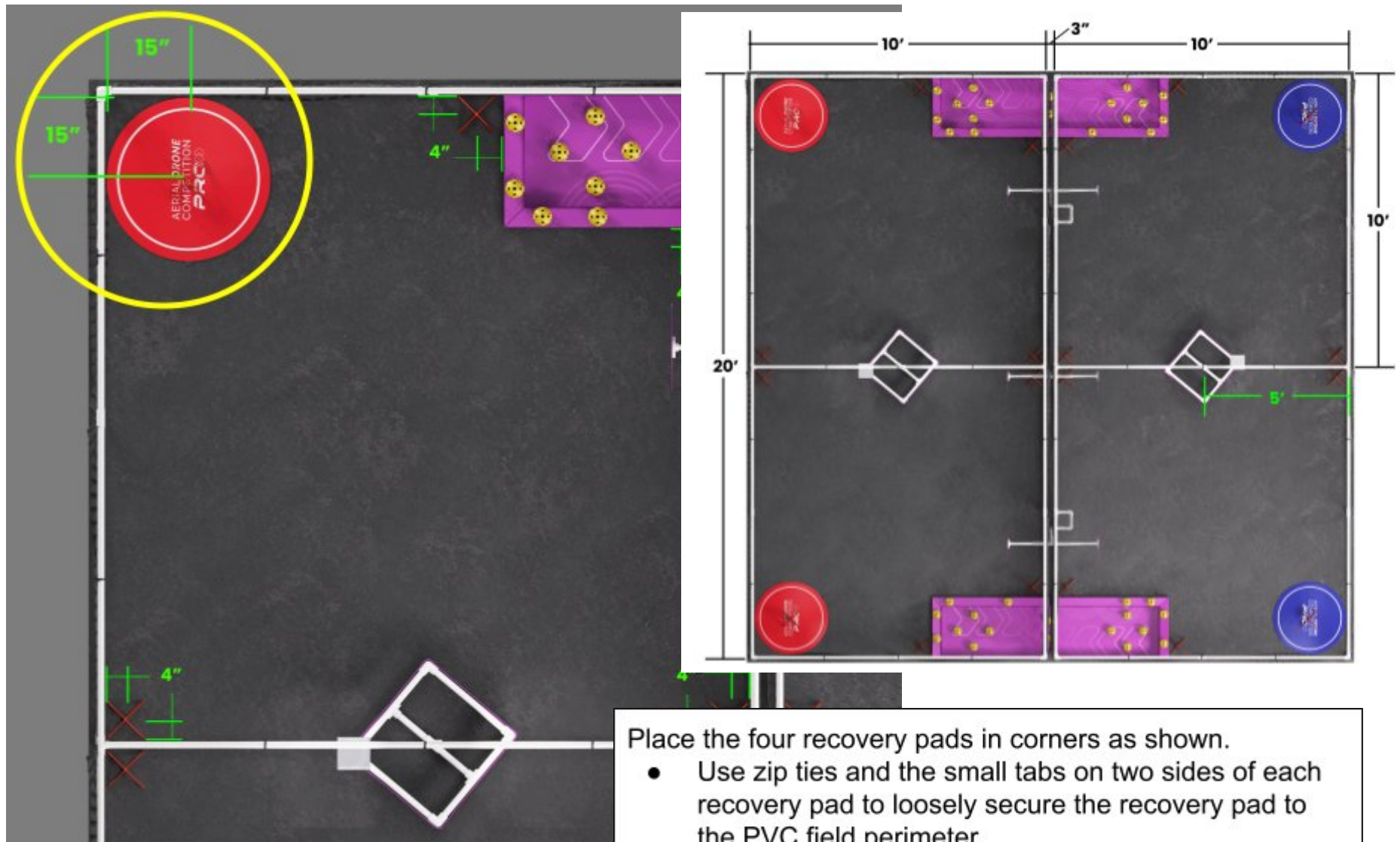
- Ensure there's a gap of approximately 1" between each pair of adjacent cooling pools.
- Each cooling pool has a semi-circular cutout on the short edge and two U-shaped brackets on the long edge that fit around the PVC of the field perimeter.
- Lift the field perimeter netting just above the height of the cooling pool, and secure it with bungees in a way that keeps game elements in the field.

2.5 Alliance/Teamwork Mission Field Layout Step 5: Build and Place the Pumps



[Instructions for Assembling the ADC Pro Off Grid Pump](#)

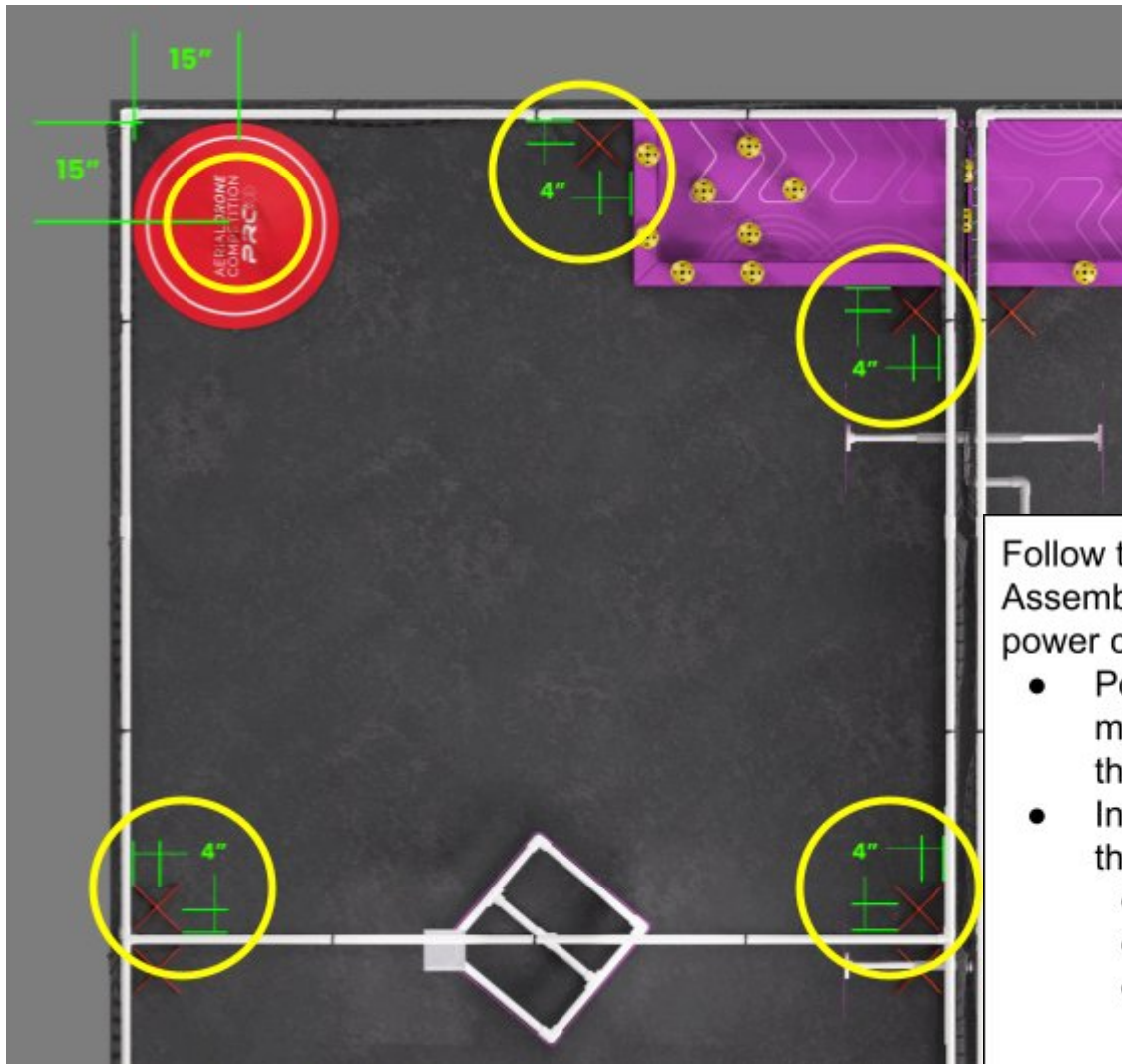
2.6 Alliance/Teamwork Mission Field Layout Step 6: Build and Place the Recovery Pads



Place the four recovery pads in corners as shown.

- Use zip ties and the small tabs on two sides of each recovery pad to loosely secure the recovery pad to the PVC field perimeter.
- Ensure that the recovery pad is still flat on the floor while secured.

2.7 Alliance/Teamwork Mission Field Layout Step 7: Assemble and Place the Power Cells



Follow the steps in the “ADC Pro Teamwork Field Assembly Guides” ([link below](#)) to build the 20 power cells.

- Power cell rotation is not specified; measurements shown in the image are to the center points of the power cell.
- In each quadrant, position power cells in the the following locations:
 - 1 centered on the recovery pad
 - 2 in corners made by the cooling pool
 - 2 in corners at the PVC segment between the alliance’s two quadrants

[ADC Pro Teamwork Field Assembly Guides](#)

2.8 Alliance/Teamwork Mission Field Layout Step 8: Place the Fuel

