



2019 OCCRA KICKOFF

September 9, 2019





Welcome and Introductions
-Jarrad Grandy



The Mission of OCCRA

The Oakland County Competitive Robotics Association (OCCRA) shall organize and administer a high school competitive robotics league in Oakland County for the purpose of:

1. Generating enthusiasm for technical and academic disciplines such as design, engineering, physics, mathematics, and electronics through student designed and built robots
2. Providing a format for integrating and applying diverse scientific, technical, and other areas of study within the high school curriculum
3. Providing recognition and encouragement for students who devote their energies to these technical, scientific, and other areas of study
4. Promoting team/workplace skills and good sportsmanship
5. Raising awareness within high schools of the diverse technical career options available in our county and state
6. Creating partnerships with corporations and the educational community that will enrich the high school experience for our students by providing greater accessibility to people in scientific and technical careers.





OCCRA FTC – Justin Howard

Tuesday, October 29th

Wednesday, November 6th

Tuesday or Wednesday, November 12th or 13th

Tuesday or Wednesday, November 19th or 20th

Two Others – TBD

Oakland County League Qualifier – Saturday, Dec 7th

“How-To” Tutorial Videos – Julie Alspach

Sig

DEVOS 4 OCCRA Videos

Search VOD, Live or Sub Channels

Search

Videos On-Demand (20)

Live Videos (0)

Presentations (0)

Courses (0)

Channels (0)

MAP

Date Added (↑)

All Cat

20 results



Mechanical Advantage

OCCRA #15 Mechanical Adva...

by Mark Hansen
2 months ago



Torque

OCCRA #13 Torque

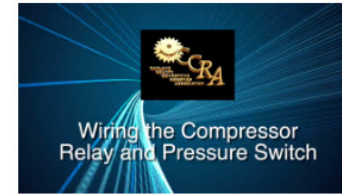
by Mark Hansen
2 months ago



Transmissions

OCCRA #16 Transmissions

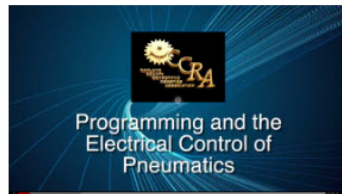
by Mark Hansen
8 months ago



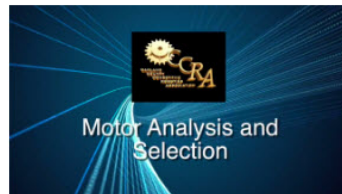
Wiring the Compressor
Relay and Pressure Switch

OCCRA #24 Wiring The Comp...

by Mark Hansen
12 months ago



Programming and the
Electrical Control of
Pneumatics



Motor Analysis and
Selection



Wiring and Testing
Directional Control Valves



The Compressor and
Pressure Regulator



<http://video.oakland.k12.mi.us/Show-Videos?g=1813ff3d&page=1&filter=vod>



OCCRA Technical Certificates

Julie Alspach

<https://tinyurl.com/occracerthelp>



2019 Competition Dates and Structure

Saturday, October 26th – Tournament # 1 – Lake Orion High School

Wednesday, October 30th – Tournament # 2 – Birmingham Seaholm High School

Saturday, November 9th – Diversity Tournament – Rochester Adams High School

Thursday, November 14th – Tournament # 4 – Oxford High School

Saturday, November 23rd – County Championship – Walled Lake Western High School

Wednesday, December 4th – OCCRA Banquet - Oakland Schools

Tournament Awards
OSEF Foundation Award
Keepsake Program Information....



**Oakland County Competitive
Robotics Association**



Premier Sponsor:

**DTE Energy
Foundation**



Platinum Sponsor:

FESTO

In Kind Sponsors:

**Fiat Chrysler Automotive
The Robot Space
SMC Pneumatics**



Special Awards...

- Oakland Schools Education Foundation Award
- Most Valuable Player/Honorable Mention (Per Team)
- Hall of Fame
 - Educator – Kristin Treman
 - Mentor – Eric Savage
 - Corporate Supporter of the Year – Festo Corporation



Kettering Scholarship

Mark Taylor

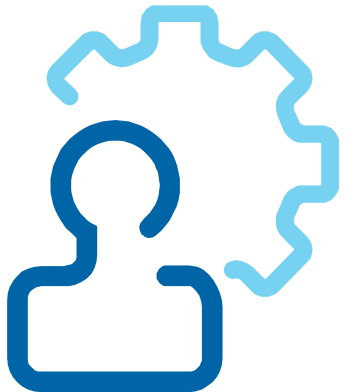
OCCRA Structure

Here are some of the general rules and regulations that need to be followed....



Fairness Guidelines

- 100% Student Designed and Built
- The robot must be built during the period between the Kickoff of 2019 and the County Championship of 2019
- Again this year – You have been supplied with a kit frame – we **STRONGLY** urge you to use it!!!
- Most kit parts from last year may be re-used
- Tools available to teams are also limited/controlled





Exceptions...



Adults are allowed to help with the following:

- Answering specific questions
- Teaching scientific/engineering principles
- Instructing with the use of machinery and safety
- Using a circular saw if there is a safety issue



Again this year...

- Design review by adults is allowed – this is intended to aide student design, not give adults a chance to take control.
- Adult mentors must not insist that students act on any of the opinions, insights and critiques that are given.
- You have one hour a week to work on this!



Corporate Support??

- This is for the league only, not individual teams
- Which means corporate logos should not be displayed on your robots, shirts or elsewhere with the team

However...we encourage all corporate sponsors to assist the League.





Safety: # 1 Concern



- Make sure that your team knows the rules
 - ignorance is not an excuse!
- As always, we will be ensuring that people are wearing their safety glasses in the pit area. Also, keep pit numbers only to who is needed – no playing around!
- A team may be disqualified from certain awards if found in violation of safety rules.



"LET'S HURRY UP . . . THE SAFETY INSPECTOR'S ON HIS WAY!"

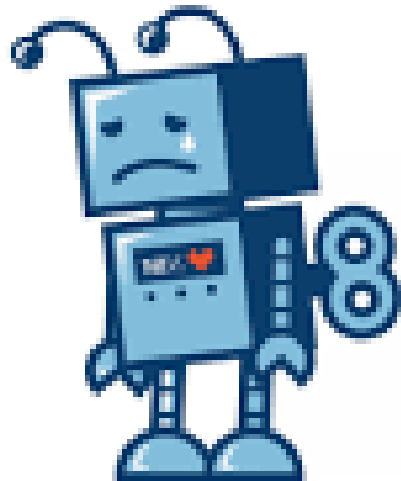


Judging Categories

There are a variety of awards given at each tournament and the Championship.



Why read the rules???



SAD ROBOT

The challenge is difficult and you need to know what you can and cannot do. Nobody wants a sad robot.



Inspection: Pre-Inspection Form



MANDATORY

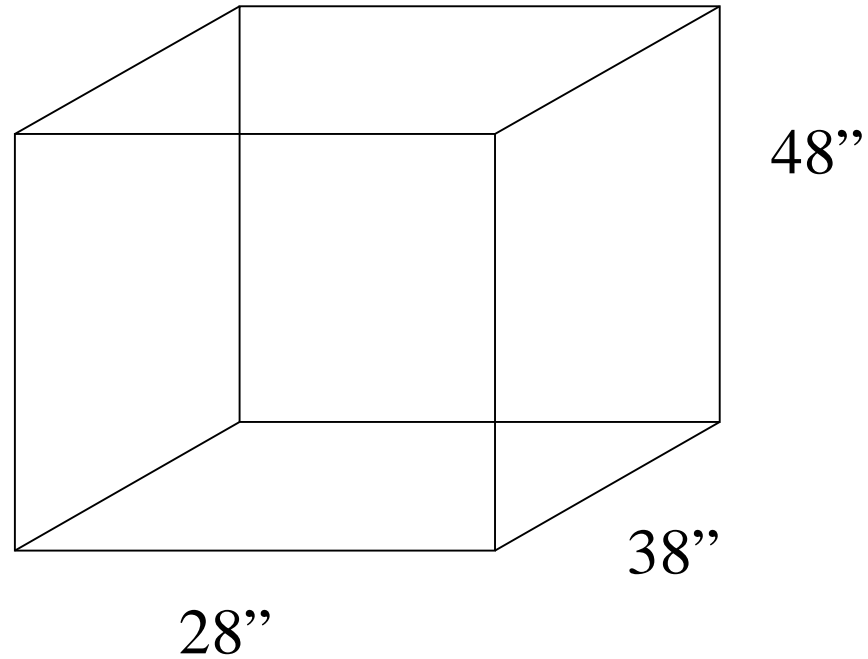
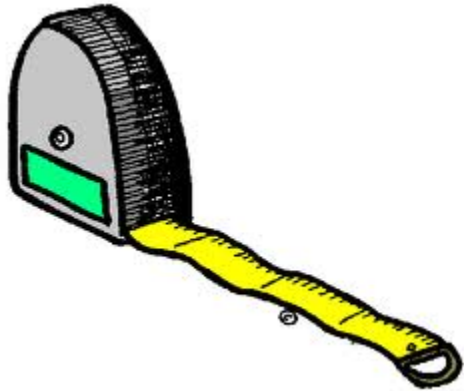


Make sure this is filled out and ready to go. The faster everyone gets inspected, the more time we have to play the game.

The form will be e-mailed to your coach!



Robot Size



Same height for 2019



Robot Weight

Back for 2019 - the robot can weigh a maximum of 115 pounds, including all decorations and battery.

Again this year! If you are using compressor powered pneumatics and cylinders (compressor on board) your robot may weigh 120 pounds.



Carpet Damage



No part of the robot that is capable of catching/damaging/etc the carpet should be near the floor! The recommendation is keeping floor clearance at a minimum of $\frac{3}{4}$ "



Wedge Robot



No vertical perimeter surface of the robot may be less than 60 degrees from the floor.



Back for 2019, the VEX “Cortex” controller

This year, you will once again have the VEX controllers for the large robots.



**Make sure you are using the white 2.0 USB transmitter!
The 1.0 version/firmware should not be used as you may
have communication issues!!!**



Back for 2019, RobotC will once again be used



RobotC is FREE to all teams from VEX



The VEX Controls give us:

Brings back RobotC for OCCRA. This is a user-friendly way for students to learn about programming. Keep in mind that OCCRA volunteers can not guarantee support of your programs at events.

This year we will continue the forum on www.chiefdelphi.com for OCCRA teams to gather, share ideas, and ask questions.

And, yes...There will still be default programs to work with.

Thanks Again !



Requirement: Visibility

All teams are required to mount the controls in a manner that is visible to OCCRA volunteers. This will help with troubleshooting and minimize delays between matches.



The last thing you want is to lose communication with your robot – it will be sad!



Tech Support: Need Help?



1. Log on to www.chiefdelphi.com to post questions and read answers on the OCCRA forum
<https://www.chiefdelphi.com/c/competition/occra>
<https://www.chiefdelphi.com/c/competition/occra-q-a>
2. Contact one of the OCCRA officials



Vex Cortex Questions?

<http://www.vexforum.com>



☰ All Channels > Technical Support > OFFICIAL Tech Support UNOFFICIAL Tech Support ROBOTC Tech Support

Technical Support	Unofficial: Gyro Sensor Rotation Types
UNOFFICIAL Tech Support	Clawbot motors not responding
ROBOTC Tech Support	Competition Autonomous Programming
UNOFFICIAL Tech Support	Can a Vex 0.5 Microcontroller be programmed remotely?
UNOFFICIAL Tech Support	Autonomous in Driver Control
Technical Support	Arm not holding position
OFFICIAL Tech Support	Gyro Sensor Rotation Types
Technical Support	✔ How to make a scissor lift
UNOFFICIAL Tech Support	Sync joystick to bot
Technical Support	Interesting PROS Issue
Technical Support	✔ What are gear ratios & torque?

Check out the Vex Forum for questions and ideas as well as setup documents.



At the Competitions:

- We will attempt to announce all scores for the teams at the conclusion of each match. They will be posted after the event is concluded.
- All match score questions, music requests, etc. need to be addressed at pit administration or with the scoring table at an **appropriate** time.
- Remember, the field crew is there to make sure that the game is running smoothly for **everyone**.

Music requests can be sent ahead of time to:

occrmusic@gmail.com



Win, Lose, Tie

Win – 10 pt Bonus added to Match Score

Lose – No Bonus added to match score

Tie (Non-Zero) – 5 pt Bonus for each alliance added to Match Score

At each event, total points from 4 matches determines the event 1st, 2nd and 3rd place. For the Championship, top twelve match scores are used.

Diversity Tournament – 6 Matches (Top 4 used for event, all but Mentor Match used for Country Rankings)



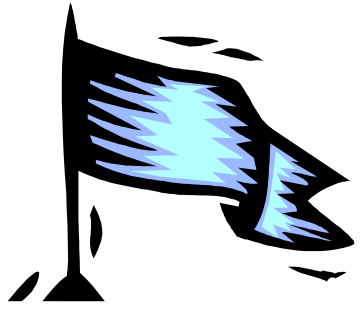
Championship Alliance Selection

A number of the top-seeded teams will not be allowed to select each other during the selection process at the county championship event. This number will be determined by a random process (Rolling of three dice – top 3 ranked teams) before the start of the elimination matches at the championships.

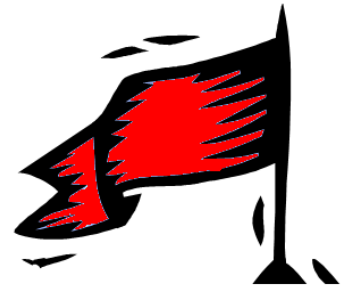
Roll 3 = Pick #3 or higher
Roll 4 = Pick #4 or higher
Roll 5 = Pick #5 or higher
Roll 6 = Pick #6 or higher
Roll 7 = Pick #7 or higher
Roll 8 = Pick #8 or higher
Roll 9 = Pick #9 or higher

The randomness of the die roll is
used by OCCRA to encourage fair
play by all teams!





Alliance Color - Flags



All robots must have their team flag (with the proper color) that contains their number correctly installed on a piece of ½” PVC pipe that extends upward from the robot at the highest stationary point and is clearly visible from all sides. Robots must also have a team number displayed that is written in digits that are at least 4 inches high and visible from at least 3 sides.



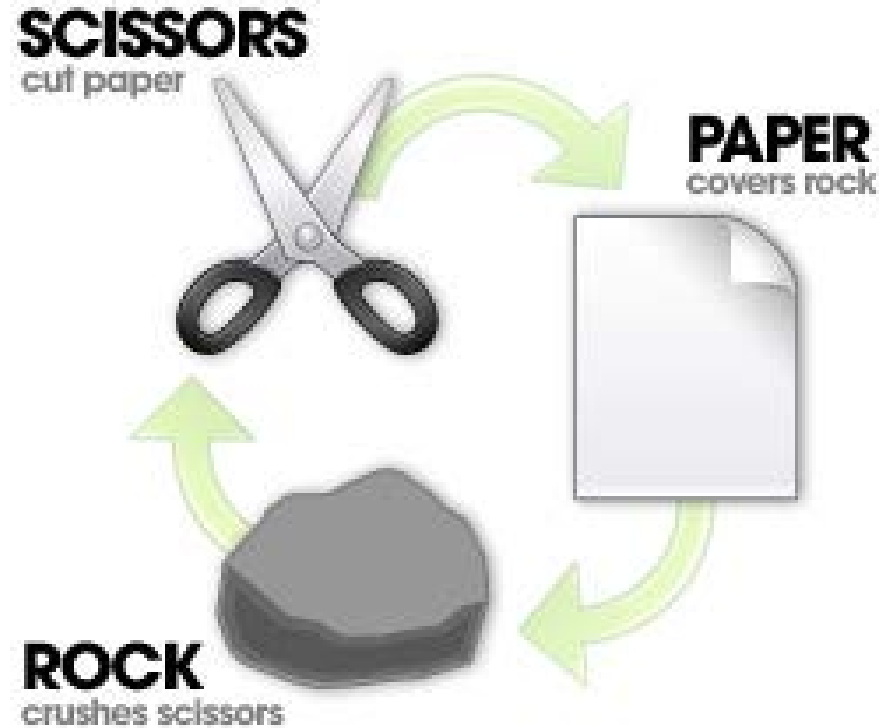
Fasten them in, but...

Also, design your flag holder to make an easy switch from red to blue or blue to red.

You don't want them falling off, but you also want them to be changed quickly without delaying the game.



Read the Rules!



You can't play a new game if you don't know the rules! Not knowing is not an excuse and will not change the outcome.





Pneumatics Restriction:



As a safety matter, pneumatics are limited to those provided in the kits or commercially created. You may **NOT** design or build your own components.

Specified tubing, compressors and accumulators **must** be used.

This comes from our strong commitment to maintaining a safe environment for everyone.





Makes me want to roast marshmallows. Still not sure flame throwers are on the list. They're "Out" of here...

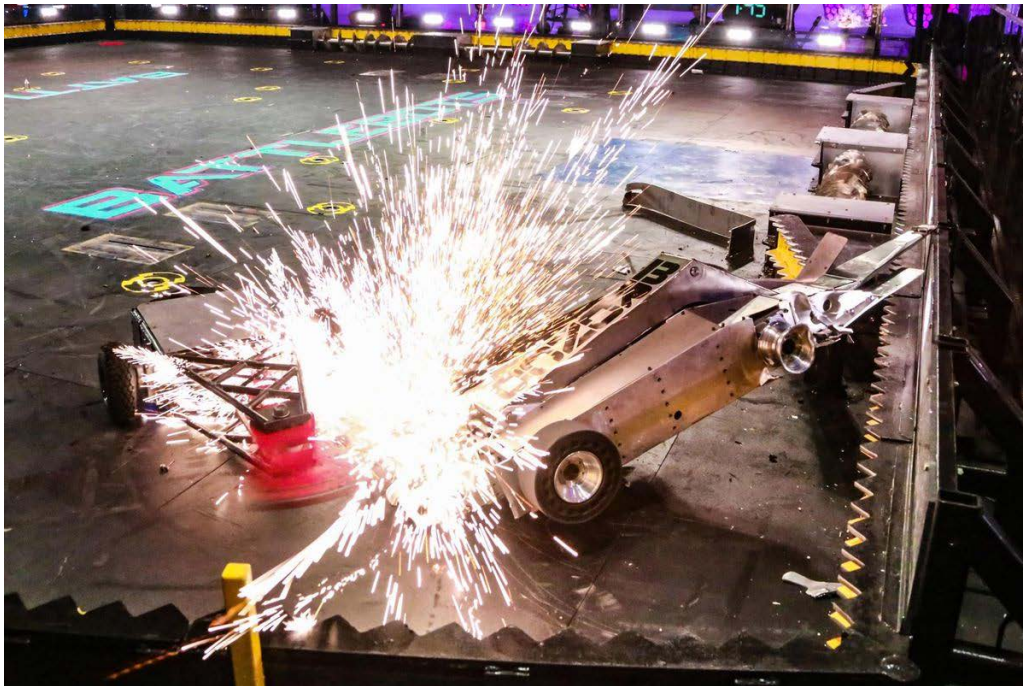


Read the Rules for Everyone's Safety!



Robot Interaction

Interaction is expected, but only within the scope of the game rules. (Read – this is **NOT** Battlebots)



How Much is Too Much???



The referees will make the call, and as always, their decisions are **FINAL!**

High Speed ramming is NOT allowed. However, contact should be expected – your robot should be robust enough to handle contact.



Gracious Professionalism

This means that at all times we should act in a way that our grandmothers would be proud of.

Also remember we represent our schools and you are a guest in someone else's building!



Trapping (Pinning): 5 second rule

Pinning is holding the opponent against a structure as to not allow them to move. If warned of pinning the team causing the pinning **MUST** move 6 ft away allowing the other robot to move.

Trapping can also be restricting an opposing Robot into a small confined area of the field.

Entangling or latching onto another robot is also considered pinning and is not allowed.

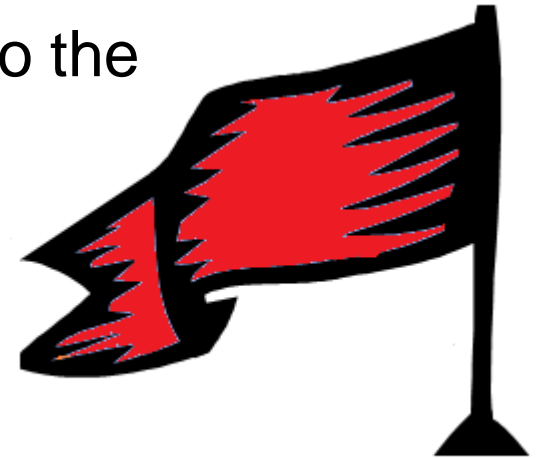
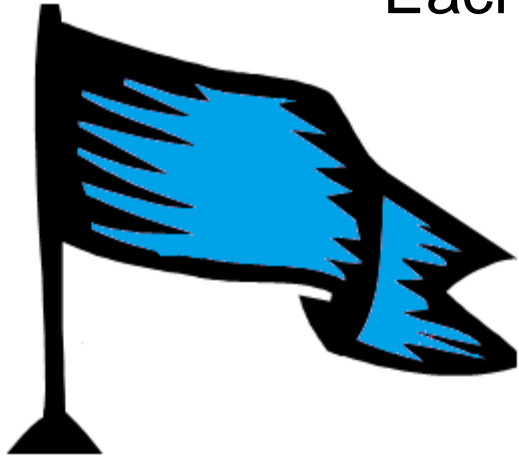
Violations will be assessed with a foul. Continued trapping will result in disqualification.



Red and Blue Flags

Rule violations may result in a warning, penalty or disqualification. This will be indicated with a red or blue flag – based on the offending alliance.

Each foul will result in 3 points being added to the opponents score.



OCCRA Kit Notes...



Motor Rule

All motors supplied in the kit of parts are allowed plus all 12V DC motors that are rated below 350 Watts and are available on-line from BaneBot, The Robot Space, AndyMark and VEX are allowed in OCCRA. These motors may be used in any number the team wants—there is no limit. Keep main breaker (120 Amps) and Cortex (10 inputs) in mind during design and component selection.

Note: Electric servos, such as HD322 Hi-Tech Servo or equivalent (available from servohut.com and most hobby shops) are *not* classified as motors for OCCRA and may also be used in any number but will not be part of the Kit of Materials.



Important Servo Note

The controller can be run off the 7.2V battery or the main 12V battery (with an adapter).

However, if you are using servos (like the Hi-Tech HD322), you **MUST** use the 7.2V battery in order to avoid damaging the servos.

Also, in all cases you **MUST** have the 9V backup battery on the controller.

THIS IS IMPORTANT...if you want your robot to stay running.



Spike Relay

The Spike Relay is legal, but no longer guaranteed to be available (spares, etc).



Adafruit DRV8871 can be used to replace a Spike Relay for controlling 12 Volt Pneumatic Solenoids



Now, for the game rules...



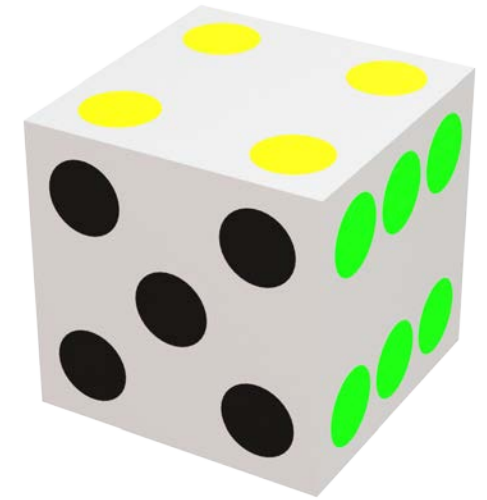
Are you ready???

Game Design Committee (GDC)





“Roll the Dice”



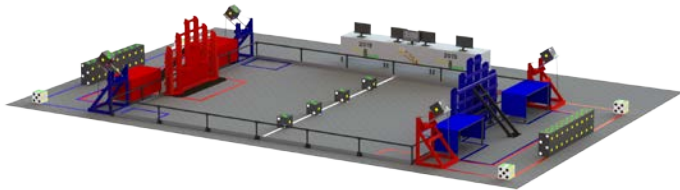


OCCRA Roll The Dice - A Primer

OCCRA Roll The Dice is played on a *Field* which is a twenty-four (24) foot x thirty (30) foot carpeted area, surrounded by a metal pipe *Field Perimeter*. Each *Match* consists of two (2) *Alliances* - one "red" and one "blue" - which are each composed of two (2) *Drive Teams* with one (1) *Robot* each. A *Match* lasts one-hundred and twenty (120) seconds, during which *Drivers* control the *Robots*. There is no autonomous period in OCCRA Roll The Dice.

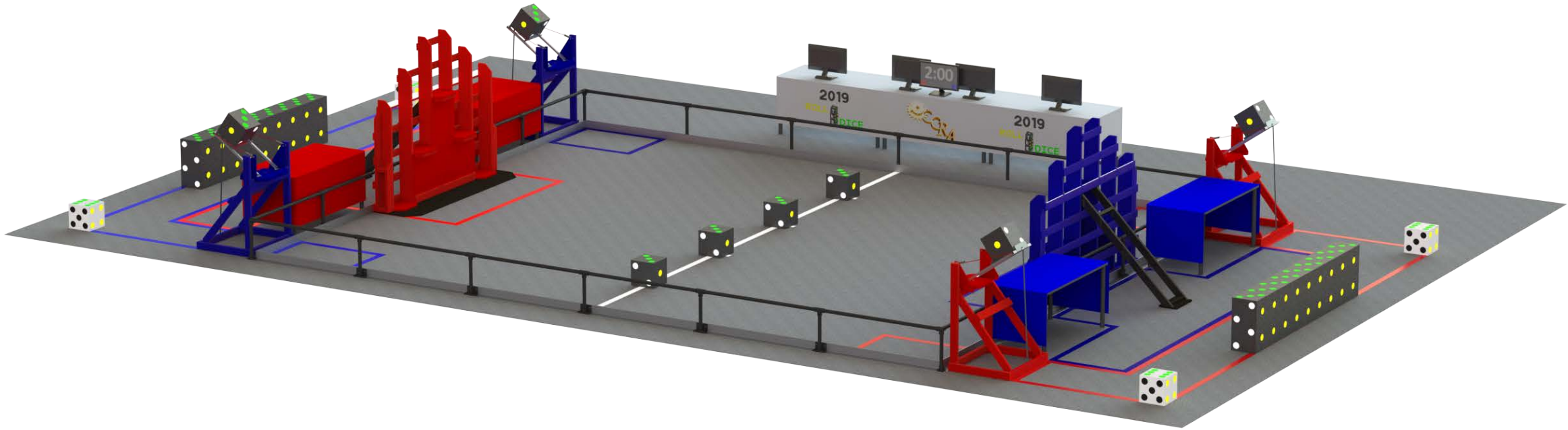
There is a *Goal Zone* and a *Goal* on each end of the *Field*. There are also two (2) *Human Player Stations* and two (2) *Loading Zones* on each end of the *Field*. There are forty-four (44) *Dice*, and four (4) *Bonus Dice* that can be *Scored* in different ways:

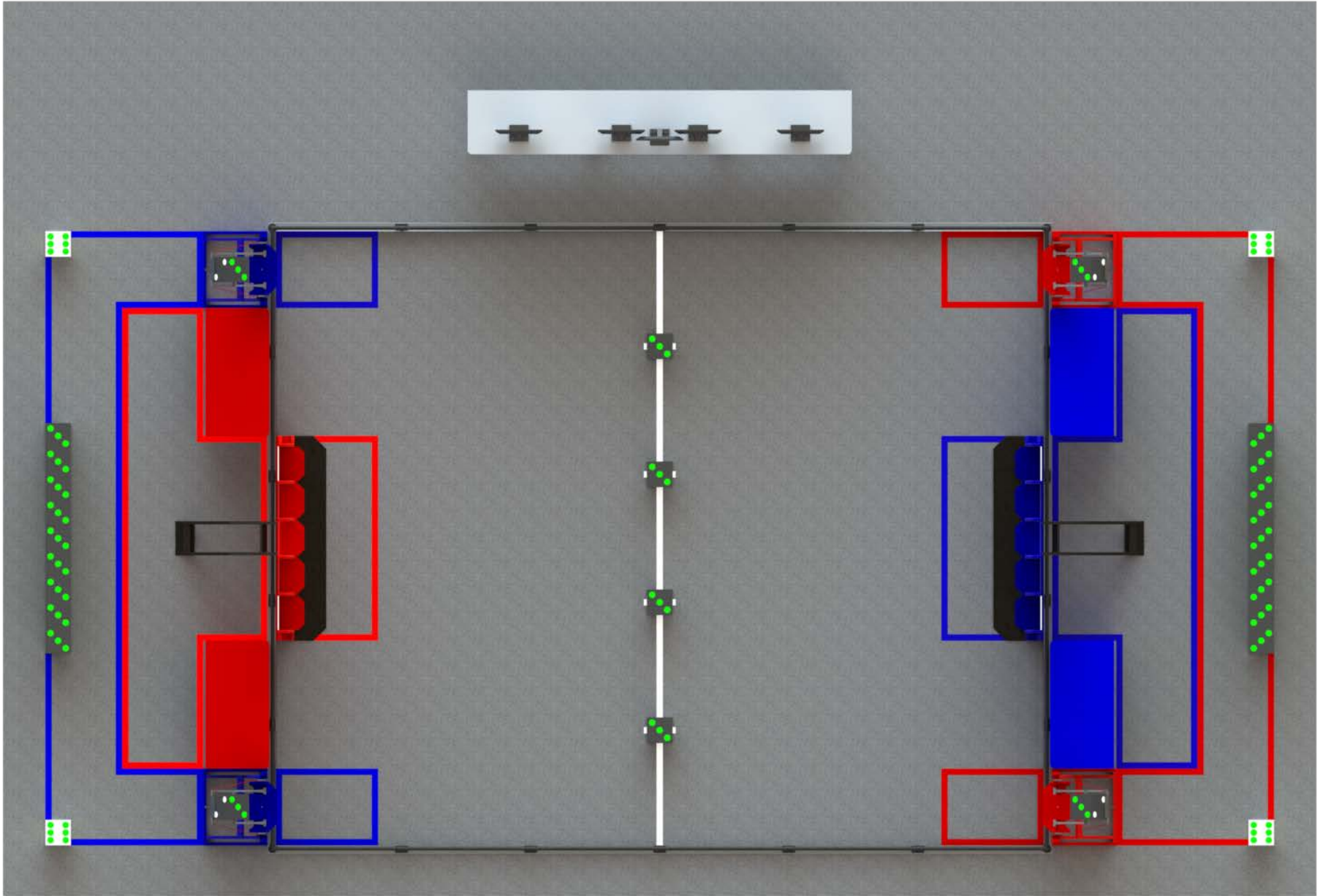
- *Floor Scored* in the *Alliance's Goal Zone*; worth one (1) *Match Point* per *Die*
- *Goal Scored* when a *Die* is placed in the *Alliance's Goal*; worth the amount shown on the *Die* facing towards the middle of the *Field*, or towards the *Driver's Station*. One (1) dot on the *Die* is worth one (1) *Match Point*, two (2) dots is worth two (2) *Match Points*, three (3) dots is worth three (3) *Match Points*.
- *Bonus Goal Scored* when a *Bonus Die* is placed in the *Alliance's Goal* at least partially above the white *Bonus Line*; worth the amount shown on the *Bonus Die* facing towards the middle of the *Field*, or towards the *Driver's Station*. Four (4) dots on the *Bonus Die* is worth four (4) *Match Points*, five (5) dots is worth five (5) *Match Points*, six (6) dots is worth six (6) *Match Points*.

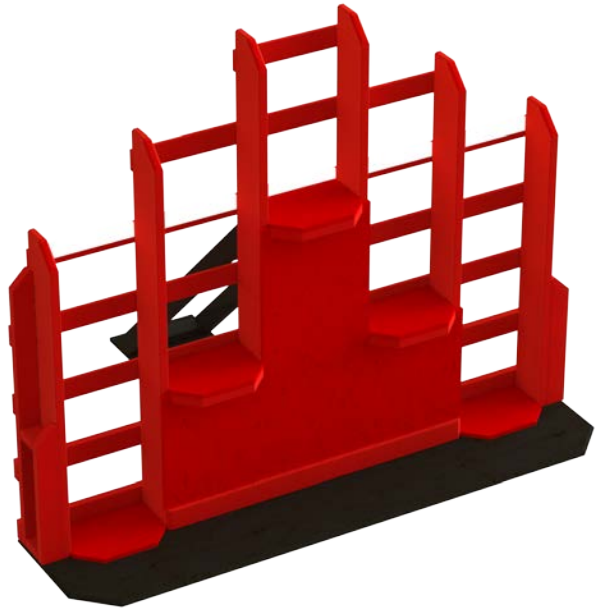
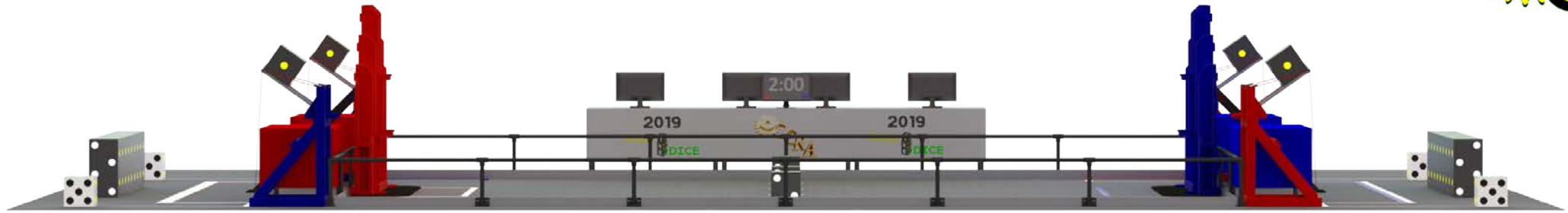


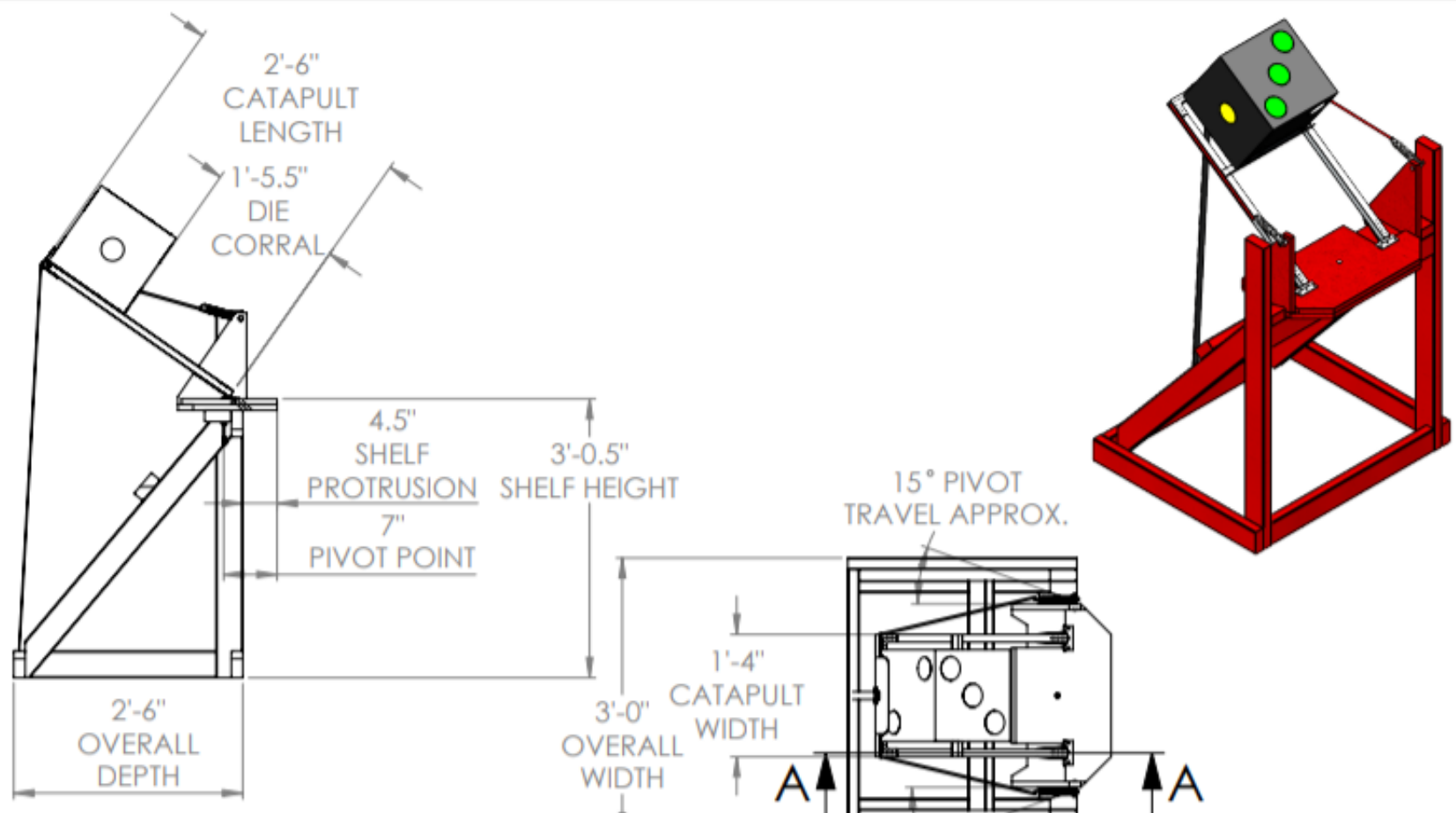


The field of play 2019









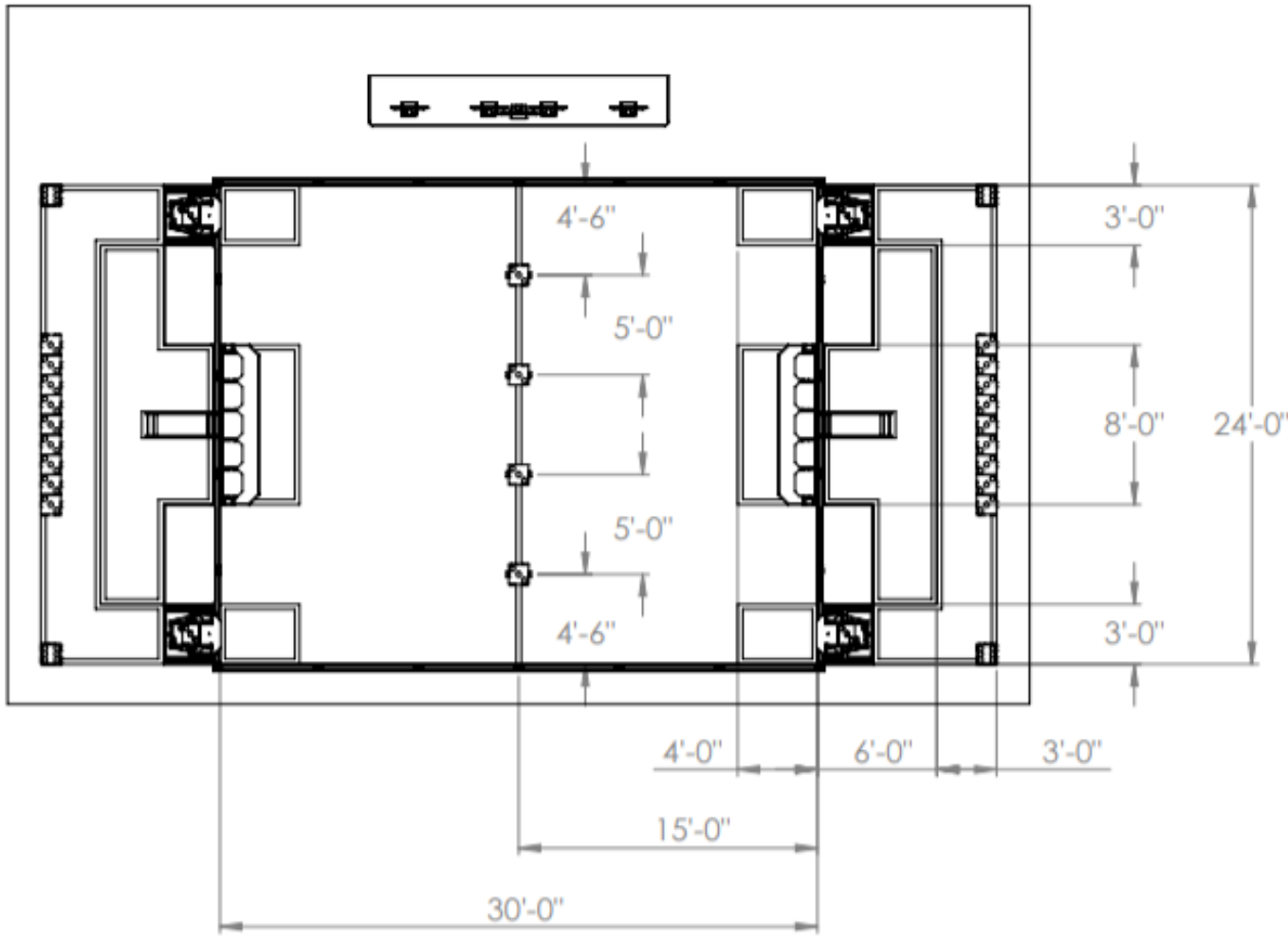
SECTION A-A

CATAPULT DIALED IN TO LAUNCH DICE AND BONUS DICE APPROX. TO CENTER LINE.



	DESIGNED BY:	DATE
	JIM ZONDAG	09/09/2019
DRAWING NAME		SCALE:
HP STATION DIM.		1:20



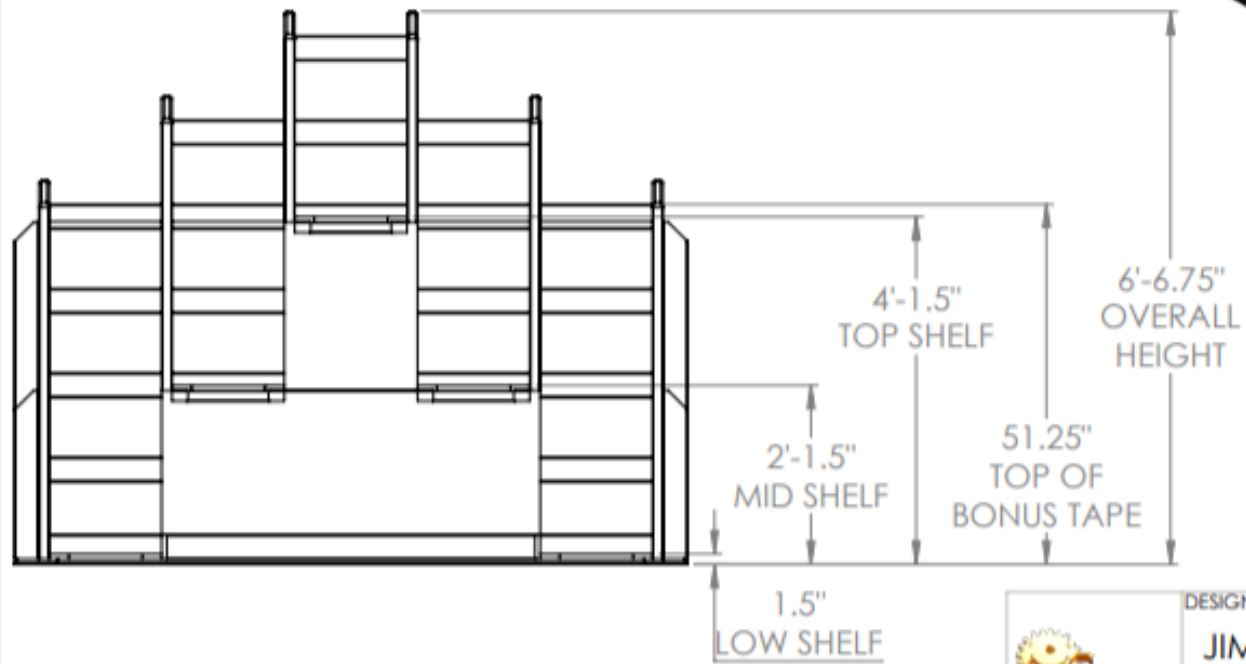
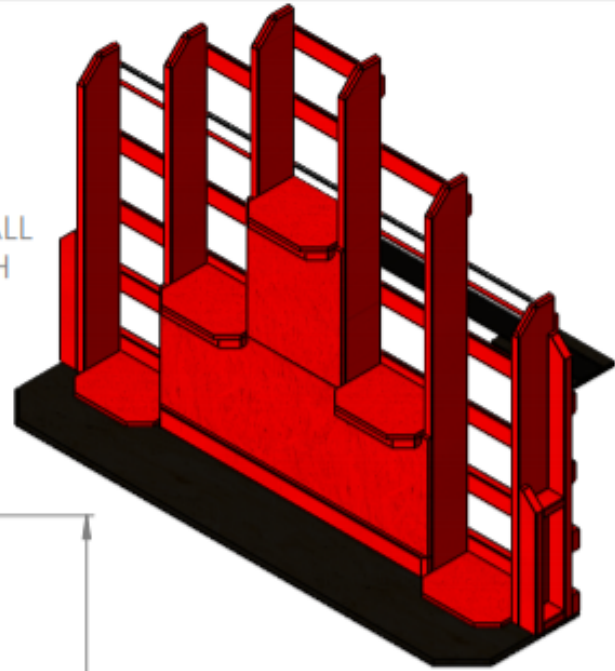
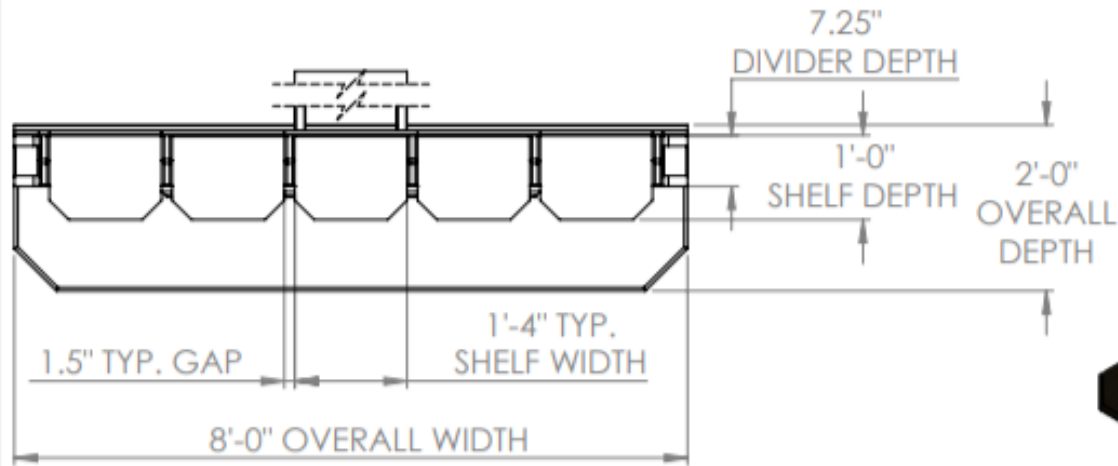


FIELD PERIMETER APPROX. 20" TALL

2019
ROLL DICE

	DESIGNED BY:	DATE
	JIM ZONDAG	09/09/2019
	DRAWING NAME	SCALE:
	GENERAL FIELD DIM.	1:100

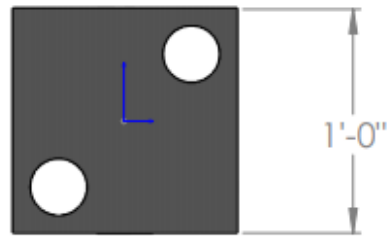
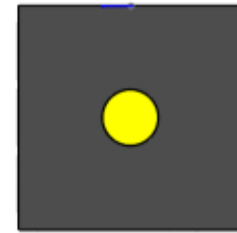
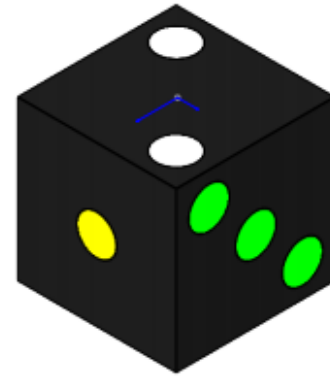
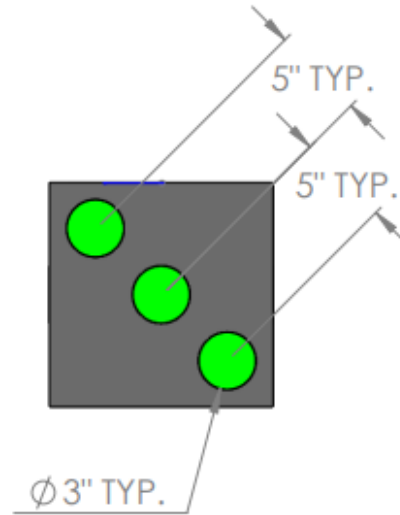
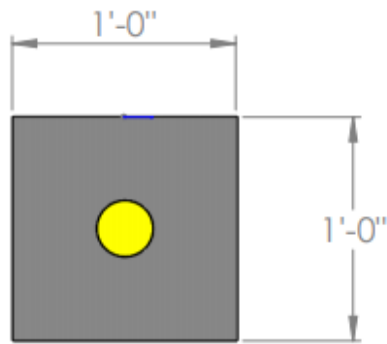
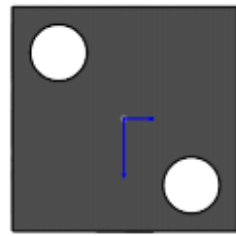
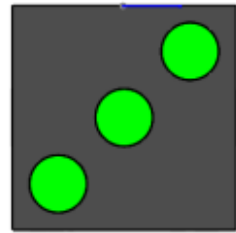




2019
ROLL DICE

	DESIGNED BY: JIM ZONDAG	DATE: 09/09/2019
	DRAWING NAME: GOAL DIM.	SCALE: 1:25

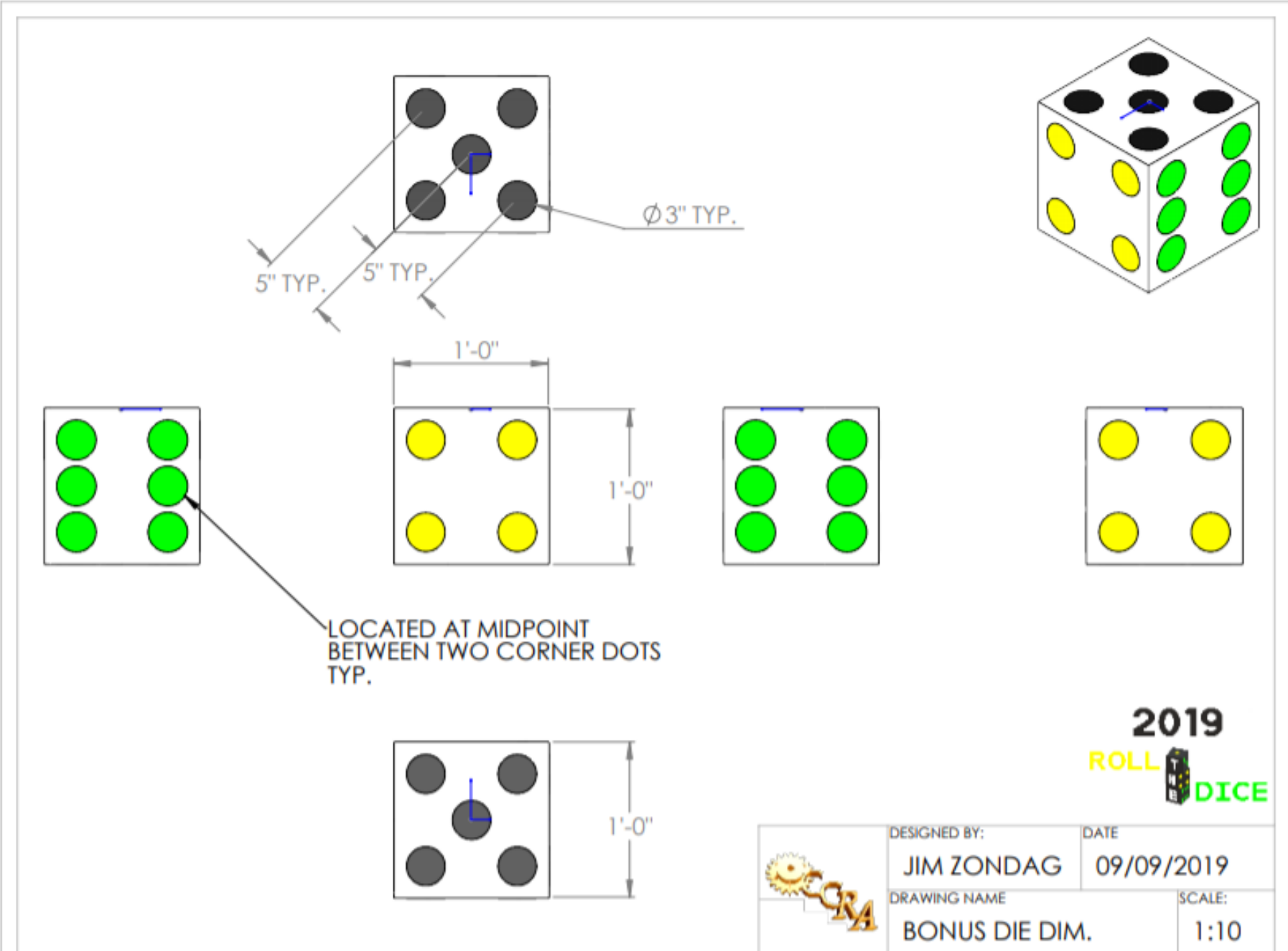




2019
ROLL THE DICE

	DESIGNED BY: JIM ZONDAG	DATE: 09/09/2019
	DRAWING NAME: DIE DIM.	SCALE: 1:10

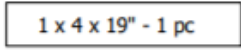
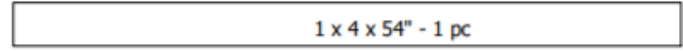




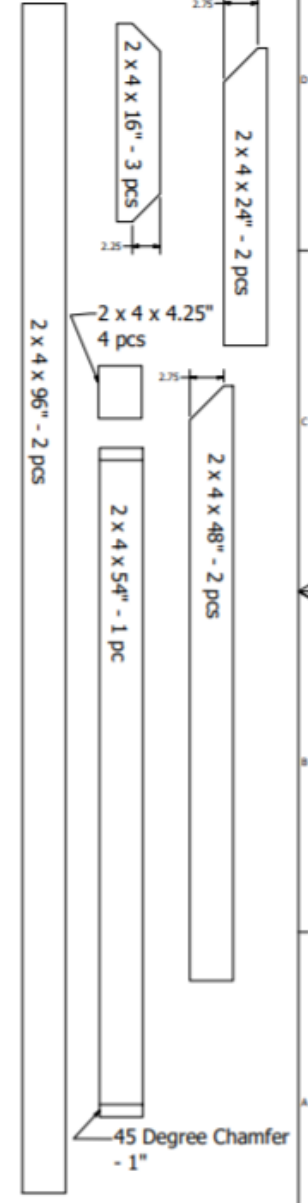
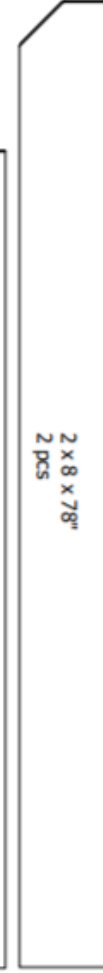
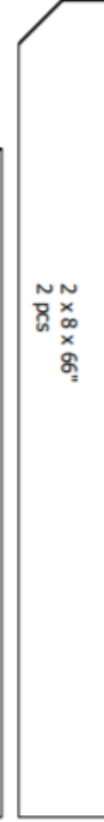
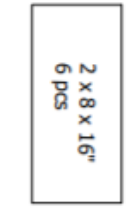
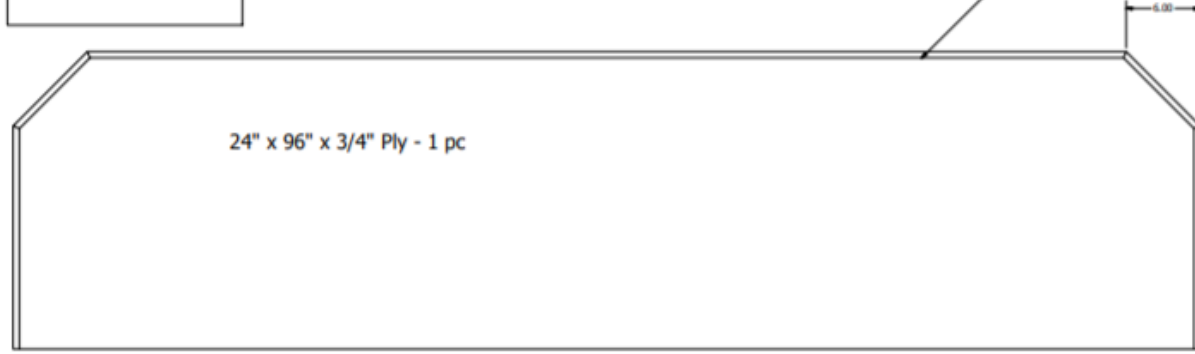
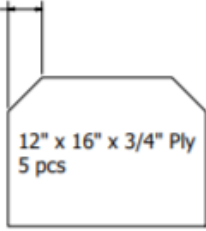
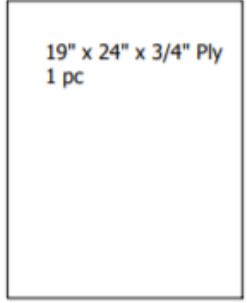
2019
ROLL DICE

	DESIGNED BY: JIM ZONDAG	DATE: 09/09/2019
	DRAWING NAME: BONUS DIE DIM.	SCALE: 1:10





Material Purchase List:
 Makes one complete 2019 OCCRA Goal structure
 6 pcs - 2 x 8 x 8'
 5 pcs - 2 x 4 x 8'
 4 pcs - 1 x 4 x 8'
 1 sheet - 4' x 8' x 3/4" ply
 1 sheet - 2' x 4' x 3/4" ply
 2" deck screws
 3" deck screws
 Construction adhesive.



Scoring (end of match)

Match Action	Match Point Value
Floor Scored	1
Goal Scored - 1 Dot	1
Goal Scored - 2 Dots	2
Goal Scored - 3 Dots	3
Bonus Goal Scored - 4 Dots	4
Bonus Goal Scored - 5 Dots	5
Bonus Goal Scored - 6 Dots	6
Foul	3 (added to opponent score)
Win Bonus	10
Tie Bonus	5



The Restricted Zone

The Restricted Zones are the Goal Zones and Loading Zones.

Goal Zone: The 4' by 8' rectangular floor area in front of the Goal and centered on the width of the field.

Loading Zone: The 3' by 4' square floor area in each corner of the field where contact with an opponents' robot is not allowed. The tape that is used to mark the zone is considered part of the zone.

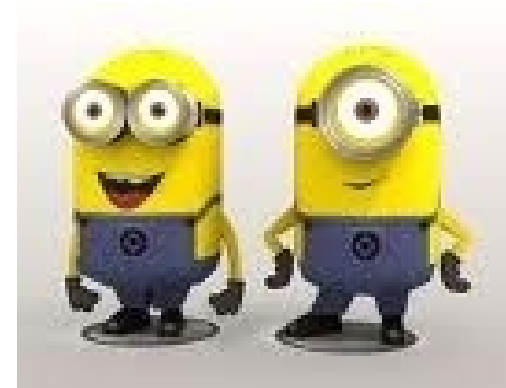
For safety of the players involved, ramming of robots in the restricted zone is prohibited. Incidental contact is allowable but called at the discretion of the referees.





The Role of the Human Player:

Human Players are able to load one (1) Die at a time to their alliance robot. This is done through the Loading Station



Human player position:

- Each alliance will start with 18 Dice. Human Players must stay within their zones at all times.

Alright, time to start designing and
building

GOOD LUCK!!



Read The Rules!

Read The Rules!

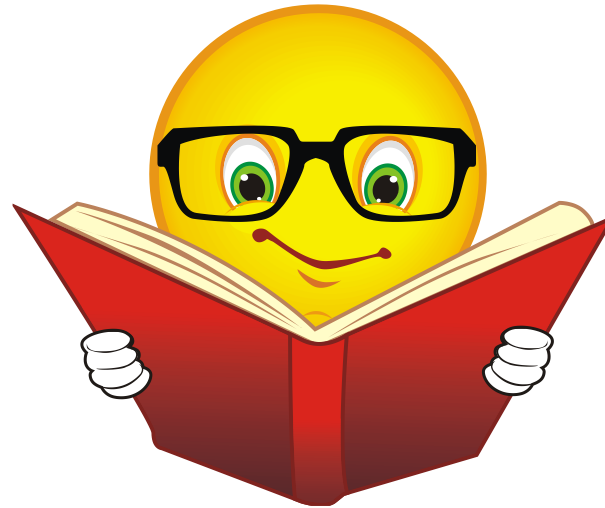
Read The Rules!

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Just in case you missed the whole part about reading the rules!



Questions anyone??

