FRC 2020 Game Overview and Thought Starters

INFINITE RECHARGE℠

ADAMBOTS

Agenda

- Game overview
- Considerations
- Break (water and snacks in hallway)
- Breakout groups
- Report outs
- Next steps

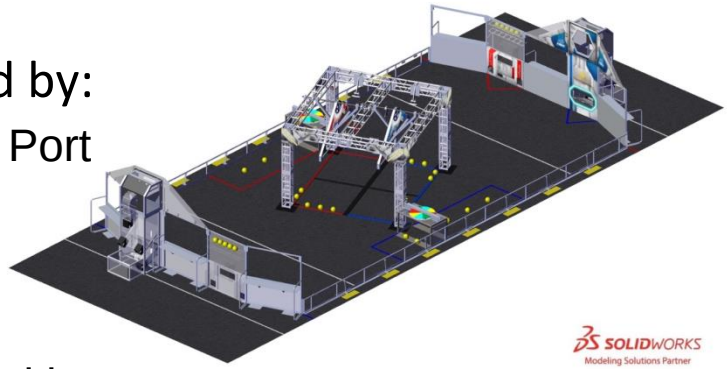
Game Overview
The Arena
Safety
Seeding and Playoffs
Game Play Scoring
Game Play Drive Team
Game Play
Robot Rules
General Rules
Human Actions
Considerations
Key Dates
Discussion

- Game Overview
- The Arena
- Safety
- Seeding and Playoffs
- Game Play Scoring
- Game Play Drive Team
- Game Play
- Robot Rules
- General Rules
- Human Actions
- Considerations
- Key Dates
- Discussion

You may ask questions at any time, but try not to ask before the subject is reviewed!

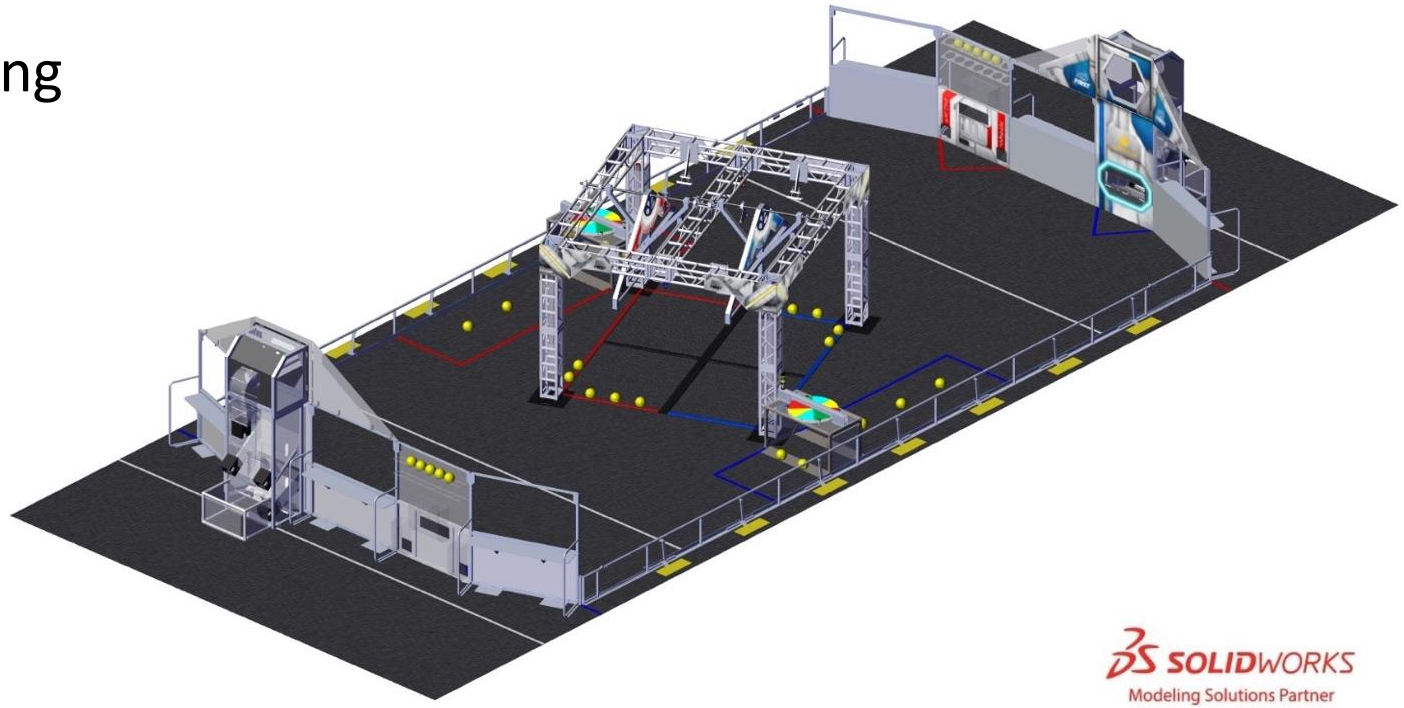
Game Overview

- In INFIRNITE RECHARGE℠, two alliances work to protect *FIRST* City from approaching asteroids caused by a distant space skirmish. Each Alliance, along with their trusty droids, race to collect and score Power Cells in order to energize their Shield Generator for maximum protection. To activate stages of the Shield Generator, droids manipulate their Control Panels after scoring a specific number of Power Cells. Near the end of the match, droids race to their Rendezvous Point to get their Shield Generator operational in order to protect the city!
- 15 second Autonomous Period points scored by:
  - Scoring Power Cells in the Power Port
  - Moving from the Initiation Line
- Final 2 minutes and 15 seconds points scored by:
  - Continue to score Power Cells in the Power Port
  - Completing Rotation Control
  - Completing Position Control
  - Hanging from the Generator Switch
  - Getting the Generator Switch to the level position



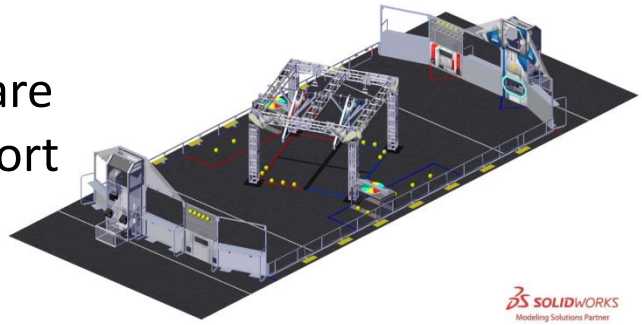
Game Overview - Arena

- Field
- Power Cells
- Field Control Equipment
- Robot Control
- Scorekeeping

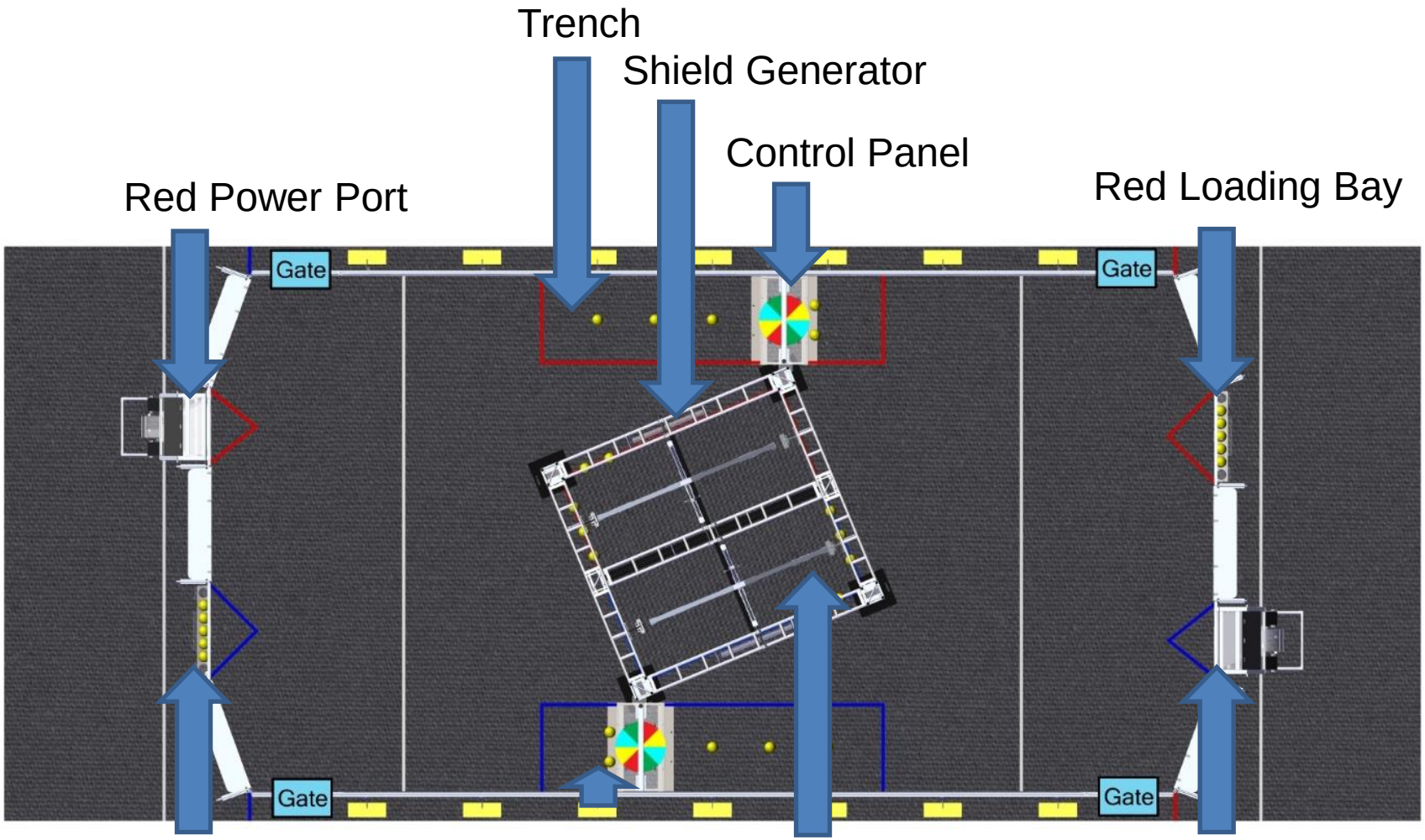


Game Overview – Arena Field

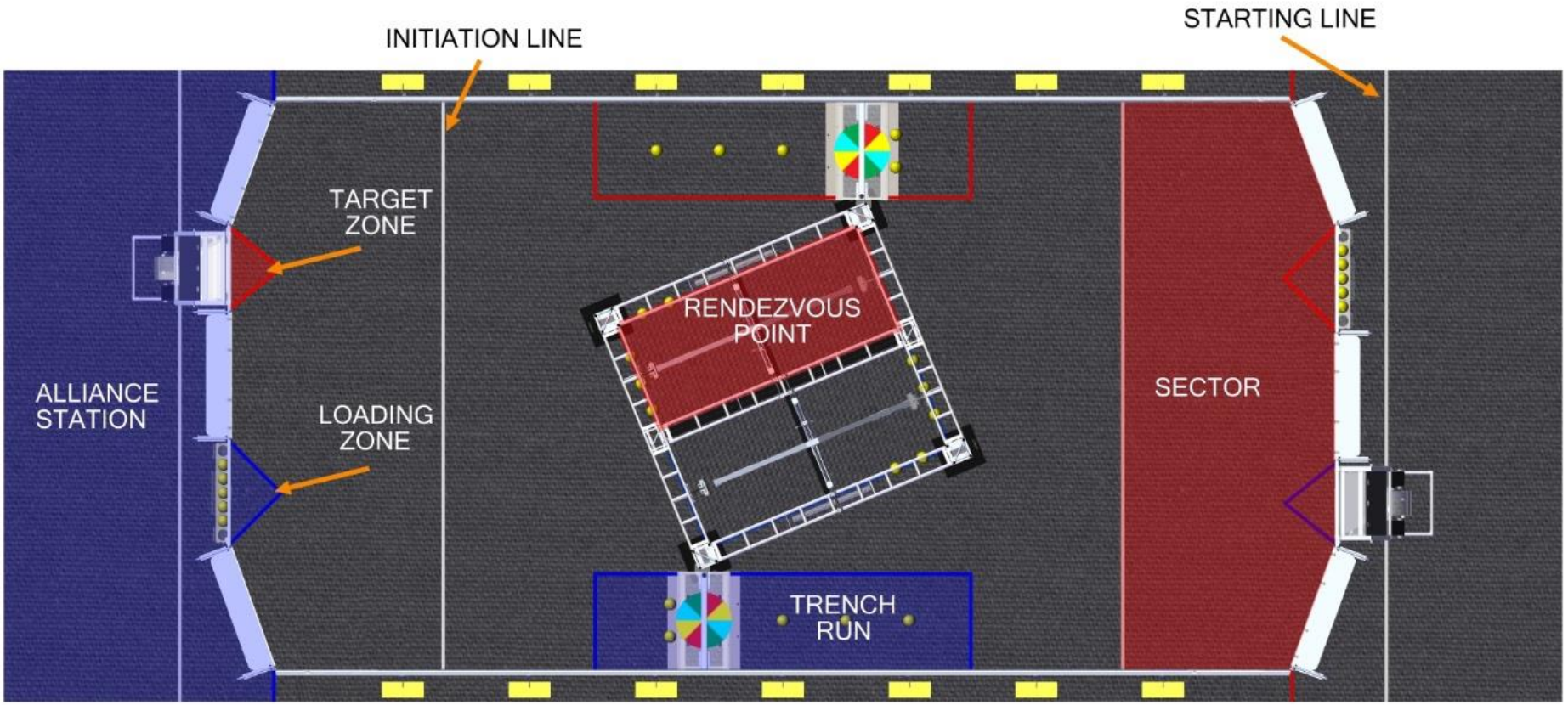
- *INFINITE RECHARGE has a* 26 ft. 11 ¼ in. by 52 ft. 5 ¼ in. carpeted field populated with a Shield Generator, Trenches, Loading Bays, and Power Ports.
- Shield Generator in the center and consists of the Generator Switches, the boundaries, and the floor protection.
  - One Red Trench and one Blue Trench located along the guardrail. Each Trench contains a Control Panel
  - One Red Power Port and one Blue Power Port are located in the Alliance Walls. The Red Power Port is part of the Blue Alliance Wall and the Blue Power Port is part of the Red Alliance Wall.
  - One Red Loading Bay and one Blue Loading Bay are located in their respective Alliance Walls.



Game Overview - Field



Game Overview - Field



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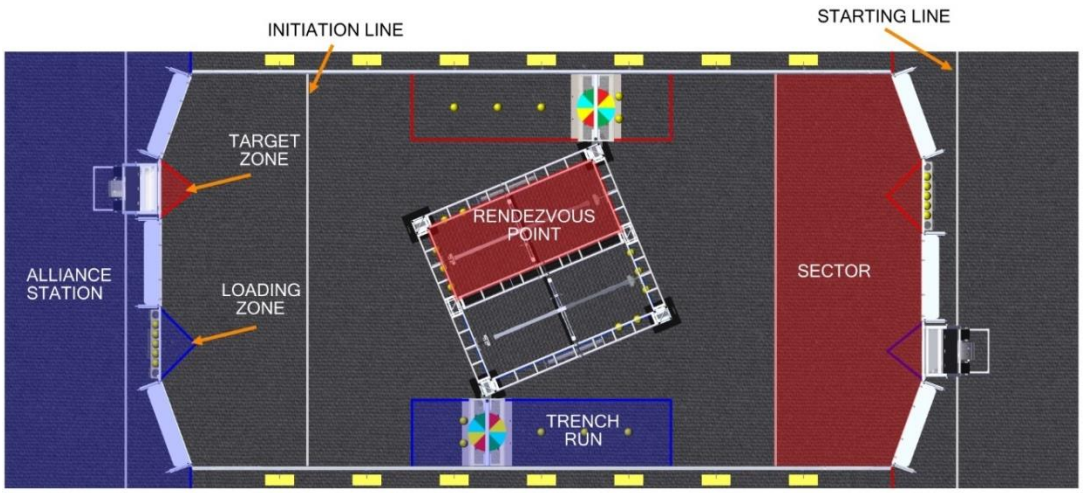
Game Overview - Field

Initiation Line: located 10 ft. from the face of Player Station 2 to the neat edge of the tape. An Alliance's Initiation Line is located in the opponent's Sector.



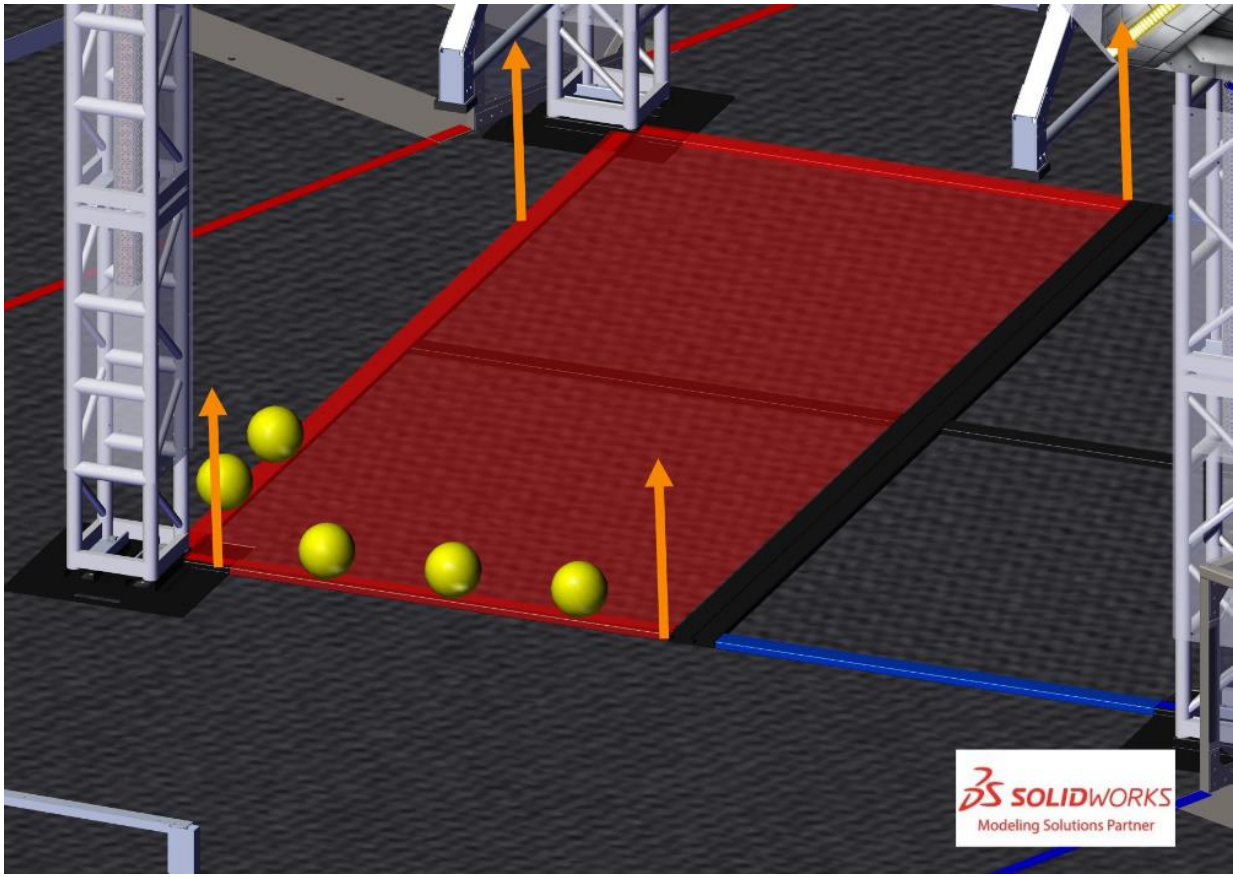
Loading Zone: 5 ft. wide, 2 ft. 6 in. deep infinitely tall volume with a triangular base bounded by the Loading Bay and Alliance colored tape. It includes the tape.

Target Zone: 4 ft. wide, 2 ft. 6 in. deep infinitely tall volume with a triangular base bounded by the Power Port and Alliance colored tape. It includes the tape.

Sector: 26 ft. 11 ¼ in. wide by 10 ft. 2 in. deep infinitely tall volume formed by an Alliance's Alliance Wall, guardrail, and Initiation line. It includes the Initiation line.

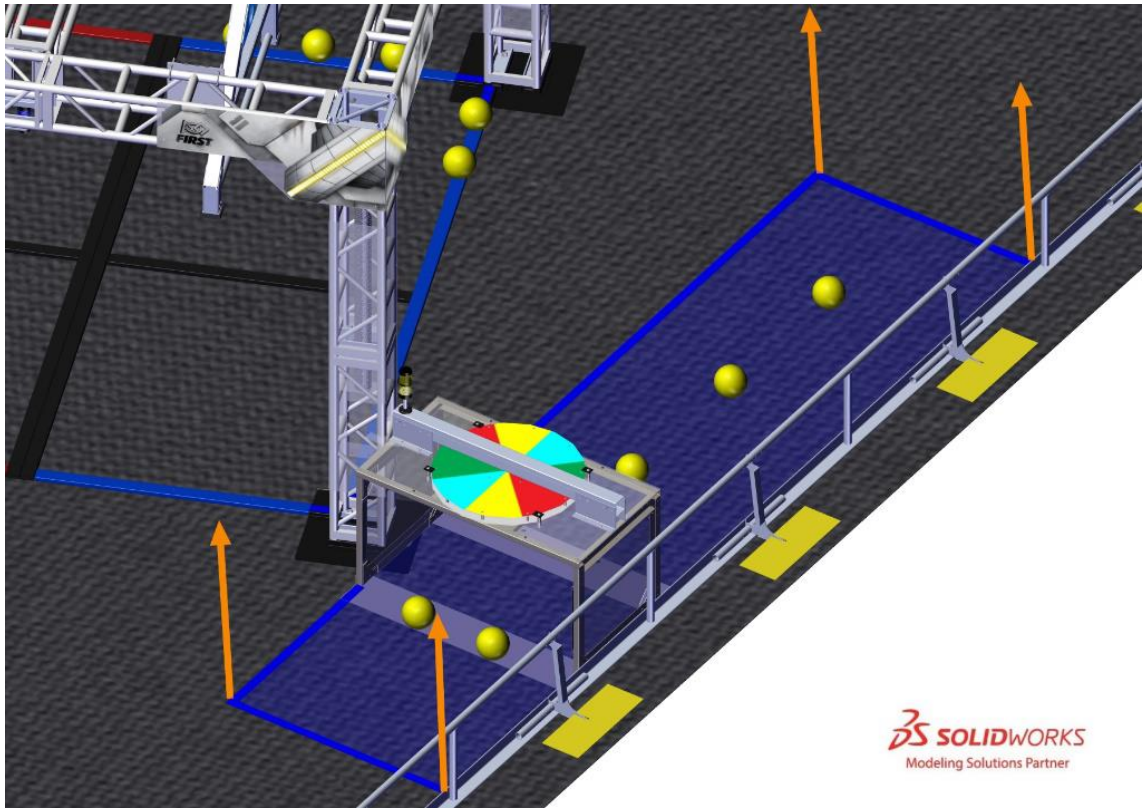
Game Overview – Rendezvous Point

A 5 ft. 6 ¾ in. wide, 12 ft. 6 ¾ in, deep, infinitely tall volume formed by the Alliance colored Boundaries and the black Boundary pair that divides the Red and the Blue Boundaries. It includes the Alliance colored Boundaries.



Game Overview – Trench Run

A 4 ft. 7 ½ in. wide, 18 ft. deep, infinitely tall volume that is bounded by the guardrail, the edge of the Trench vertical support closets to the center of the Field, and Alliance colored tape. It includes the Alliance colored tape.



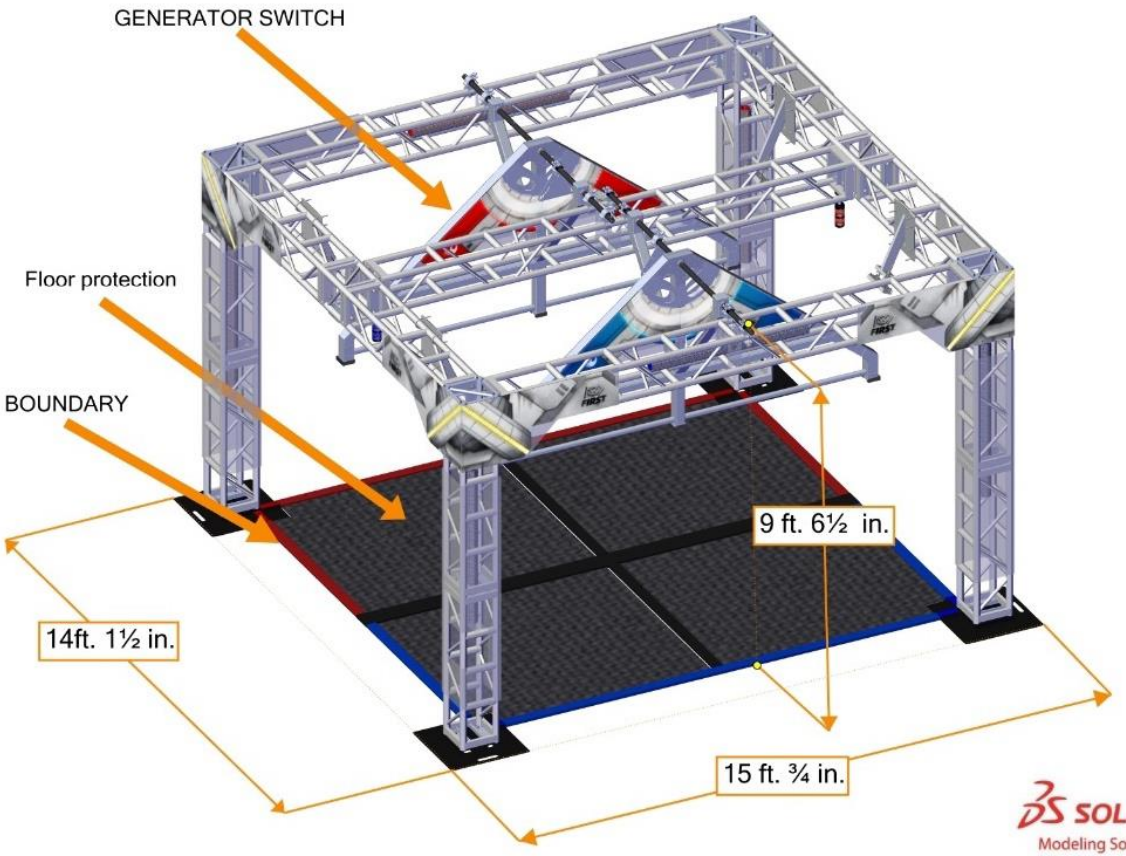
Game Overview – Shield Generator

It is oriented at a 22.5 degree angle relative to the guardrails.

It has one Generator Switch per alliance.

Boundaries divide the floor into sections.

Spaces between Boundaries include flooring protection to prevent floor damage.

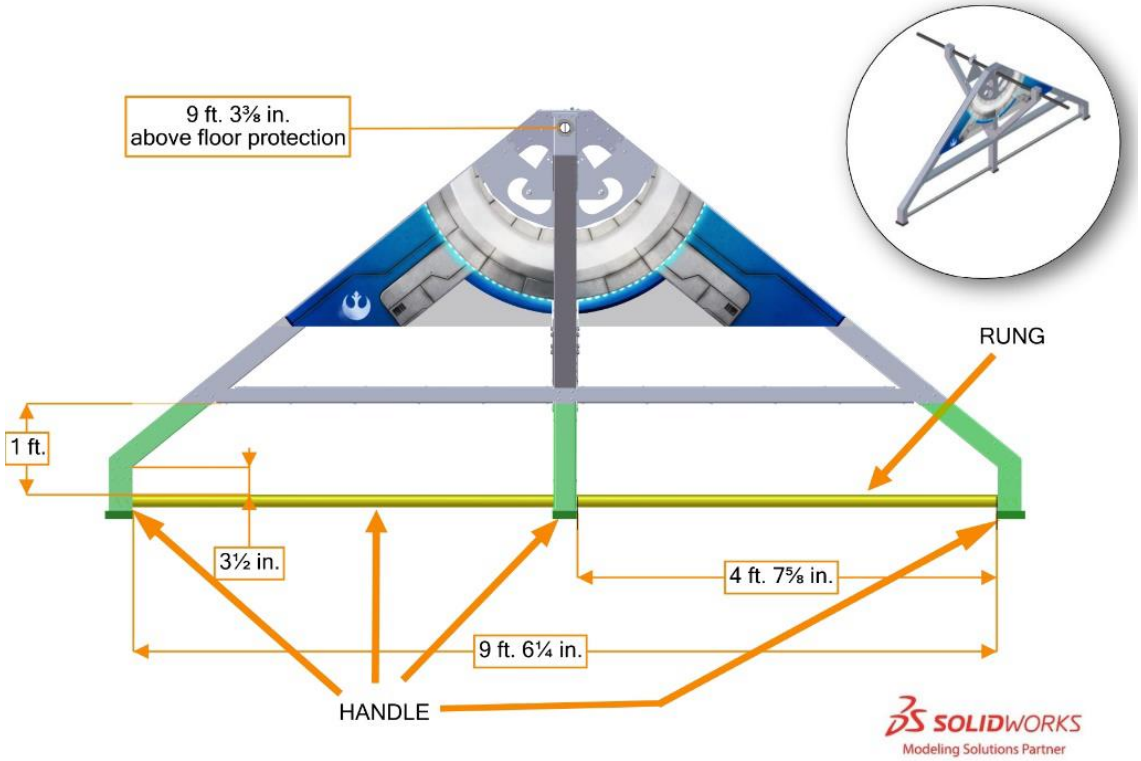


Game Overview – Generator Switch

One Generator Switch per alliance.

It is 7 ft. 6 in. wide, 10 ft. deep, and 4 ft. 6 in. tall assembly that swings from the top of the Shield Generator.

Each Switch has a handle that consists of Rung and supporting structure below the horizontal beam of the Switch. A Rung is a 1 ¼ in. schedule 40 aluminum pipe.

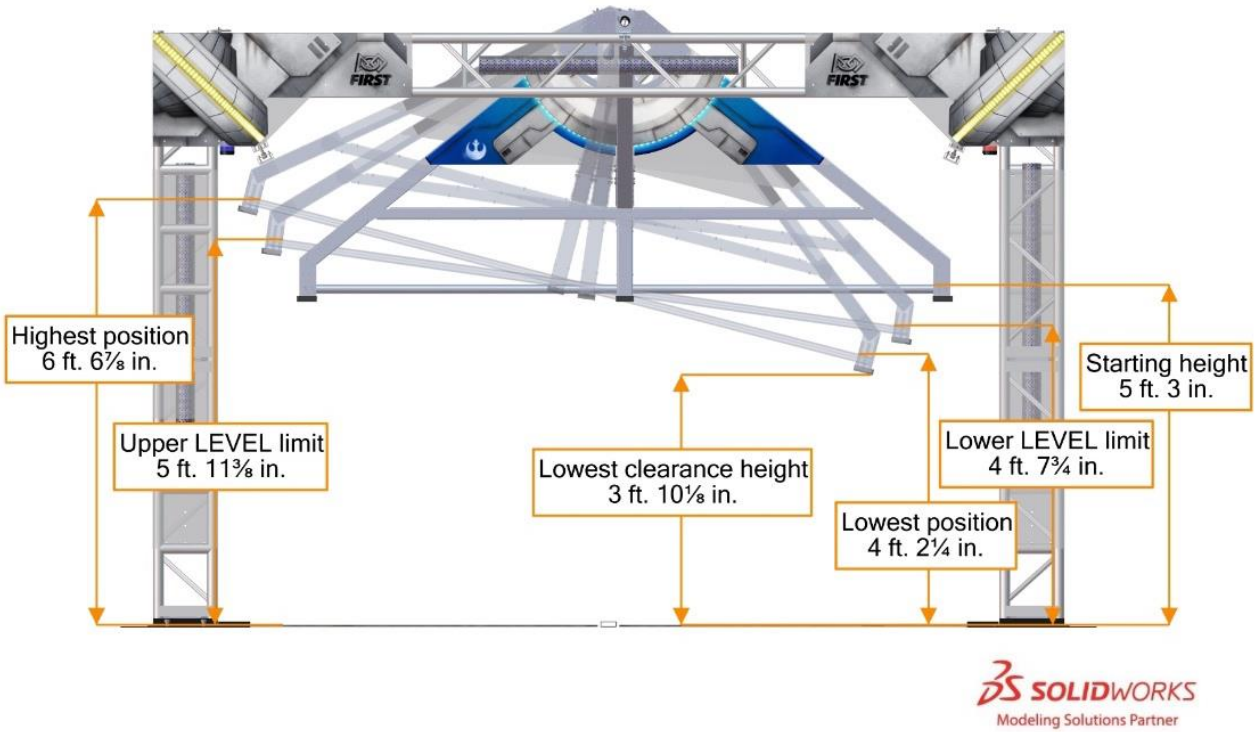


Game Overview – Generator Switch

Start of match: top of Rung is parallel to and 5 ft. 3 in. above the floor.

It can tilt and rest in different positions depending on the number and location of robots pulling on the handle.

Hard stops prevent the switch from rotating more than 14.5 degrees in either direction.



Game Overview – Generator Lighting

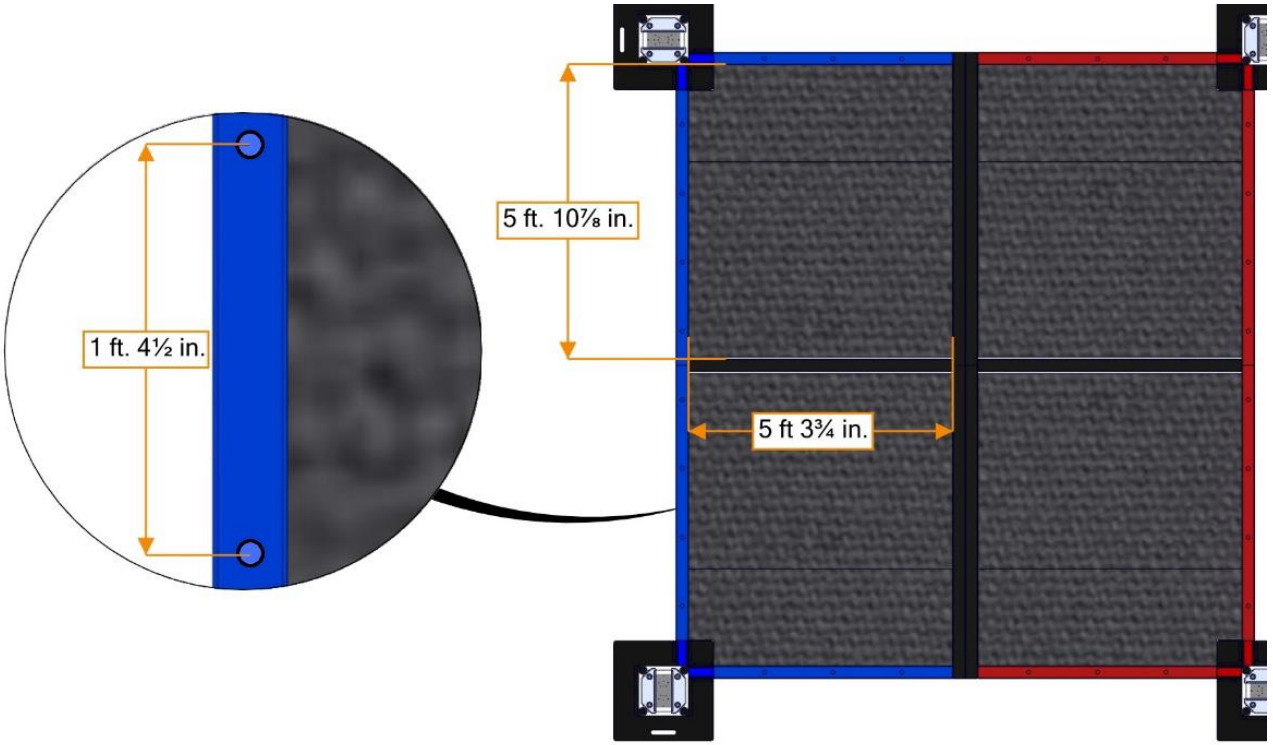
A set of stack lights for each Alliance which are enabled from the start of the End Game until five seconds after the Match. These lights illuminate when the corresponding Generator Switch is level.

Each half of the Shield Generator features three Alliance colored light bars inside of the truss structure.

- The first light bar, inside the vertical truss section adjacent to the Alliance's Trench turns on once Stage 1 is Activated.
- The second light bar, inside the vertical truss section closest to the Alliance's Power Port, turns on once Stage 2 is Activated.
- The third light bar, inside the horizontal truss connecting the two previous truss sections, turns on one Stage 3 in Activated.

Game Overview – Boundaries

3 in. wide, 1 in. tall steel barriers that divide the area inside the Shield Generator into four equal sized rectangles that are 5 ft. 3 ¾ in. wide by 5 ft. 10 7/8 in. deep. A pair of black boundaries divide the Red and Blue Rendezvous points.



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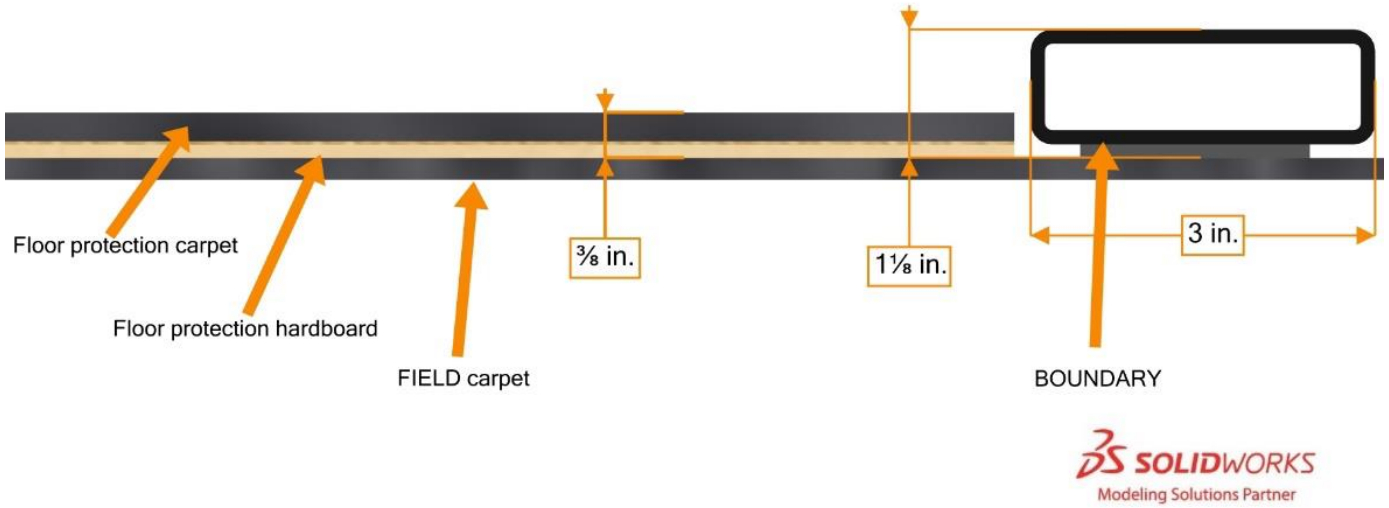
Game Overview – Boundaries

A layer of 1/8 in. thick hardboard is installed on top of the filed carpet and covered with another layer of carpet to protect venue flooring.



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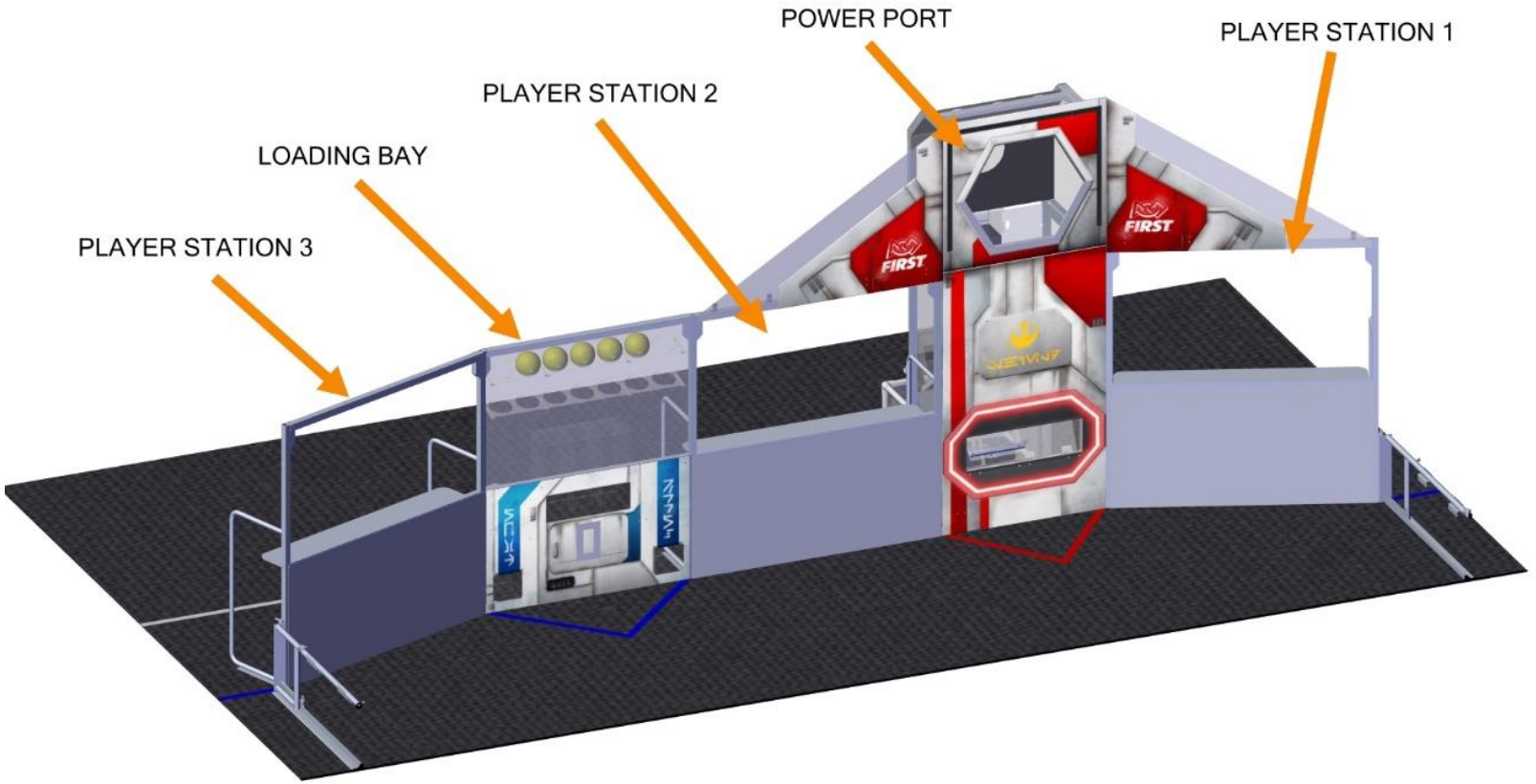
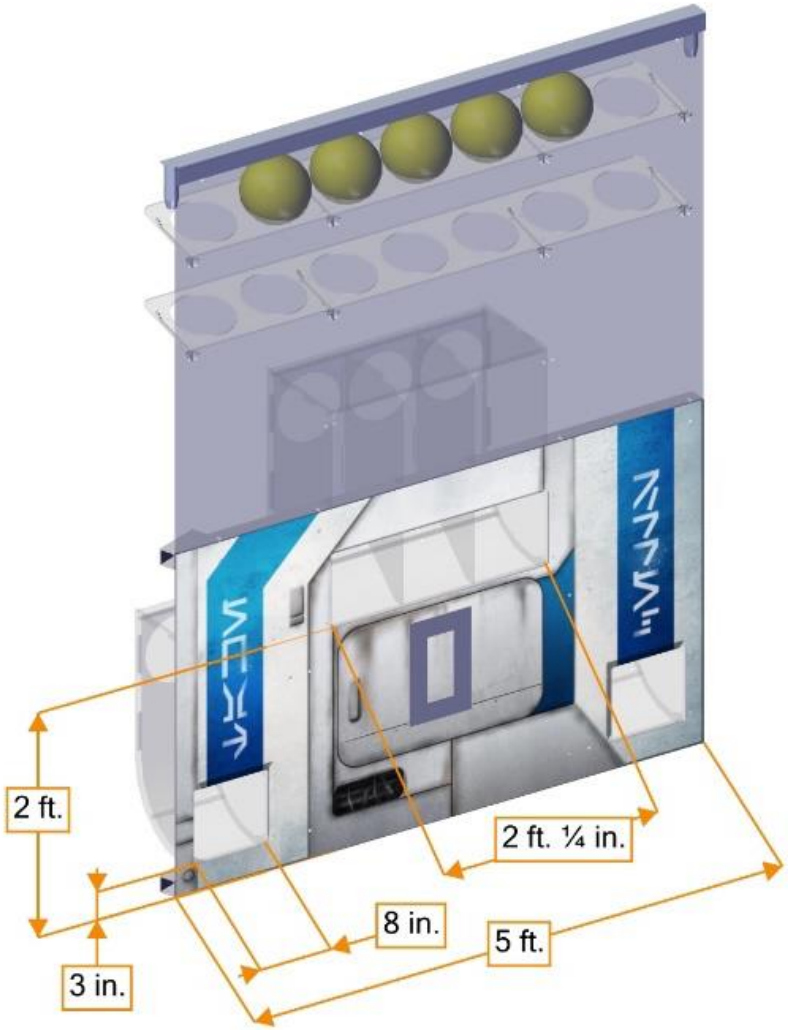
Game Overview – Alliance Station

Has three player stations, the Loading Bay, and the Power Port.



Game Overview – Loading Bay



6 ft. 6 in. tall by 5 ft. wide structure located between Player Stations 2 and 3. Human Players deliver Power Cells through one of the five chutes.

Two low chutes and three high chutes.

Includes two racks for Power Cell storage. Each rack contains openings for seven Power Cells.

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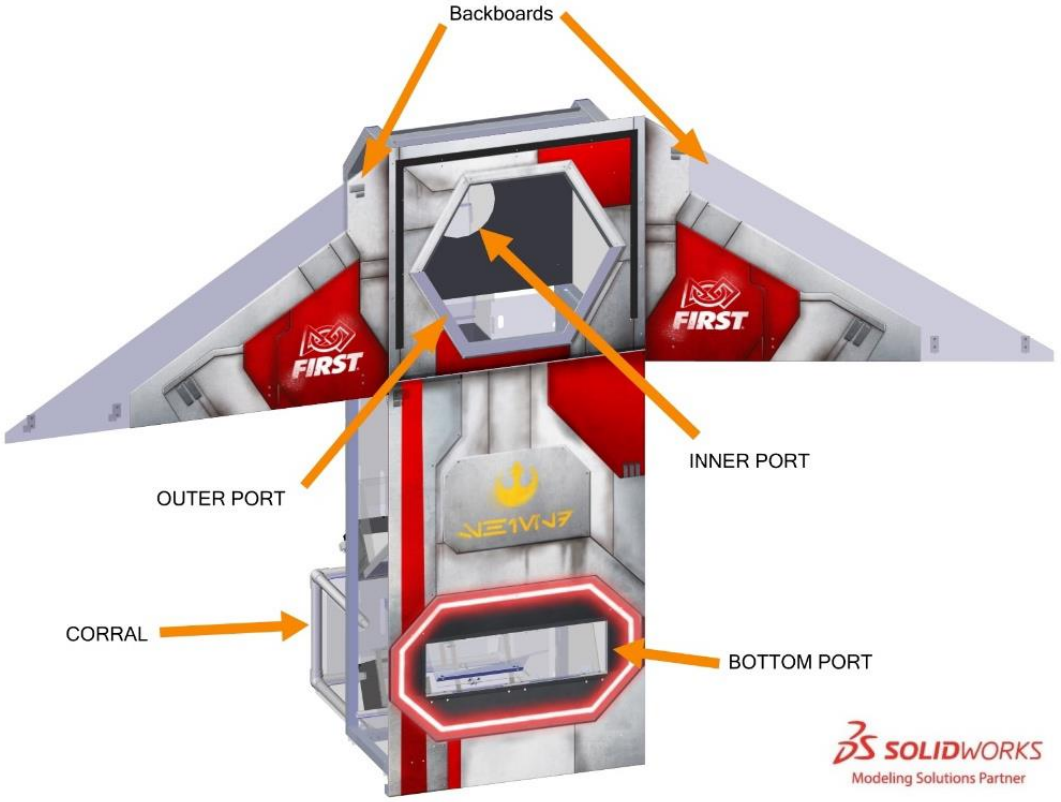
Game Overview – Power Port

Located on Opposing Alliance Wall.

The bottom port is a 10 in. tall, 2 ft. 10 in. wide rectangle. The bottom edge is 1 ft. 6 in. above the carpet

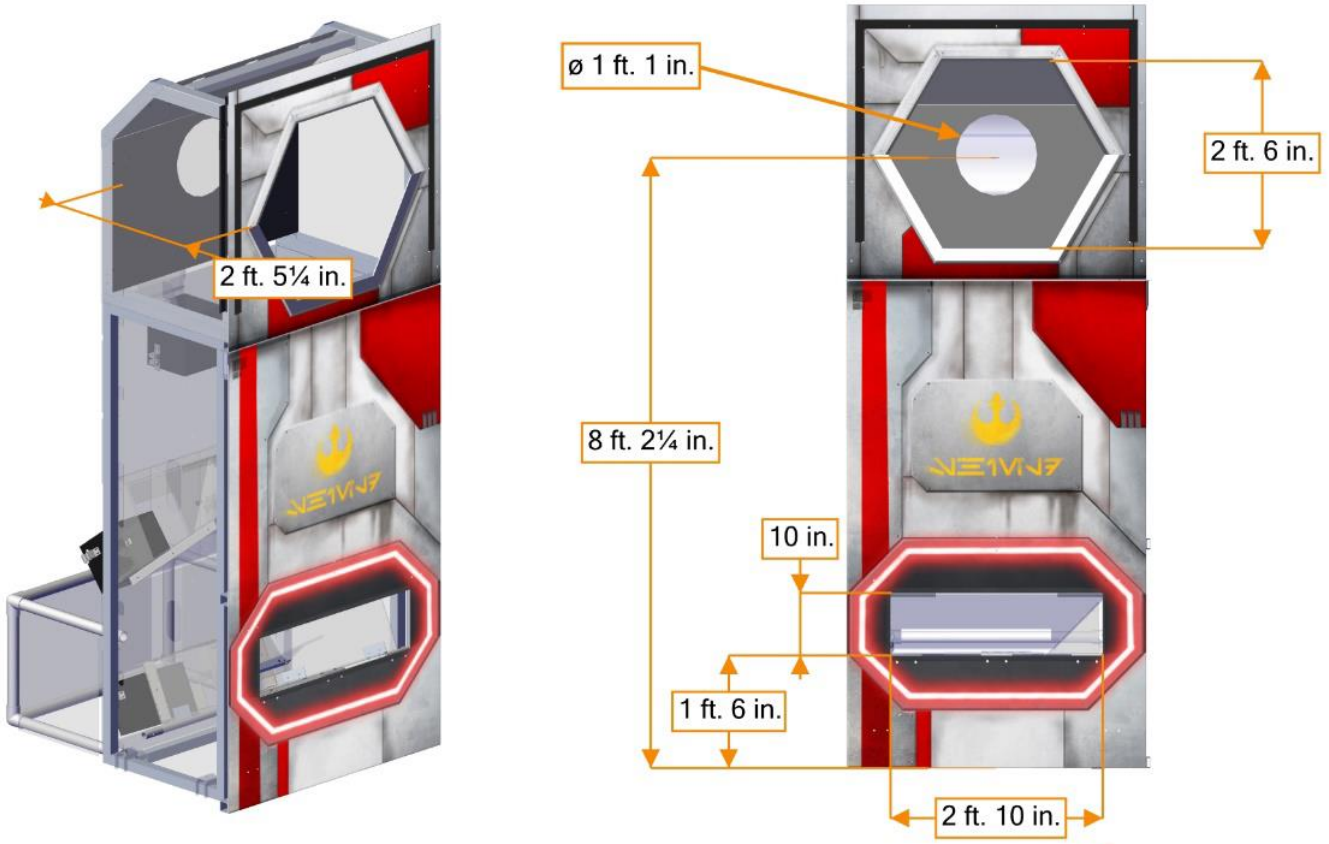
The Outer Port is a regular hexagon that measures 2 ft. 6 in. in height. The center is 8 ft. 2 ¼ in. above the carpet.

The Inner Port is a 1 ft. 1 in. diameter circle concentric with and 2 ft. 5 ¼ in. behind the Outer Port. The center is 8 ft. 2 ¼ in. above the carpet.



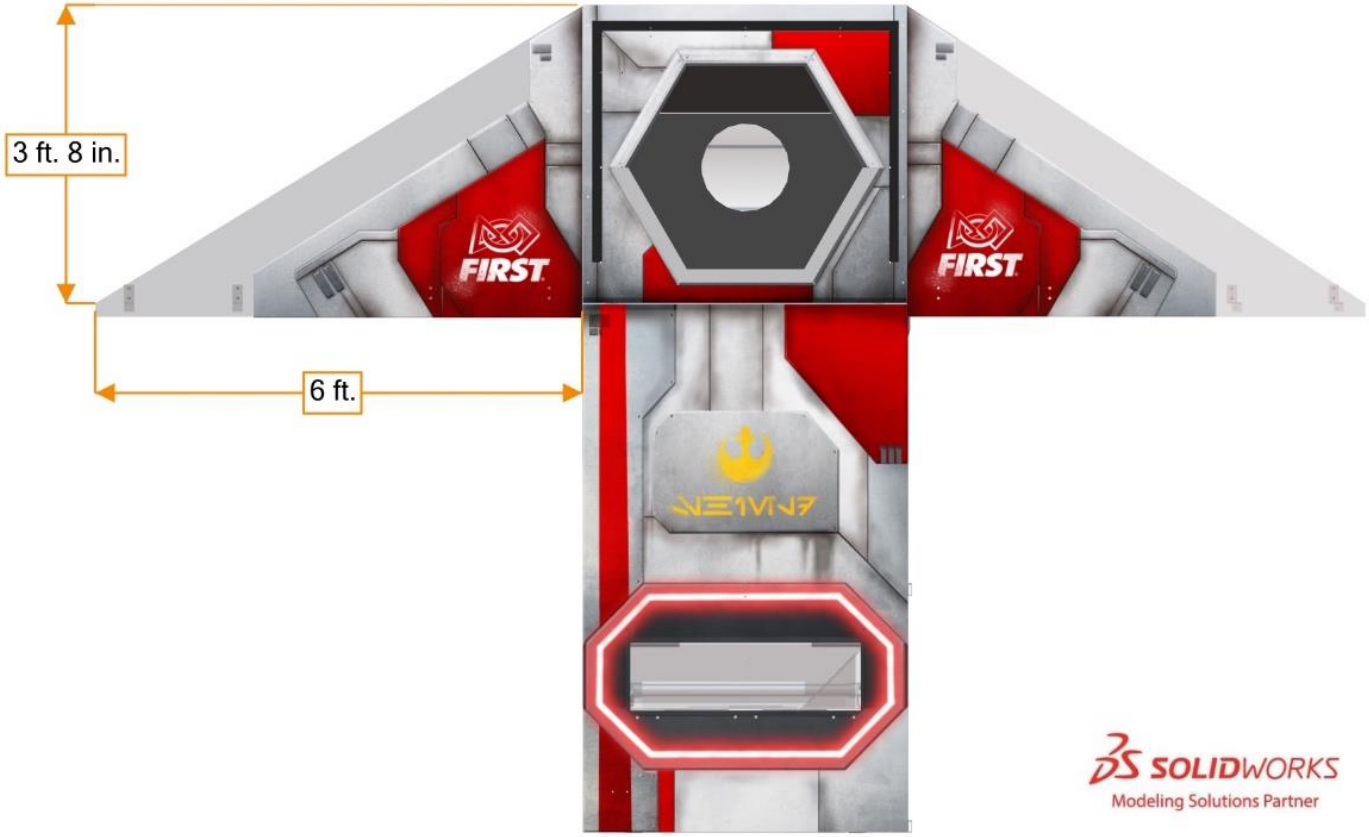
Game Overview – Power Port

Releases scored Power Cells into its corral, and Power Cells are recycled back to the field by Human Players.



Game Overview – Power Port

Features two polycarbonate backboards on either side to help prevent Power Cells from leaving the field.



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Game Overview –Outer Port Lighting

LED Light String is used to indicate the progress towards capacity.

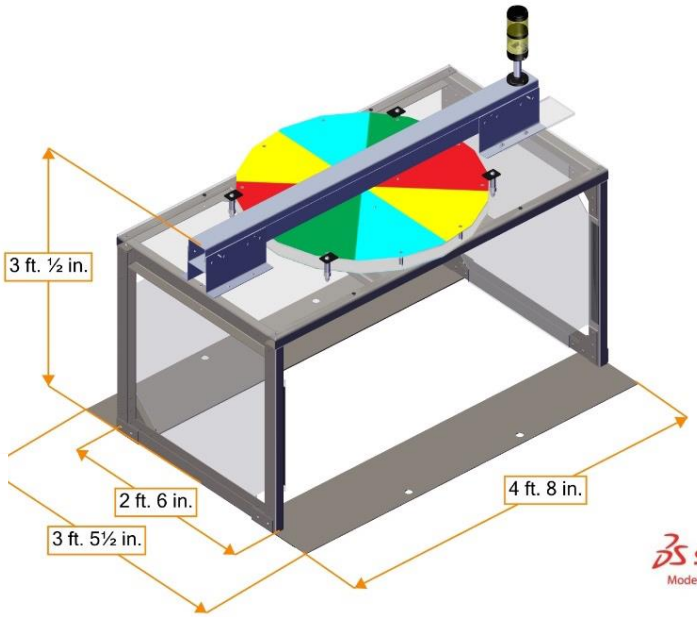
FIELD is human safe
(all green)

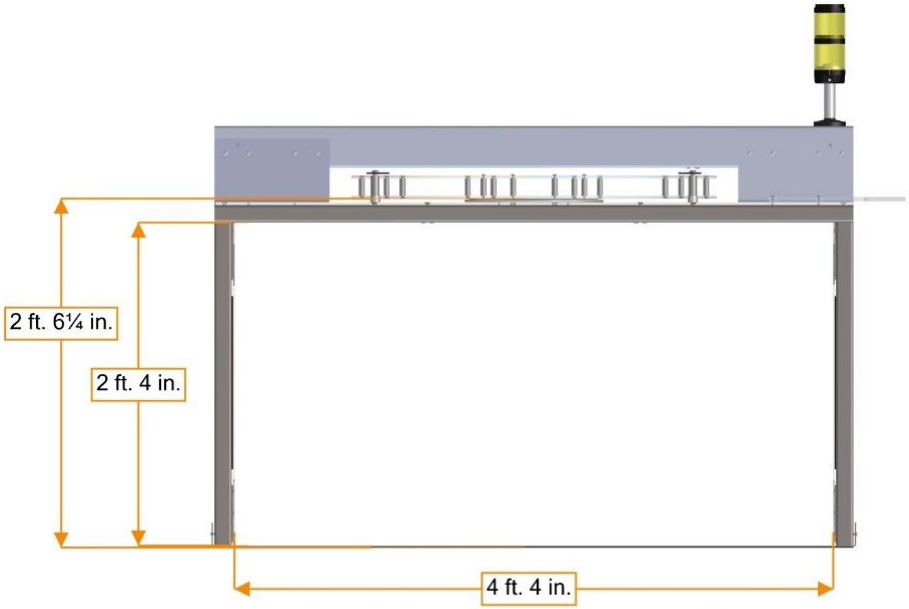
CAPACITY reached
(yellow chase)

All Stages ACTIVATED
(all ALLIANCE color)

Game Overview – Control Panel

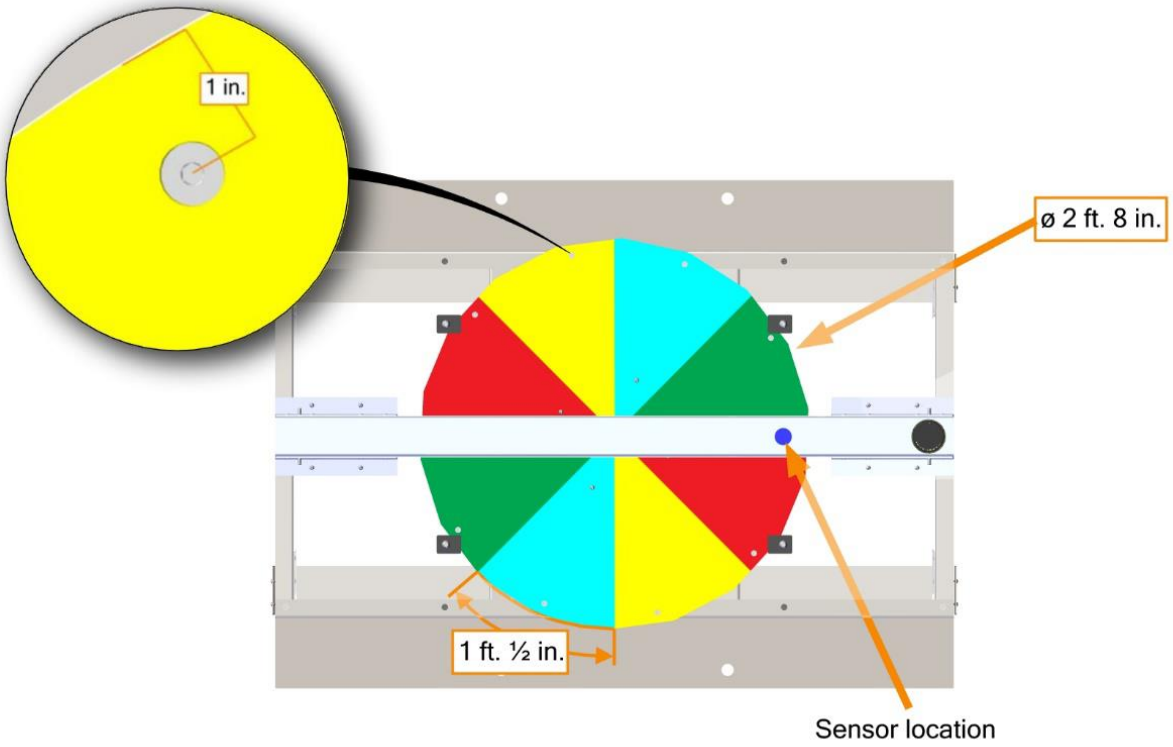
On top of each Trench is a Control Panel and a yellow stack light.





Game Overview – Control Panel

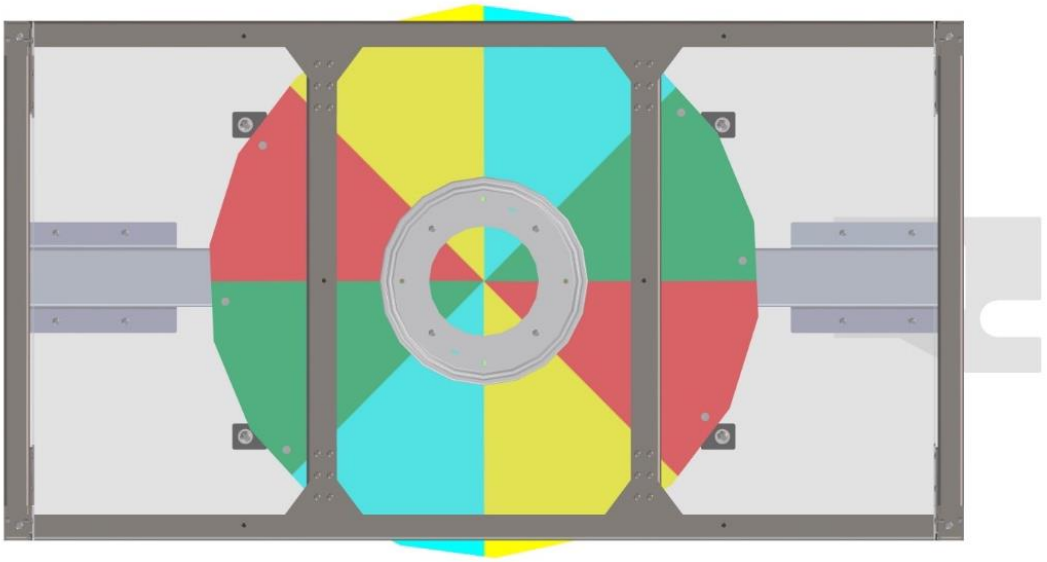
Control Panel is a 2 in. tall, 2 ft. 8 in. diameter disk constructed of two pieces of ¼ in think polycarbonate, spaced apart by ten ½ in. diameter metal spacers at regular intervals. The bottom edge of the Control Panel is located 2 ft. 6 ¼ in. above the carpet.



Game Overview – Control Panel

Eight equal size wedges – red, green, blue, and yellow.

Color CMYK Values	Cyan	Magenta	Yellow	Black
Blue	100	0	0	0
Green	100	0	100	0
Red	0	100	100	0
Yellow	0	0	100	0



Bottom View

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Game Overview – Control Panel

Each has two requirements to Energize the Shield Generator

- Rotation Control – Rotate control panel at least three but not more than five revolutions in the same direction. If more than five, then it resets to zero. The Trench light turns on once Stage 2 capacity is reached.
- Position Control – Rotate Control Panel so a specified color aligns with the sensor for at least five seconds. Once either Alliance reaches Stage 3 capacity, FMS relays a specified color to all Operator \Consoles simultaneously.

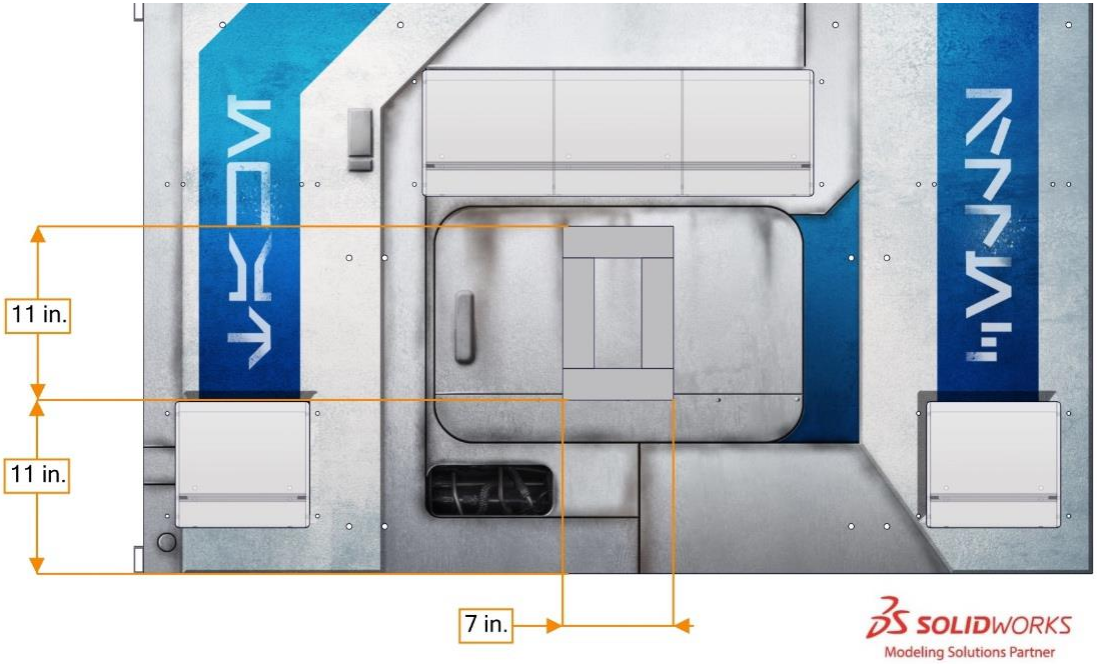
Light Stage	Shield Generator Stage	Criteria
Off	1, 2, or 3	Stage not at capacity or stage 3 activated
Solid	2 or 3	The Power Port is at capacity, the control panel is ready for use
Flashing	2	The Control Panel has rotated the required number for rotation control, but has not yet continuously read a single color for two seconds.
	3	The Control Panel has read the required color for position control for at least three seconds and less than five seconds.

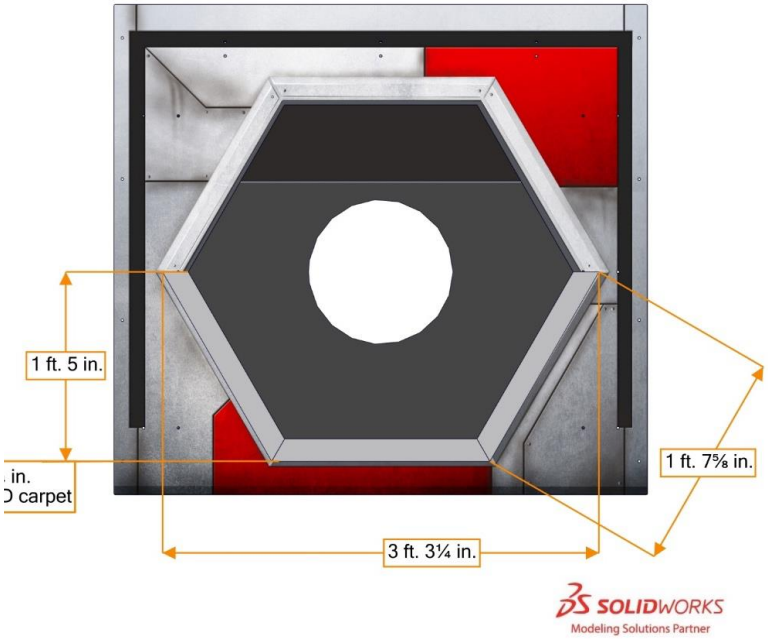
Game Overview – Power Cell

Yellow 7 in. diameter medium bounce dino-skin foam ball.

Game Overview – Vision Targets

Vision targets made from 2 in. wide strips of reflective material are located on the Power Ports and Loading Bays.

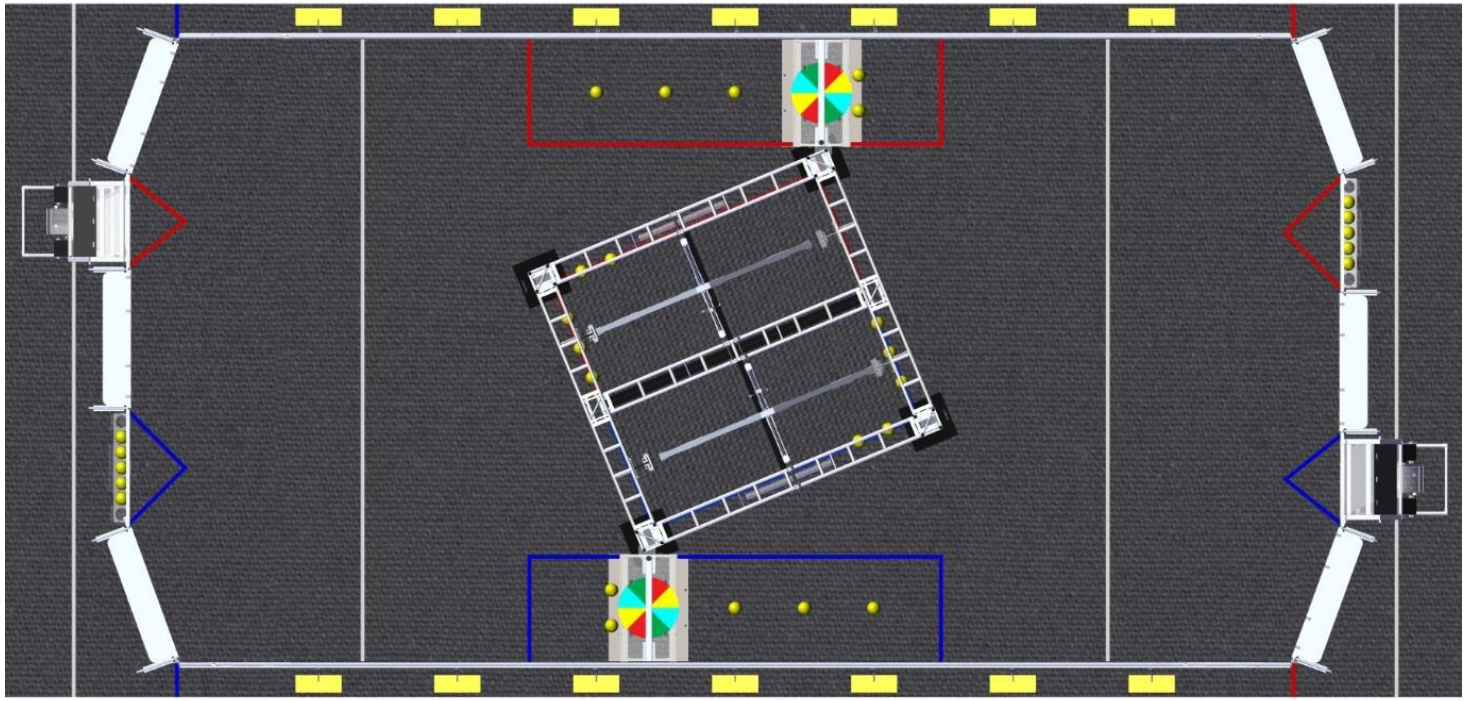




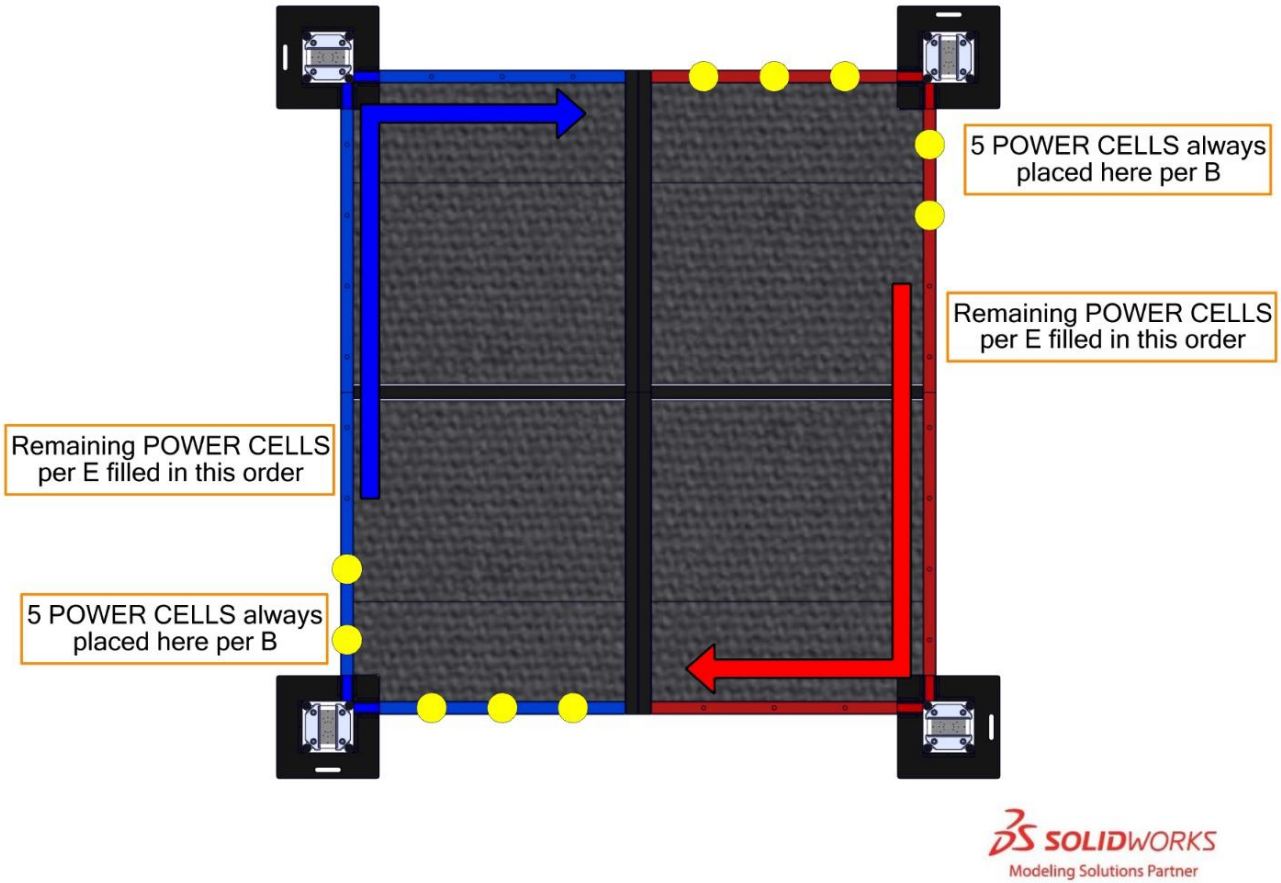
Game Overview – Setup

Forty-eight Power Cells are staged as follows:

A. Five in each of the two Trench runs
B. Five placed on the Boundaries inside each Alliance's Rendezvous Point
C. Five on the racks in each Alliance Station Loading Bay
D. Each of the three teams may preload up to three in their robot
E. Remaining in the holes on the boundaries in the corresponding Alliance's Rendezvous point



Game Overview – Setup



Game Overview – Setup

Each Team stages their robot such that at least part of its Bumpers are intersecting the infinite vertical volume created by the corresponding Alliance's Initiation Line.

Humans stage behind the starting line inside their Alliance Station.

Technicians stage in the event-designated area near the Field

Game Overview – FMS Audio Clues

FMS alerts participants to milestones in the match using audio cues.

Event	Timer Value	Audio Cue
Match Start	0:15	Cavalry Charge
Auto Ends	0:00	Buzzer
Teleop Begins	2:15	Three Bells
Endgame warning	0:30	Imperial Alarm
Match End	0:00	Buzzer
Match Stopped	n/a	Foghorn
Rotation Control complete	n/a	Whirring
Position Control complete	n/a	Charging Up

Safety

- Safety is paramount at all times, and each rule is intended to establish norms at each event that will mitigate injury risk to all participants.
- Robots whose operation or design is dangerous or unsafe are not permitted.
- Drivers need to know the safety rules for entering the field, exiting the field, robot carrying, human safety rules during the match, etc.

Match Play – Scoring

Alliances are rewarded for various actions:

- Movement during Auto
- Scoring Power Cells in Power Ports
- Manipulating Control Panels
- Activating stages of the Shield Generator
- Energizing the Shield Generator,
- Winning or tying Matches

Game Play – Power Port Scoring

Alliances generate energy by scoring Power Cells into one of three openings of their Power Port. To be considered scored, the Power Cell must pass through the bottom outer or inner ports and exit through the respective scoring sensors.

Game Play – Shield Generator Scoring

The Shield Generator stores energy generated by scored Power Cells. Alliances work to make the Shield Generator Operational and Energized in order to protect *FIRST* City. It has three stages that need to be charged to capacity and activated consecutively. Capacity is the number of Power Cells that must be scored to charge each stage. Each Power Cell, regardless of the Power Port opening in which it scores, counts equally toward capacity.

Stage	Capacity	Activated When
1	9	Nine power cells are scored & teleop has begun
2	20	Twenty power cells are scored in Stage 2 and rotation control is complete
3	20	Twenty power cells are scored in Stage 3 & position control in complete

Power cells scored after a stage is at capacity generate match points but do not contribute to the next stage's capacity.

Game Play – Control Panel Scoring

Control Panels activate shield generator stages two and three. A stage may be activated once it reaches capacity, and a stage must be activated before the next stage can begin charging.

Once all three stages are activated, the shield generator is energized.

Game Play – Generator Switch Scoring

Alliances use their generator switch to earn match points and make the shield generator operational

A robot is considered parked if, at the conclusion of the match, it is fully supported by the shield generator and not in contact with any carpet outside its alliances rendezvous point.

A robot is consider hanging if, five seconds after the arena timer displays zero following teleop, it is fully supported by its generator switch.

A generator switch is considered level if, five seconds after the arena timer display zero following teleop, both following criteria are met:

1. It is in the level range, and
2. All alliance robots contacting the generator switch are hanging

The Shield Generator is considered to be operational when the alliance's endgame score is greater than or equal to 65 points

Game Play – Point Values

Award	Awarded for	Auto	Teleop	Qual.
Initiation Line	Exit the vertical volume of the initiation line at any time before the end Auto (per robot)	5	-	-
Power Cells	Scored in Bottom Port	2	1	-
	Scored in Outer Port	4	2	-
	Scored in Inner Port	6	3	-
Control Panel	Rotation Control	-	10	-
	Position Control	-	20	-
Endgame Points	Hang (per robot)	-	25	
	Park (per robot)	-	5	-
	Level with 1-3 robots hanging	-	15	-
Shield Generator Operational	Earning at least sixty-five endgame points	-	-	1 Ranking Point
Shield Generator Energized	Stage 3 activated	-	-	1 Ranking Point
Tie				1 Ranking Point
Win				2 Ranking Point

Game Play – Rule Violations

Penalty	Description
Foul	A credit of three points towards the opponent's match score
Tech Foul	A credit of fifteen points toward the opponent's match score
Yellow Card	A warning issued by the head referee. A subsequent yellow card within the same tournament phase will lead to a red card
Red Card	A penalty assessed for egregious robot or team member behavior or rule violations which results in a team being disqualified for the match
Disabled	Robot is commanded to deactivate all outputs, rendering the robot inoperable for the remainder of the match
Disqualified	The state of a team in which they receive zero match points in a qualification match or caused their alliance to receive zero match points in a playoff match

Game Play – Drive Team

Drive team is a set of up to five people from the same FRC team responsible for team performance for a specific match.

Role	Description	Max/Drive Team	Criteria
Coach	A Guide or advisor	1	Pre-college student or adult mentor
Driver	An operator and controller of the robot	3	Per-college student
Human Player	A power cell manager		
Technician	A resource for robot troubleshooting, setup, and removal from the field	1	Pre-college student

Game Play – Humans

- Drivers, coaches, and human players stage between the starting lines in their alliance station.

- Technicians stage in the event-designated area near the field.

Game Play – Other

- Power Cells that leave the field are place back into the field approximately at the point of exit by field staff at the earliest safe opportunity.

Game Play – Robots

- When placed on the field for a match, each robot must be:
  - In compliance with all robot rules
  - The only item left on the field by the drive team
  - Confined to its staring configuration
  - Positioned such that its bumpers are intersecting the infinite vertical volume of the initiation line
  - Supporting not more than three power cells

Game Play – Robots

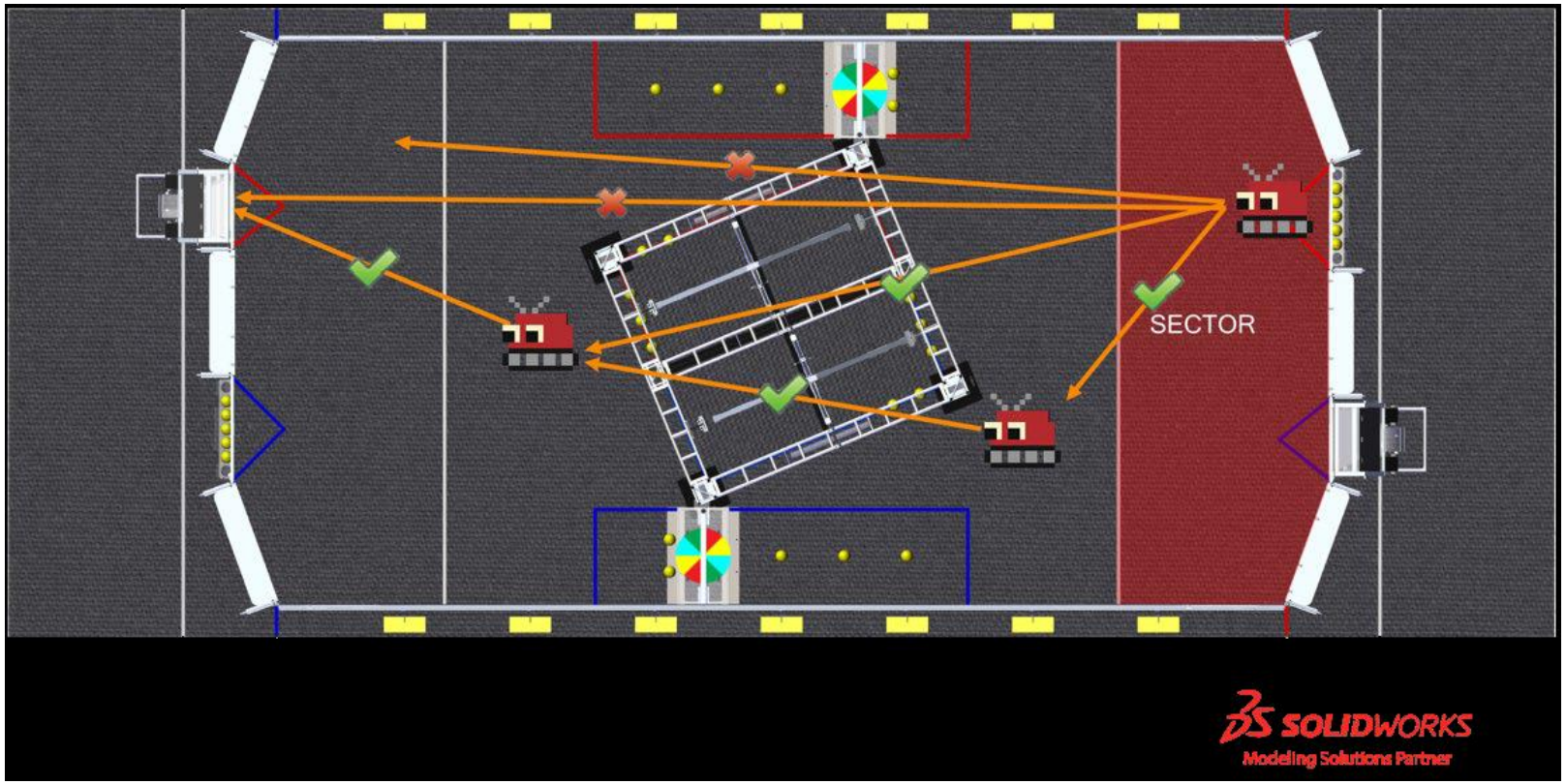
- During Auto Only
  - No defense
  - No part of a robot's bumpers may break the plane of the opponent's sector
  - Drive team members in alliance stations may not contact anything in front of the starting lines
  - Drive team may not directly or indirectly interact with robots or operator consoles unless for personal safety.

Game Play – Power Cell Interaction

- No more than five Power Cells at a time. In control of a Power Cell if:
  - Power Cell is fully supported by the robot
  - Power Cell travels across the field such that when the robot changes direction, the Power Cell travels with the robot,, or
  - The robot is holding a Power Cell against a field element in attempt to guard or shield it
- Robots may not intentionally eject Power Cells from the field other than through the Power Port
- Robots may not deliberately use Power Cells in an attempt to ease or amplify the challenge associated with field elements.

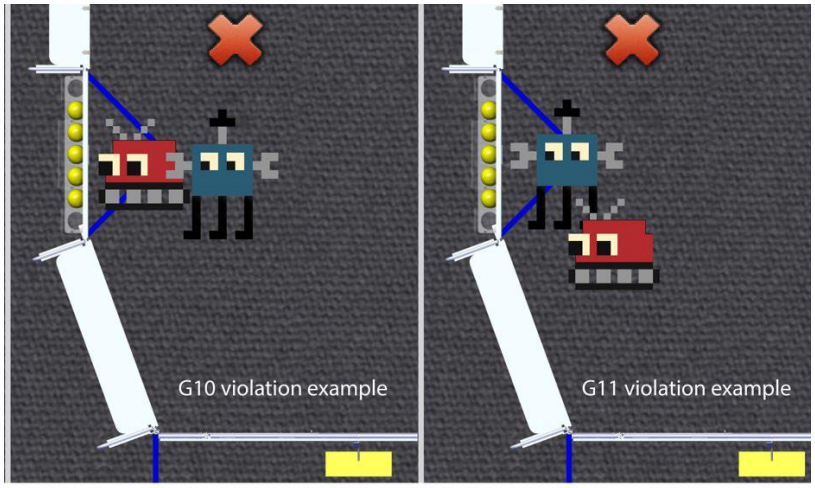
Game Play – Zone Specific Restrictions

- A robot whose bumpers are fully contained by their sector may not cause Power Cells to travel into or through theirs opponent's sector.



Game Play – Zone Specific Restrictions

- G10. A robot whose bumpers are intersecting the opponent's target zone, trench run, or loading zone may not contact opponent robots, regardless of who initiates contact. (Technical foul per incident)
- G11. An opponent robot may not contact a robot whose bumpers are intersecting its target zone or loading zone, regardless of who initiates contact. (Technical foul per incident)



Game Play – Zone Specific Restrictions

- G12. A robot may not contact the opponent's control panel, either directly, or transitively through a power cell, if
  - The opponent robot is contacting that control panel, and
  - The opponent's power port has reached capacity

  (Violation: Opponents are awarded one shield generator energized ranking point if not completed at the conclusion of the match)
- G13. A robot may not be fully supported by a partner robot unless the partner robot's bumpers are intersecting its rendezvous point.
- G14. During the endgame, a robot may not contact an opponent robot whose bumpers are completely contained in its Rendezvous point and not in contact with its generator switch.

Game Play – Zone Specific Restrictions

- G15. During the endgame, a robot may not contact an opponent's robot that is contacting its generator switch and not in their opponent's Rendezvous point.
- G16. Bumpers must be in the bumper zone during the match unless a robot's bumpers are intersecting its Rendezvous point or a robot is supported by a partner robot whose bumpers are interesting its Rendezvous point. (Violation: Foul. If strategic, Red Card)

Game Play – Zone Specific Restrictions

- G17. Robot heights, as measured when it's resting normally on a flat floor, may not exceed 45 in. above the carpet during the match, with the exception of robots intersecting their alliance's Rendezvous point during the endgame.
- G18. Robots may not extend more than 12 inches beyond their frame perimeter
- G19. Robots may not intentionally detach or leave parts on the field.

Game Play – Robot to Robot Interaction

- G21. Robots may not pin an opponent's robot for more than five seconds.
- G22. Two or more robots that appear to a referee to be working together may not isolate or close off any major component of match play:
  - Blocking an opponent's trench
  - Blocking all the opponent loading bay chutes
  - Blocking the opponent bottom port
  - Shutting down access to all power cells on the field
  - Quarantining all opponents to a small area of the field

  A single robot blocking access to a particular area of the field is not a violation of this rule.

  Two robots independently playing defense on tow opponent robots is not a violation of this rule.

Game Play – Robot to Robot Interaction

- G24. A robot with a component(s) outside its frame perimeter may not initiate direct contact with an opponent robot inside the vertical projection of its frame perimeter using that component.
- G25. A robot may not initiate direct contact inside the vertical projection of an opponent robot's frame perimeter that damages or functionally impairs the opponent robot. (Technical foul and Red Card)

Game Play – Field Interaction

- G26. Robots are prohibited from the following actions with regards to arena field elements: Note items A-C exclude power cells, handle, and alliance's control panel. Item G excludes the handle.
  A. Grabbing
  B. Grasping
  C. Attaching
  D. Deforming
  E. Becoming Entangled
  F. Damaging
  G. Suspending from

Game Play – Humans

- The only equipment that may be brought to the arena and used by the drive teams during a match are:
  - The operator console
  - Non-powered signaling devices
  - Reasonable decorative items
  - Special clothing and/or equipment required due to a disability
  - Devices used solely for planning or tacking strategy
  - Devices used solely to record gameplay
  - Non-powered personal protective equipment
- A robot shall be operated solely by the drivers and/or human players of that team

Game Play – Humans

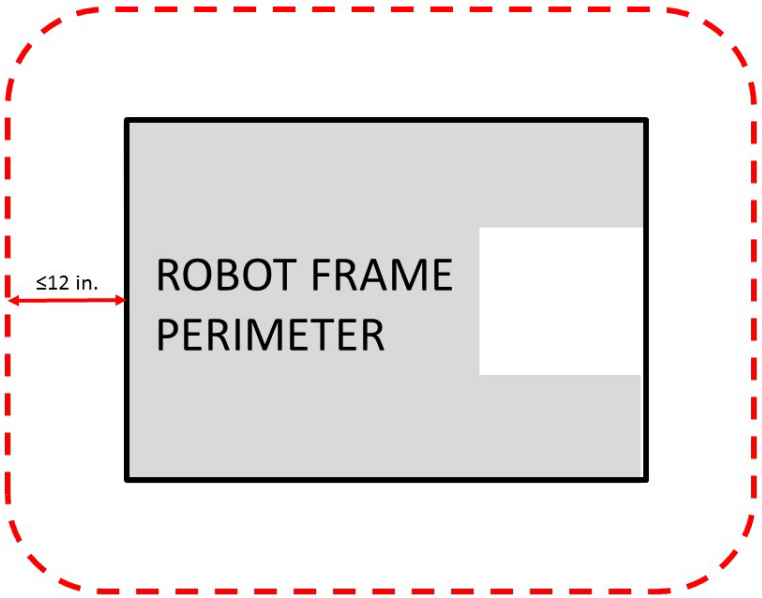
- Prior o the start of the match, drive teams may not rearrange the power cells within the alliance station or stage on the field (except those in robot)
- Power cells may only be introduced to the field
  A. During teleop
  B. By a driver or human player, and
  C. Through the loading bay
- During a match, coaches may not touch power cells, unless for safety purposes
- Teams may not interfere with any automated scoring hardware
- During teleop, an alliance may not have more than fifteen power cells in their alliance station
- Power cells must be stored on the loading bay racks

Robot Construction Rules

- Robot my not intentionally detach or leave parts on the field.
- Robot must be in compliance with bumper rules throughout the match.
- Robot must be removed from the field by hand.
- Robot must have a frame perimeter, contained within the bumper zone, that is comprised of fixed, non-articulated structural elements.

Robot Construction Rules

- A robot's starting configuration may not have a frame perimeter greater than 120 in. and may not be more than 45 in. tall.
- Robots may not extend more than 12 in. beyond their frame perimeter.



Robot Rules

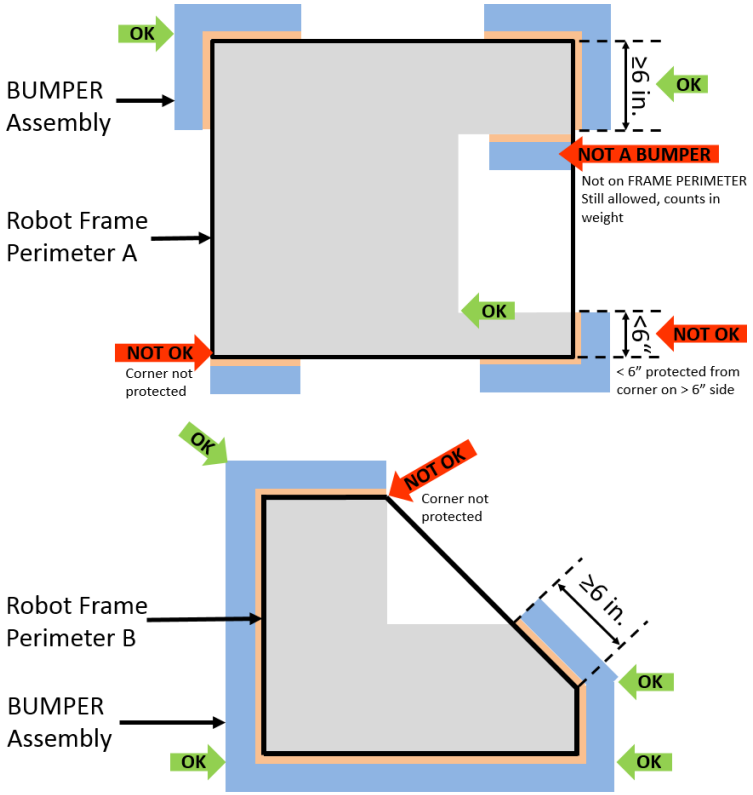
- A robot weight must not exceed 125 lbs. When determining weight, the basic robot structure and all elements of all additional mechanisms that might be used in different configurations of the robot shell be weighted together.
  - Excluding bumpers, battery and its associated half of the Anderson cable quick connect pair

Robot Rules

- Traction devices must not have surface features such as metal, sandpaper, hard plastic studs, cleats, hook-loop fasteners or similar attachments.
- Robot must allow removal of game pieces from the robot and the robot from field elements while disabled and powered off.
- The total cost of all items on the robot shall not exceed $5,000.
- No individual, non-KOP item or software shall have a Fair Market Value that exceeds $500.
- BOM cost of each non-KOP item must be calculated based on the unit Fair Market Value for the material and/or labor, except for labor provided by team members (including sponsor employees who are members of the team), members of other teams, event provided Machine Shops and shipping.

Bumper Rules

- Robots are required to use bumpers to protect all outside corners of the frame perimeter.

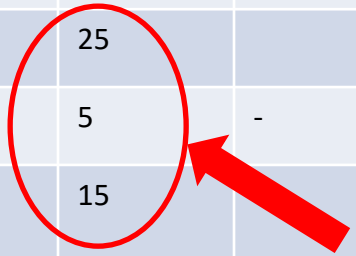


Other Rules

- There are many other rules for the construction of the robot, allowable motors, etc. in the game manual

Game Play – Point Values

Award	Awarded for	Auto	Teleop	Qual.
Initiation Line	Exit the vertical volume of the initiation line at any time before the end Auto (per robot)	5	-	-
Power Cells	Scored in Bottom Port	2	1	-
	Scored in Outer Port	4	2	-
	Scored in Inner Port	6	3	-
Control Panel	Rotation Control	-	10	-
	Position Control	-	20	-
Endgame Points	Hang (per robot)	-	25	
	Park (per robot)	-	5	-
	Level with 1-3 robots hanging	-	15	
Shield Generator Operational	Earning at least sixty-five endgame points	-	-	1 Ranking Point
Shield Generator Energized	Stage 3 activated	-	-	1 Ranking Point
Tie				1 Ranking Point
Win				2 Ranking Point



Seeding

- All teams seeded during qualification matches.
- Teams ranked in this order:

Order	Points
1	Ranking score
2	Cumulative Auto points
3	Cumulative Endgame points
4	Cumulative Teleop power cell and control panel points
5	Random sorting by FMS

Playoff Matches

- No ranking points; earn a win, loss, or tie
- Within each series, first alliance to win two matches moves on
- In quarterfinals and semifinals, tie breaker used in case of tie:

Order Sort	Criteria
1st	Cumulative foul points due to opponent rule violations
2nd	Cumulative auto points
3rd	Cumulative endgame points
4th	Cumulative teleop power cell and control panel points
5th	Match is replayed

District teams are ranked throughout the season based on the points they earn at their first two home District events they attend, as well as at their District Championship. Points (points tripled) are awarded to teams as follows:

District point assignment

Category	***Points***
Qualification round performance.	For events of all sizes, a maximum of twenty-two (22) points will be awarded.)
ALLIANCE CAPTAINS	Equal to 17 minus the ALLIANCE CAPTAIN number (e.g. 14 points for ALLIANCE #3 Captain)
Draft Order Acceptance Number	Equal to 17 minus the Draft Order Acceptance (e.g. 12 points for the Team that is 5th to accept an invitation)
Playoff Advancement	Points awarded based on team participation in individual playoff rounds, and whether or not the ALLIANCE advances.
Judged Team Awards	• 10 points for Chairman's Award • 8 points each for Engineering Inspiration and Rookie All Star Awards • 5 points each for all other judged Team awards
Team Age	• 10 points for Rookie Teams • 5 points for second-year Teams

District qualifications for the Michigan State District Championship:

A. District Chairman's award winner
B. District ranking for the first two districts
C. District Engineering Inspiration winner (qualifies to compete for the award only)
D. District Rookie All Star winner (qualifies to compete for the award only)

Michigan State Championship Capacity is 200

90 Michigan Teams qualify for World Championship

Considerations

- What is important to do?
  - For ranking points
  - For auto scoring
  - For teleop scoring
  - For making it into the Playoff round
  - For tie breaking in ranking points
  - For durability and reliability
  - To win engineering awards
- Form follows function:
  - Decide what function(s) we want to perform before deciding on what form to make the robot

Considerations

- What can be done so that the robots will be done in time to practice (driving robot after 4 weeks)?
- Should we plan to use the camera to either help drivers or use vision tape?
- Think about how you would do it if only humans played
- What is impact of limited size restrictions?
- For each function, consider impact on rest of robot functions, space, weight, balance, etc.
- Decide what we don’t want to do and eliminate it from further consideration
- Trying to do everything usually means you sacrifice doing a few things really well

Considerations

- What worked well in the past that we should repeat?
- What didn't work well in the past that we should avoid?
- What can be programmed?
- What do we know how to do?
- What can be done effectively?
- Are we building two robots
  - First one is prototype plus one to drive when robot in bag
  - Second one is done with CAD and made to look good
- What needs to be done in CAD first vs. done and then use CAD to improve the second robot

Considerations

- What is needed to win in week one might not win in week six or State Championship
- The better the robot and drive team, the more we play and the more the robot is used
- What about defense in this year's game
- Can the same mechanism do more than one function with some modifications
  - Example, same device turns control panel can also sense color

Considerations

- Meeting yesterday indicated:
  - Base chassis plan is a fully enclosed design using West Coast and chains
  - Base chassis plan is to start integrating electrical into chassis in week one
  - Try to design manipulators with a “touch it own it” approach
  - Configuration should go where we want it to go based on strategy (trench, Rendezvous point, etc.)

Considerations

- Based on scoring and tie breaking, what are two or three key strategies:
  - Ability to maximize elimination round points
  - Autonomous programming for mobility or scoring
  - Ability to collaborate with Alliance partners
  - Assist alliance with ranking points
- Take enough time to know **what** we **want** to do (knowing why we want to do it) before we decide how to do it.

Considerations

- Impact of no bag day:
  - Still want to build robot to have lots of drive team practice time with the competition robot, therefore, still want it built around normal bag day timeframe
  - Still want to build a practice/prototype robot to learn and experiment by week 4 so drive team can use it
  - Still need some field elements
    - Start with visual aids using plastic, foam, wood, etc.
    - Only build what we need for practice room (access starting Jan 25th)
  - Consider visuals of robot to match theme but keep Adambots identity and recognize sponsors

Strategy and Design Development

1. Taking next couple of days to “really, really, really think about the problem” before we solve the problem.
2. All engineering team leaders are also on the Strategy Team and will be involved in the strategy development in the next week.
3. Today we are gathering information from what we know today.

Design Selection

- After input reviewed and input from various teams, Game Strategy and Scouting team, etc.:
  - AdamBots Design selection committee
  - Use tools to compare options
  - Recognize that almost everything we think of will be done by someone

Strategy Discussion Groups

1. There are 4 discussion groups (business team members welcome to join a group)
2. List what is important to do **and why**
3. Also list what we do not need to do **and why**

DO NOT TRY TO DESIGN A ROBOT – THIS IS A STRATEGY DISCUSSION ONLY!

Strategy Discussion Groups

1. Break from 2:30 Pm to 3:00 PM
2. You have until 4:30 PM to prepare for review
3. At 4:30 PM, we will go around the room and have each team summarize their discussion
4. Game Strategy will document and summarize results
5. Project Management will start process of schedule management
6. When done, we need to clean up the room as if we were never here