2023-24 Season
Head Referee / Referee Training
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Jan 2024

Welcome to CENTERSTAGE!

Are you up to the challenge?

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Referee Forum Q&A

Roles, Responsibilities and Training

Referee

- Welcomes the Teams at the field and checks their readiness - including safety glasses, driver/drive coach ID badges, no visible personal electronics (phones) etc..

Scoring Referee

- Confirms team numbers and alliance marker color matches the information on their scoring tablet screen
- Records scores on tablets for robot achievements as they happen and at the end of each match period
- Confers with Game-Play Referees at end of match to records any penalties
- Double checks and submits final scores

Game-Play Referee

- Monitors robot set-up
- Assists with field randomization process
- Observes all game-play action and team behavior
- Helps the team members avoid breaking the rules of the game
- Identifies rules violations, and "calls" them in the moment
- Confers with Scoring Referees at end of match to communicate any penalties and help review scoring

FIRST highly recommends rotating the Referee roles every 5 matches

Head Referee Role

- Is the reference for all rulings on the field – Head Referee Decision is Final!

- Knowledgeable resource for the Referee crew

- Owns the playing field – Keeps the match schedule flowing smoothly and on time

- Signals Match Starts – Observes all matches - Calls for Field Re-set after scores are finalized

- Conducts Event Day Referee Meeting – Hi-Level Game Walk, Key Game Rules & Interpretations and Q&A

- Leads the Driver's meeting – Explains Tournament Flow, Key Game Rules & Interpretations and Q&A

- Manages match disputes and team questions via The Head Referee Question Box

- Conducts brief Alliance Captain's Meeting following Alliance Selection Process

- Tracks Repeated Rule Violations, Addresses Egregious Behavior and Issues Yellow and Red cards

Game Documents & Training

Game Rules & Updates:

Game Manual Part I – Traditional Events currently revision 1.2 (Read Sections 3.5, 7.4, 7.5)

Game Manual Part II –Traditional Events currently revision 1.2 (Read all Sections)

Official Team Q&A forum ever increasing list of official game interpretation & updates (on-going)

Essential Referee Training Material:

Referee and Head Referee Training Manual

Volunteer Q&A Forum (For Volunteers only - you must login before Referee Q&A forum is visible)

Referees are expected to be certified – 40 question multiple choice quiz - open book
Certification Can Only Be Completed in the BlueVolt Learning System

BlueVolt Learning System

Once you have <u>registered</u> for a volunteer role that requires certification, a link will appear in your FIRST dashboard that will connect you to the "BlueVolt" learning management system

1. Login to your FIRST Dashboard (www.firstinspires.org)

2. On the grey menu below "Dashboard" Click on "Volunteer Registration"

3. Click on "Roles Missing Certification" .

4. Click into the link to "Review Outstanding Tasks" which will take you to the BlueVolt site where you can <mark>enroll</mark> and <mark>complete head referee / referee certification</mark>

or
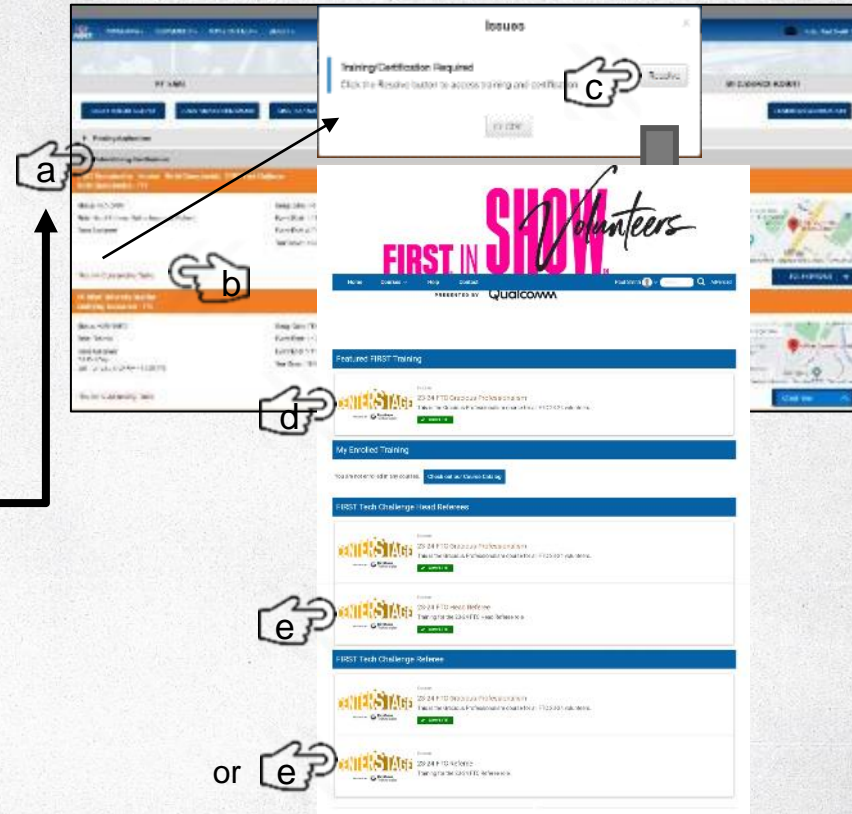
All volunteers must complete the "Gracious Professionalism Course" before they can enroll in other courses

FIRST Tech Challenge Referee

Course
23-24 FTC Gracious Professionalism
This is the Gracious Professionalism course for all FTC 23-24 volunteers.

Once you have selected this training, you must enroll in the course

Course
23-24 FTC Referee
Training for the 23-24 FTC Referee role.

Once you have selected this training, you must enroll in the course (then you will have access to all the documents and videos)

Head Referee and Referee Training are virtually the same

Referee Training Manual

Videos - Referee Tasks and General Game Rules (optional)

Certification Test (~40 Questions)

Instructions to Access Volunteer Forum

Monthly Referee Q&A Recordings

CENTERSTAGE
Game Field Layout and Descriptions
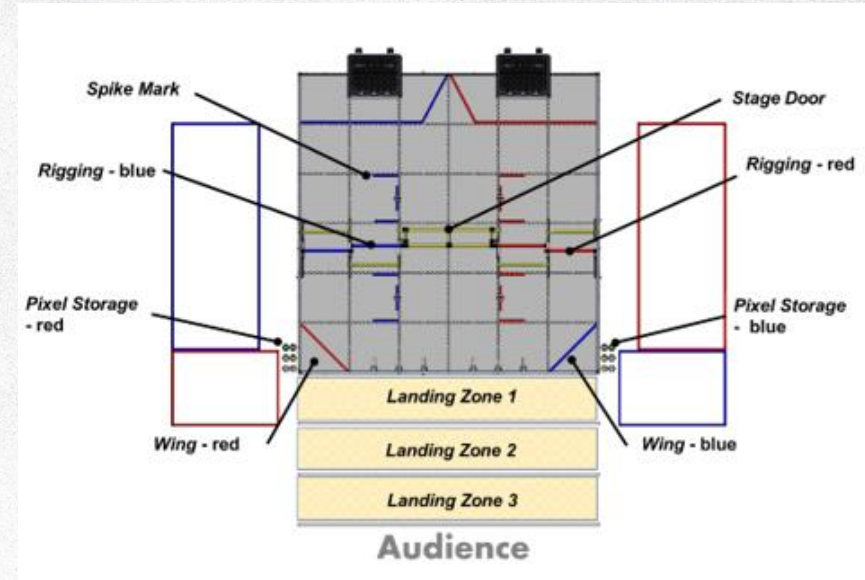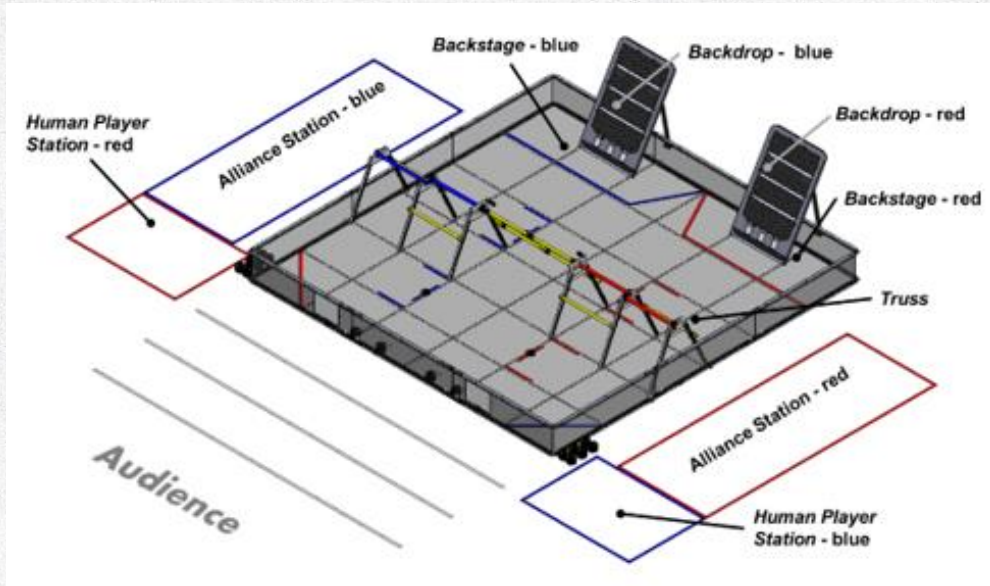
The vertical projection of the outside edge of a region's boundary (including the field perimeter) is considered part of a scoring area

Pixels - Game Provided Scoring Elements
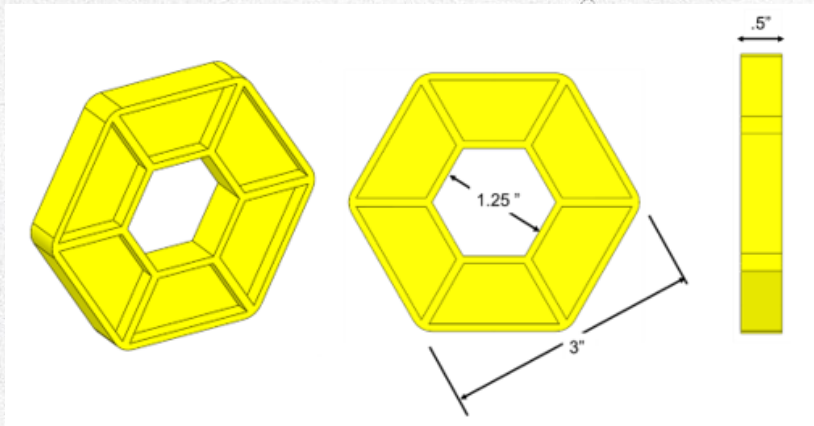
A hexagonal shaped Scoring Element, 3-inches across by 0.5-inches thick.

There are a total of sixty-four (64) white Pixels, ten (10) yellow Pixels, ten (10) green Pixels, and ten (10) purple Pixels.

Drone - Team Supplied Scoring Element (Optional)
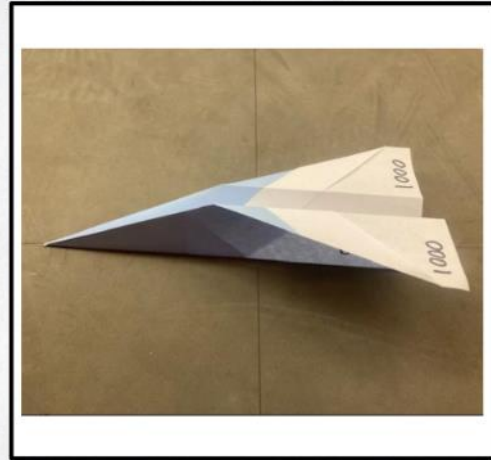
<DR01>b. – Must look like a paper airplane, with fuselage and wings ✓

<DR01>c. – Color must match Alliance ✓

<DR01>d. – Drone must be labeled with Team number ✓

<DR01>e.i. – Must be made from one, continuous sheet of paper. No bigger than 8 ½ x 11 or A4. ✓

<DR01>e.iv. – No other materials may be used ✓

For Use in End Game.

Teams may bring multiple designs to an event, but only one may be brought to the field each match.

Team Prop - Team Supplied Game Element
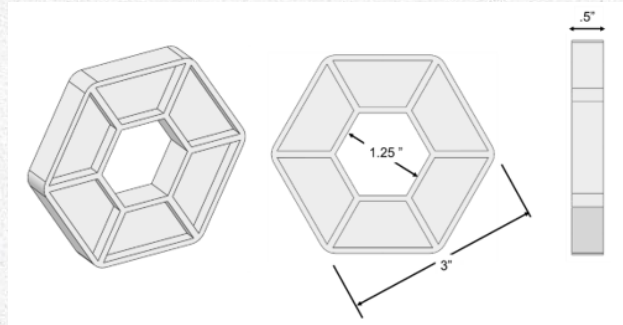
Game Provided White Pixel Placed on Randomized Spike Mark at Setup
This IS a Scoring Element

<u>Optional Team Prop (for potential Bonus Points)</u>

- Teams will need one entirely red Prop and one entirely blue Prop.
- Material Constraints – GM1 materials, No Fiducial markers or retroreflective properties.
- Size Constraints – Max 4 inches by 4 inches by 4 inches and Min 3 inches by 3 inches by 3 inches.
- Team Number no more than 0.5 inches in height and must be legible from 12 feet away (ie. Color can differ from base color)
- Illegal Parts – Must not be a COTS game element from current or last season (Q84).
- **This is NOT a Scoring Element**
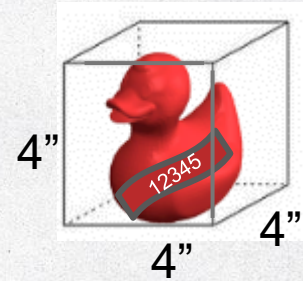
Team Prop has no scoring value during any part of match. Is used to identify scoring locations for randomized tasks during Autonomous. **Pixel** may be used for scoring in any period.

AprilTags - NEW

A visual fiducial (referencing) system that provides high accuracy localization for the robots.
(Replaces Vuforia field images)
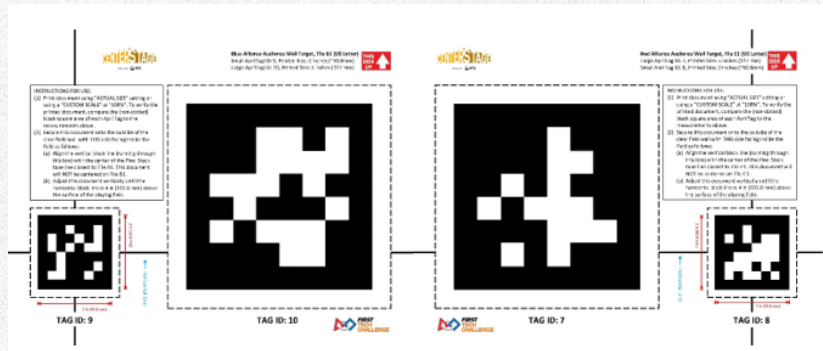
Two AprilTags, each attached to the OUTSIDE surface of the perimeter wall (audience side)
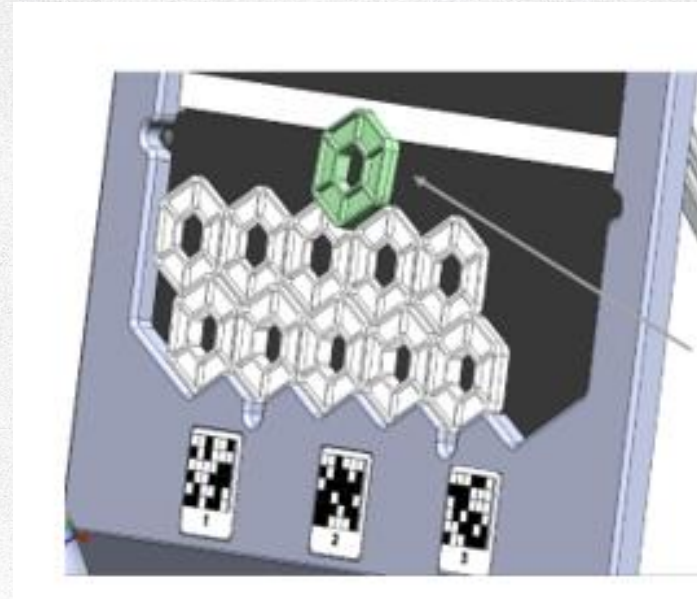
Three AprilTags Attached to the bottom to each alliance Backdrop

Field Personnel

Field Personnel

Blue Alliance Game Play* Referee 1

Red Alliance Game Play* Referee 2

**Scoring Referee 1

**Scoring Referee 2

Human Player

Human Player

Head Referee (may also move to back during End Game)

Team
Mentors, supporters, and pre-college-aged students affiliated with an entity registered with FIRST and for the competition

Drive Team
Up to four representatives two student drivers, one student human player, and one student or adult mentor drive coach

Human Player
Places Pixels and Drones on the field from Pixel Storage area during Driver-Period. ONLY 1 HUMAN PLAYER PER ALLIANCE in a match.
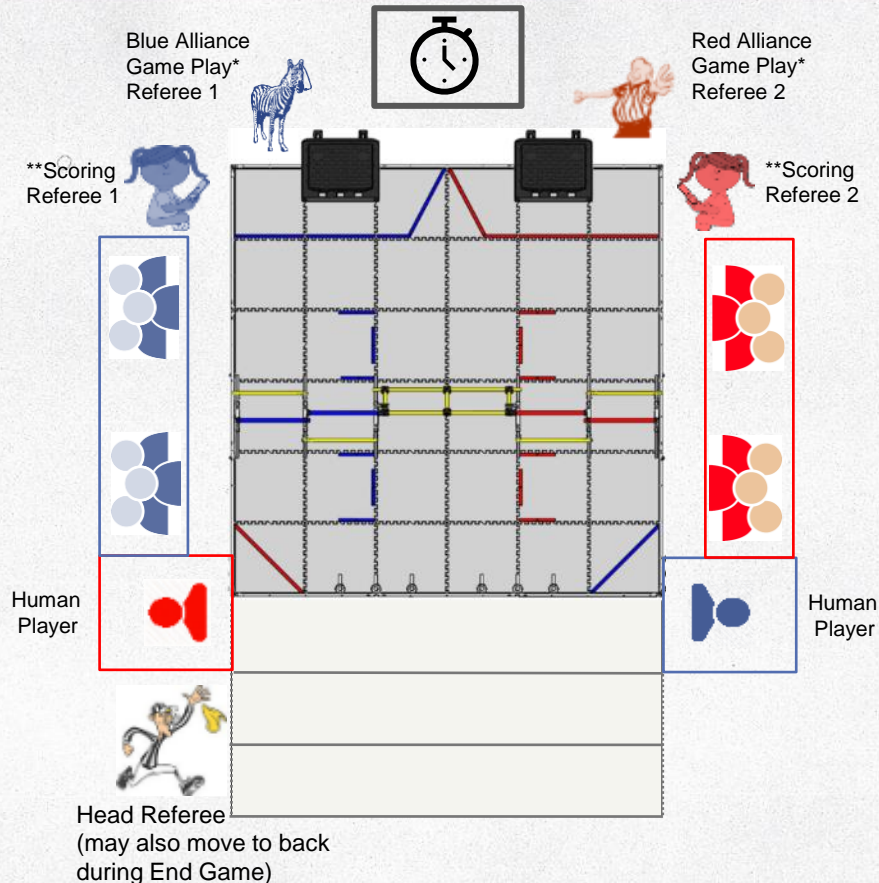
Game Play & Head Referee Observes matches, identifies rule violations, and "calls" them. Helps the competitors avoid breaking the rules of the game.

Scoring Referee Records the scoring achievement throughout the match.
** Must have line of sight to see Pixel scoring on Backdrop

Every 5 matches, the referees will trade responsibilities and continue to rotate responsibilities throughout the remainder of the tournament.

Match Flow & Game Procedures

Pre-Match Set Up

Referees, welcome teams, confirm team numbers, safety gear & correct alliance markers. Enters pre-match setup on tablets and monitors robot setup on field.

| Teams approach field from Queuing | Drive Teams Set Up & Power On Robots | Team Introductions by Game Announcer | Field Randomized & Final Pre-Match Checks | Game Announcer "3-2-1 Go" |
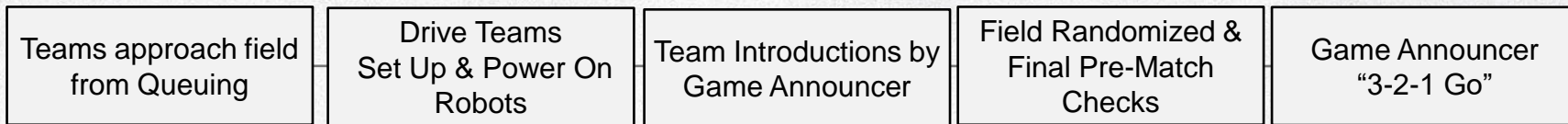
2 ½ Minute Match

Referees, Observe game-play action, team behavior. Record scoring achievements and rule violations.

| Drivers starts robots | 30 Second Autonomous Period | 8 Second Transition | 120 Second Driver Control Period | Drive teams stop robots and place down controllers |

30 Second End Game
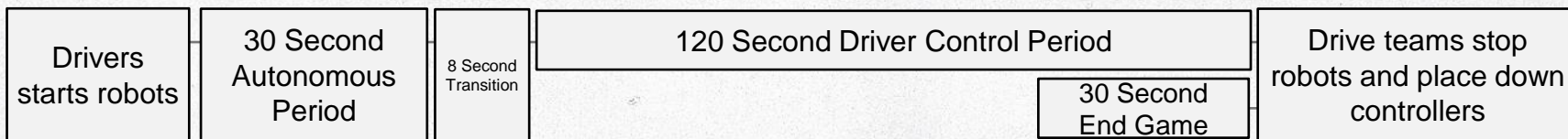
Post-Match

Referees, Review and Finalize Scores and Penalties, Submit Scoring Data, Monitor team egress.

| Referee Finalize & submit Scores | Head Referee Signals Field Reset | Teams remove robots and exit area |
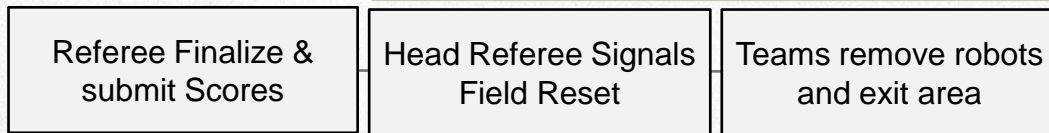
~9 Minutes Cycle for a Single Field Event*
~7 Minutes Cycle for a Dual Field Event*

- Note: A Team playing in consecutive Qualification Matches will receive a minimum of five minutes (5:00) between the time a referee signals the Field to be reset and when the Robot is placed onto the Field for the next Match.

Elimination Rounds (same process as last season)

GM1 <C29> Elimination Matches differ from Qualification Matches in the following ways

a) Alliance Size – The number of Teams on an Alliance is dependent upon the number Teams at the Competition:

  i. 20 or fewer Teams: Two Team Alliances. Both Teams play all Matches.
  ii. 21 or more Teams: Three Team Alliances. Two of the Teams represent their Alliance in each Match

b) For Competitions with three Team Alliances:

  i. All three Teams must play at least once in the first two Matches of a round. The Team that sits out the first Match must play in the second Match, with no exceptions.
  ii. The Alliance Captain must let the referee know which two Teams are playing in each Match. Failure to do this in a timely manner as described below results in a coin toss to decide which Team(s) will compete in the Match
      • Match 1: At least four minutes prior to the start of the Match
      • Match 2 and higher: Within four minutes following the display of scores from the Alliance's previous Match

c) Match Timing – There are no Team requested timeouts. An Alliance has eight minutes (8:00) from the initial announcement or display of the Match results for their Robots to be set up on the playing and ready for the start of their next Match. A Match may begin early if both Alliances are ready to begin a Match ahead of time.

d) Team Disqualification - If a Team is disqualified during Elimination Matches, the entire Alliance is disqualified.

CENTERSTAGE
Pre-Match Setup (GM2 4.4.1)

Not to Scale

Field Setup / Reset

On-Field:

- Six (6) stacks of five (5) white Pixels on white tape lines along audience side of field (against the wall)
- Four (4) white Pixels, one (1) for each set of Spike Marks. The Pixels will start centered on top of the center Spike Marks.
- *Note the Spike Mark Is the entire 12" Tape. The Black Sharpie Line just marks the middle of the tape.*

Off-Field (in Alliance Pixel Storage Areas)
- Three (3) stacks of five (5) white Pixels
- One (1) stack of five (5) purple Pixels
- One (1) stack of five (5) yellow Pixels
- One (1) stack of five (5) green Pixels

Four White "Randomization" Pixels, centered on each Center Spike Mark

Alliance Neutral
Six Stacks of Five White Pixels

To avoid autonomous problems, it is recommended at the start of the Competition, the Head Referee confirms Spike Marks, Stack Lines and AprilTags (on field perimeter) are accurately positioned in accordance with field set up guide.
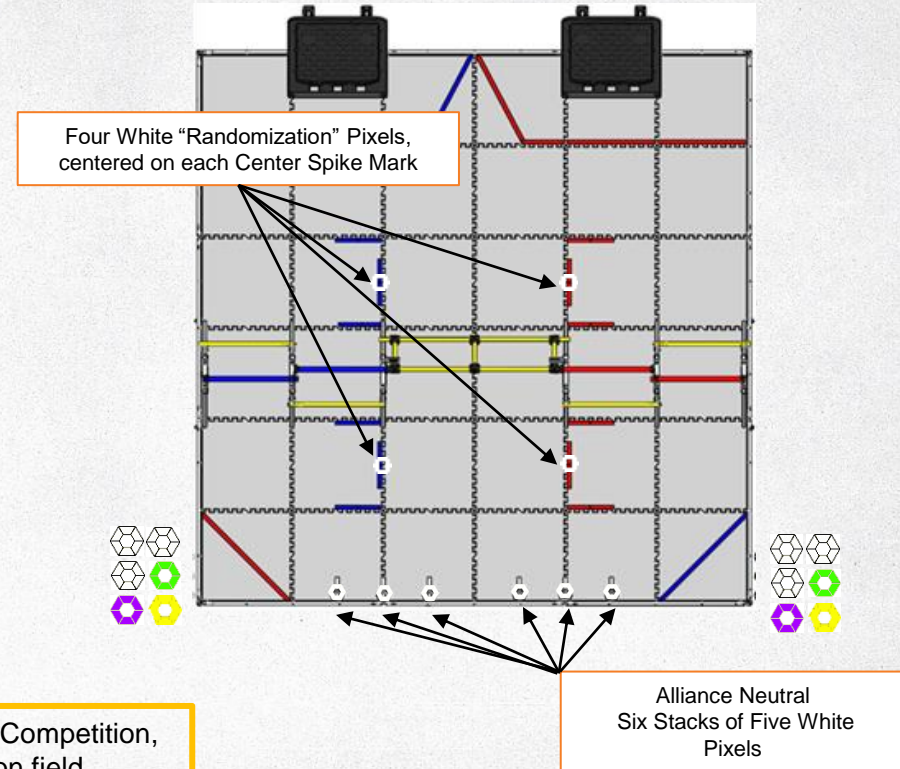
Robot Set Up

When authorized, Drive Teams will set up their Robots on the Playing Field with the following constraints:

- **Robots** - Blue alliance Robot must start <u>Completely In</u> Tile A2 or A4, Red Robot must start Completely In Tile F2 or F4. *(Tile area is defined by the INNER perimeter of tile – Q&A156)*

- **Robots -** must be touching the Wall (in any orientation)

- **Pre-Loaded Pixels** – The Drive Team may Pre-Load exactly one (1) yellow Pixel and/or one (1) purple Pixel. If used, Pre-Loaded Pixels are taken from Pixel Storage. When loaded, the Pre-Loaded Pixels must be Outside all Scoring Areas.

- **Pre-Loaded Drones** - Drive Teams may Pre-Load exactly one (1) Drone *(or placed in Pixel Storage area)*.

- **Team Prop** – Drive Teams intending to use their Team Prop must place it centered on top of the center Spike Mark closest to their Robot. If a Team Prop is used, the white Pixel is placed into that Alliance's Pixel Storage.

Some Rules to Watch During Set Up

Preload Definition: Touching or Possessed by Robot
<u><GS12></u> Drones and Pixels In the Pixel Storage Area may not be handled until after the Match has begun with the exception of the Pre-Load Scoring Elements. ==Minor Penalty==
<u><GS13></u> Drive Teams may never step/jump over any section of the Truss and/or Stage Door. *Warning* then ==Yellow Card.==
<u><G12></u> Inspection or Touching of the playing field elements by team members inside or outside the field is not allowed – Immediate ==Minor Penalty== (==Major== *if delays the start*)
<u><G13.e></u> Late team arrival or Delay of Match Start ==Minor or Major== Penalty depending on magnitude of delay)

Robot must not be "IN" tile teeth
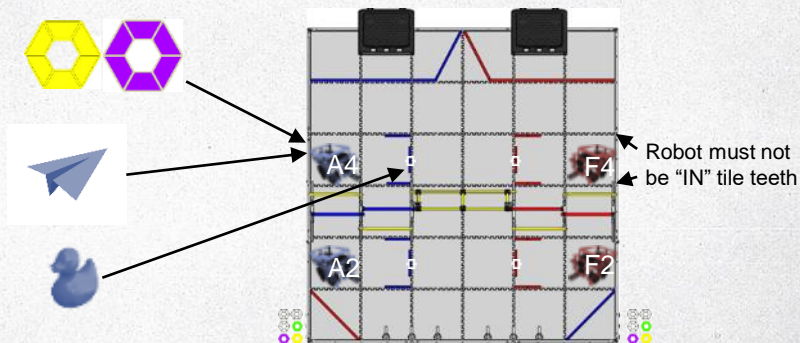
Field Randomization

Once Teams and Referees have communicated (via thumbs up!) to the Head Referee that Robot Set-up is complete……..

- Drive Teams may no longer touch their Robots until the end of the Match
- Drive Teams may not touch their Driver Stations or controllers until the Autonomous Period has ended. Except to start the robot.

Head Referee will then call the scorekeeper to randomize the field

- Field personnel will enter the field and move the Randomization Object (White Pixel or Team Prop) to the centerline of the chosen Spike Mark determined by the scoring system (Left, Right or Center Mark)
- Maintain orientation – translate only – no rotation

When field is set, Head Referee signals to Scorekeeper and Game Announcer to begin the match countdown
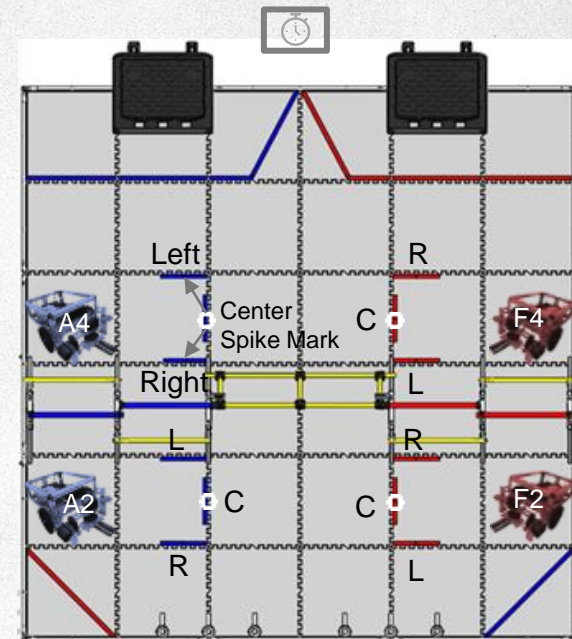
<GS02> Drive Team Touching Robots or Driver Stations - Minor Penalty will be assessed for any Team that interacts with their Driver Station devices during randomization + forfeit eligibility for the Randomization Tasks in Autonomous **EXCEPT** if FTA works with Team to Fix a Pre-match Issue with the Robot or Driver Station.

CENTERSTAGE
Autonomous Period – 30 seconds
(Ref. GM2 Sections 4.4.2)

At start of Autonomous

- Drive teams will start a 30-second Autonomous* using a start comment on their Driver Station touch screen
- The Driver Station shall then remain in a *hands-off location,* so it is clear to referees that there is no Robot control
- Referees will record the robot achievements as they happen and note any rule violations, such as :

<u>General Rules (others may apply)</u>
<S02> (Unsafe) Robot extension outside of playing field
<G04> Robot Manipulation of Scoring Elements (part of robot)
<G06> Scoring Elements in Contact with Robots (end of period)
<G16> Drivers, Drive Coach remain "in" their Station
<G18> Early Start of Match Period
<G19> Late Start of 30-Second Auto Command
<G21> Robot Control During Autonomous
<G20> Robot Actions at End of the Period (Robot & Scoring)

<u>Game Specific Rules (other may apply)</u>
<u><GS01></u> Pixel in contact with robot in Backstage is eligible to score
<u><GS03></u> Autonomous Interference in Opposing Alliance half of field
<u><GS05></u> Robot Control/Possession Limits for Scoring Elements
<u><GS08></u> Backdrop and Backstage Constraints
<u><GS10></u> Pixels may not be Propelled
<u><GS12></u> Human Player Constraints

Rules Discussed On Following Slides

* Drive Teams are not required to execute an op mode for Autonomous Period. They will stand and wait until autonomous finishes to pick up their controllers for Driver Controlled Period.

Auto-1. Navigating

Backstage
(Right Trapezoid area)

Robots that Park "In" the Backstage for the corresponding Alliance earn *five (5) points for each Robot.*
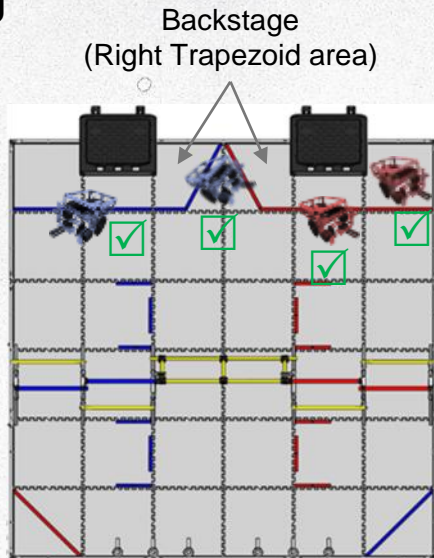
The robot only needs to break the vertical plane of the *outside* edge of the tape to be "IN"

The robot can straddle red and blue Backstage areas but must not interfere with the Opposing Alliance parking

Some Rules to Watch During this Task

<GS03a> Autonomous Interference
- A Major Penalty will be assessed for Interfering with an opposing Alliance *Robot* In the opposing Alliance's half of the Playing Field. Note: The ¾" tabs joining the centerline tiles are neutral

<G04> Robot Manipulation of Scoring Elements
- The position of the robot regardless of any possessed scoring element(s) is used to determine "IN" *(The Backstage)*

<G19> Late Start of the Autonomous Period
- A Drive Team that starts their Robot's Autonomous Op Mode late will receive a Minor Penalty. Any delay in Robot movement must be done by its *programming*. Referees have the option of issuing a Major Penalty in place of the Minor if the late provide an advantage.

<G20a> Robot Actions at End of the Period
- A Robot that is not "motionless" at the conclusion of the "game sound" receives a Minor Penalty and the actions of the Robot do not count towards their Team's Score. Referees have the option of issuing a Major Penalty in place of the Minor Penalty if the late stop results in a competitive advantage (other than Scoring)

<G21> Robot Control During Autonomous Period
- During the Autonomous Period, Drive Teams may not directly or indirectly control or interact with Robots or Driver Stations.

Auto-2a. Randomization Task #1

A purple Pixel placed On the Robot's designated Spike Mark in the Tile immediately adjacent to the starting location, earns points depending on the Randomization Object used:

i. Ten (10) points for using the white Pixel; or

ii. Twenty (20) points if Team Prop is used

Score

No Score

E-7 – Scoring Examples

Purple *Pixel* earns *Randomization Bonus*

Purple *Pixel* earns *Randomization Bonus*

Purple *Pixel* does not earn *Randomization Bonus*

Purple *Pixel* does not earn *Randomization Bonus*

A Robot may only use its own Pre-Loaded Pixels to earn Randomization Task points.

Q134 – The purple Pixel can score if placed on another Pixel or Team Prop as long as the purple Pixel is IN the correct Spike Mark.

Some Rules to Watch During this Task

<GS3b> **Autonomous Interference**
- A Major Penalty will be assessed for Interfering with the opposing Alliance's *Randomization Task* setup or Randomization Task Scoring

<GS10> **Pixel Constraints**
- Pixels may not be Propelled. Each violation of this rule results in a Minor Penalty.
- Scoring achievements that occur after the announced End of the Autonomous Period and before the start of the Driver-Controlled Period do not count towards the Score for the Autonomous or Driver-Controlled Periods

<G06> **Scoring Elements in Contact with Robots**
- Scoring Elements in a Scoring Area that are in contact with or Controlled by a Robot on the corresponding Alliance for the Scoring Area have zero Score value.
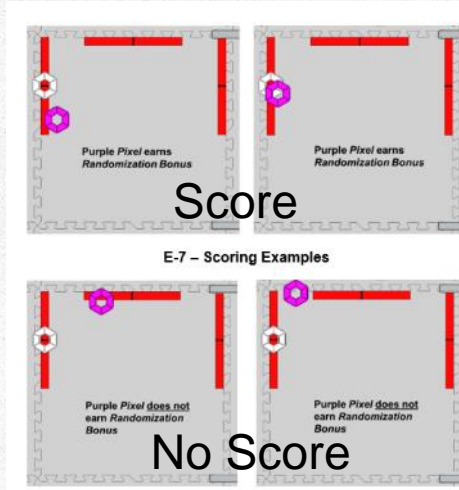
<G21> **Robot Control During Autonomous Period**
- During the Autonomous Period, Drive Teams may not directly or indirectly control or interact with Robots or Driver Stations.

Auto-2b. Randomization Task #2

A yellow *Pixel* "ON" the *Backdrop* in the location corresponding to the designated *Spike Mark* earns points depending on the *Randomization Object* used:

i. Ten (10) points for using the white randomization *Pixel*; or

ii. Twenty (20) points if *Team Prop* is used for Randomization

Right *Spike Mark*

C

L   R

Right Spike Mark = Right AprilTag etc….

A yellow *Pixel* must contact at least one of the two surfaces directly above the *AprilTag*

R

right *AprilTag*

Randomization Object- right side scoring locations
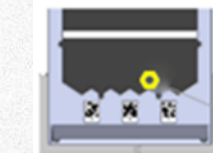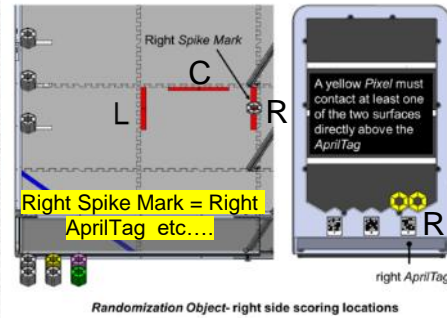
❌ Not Touching a Surface (it is sitting on a crest of the sawtooth)
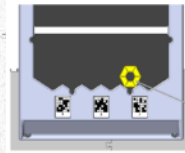
✅ Touching one of the Surfaces above the correct AprilTag

A Robot may only use its own Pre-Loaded Pixels to earn Randomization Task points
For example, a yellow Pixel bumped off the crest by their alliance partner does not score

Scoring Refs need to assign the correct robot number to the scored Pixel when only one prop

Some Rules to Watch during this task

See rules applicable to Randomization Task #1…..Plus:

<u>**<GS08>**</u> **Backdrop and Backstage Constraints −**
   d) Robots located *In* Tile rows 1, 2, or 3 may not Score into the Backstage or Backdrop. Each violation will receive a Minor Penalty.

Allowed Backdrop/Backstage Scoring Location ✅

Not Allowed Backdrop/Backstage Scoring Location ❌

6
5
4
3
2
1

A B C D E F
Audience

Auto-3 Pixels (in Backdrop or Backdrop)

Robots placing Pixels earn points as follows:

a) All Pixels On the recessed Scoring area of their Alliance <u>Backdrop</u> earn five (5) points per Pixel.
b) Pixels In their Alliance <u>Backstage</u> earn three (3) points per Pixel.

Pixels that are Scored in the Autonomous Period will earn additional points at the end of the Driver-Controlled Period if they remain in place.

Scored Pixel – 3 Points

Dimensions are for reference only. Actual position of the tape and *Backdrop* are dependent on the *Tile* position and will be detailed in the Setup guide.

Scored Pixel – 5 Points

Note: Pixel sitting on top of a Pixel is counted as scored
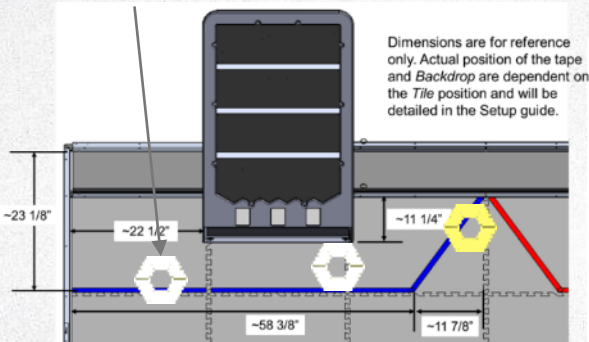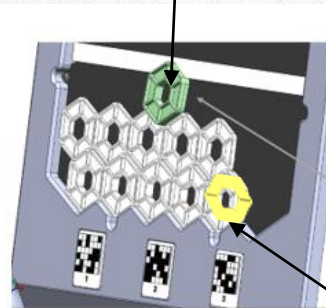
Some Rules to Watch during this task

<GS01> **General Rule Exceptions**
- Robot contact with a Pixel in a Backstage is allowed as an exception to rule <G06> (if the Pixel is not Possessed by the Robot). Ie. a Pixel contacting a parked robot in the Backstage is still eligible to score.

<GS05> **Robot Control/Possession Limits for Scoring Elements**
- Robots may Control or Possess a maximum of two (2) Pixels and one (1) Drone at a time. (details next page for details)

<GS08> **Backdrop and Backstage Constraints**
- Robots located *In* Tile rows 1, 2, or 3 *(audience side of rigging)* may not Score into the Backstage or Backdrop. Each violation will receive a Minor Penalty.

<GS10> **Pixel Constraints**
- Pixels may not be Propelled. Each violation of this rule results in a Minor Penalty *(Propel = Launch, Roll or Slide)*

<GS12> **Human Player Constraints**
- Drone`s and Pixels may be placed or dropped only In the Wing only during the Driver-Controlled Period. Minor Penalty

Scoring Refs must watch for Pixels that fall off the Backdrop (-5 points) and into the Back stage (+3 points)

Control/Possession Limits Rule

Controlled
An object is Controlled by a Robot if the object is following the movement of the Robot.

Herding (Control)
Pushing or moving one or more Scoring Elements to a desired location or direction that gains a strategic advantage

Trapping (Control)
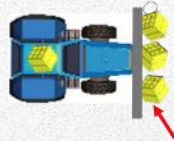Trapping one or more Scoring Elements against a Game Element, Playing Field Wall, or Robot to shield or guard. Scoring element may be trapped beneath a robot

Carrying (Control)
applies even if inadvertent

Robots may Control or Possess a maximum of 2 Pixels and 1 Drone at a time

Team Prop may be controlled as long as never "grasped" (Rule G25 Warning then Major)

<GS05> **Robot Control/Possession Limits**

a) Robots may Control or Possess a maximum of two (2) Pixels and one (1) Drone at a time. Controlling or Possessing more than the allowed quantity of Scoring Elements is an immediate Minor Penalty for each Scoring Element above the limit plus an additional Minor Penalty per Scoring Element in excess of the limit for each 5-second interval that the situation continues.

b) Scoring a Pixel while in Control or Possession of more than the allowed quantity of Scoring Elements will result in a Minor Penalty per Element Scored.

c) Control/Possession limit exceptions:

   i. Knocking over a stack of unscored Pixels is allowed.

   ii. Inadvertent and Inconsequential movement of a pre-set stack of unscored Pixels is allowed. Moving the stack Completely Off the tape is considered consequential.

   iii. Plowing through any quantity of Scoring Elements is allowed.

   iv. Pixels In the Backstage that are directly Supported by the Playing Field Floor or Supported by a Pixel that is directly Supported by the Playing Field Floor, are exempt from the Control/Possession limit. The intent of this rule is to prevent penalizing a Robot maneuvering In the Backstage.

   v. Pixels On the Backdrop are exempt from the Control/Possession limit.

At End of Autonomous

- **<G01>** End of the period coincides with the START of the sound of the buzzer (match countdown clock hits 2:00)
  - However, Teams have a 3-second grace period until the BUZZER SOUND ENDS for robots to Park/Stop
  - Robots that are not Motionless after the grace period receive a <mark>Minor Penalty</mark> <G20.c>
  - Scoring achievements that were started (unless disallowed by Game-Specific rules) before the End of the Period and completed before the end of the buzzer are eligible to be counted as Scored.

- **<G06>** Scoring Elements in contact with robots do not count

  - Exception: Robot contact with Pixels in the Backstage floor area is allowed (GS01.a)

- Scoring system will provide audio cues for the Drive Team to pick up their Driver Stations
  - Robot Scoring achievements that occur after the announced End of the Autonomous Period and before the start of the Driver-Controlled Period do not count towards the Score for the Autonomous or Driver-Controlled Periods.

- After 3-2-1-GO!………Teams press their Driver Station start button to resume

> Achievements are recorded as they happen, but are FINALIZED at the End of the Period

* Drive Teams are not required to execute an op mode for Autonomous Period. They will stand and
 wait until autonomous finishes to pick up their controllers for Driver Controlled Period.

CENTERSTAGE
Driver Controlled Period - Includes End Game
(Ref. GM2 Sections 4.4.3 & 4.4.4)

During Two minutes of Driver Controlled Period

First 90 seconds of CENTERSTAGE, teams will be scoring Pixels on the Backdrop and in the Backstage

Final 30 seconds (known as end game), teams can continue to score Pixels AND Launch Drones into the Landing Zones, Suspend from Rigging and Park

Scoring will be done as it happens (live) , but finalized at end of match

Game Play Referees will continue to watch, warn and/or record any rule violations, including the following

General Rules (others may apply)

<S1> Unsafe Robots and/or Playing Field Damage
<G16> Drivers, Drive Coach remain "in" their Station
<G18> Early Start of Match Period
<G20> Late Parking – Movement after end of buzzer
<G22> Drive Team Contact with the Playing Field or Robot
<G26> Destruction, Damage, Tipping, etc.
<G28> Pinning, Trapping, or Blocking Robots
<G30> Egregious Behavior or Repeated Rules Violations

Game Specific Rules

<GS04> Descoring
<GS05> Robot Control Limits for Scoring Elements
<GS06> Truss Constraints
<GS07> Stage Door Constraints
<GS08> Backdrop and Backstage Constraints
<GS09> Wing Constraints
<GS10> Pixel Constraints
<GS11> Drone Constraints
<GS12> Human Player Constraints

All Scoring Achievements are Scored Live and FINALIZED at rest,
at the End of The Match

Human Player.....

may start placing or dropping Pixels or Drones in the Wing after the start of the Driver Controlled Period.


Red HP

Blue HP
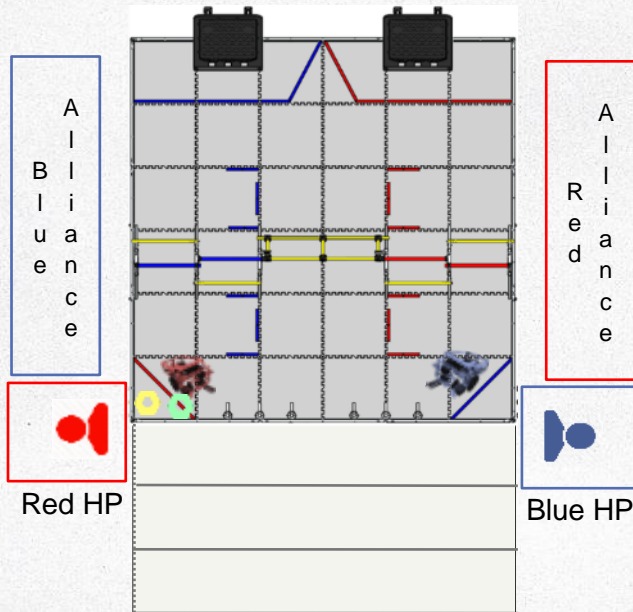
<GS12> **Human Player Constraints − Each violation** <mark>**Minor Penalty.**</mark>

a) Drones and Pixels In the Pixel Storage Area may **not be handled** until after the Match has begun with the exception of the Pre-Load Scoring Elements.

b) Drones and Pixels **may be placed or dropped** only In the Wing and only during the Driver-Controlled Period. Drones and Pixels can be in any orientation and may be in contact with other Drones or Pixels In the Wing. *Note: No penalty if Pixel is dropped "IN" Wing and incidentally rolls outside. Referees should ensure this is not a strategy.*

c) Human Players may place a maximum of two (2) Pixels or one (1) Drone In a Wing at a time *(maximum 6 Pixels in the Wing per GS09)*

d) Once a Pixel or Drone has been placed in the Wing, a Human Player may not pick it up or reposition it.

e) Human Players may not *(intentionally)* Propel Pixels or Drones Out of the Wing.

f) Human Player may enter the area between the Human Player Station and the adjacent Playing Field Wall while placing a Pixel or Drone In the Wing, provided it is done safely.

g) The Human Player may not use tools or devices (including another Pixel) to manipulate a Pixel or Drone. Accommodations and exceptions for Human Players with disabilities or extenuating circumstances will be made at the discretion of the Tournament Director.

h) For safety reasons, a Human Player cannot break the vertical plane of the Playing Field Perimeter or hand-deliver a Pixel or Drone to the Playing Field when there is a Robot In the Wing. A Disabled Robot In an Alliance Wing is not considered a safety hazard to the Human Player, therefore Drones and Pixels may continue to be placed.

i) Robot cannot enter the Wing while a Human Player is In the Wing

The Wings...

Red HP

Blue HP
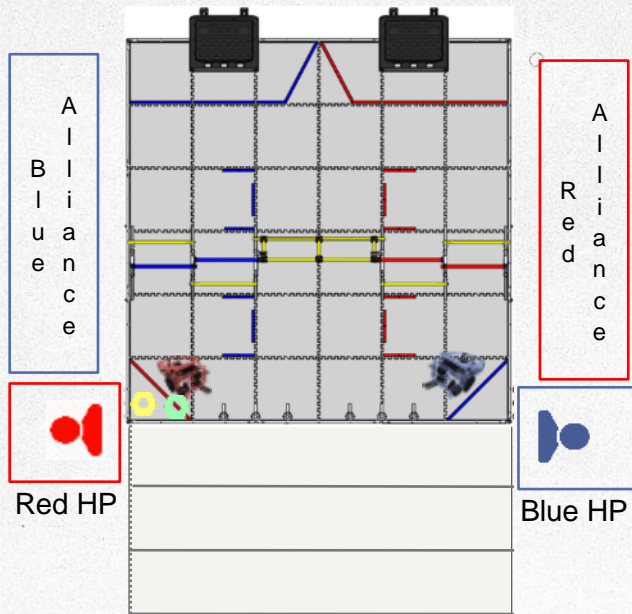
Max of six un-possessed Pixels permitted In each Wing at any one time <GS09>

<GS09> Wing Constraints

a) A Robot may not impede or obstruct an opposing Alliance Robot that is In the corresponding Alliance's Wing. Each violation of this rule results in an immediate Minor Penalty.

b) Robots may not be In or Block access to the opposing Alliance's Wing. Once a referee determines this rule is being violated, a Major Penalty will be applied. A Minor Penalty will be added for every 5 seconds the violation continues. A Robot is in violation until it has moved at least 3 feet (0.9 m), approximately 1.5 Tiles, from the Blocked Wing. *Note: Referees may apply <G10> Inadvertent and Inconsequential during Autonomous Period.*

c) A Disabled Robot In a Wing is not considered a safety hazard, therefore Scoring Elements may continue to be placed. However, a Disabled Robot In the opposing Alliance's Wing remains eligible for all Penalties associated with <GS09> including escalation to Yellow Cards. This is an explicit exception to rule <G07>.

d) There can be a maximum of six (6) Pixels In the Wing at any one time. A Minor Penalty will be assessed for each additional Pixel beyond the maximum. Pixels in the Possession of a Robot do not count towards this limit. ***Opposing alliance robot may incur GS09b Major and G29 Major if pushes Pixel in Wing and affects Game-Play.***
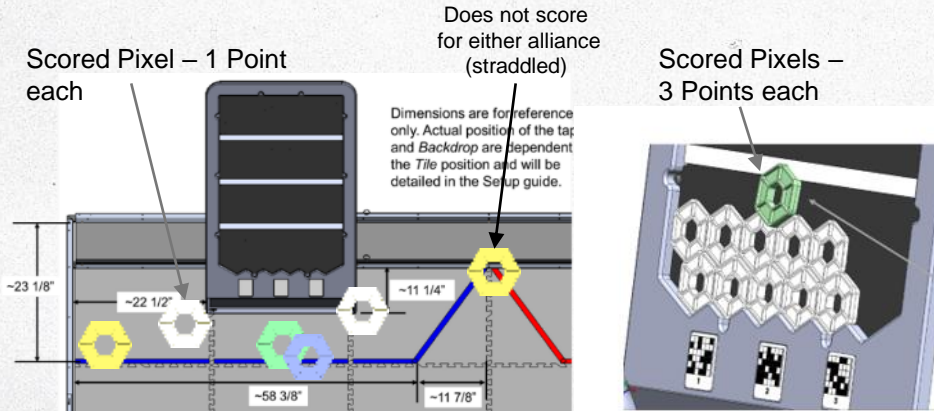
Leaving an extension to try to "game" wing protections while in other portions of the field does not provide GS09.a protections.

DC-1. Pixels on Backdrop and Backstage

Pixel – Robots placing Pixels earn points as follows:

a) Pixels On the recessed Scoring area of their Alliance Backdrop earn *three (3) points per Pixel*.
b) Pixels In their Alliance Backstage earn *one (1) point per Pixel*.

Pixel score values in Driver-Period are lower than Autonomous

Scored Pixel – 1 Point each

Does not score for either alliance (straddled)

Scored Pixels – 3 Points each

Dimensions are for reference only. Actual position of the tape and *Backdrop* are dependent the *Tile* position and will be detailed in the Setup guide.

~23 1/8"   ~22 1/2"   ~11 1/4"   ~58 3/8"   ~11 7/8"

Some Rules to Watch During This Task

<GS10> Pixel Constraints
- Pixels may not be *Propelled*. Each violation of this rule results in a Minor Penalty

<GS08> Backdrop and Backstage Constraints
a) A Robot may not impede or obstruct an opposing Alliance Robot that is In the Backstage from Scoring a Pixel. Minor Penalty.
b) Robots may not Block access to the opposing Alliance's Backstage or Backdrop. Once a referee determines this rule is being violated, a Major Penalty will be applied. A Minor Penalty will be added for every 5 seconds the violation continues. A Robot is in violation until it has moved at least 3 feet away.
c) A Disabled Robot In the opposing Alliance's Backstage remains eligible for all Penalties associated with <GS08>.
d) Robots located In Tile rows 1, 2, or 3 may not Score into the Backstage or Backdrop. Each violation will receive a Minor Penalty.

<GS04> Descoring
- Robots may not descore Pixels from the opposing Alliance's Backdrop or Backstage. Minor Penalty for each Pixel descored.

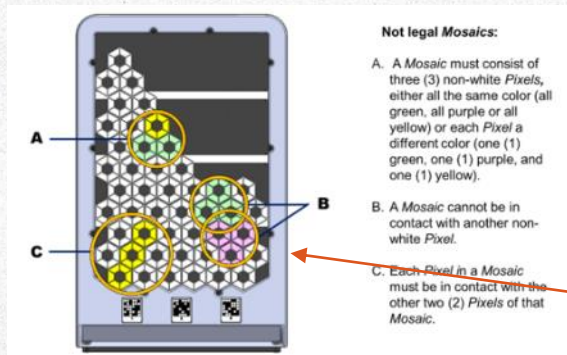**<GS05> Robot Control/Possession Limits for Scoring**
c) Limit Exception: Pixels On the Backdrop are exempt from the Control/Possession limit HOWEVER <GS5> limits apply if the robot removes Pixels from the alliance Backdrop.

DC-2 Mosaic on Backdrop

(Legal) Mosaics earn *ten (10) points per Mosaic*

Legal Mosaics:

A, B, C *Mosaic* consists of three (3) non-white *Pixels*, all the same color (all green, all purple or all yellow) and in contact with the other two (2) *Pixels* of that *Mosaic*.

D *Mosaic* consists of three (3) non-white *Pixels*, all different colors (one (1) green, one (1) purple and one (1) yellow) and in contact with the other two (2) *Pixels* of that *Mosaic*.

Not legal *Mosaics*:

A. A *Mosaic* must consist of three (3) non-white *Pixels*, either all the same color (all green, all purple or all yellow) or each *Pixel* a different color (one (1) green, one (1) purple, and one (1) yellow).

B. A *Mosaic* cannot be in contact with another non-white *Pixel*.

C. Each *Pixel* in a *Mosaic* must be in contact with the other two (2) *Pixels* of that *Mosaic*.

Additional Rules to Watch During This Task

<GS04> Descoring

- Robots may not descore Pixels from the opposing Alliance's Backdrop or Backstage.
  b) An additional Minor Penalty is assessed for each affected completed Mosaic

> Per Q88: <GS04> penalties apply if the opposing alliance robot directly or *indirectly* causes descoring (such as bumping the opposing alliance robot into their own Backdrop)
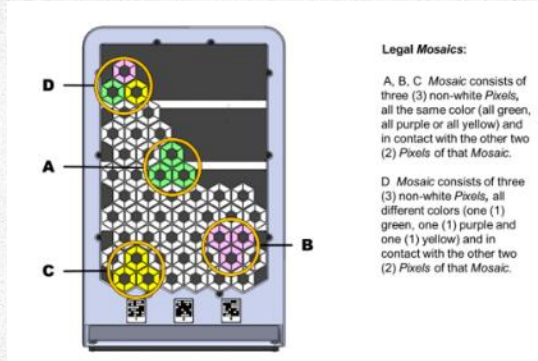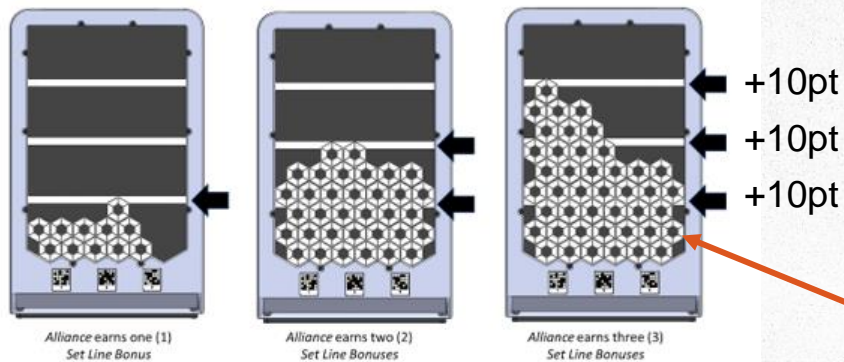
<GS05> Robot Control/Possession Limits for Scoring

c) Limit Exception: Pixels On the Backdrop are exempt from the Control/Possession limit HOWEVER <GS5> limits apply if the robot removes Pixels from the alliance Backdrop.

> Pixels do not have to be tessellated (as shown) to score.
> There can be gaps as long as the Pixels are touching each other

DC-3 Set Bonus on Backdrop

Alliances earn *ten (10) points* when Scored Pixels On a Backdrop extend In a horizontal Set Line. Vertically crossing In each Set Line earns one (1) Set Bonus, regardless of the number of Pixels that cross it. *The maximum Set Bonus for an Alliance is thirty (30) points*.

+10pt

+10pt

+10pt

Alliance earns one (1) Set Line Bonus

Alliance earns two (2) Set Line Bonuses

Alliance earns three (3) Set Line Bonuses

F-4 Set Bonus

Additional Rules to Watch During This Task

<GS04> **Descoring**
- Robots may not descore Pixels from the opposing Alliance's Backdrop or Backstage
  b) An additional Minor Penalty is assessed for each affected completed *Set Line Bonus scoring achievement*

> Per Q88: <GS04> penalties apply if the opposing alliance robot directly or *indirectly* causes descoring (such as bumping the opposing alliance into their own Backdrop)

<GS05> **Robot Control/Possession Limits for Scoring**
  c) Limit Exception: Pixels On the Backdrop are exempt from the Control/Possession limit HOWEVER <GS5> limits apply if the robot removes Pixels from the alliance Backdrop.
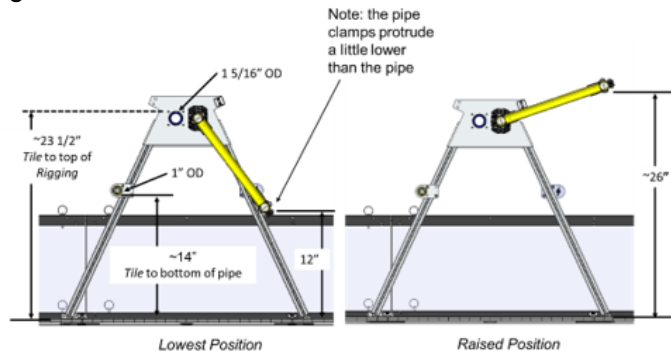
> If a robot is touching a Pixel on the Backboard at the end of the match it does not score – however any associated setline bonus (or Mosaic) will score.

Moving around the field

Rigging   Stage Door   Rigging
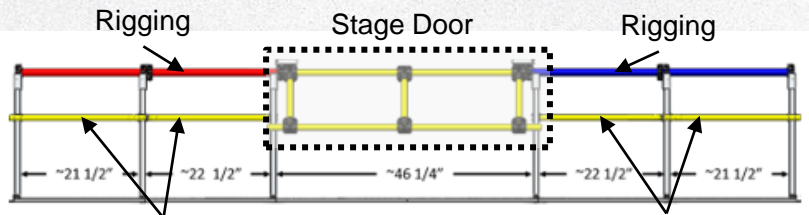
Height Restriction Bars   Height Restriction Bars

The Stage Door is wide enough for two Robots to pass through at the same time without disruptions

<GS07> Stage Door Constraints

Stage Door constraints apply to both operational and Disabled Robots.

a) Robots may not Grasp the Stage Door. Violation of this rule results in a Major Penalty.

b) Preventing the Stage Door from operating normally while an opposing Alliance Robot attempts to travel through the Stage Door is not allowed. Violation of this rule results in a Major Penalty. *For example: Robots may not limit the upward motion of the Stage Door*.

c) Transit constraints: Violations of this rule are addressed per rule <G28> (Blocking/Pinning). Repeated violations will quickly escalate to a Yellow Card at the discretion of the Head Referee.

    i. Disrupting the transit of an opposing Alliance Robot through the Stage Door is not allowed.

    ii. Robots passing through the Stage Door from the audience side of the Playing Field to the back have transit priority. Robots traveling from the back of the Playing Field to the audience side of the Playing Field must yield a free path of travel.

In End Game per <GS06>, the height restricted paths leading to the Rigging are <u>not</u> an open path of travel when applying rule <G28>. Robots must leave an alternate path open to the rigging or other side of the field to avoid a blocking call
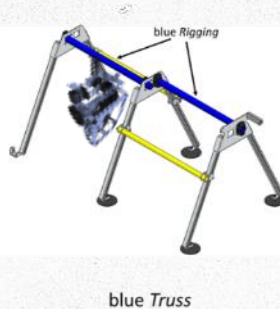
EG-1a. Robot Location – Suspended from Rigging

A Robot Suspended by a corresponding Alliance's Rigging earns twenty (20) points. Only one (1) Robot per Rigging counts as Scored.
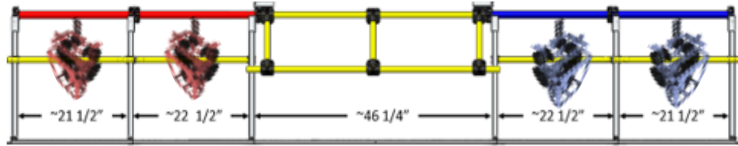
A Robot is *Suspended* when it is Completely Supported by the Rigging and is not in contact with any other Game Element, Robot, or the Playing Field Floor. Incidental contact with Scoring Elements, the Truss, another Robot or the Stage Door is allowed

The condition "at rest" is intentionally omitted from the definition of End of Period Scoring.
Robot scores if suspended at any time during 3-sec end of match buzzer sound *(from FTC Referee Forum - Hanging at the buzzer 10/17/2023)*

blue *Rigging*

blue *Truss*

Some Rules to Watch During End Game

<GS06> Truss Constraints
a) Robots may only Grasp one of either Rigging of their corresponding Alliance Specific Trusses. Contact with the other parts of the Truss is allowed for stabilization of the Robot while Suspended. The intent is that the Rigging is the primary support for the Robot. Violation of this rule results in zero Score value for the Suspend task.
b) Robots may not Grasp or Suspend from any other part of the Truss structure. Violation of this rule results in a Minor Penalty per occurrence.
c) There is a limit of one (1) Supported Robot per Rigging. Additional Robots Supported by a Rigging or by a Robot Supported by that Rigging earn a Major Penalty.
d) A Robot may not impede or obstruct an opposing Alliance Robot from Suspending during the End Game Period. Each violation of this rule results in an immediate Major Penalty and additional Blocking Penalties per rule <G28>.
e) Contact with a Suspended opposing Alliance Robot will not invalidate the Suspend. The action will also result in a Minor Penalty per occurrence for contacting the Suspended Robot.
f) During the End Game, the height restricted paths leading to the Rigging are not an open path of travel when applying rule <G28>.

EG-1b. Robot Location – Parked in Backstage

Backstage

Robots that Park In the Backstage for the corresponding Alliance earn five (5) points for each Robot.
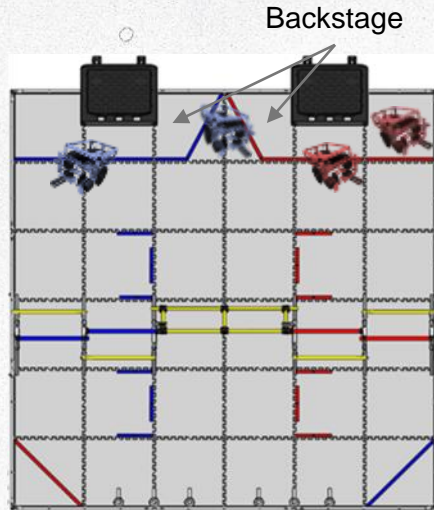
The boundary tape is part of the Area for the purposes of determining Inside and Outside. The robot only need to break the vertical plane of the *outside* edge of the tape to be "IN"

Some Rules to Watch During End Game

<GS06> Truss Constraints
- The height restricted paths leading to the Rigging are not an open path of travel when applying rule <G28>.

Although robots are permitted to cross under the height restrictions bar at any time, an alternate path of travel must be open to the Opposing Alliance robots during End Game to avoid a blocking call

<G04> Robot Manipulation of Scoring Elements
- The position of the robot regardless of any possessed scoring element(s) is used to determine "IN" or "COMPLELEY IN"
- Extending a long robot arm or tape measure is an acceptable way to break the plane.

<G20a> Robot Actions at End of the Period
- A Robot that is not "motionless" at the conclusion of the "game sound" receives a Minor Penalty and the actions of the Robot do not count towards their Team's Score. Referees have the option of issuing a Major Penalty in place of the Minor Penalty if the late stop results in a competitive advantage (other than Scoring)
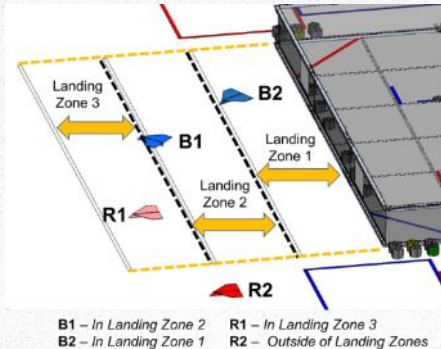
EG-2 Drone Launching

Launched Drones that end up Parked In a Landing Zone earn points as shown below. Launched Drones must pass over the Truss and/or Stage Door for each scoring attempt to earn points. Drone Launching is Scored at Rest.

a) Landing Zone 1 earns thirty (30) points.

b) Landing Zone 2 earns twenty (20) points.

c) Landing Zone 3 earns ten (10) points.

B1 – In Landing Zone 2   R1 – In Landing Zone 3
B2 – In Landing Zone 1   R2 – Outside of Landing Zones

Some Rules to Watch During End Game

<GS11> Drone Constraints

b) A Robot may not Possess a Drone provided by another Team. Major Penalty
c) Drones Launched before the End Game have zero (0) Score value.
d) Drones may be Launched from Suspended Robots.
e) For each scoring attempt, a Launched Drone must pass over a Rigging or top pole of the Stage Door before it is eligible to Score points.
f) To Score a Drone, the Drone must be in a legal configuration.
g) Drone Interference:
   i. A Robot may not affect the flight of an opposing Alliance's Drone that is flying at a height above the height of the Playing Field Wall,. The Drone that is affected will be awarded Landing Zone 1 points *(unless opposing Alliance Robot was actively playing the game and not strategically placed)*
   ii. Contact between two or more Drones in flight or In a Landing Zone is not penalized.
   iii. Drive Teams may not directly or indirectly affect the flight of a Drone. Affecting an opposing Alliance Drone will result in that Drone earning Landing Zone 1 points. Affecting their own Drone's flight results in no points for that Drone.
   iv. A Drone that contacts field personnel In a Landing Zone is awarded   Landing Zone 1 Score value regardless of the final Parking location.
   v. A Drone that contacts field personnel Outside a Landing Zone or any object Outside the Playing Field has zero Score value.

A Drone that is "launched" before the buzzer sound grace period <u>ends</u> is scored once it comes to rest,

A Drone incidentally impacting any Drive Team member is returned to the owning Alliance's Pixel Storage, otherwise it remains as is

When the Match Ends…

Drive Team should make their best effort to stop gameplay immediately. "*Robots should be motionless by the time the game buzzer sound ends*"

- **<G20a>** Robots not stopped at the conclusion of the game sound receive a Minor Penalty and the actions of the Robot do not count towards their Score. *This rule does not apply to hanging*

- **<G20b>** Scoring achievements that were started *before* the End of the Period (or during 3-second grace period) are eligible to be counted as Scored

Referees will review and finalize the scores

- **<G06>** Scoring Elements in contact with robots do not count, **EXCEPT** Robot contact with a Pixel in the Backstage area is allowed (GS01.a)

- Any penalties (10 points Minor / 30 Points Major) will be **ADDED** to the score of the opposing alliance

Referees may have brief discussions with Team(s) about pending violations

- Match disputes shall be addressed in the Question Box with the Head Referee (within 3 matches)

When complete, the Head Referee will signal the Drive Teams to retrieve their Robots and call for Field Reset
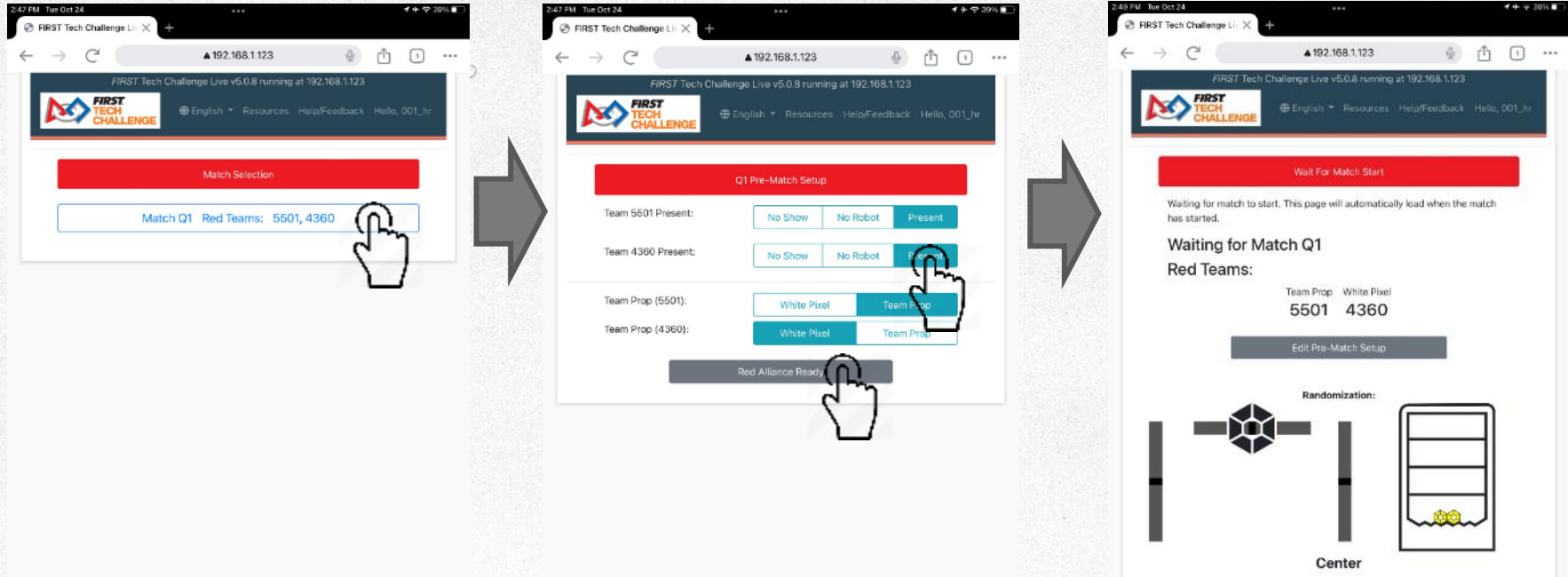
- **<G12>** Teams may not verify the Scoring/Count of Game Elements - Immediate Minor Penalty

Scoring Referee - Tablet Screens

Scorekeeper Guide

Scoring Tablet Screens

Pre-Match Setup… One scoring referee for blue alliance and one for red alliance

Key:

NOT SELECTED   SELECTED

Notes:
1) Screen will just show "Waiting for Match" until all Teams are ready for Field Randomization
2) The randomization screen will automatically change to autonomous period scoring screen when the Match starts……. be ready!

Autonomous Period Screen (Red Alliance)

Red Team 1
- Purple Pixel on Correct Randomized Spike Mark (L,C or R)
- Pre-Load Yellow Pixel on Correct Backdrop Location (L,C or R)

Red Team 2
- Purple Pixel on Correct Randomized Spike Mark (L,C or R)
- Pre-Load Yellow Pixel on Correct Backdrop Location (L,C or R)

Team 1 + 2
- Count of Pixels on Backstage (all colors)

Team 1 + 2
- Count of Pixels on Backdrop (all colors)

Team 1
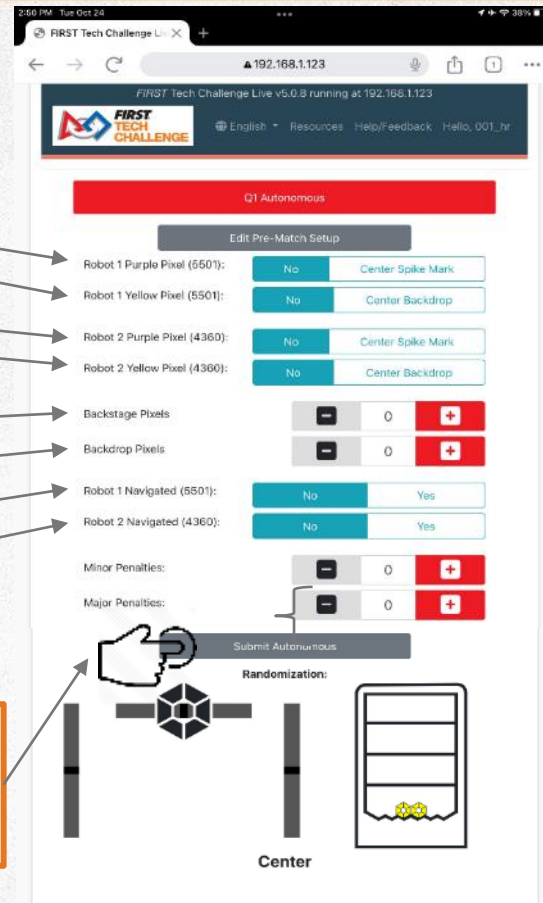- Navigated/Park IN Backstage

Team 2
- Navigated/Park IN Backstage

Scoring Referee must Submit Auto Score during 8 second transition period at end of autonomous – Penalties can wait until end of Match

Don't confuse Backstage and Backdrop – scoring is different

Driver Controlled Period Screen (Red Alliance)

Pixel Scores will carry over from Autonomous Screen

Total Pixel Count, Mosaics and Set Lines In Backstage

Robot 1 & 2 Drone Landing Positions

Robot 1 & 2 Suspended from Rigging or Parked in Backstage

Attempt to quickly submit after all achievements, then enter penalties and score changes in final review screen

Final Review All Screen

Robot Setup

Autonomous

Driver-Period

Penalties

Finalizing Scores

- Scoring Referee will Confer with the Game Play Referees & Head Referee

  - Enter any penalties on the tablet

  - Discuss any other scoring uncertainties

    - Good practice to ask Gameplay Referee for help calling out scoring acheievements during autonomous and to make mental or written note of field at end of auto.

    - Easy to miss something during 8-second transition period

- Scoring Referee Submits Final Match Scores

- Note: Yellow or Red Card Violations are not entered on tablets

  - Gameplay Referees will discuss violation(s) with Head Referee

  - Head Referee will direct scorekeeper to enter information in scoring system after displaying the appropriate card to the team.

Game Manual Definitions
(Ref GM2 Section 4.3)

Game Definitions

Don't always look to the game rules section of the manual for all the answers

Definitions provide important insight to interpreting the game rules and points scoring

Become familiar with these common definitions (section 4.3 of Game Manual 2)

- *Block / Blocking*
- *Control / Controlling…….plus Carrying, Herding, Holding, Launching, Plowing, Rolling, Sliding*
- *In (Inside) / Completely In (Completely Inside)*
- *Inadvertent and Inconsequential*
- *Interference*
- *Launching / Rolling / Sliding*
- *Park / Parked*
- *Penalties*
- *Possess / Possessing*
- *Pre-Load*
- *Propel / Propelling (inclusive of Launching, Rolling and Sliding)*
- *Suspend / Suspended* (New)
- *Support / Supported / Completely Supported*

> Italicized words in the Game Manuals are generally associated with a word or phrase found in the Definitions section of the Manual
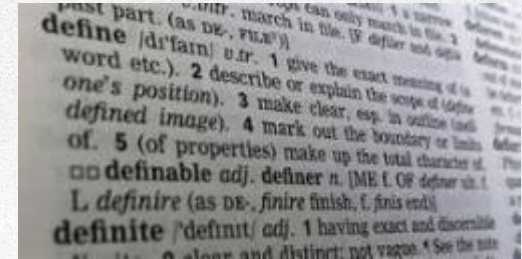
Penalties & Egregious Behavior

Scored Penalties

Game Play Referees assign penalties in accordance with Rules in Game Manual 2

- Minor penalties **ADD** 10 points to the opposing alliance's score (per occurrence)

- Major penalties **ADD** 30 points to the opposing alliance's score (per occurrence)

A Referee should immediately signal the penalty by waving an appropriately colored flag or stick toward at the offending robot (or student) AND verbally communicate the rule violation that has resulted in the penalty

- Avoids end of match "surprises" and allows team(s) chance to avoid any repeat occurrences during the match

It is important referees keep track of the reason for penalties during the match, as they may become part of discussions between the teams and the head referee in the Question Box.

- For Qualification Rounds - A student has three Matches following the disputed Match to raise a question (or within 5 mins. of announced score for last 2 qualification matches)

- For eliminations, a student must enter the question box before the alliance's next match (or within 5 minutes for last match). **Don't let anyone disassemble the field immediately after the last match!!**

Flag held high. Wave vigorously. Pointing at the offending robot.

Yellow & Red Cards (Head Referee)

Cards are served for Egregious Behavior : Rule <G30> ,Safety <S1,S2,S4> and other specified rules

Yellow serves as warning ; Red results in Match Disqualification (zero score for match)

Applies to a **Team** during Qualification Rounds ; Applies to the **Alliance** during Elimination Rounds

Cards are additive ; red always for all future violations after the initial yellow card warning

- Except cards reset at end of the Qualification Rounds

Egregious Behavior Includes:

- Uncivil behavior towards Teams, Volunteers or any other event attendees (ON or OFF the field).

- Flagrant/intentional violation of game rules or unethical match play

- Repeated (3 or more times) rules violations that were previously discussed with Head Referee

Off-field violations are worked through the Tournament Director, Team Coach and call with *FIRST*

- Head Referee will issue a card if so directed

Cards are signaled by the Head Referee standing in front of the team's alliance station and holding a yellow card and/or red card in the air.

Safety Rules <S01> to <S04>
(Ref. GM2 Section 4.5.1)

Safety Rules

<S01> Unsafe Robot or Playing Field Damage

If at any time the Robot operation is deemed unsafe or has damaged the Playing Field or another Robot, by the determination of the referees, the offending Robot may be Disabled, and the Team may be issued a Yellow Card. Re-inspection of the Robot is required before it may play another Match. Damage that requires significant repair and/or delays subsequent Match play is likely to escalate to a Red Card.

<S02> Robot Extension Outside the Playing Field Boundary

If any portion of the Robot contacts anything Outside the Playing Field Perimeter, the Team will be issued a Yellow Card and the Robot may be Disabled immediately for the remainder of the Match, unless allowed by Game-Specific rule(s) listed in section 4.5.3. See the game definitions in section 4.3 for a complete description of the Playing Field Perimeter.

> The intent of this rule is not to Penalize an Alliance for Inadvertent, _safe_ Robot extension Outside the Playing Field Perimeter.. **<S1> applies if deemed unsafe without contact**.

<S03> Safety Gear

All members of the Drive Team are required to wear approved eye protection and shoes with closed toed and a closed back. If any member of the Drive Team is not wearing these safety items, the referee will issue a Warning to the Team member(s) and if the situation is not remedied within 30 seconds, the offending member(s) of the Drive Team must leave the Competition Area for the remainder of the Match and may not be replaced by another Team member. Repeated Team member violations during the competition will escalate to a Team Warning. Following the Team Warning, subsequent violations by any member of the Team will result in a Minor Penalty for the Alliance.

Safety Rules (continued)

<S04> Unsafe Robot or Playing Field Damage (NEW for 2023-2024 Season)

Competition Area Safety – When a competition has venue-specific safety rules for the Competition Area, all members of a Team are required to abide by those rules. Initial violations will result in a verbal Warning. Subsequent violations at a competition will result in a Yellow Card.

**CENTERSTAGE Season - Traditional Play
Game Specific Rules <GS1> to <GS14>
(Ref GM2 Section 4.5.3)**

<GS01> General Rule Exceptions

The following instances of gameplay are Game-specific exceptions to General Game Rules in section 4.5.2:

a) Robot contact with a Pixel in a Backstage is allowed as an exception to rule <G06> *Scoring Elements in Contact with Robots* if the Pixel is not Possessed by the Robot.

b) Robots are allowed to Grasp the Rigging as an exception to rule <G25> *Robots Grasping Game Elements*

c) A Robot may Launch their Drone to the Outside of the Playing Field as an exception to rule <G27> *Removing Game Elements from the Field.*

d) Rule <GS06>.f modifies the application of rule <G28> *Pinning/Trapping/Blocking*

e) Rule <GS07> constraints are an exception to rule <G07> *Disabled Robot*

f) Consequences for violating rule <GS07>.a apply a stricter penalty than outlined in rule <G25> *Robots Grasping Game Elements*

g) Rule <GS08>.c is an exception to rule <G07> *Disabled Robot*

h) The rule <GS09> consequence for a Disabled Robot In a Wing is an exception to rule <G07> *Disabled Robot*

A list of exceptions, where Specific Game Rules over-ride the General Rules

<GS02> Drive Teams Touching Robots or Driver Stations after Randomization

Drive Teams are not allowed to touch or interact with their Robots or Driver Station once field personnel have begun the Playing Field randomization process.

If this occurs, a Minor Penalty will be assessed to the Alliance. The offending Robot is not eligible to earn points for the Randomization Tasks in the Autonomous Period.

The non-offending Alliance partner Robot remains eligible for the Randomization Tasks Scoring achievement

Except to start autonomous

Re-Randomization of the field is generally not required since the offending robot is not eligible for the bonus (as long as other teams were not required to access their android devices)

<GS03> Autonomous Interference

During the Autonomous Period, a Major Penalty is assessed for the following actions:

a) Interfering with an opposing Alliance Robot In the opposing Alliance's half of the Playing Field. Tiles A, B, C constitute the blue side of the Playing Field, Tiles D, E, F constitute the red side of the Playing Field. The tabs joining Tiles C and D are neutral.

b) Interfering with the opposing Alliance's Randomization Task setup or Randomization Task Scoring

c) Robots moving the pre-placed white Pixel stacks in the opposing Alliance half of the Playing Field that impacts or impedes the opposing Alliance's Autonomous Period Scoring actions.
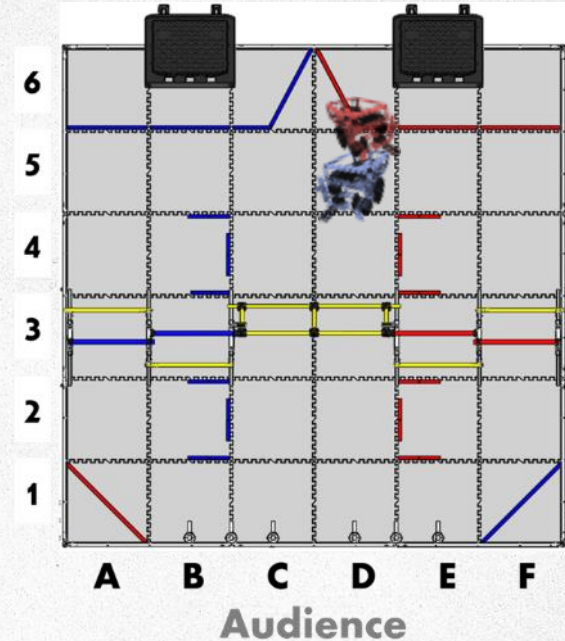
<GS04> Descoring

Robots may not descore Pixels or affect scoring achievements from the opposing Alliance's Backdrop or Backstage.

a) A Minor Penalty will be assessed for each Pixel that is descored.

b) An additional Minor Penalty is assessed for each affected completed Mosaic and/or Set Line Bonus scoring achievement.

Dimensions are for reference only. Actual position of the tape and *Backdrop* are dependent on the *Tile* position and will be detailed in the Setup guide.

<GS05> Robot Control / Possession Limits

a) Robots may Control or Possess a maximum of two (2) Pixels and one (1) Drone at a time. Controlling or Possessing more than the allowed quantity of Scoring Elements is an immediate <mark>Minor Penalty</mark> for each Scoring Element above the limit plus an additional <mark>Minor Penalty</mark> per Scoring Element in excess of the limit for each 5-second interval that the situation continues.
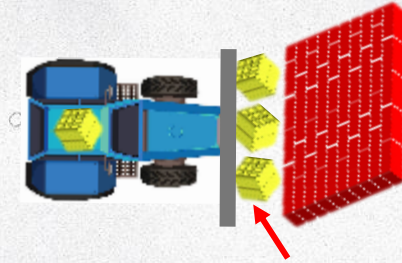
b) Scoring a Pixel while in Control or Possession of more than the allowed quantity of Scoring Elements will result in a <mark>Minor Penalty</mark> per Element Scored.

c) Control/Possession limit exceptions:

   i.   Knocking over a stack of unscored Pixels is allowed.

   ii.   Inadvertent and Inconsequential movement of a pre-set stack of unscored Pixels is allowed. Moving the stack Completely Off the tape is considered consequential.

   iii.   Plowing through any quantity of Scoring Elements is allowed.

   iv.   Pixels In the Backstage that are directly Supported by the Playing Field Floor or Supported by a Pixel that is directly Supported by the Playing Field Floor, are exempt from the Control/Possession limit. The intent of this rule is to prevent penalizing a Robot maneuvering In the Backstage.

   v.   Pixels On the Backdrop are exempt from the Control/Possession limit.
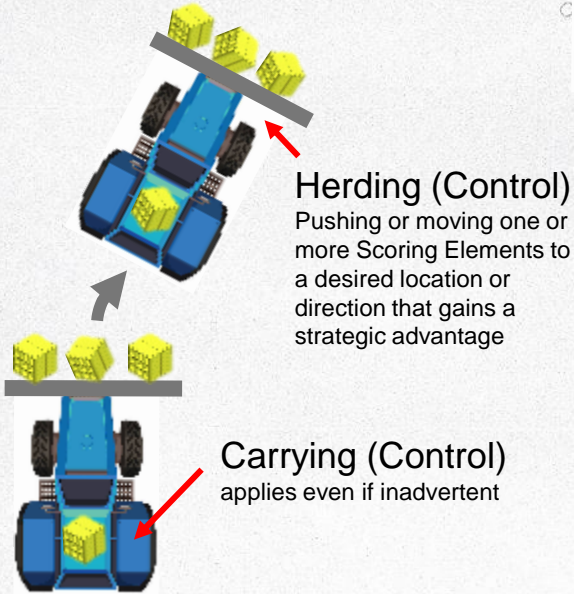
Controlled
An object is Controlled by a Robot if the object is following the movement of the Robot.

Not Controlled or Possessed

Herding (Control)
Pushing or moving one or more Scoring Elements to a desired location or direction that gains a strategic advantage

Carrying (Control)
applies even if inadvertent

Trapping (Control)
Trapping one or more Scoring Elements against a Game Element, Playing Field Wall, or Robot to shield or guard. Scoring element may be trapped beneath a robot

Plowing
Inadvertent contact with Game Elements while in the path of the Robot moving about the Playing Field that provides no additional advantages beyond field mobility.

Inadvertent
Transient contact with a moving game element

<GS06> Truss Constraints

a) Robots may only Grasp one of either Rigging of their corresponding Alliance Specific Trusses. Contact with the other parts of the Truss is allowed for stabilization of the Robot while Suspended. The intent is that the Rigging is the primary support for the Robot. Violation of this rule results in zero Score value for the Suspend task.

b) Robots may not Grasp or Suspend from any other part of the Truss structure. Violation of this rule results in a Minor Penalty per occurrence.

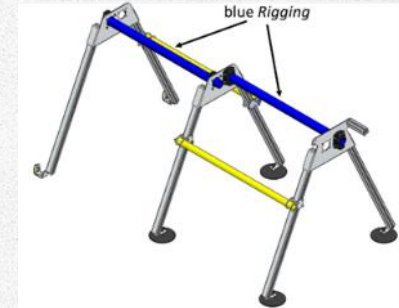c) There is a limit of one (1) Supported Robot per Rigging. Additional Robots Supported by a Rigging or by a Robot Supported by that Rigging earn a Major Penalty.

d) A Robot may not impede or obstruct an opposing Alliance Robot from Suspending during the End Game Period. Each violation of this rule results in an immediate Major Penalty and additional Blocking Penalties per rule <G28>.

e) Contact with a Suspended opposing Alliance Robot will not invalidate the Suspend. The action will also result in a Minor Penalty per occurrence for contacting the Suspended Robot.

f) During the End Game, the height restricted paths leading to the Rigging are not an open path of travel when applying rule <G28>.
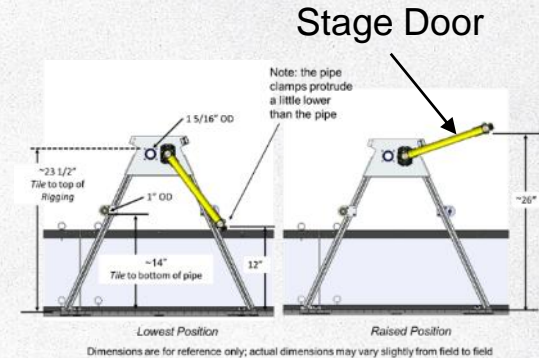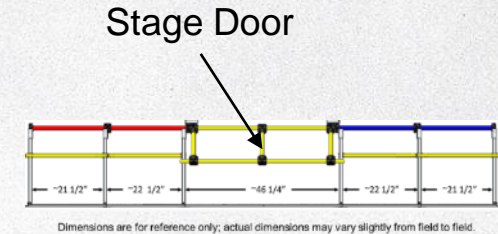

blue *Truss*
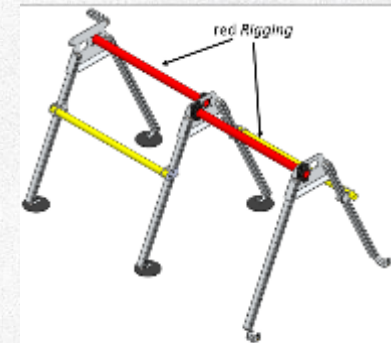
red *Truss*

<GS07> Stage Door Constraints

Stage Door constraints apply to both operational and Disabled Robots.

a) Robots may not Grasp the Stage Door. Violation of this rule results in a Major Penalty.

b) Preventing the Stage Door from operating normally while an opposing Alliance Robot attempts to travel through the Stage Door is not allowed. Violation of this rule results in a Major Penalty. For example: Robots may not limit the upward motion of the Stage Door.

c) Transit constraints: Violations of this rule are addressed per rule <G28>. Repeated violations will quickly escalate to a Yellow Card at the discretion of the Head Referee.

   i.   Disrupting the transit of an opposing Alliance Robot through the Stage Door is not allowed.

   ii. Robots passing through the Stage Door from the audience side of the Playing Field to the back have transit priority. Robots traveling from the back of the Playing Field to the audience side of the Playing Field must yield a free path of travel.

Stage Door

Dimensions are for reference only; actual dimensions may vary slightly from field to field.

Stage Door

Note: the pipe clamps protrude a little lower than the pipe

Lowest Position   *Raised Position*

Dimensions are for reference only; actual dimensions may vary slightly from field to field.
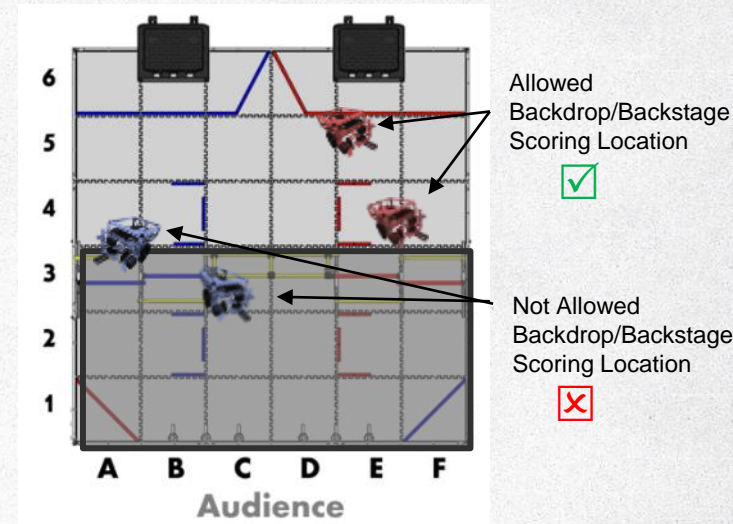
The Stage Door is wide enough for two Robots to pass through at the same time without disruptions. Robots that allow a free path of travel to faster Robots are less likely to incur transit constraint Penalties.

<GS08> Backdrop and Backstage Constraints

a) A Robot may not impede or obstruct an opposing Alliance Robot that is In the Backstage from Scoring a Pixel. Each violation of this rule results in an immediate <mark>Minor Penalty.</mark>

b) Robots may not Block access to the opposing Alliance's Backstage or Backdrop. Once a referee determines this rule is being violated, a <mark>Major Penalty</mark> will be applied. A <mark>Minor Penalty</mark> will be added for every 5 seconds the violation continues. A Robot is in violation until it has moved at least 3 feet, approximately 1.5 tiles, from the affected Robot(s).

c) A Disabled Robot In the opposing Alliance's Backstage remains eligible for all Penalties associated with <GS08>. This is an explicit exception to rule <G07>.

d) Robots located In Tile rows 1, 2, or 3 may not Score into the Backstage or Backdrop. Each violation will receive a <mark>Minor Penalty</mark>.

Allowed Backdrop/Backstage Scoring Location ✅

Not Allowed Backdrop/Backstage Scoring Location ❌

<GS09> Wing Constraints

a) A Robot may not impede or obstruct an opposing Alliance Robot that is In the corresponding Alliance's Wing. Each violation of this rule results in an ==immediate Minor Penalty==.

b) Robots may not be In or Block access to the opposing Alliance's Wing. Once a referee determines this rule is being violated, a ==Major Penalty== will be applied. A ==Minor Penalty== will be added for every 5 seconds the violation continues. A Robot is in violation until it has moved at least 3 feet (0.9 m), approximately 1.5 Tiles, from the Blocked Wing.

c) A Disabled Robot In a Wing is not considered a safety hazard, therefore Scoring Elements may continue to be placed. However, a Disabled Robot In the opposing Alliance's Wing remains eligible for all Penalties associated with <GS09> including escalation to ==Yellow Cards==. This is an explicit exception to rule <G07>.

d) There can be a maximum of six (6) Pixels In the Wing at any one time. A ==Minor Penalty== will be assessed for each additional Pixel beyond the maximum. Pixels in the Possession of a Robot do not count towards this limit.

Block / Blocking Access – Preventing an opposing Alliance Robot from accessing the Wing by obstructing ALL paths of travel to the Wing
Impede/Obstruct - Delay or hinder access to the Wing

<GS10> Pixel Constraints

Pixels may not be *Propelled*. Each violation of this rule results in a <mark>Minor Penalty.</mark>

Definition:

Propel / Propelling – Giving Game Elements enough force such that they move independent of contact with the Robot or Human Player. Movement solely due to gravity is not Propelling. Launching, Rolling, and Sliding are forms of Propelling.

Launch / Launching – *Propelling* Game Elements through the air or <u>water</u> above the Playing Field Floor.

Rolling – *Propelling* Game Elements along the Playing Field Floor.

Slide / Sliding – *Propelling* Game Elements along the Playing Field Floor

Rolling or Sliding

Launching
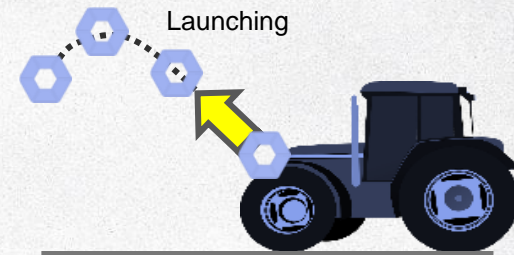
Use judgment in applying GS10 - consider whether the propelling action and outcome were Inadvertent and Inconsequential (per G10) – Did the team gain any game-play advantage?

\<GS11> Drone Constraints

a) A Robot may not Possess a Drone provided by another Team. A Major Penalty will be assessed for violating this rule.

b) Drones Launched before the End Game have zero (0) Score value.

c) Drones may be Launched from Suspended Robots.

d) For each scoring attempt (Launch, fly, land), a Launched Drone must pass over a Rigging or top pole of the Stage Door before it is eligible to Score points.

e) To Score a Drone, the Drone must be in a legal configuration. Altering a Drone after inspection or during Match play to better the chance of Scoring is not in the spirit of this rule and will not be considered a Scored Drone.

f) Drone Interference:

   i. A Robot may not affect the flight of an opposing Alliance's Drone that is flying at a height above the height of the Playing Field Wall, approximately 11.5 inches (295 mm). The Drone that is affected will be awarded Landing Zone 1 points.

   ii. Contact between two or more Drones in flight or In a Landing Zone is not penalized.

   iii. Drive Teams may not directly or indirectly affect the flight of a Drone. Affecting an opposing Alliance Drone will result in that Drone earning Landing Zone 1 points. Affecting their own Drone's flight results in no points for that Drone.

   iv. A Drone that contacts field personnel In a Landing Zone is awarded Landing Zone 1 Score value regardless of the final Parking location

   v. A Drone that contacts field personnel that are Outside a Landing Zone or any object Outside the Playing Field has zero Score value regardless of the final Parking location.
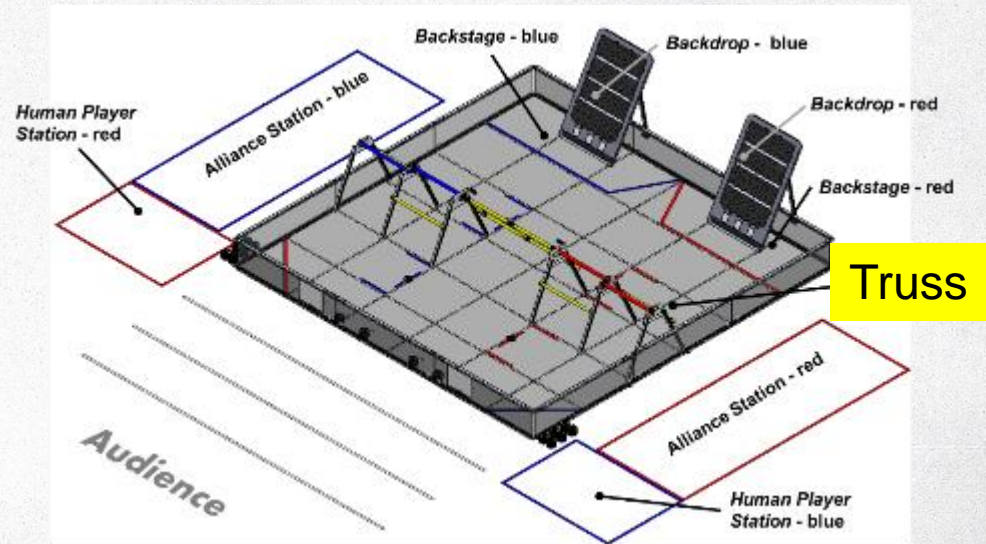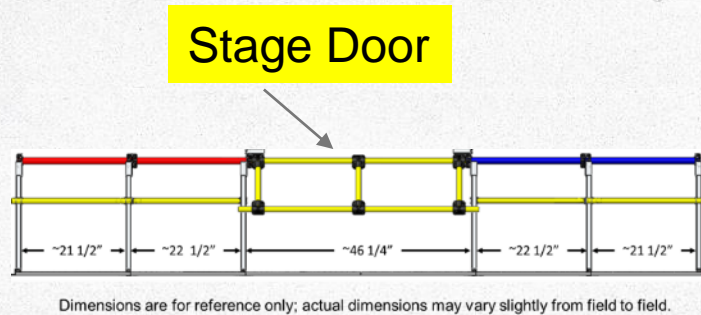
<GS12> Human Player Constraints

Each violation of this rule results in a <mark>Minor Penalty.</mark>

a)   Drones and Pixels In the Pixel Storage Area may not be handled until after the Match has begun with the exception of the Pre-Load Scoring Elements.

b)   Drones and Pixels may be placed or dropped only In the Wing and only during the Driver-Controlled Period. Drones and Pixels can be in any orientation and may be in contact with other Drones or Pixels In the Wing.

c)   Human Players may place a maximum of two (2) Pixels or one (1) Drone In a Wing at a time.

d)   Once a Pixel or Drone has been placed in the Wing, a Human Player may not pick it up or reposition it.

e)   Human Players may not Propel Pixels or Drones Out of the Wing.

f)   The Human Player may enter the area between the Human Player Station and the adjacent Playing Field Wall while placing a Pixel or Drone In the Wing, provided that it is done safely.

g)   The Human Player may not use tools or devices (including another Pixel) to manipulate a Pixel or Drone. Accommodations and exceptions for Human Players with disabilities or extenuating circumstances will be made at the discretion of the Tournament Director.

h)   For safety reasons, a Human Player cannot break the vertical plane of the Playing Field Perimeter or hand-deliver a Pixel or Drone to the Playing Field when there is a Robot In the Wing. A Disabled Robot In an Alliance Wing is not considered a safety hazard to the Human Player, therefore Drones and Pixels may continue to be placed.

i)   A Robot cannot enter the Wing while a Human Player is In the Wing.

<GS13> Truss/Stage Door Safety

Drive Teams may never step/jump over any section of the Truss and/or Stage Door. The first instance will result in a Warning to the Team. Subsequent violations at a competition will result in a Yellow Card. Further violations beyond will be addressed per <G30> *(Egregious Behavior)*

Stage Door

Truss

Dimensions are for reference only; actual dimensions may vary slightly from field to field.

General Games Rules
(Ref. GM2 Section 4.5.2)

General Rules <G01> to <G05>

<G01> Autonomous to Driver-Controlled Period Transition At the conclusion of the *Autonomous Period, Robots* will remain in a hands-off state. Field personnel will not enter the field and will not touch *Robots* on the field during the *Autonomous* to *Driver-Controlled* transition. The scoring system display will provide visual and audio cues for *Drive Teams* to pick up their *Driver Stations. Drive Teams* will have five (5) seconds to pick up and prepare their *Driver Station.* After five (5) seconds, there will be a "3-2-1 go" countdown and the *Driver-Controlled Period* of the *Match* will begin.

<G02> Certifying the Score at the End of The Match - *Scores* will be tracked by field personnel throughout the *Autonomous* and *Driver-Controlled Periods* of the *Match.* At the *End of the Match*, the final *Score* will be certified as quickly as possible. A change in state of a *Game Element* or *Robot* at the *End of the Match* after its final *Score* is recorded will not change an already-recorded *Score. Scoring Elements* will not be recounted after the *End of the Match* unless otherwise specified by a Game-Specific rule.

<G03> Forcing an Opponent to Break a Rule – The actions of an *Alliance* or their *Robots* shall not cause an opposing *Alliance* or *Robot* to break a rule and thus incur *Penalties.* Any forced rule violations committed by the affected *Alliance* shall be excused, and no *Penalties* will be assigned to the affected *Alliance*.

<G04> Robot Manipulation of Scoring Elements - *Scoring Elements* that are *Controlled* or *Possessed* by a *Robot* are part of the *Robot* except when determining the location of the *Robot* or otherwise specified by a Game-Specific rule.

<G05> Robot or Scoring Elements In Two or More Scoring Areas - *Robots* or *Scoring Elements* that are eligible for two or more *Scoring* achievements earn points only for the highest value achievement. If the achievement values are equal, only one achievement counts as *Scored*.

General Rules <G06> to <G10>

<G06> Scoring Elements in Contact with Robots – *Scoring Elements* in a *Scoring Area* that are in contact with or *Controlled* by a *Robot* on the corresponding *Alliance* for the *Scoring Area* have zero *Score* value.

<G07> Disabled Robot Eligibility – If a referee Disables a Robot, it will not be eligible to Score or earn points for the remainder of the Match. A Disabled Robot (whether referee induced or Robot failure) does not earn Penalties after being declared Disabled unless otherwise specified by a Game-Specific rule. *(Note: Disabled Robots that are immobile to due reliability issue (ie. Not safety) may still score; such as being pushed by another robot into a parking area – see Referee Training Manual)*

<G08> Playing Field Tolerances - Competition provided Playing Field and Game Elements will start each Match with tolerances that may vary by +/-1.0 inch. Teams must design their Robots accordingly. *Expectation is to set up the field as precisely as possible.*

<G09> Match Replay - Matches are replayed at the discretion of the head referee only for a failure of a non-Team supplied Game Element or verified Wi-Fi interference that was likely to have impacted which Alliance won the Match.

Unexpected *Robot* behavior will not result in a *Match* replay. *Team*-induced failures, such as low battery conditions, processor sleep time-outs, *Robot* mechanical, electrical, software, or communication failures, etc. are NOT valid justifications for a replaying of a *Match*

<G10> Inadvertent and Inconsequential – *Robot* actions that violate a rule may be ruled at the referee's discretion to be *Inconsequential* and *Inadvertent* and will not be *Penalized*.

Pre/Post-Match <G11> to <G12>

<G11> Illegal Match Communication Electronic communication (cell phone, two-way radio, Wi-Fi, Bluetooth, etc.) by *Drive Team* members after an *Alliance* has been called from the queue to the *Playing Field* for its *Match* is not allowed. The first instance of violating this rule will result in a *Warning*, with any following instances during the competition resulting in a *Minor Penalty*. Items that may be mistaken by a casual observer as being in violation of this rule should not be brought to the *Playing Field*. The *Driver Station* is exempt from this rule but must be used only for operating the *Robot*.

<G12> Playing Field Access - *Team* members must not enter the *Playing Field* for any reason other than to place/retrieve their *Robots*. While placing *Robots*, *Teams* may not measure, test, or adjust *Game Elements Inside* or Outside of the *Playing Field* unless allowed by Section 4.4.1. When retrieving *Robots, Teams* may not verify the *Scoring* of *Game Elements*.

a) Minor Penalty for violations during Match setup or following the End of the Match.

b) Major Penalty for violations that delay the start of the Match

c) Violations of this rule outside of normal Match play will result in a Yellow Card.

Pre/Post-Match <G13>

<G13> Pre-Match Robot Placement – At the beginning of a *Match*, each *Alliance Robot* must be set up on the *Playing Field* according to section 4.4.1 Pre-*Match*.

a) During the Qualification *Matches*, the blue *Alliance Robots* are set up on the *Playing Field* first, unless the red *Alliance* waives their right to set up on the *Playing Field* second.

b) During the Elimination *Matches*, the 3rd and 4th seeded *Alliance Robots* are set up on the *Playing Field* first, unless the higher seeded *Alliance* waives their right to set up on the *Playing Field* second. *Alliance* color doesn't change the seeding of a *Team* during the Elimination *Matches*. If the 4th seed defeats the 1st seed in the Semi-Finals, they will still have to place their *Robot* on the field first in the finals because their seeding will be lower than the 2nd or 3rd seed.

c) During Elimination *Matches*, three *Team Alliances* may only place two *Robots* that are intended to compete in that *Match*. After the *Robots* are placed, the *Alliance* cannot swap in the 3rd *Alliance's Robot* for a *Robot* already placed.

d) T*eams* may implicitly waive their right to place their *Robots* on the *Playing Field* last by placing their *Robots* on the *Playing Field* before or with the opposing *Alliance*. There is no need to tell the referees; *Teams* waive their right by the act of placing their *Robots* on the *Playing Field*.

e) T*eams* that unnecessarily delay the beginning of a *Match* and/or field reset will incur a <mark>Minor</mark> *Penalty* for each offense. Significant delays may escalate to a <mark>Major</mark> *Penalty* at the discretion of the head referee.

Pre/Post-Match <G14> to <G15>

<G14> Robot Starting Volume – Before the start of a *Match*, each *Robot* in its starting location must not exceed a volume of 18 inches by 18 inches by 18 inches. Flexible materials (i.e., zip tie, surgical tube, string, etc.) may extend up to 0.25 inches beyond the 18-inch size constraint. A *Pre-Loaded Scoring Element* may extend *Outside* the 18-inch (457.2 mm) cube volume constraint. Once a violation has been identified, if the *Team* cannot fix the violation within thirty (30) seconds, the offending *Robot* will be removed from the *Playing Field*. *Robots* removed from the field are not subject to a delay of game (<G13>e) *Penalty*. The *Team* remains eligible to earn Ranking and TieBreaker Points if a member of the *Drive Team* is in their *Alliance Station* during the *Match*.

After the start of a *Match*, the *Robot* may extend in any direction unless otherwise specified by the Game-Specific rules detailed in section 4.5.3.

<G15> Robot Setup/Alignment - *Teams* may align their *Robots* during Pre-*Match* setup if they do so with legal components that are part of the *Robot* and can be reset to be within the 18-inch cube starting volume constraint. *Robot* setup alignment devices that extend outside the 18-inch starting volume constraint cannot be powered. A single member of the *Drive Team* may also align the *Robot* by sight if they are next to the *Robot* and their action does not delay the start of a *Match*. A *Minor Penalty* will be assessed to the *Alliance* for violation of this rule.

Pre/Post-Match <G16> to <G17>

<G16> Alliance Stations

During a *Match*, the *Drive Team* must remain *In* their *Alliance Station*.

a) *Drive Teams* may be anywhere in their respective *Alliance Station*.

b) The first instance of leaving the *Alliance Station* will result in a *Warning*, with any following instances during the *Match* resulting in a <mark>*Minor*</mark> *Penalty*. Leaving the *Alliance Station* for safety reasons will not result in a *Warning* or *Penalty*

c) Opposing *Alliance's Drive Team* members cannot distract/interfere with each other or the off-field *Scoring Elements* (if present in the current season's challenge). Violations of this rule will result in an immediate <mark>*Major*</mark> *Penalty* and a possible *Yellow Card*

d) After *Robots* are set up on the *Playing Field*, and before the *Match* starts, *Drive Teams* must stand *Inside* their respective *Alliance* or *Human Player Station*. Once the *Match* starts, the members of the *Drive Teams* may stand, sit, or kneel for the remainder of the *Match*. Violations of this rule (for example, lying down in the *Alliance Station*) will result in a <mark>*Minor*</mark> *Penalty*. Repeated violations of this rule will be handled per rule <G30>.

<G17> Post-Match Removal of Robots - *Robots* must be designed to permit easy removal of *Game Elements* from the *Robot* after the *Match*. *Robots* should also be able to be removed from the *Playing Field* without unnecessary delay or damaging the *Playing Field*. A <mark>*Minor*</mark> *Penalty* will be assessed for violations of this rule.

Game Play <G18> to <G21>

<G18> Starting Gameplay Early (Autonomous or Driver-Controlled Period) - *Robots* that start playing the game (*Autonomous* or *Driver-Controlled Period)* prior to the start of a *Match Period* receive a Minor *Penalty*. Referees have the option of issuing a Major *Penalty* in place of the Minor *Penalty* if the early start results in a competitive advantage for the offending *Alliance*.

<G19> Late Start of the Autonomous Period - A *Drive Team* that starts their *Robot's Autonomous* Op Mode late will receive a Minor *Penalty*. Any delay in *Robot* movement must be done by its programming. Referees have the option of issuing a Major *Penalty* in place of the Minor *Penalty* if the late start results in a competitive advantage for the offending *Alliance*.

<G20> Robot Actions at End of a Period

a) *Robots* must *Park* at the end of the *Autonomous* and *Driver-Controlled Periods*. *Robots* that are not *Parked* at the <u>conclusion</u> of the "game sound" receive a Minor *Penalty* and the *Robot's* following actions do not count towards their *Alliance's Score*. *Drive Teams* should make their best effort to stop gameplay immediately when the *End of the Period* game sound begins. Referees have the option of issuing a Major *Penalty* in place of the Minor *Penalty* if the late stop results in a competitive advantage (other than *Scoring*) for the offending *Alliance*.

b) *Scoring* achievements that were started (unless disallowed by Game-Specific rules) before the *End of the Period* are eligible to be counted as *Scored*.

c) *Robot Scoring* achievements that occur after the announced *End of the Autonomous Period* and before the start of the *Driver-Controlled Period* do not count towards the *Score* for the *Autonomous or Driver-Controlled Periods*.

Game Play <G22> to <G26>

<G21> Robot Control During Autonomous Period - During the *Autonomous Period*, *Drive Teams* may not directly or indirectly control or interact with *Robots* or *Driver Stations*. Early stopping of the *Robot* while running its *Autonomous* code is not allowed, except in cases of personal or equipment safety, and any achievements earned due to early stoppage will not *Score* points. A *Major Penalty* will be assessed for violating this rule. *Teams* that stop their *Robots* during the *Autonomous Period* are allowed to participate in the *Driver-Controlled Period* provided it can be done safely.

<G22> Drive Team Contact with the Playing Field or Robot - During a *Match*, the *Drive Team* is prohibited from making contact with the *Playing Field*, any *Robot*, or any *Game Element* unless allowed by Game-Specific rules. The first instance of contact will result in a *Warning*, with any following instances during the competition resulting in a *Minor Penalty*. Contact that affects *Scoring* and/or gameplay will result in issuance of a *Yellow Card* at the discretion of the referees. Contact with the *Playing Field*, a *Game Element,* or a *Robot* for safety reasons will not result in a *Warning* or *Penalty*.

<G23> Drive Team Coach Driver Station Control - During the *Driver-Controlled Period*, *Robots* must be remotely operated only by the *Drivers* using the Gamepads connected to the *Team's Driver Station* and/or by software running on the on-board *Robot* control system. The first instance of the *Coach* operating a Gamepad will result in a *Warning*, with any following instances during the competition resulting in a *Major Penalty.* During the *Driver-Controlled Period*, *Drive Team Coaches* and/or *Drivers* are allowed to hold the *Team's Driver Station* Android device and interact with it to select an Op Mode, view information displayed on the screen, and initialize, start, stop, and reset the *Robot*.

Game Play <G24> to <G26>

<G24> Robots <u>Deliberately</u> Detaching Parts of Mechanisms (excluding scoring elements) - *Robots* may not deliberately detach parts during a *Match* or leave mechanisms on the *Playing Field* unless permitted by a Game-Specific rule. *Possessed* or *Controlled Scoring Elements* are not considered to be a part of the *Robot* for the purpose of this rule. The consequence of deliberately detaching a part is a *Minor Penalty* if it does not *Block* an opposing *Alliance Robot, Alliance Specific Scoring Element* or *Scoring Area*. If a deliberately detached component or mechanism affects gameplay by any *Robot*, the offending *Robot* will receive a *Major Penalty* and will be issued a *Yellow Card. Robot* parts that are released but remain connected by a tether are considered detached for the purposes of this rule.

<G25> Robots Grasping Game Elements - *Robots* may not *Grasp* and/or attach to any *Game Element*, *Robot,* or structure other than *Scoring Elements*, unless specifically allowed by Game-Specific rule(s) listed in section 4.5.3. The first instance will result in a *Warning* with any following violations during the competition resulting in a *Major Penalty.*

<G26> Destruction, Damage, Tipping, Entanglement of Robots or Game Elements - *Robot* actions aimed at the destruction, damage, tipping over, or entanglement of *Robots* or *Game Elements* are not in the spirit of the *FIRST* Tech Challenge and are not allowed unless permitted by Game-Specific rules. However, *FIRST* Tech Challenge games are highly interactive. *Robot*-to-*Robot* contact and defensive gameplay should be expected. *Robot* interactions that result in tipping, entanglement, or impair the functions of an opposing *Alliance's Robot* may result in a *Major Penalty* and/or a *Yellow* card.

Game Play <G27> to <G29>

<G27> Removing Game Elements from the Playing Field - *Robots* may not deliberately remove *Game Elements* from the *Playing Field* during a *Match* unless specifically allowed by Game-Specific rule(s) listed in section 4.5.3. *Game Elements* that *Inadvertently* fall *Outside* the *Playing Field* will be returned to the *Playing Field* by field personnel at the earliest safe and convenient opportunity at a non-*Scoring* location approximately where it left the field. *Game Elements* removed from the *Playing Field* in an attempt to *Score* are also not subject to this *Penalty*. *Teams* deliberately removing *Game Elements* from the *Playing Field* will incur a <mark>Minor</mark> *Penalty* per *Game Element* removed from the *Playing Field*. Game-Specific rules listed in section 4.5.3 that address the removal of specified *Scoring Elements* from the *Playing Field* take precedence over this general game rule.

<G28> Pinning, Trapping, or Blocking Robots –A *Robot* may not cause an opposing *Alliance Robot* to become *Pinned, Trapped,* or *Blocked*.

Once a referee determines this rule is being violated, a <mark>Minor</mark> *Penalty* will be assessed for every 5 seconds the violation continues.

A *Robot* is in violation until it has moved at least 3 feet (0.9 m), approximately 1.5 *Tiles*, from the *Pinned, Trapped, or Blocked Robot.*

During the *Autonomous Period, Robots* will not incur this *Penalty* unless it is determined by the referee to be part of a deliberate strategy, which will then be penalized as described above. If the violation happens during the *Autonomous Period*, the first action done by the offending *Robot* during the *Driver-Controlled Period* must be to move away from the *Pinned, Trapped,* or *Blocked Robot* or a <mark>Minor</mark> *Penalty* will be assessed immediately

<G29> Illegal Usage of Game Elements *Robots* may not deliberately use *Game Elements* to ease or amplify the difficulty of any *Scoring* or game activity. A <mark>Major</mark> *Penalty* will be assessed for violations of this rule. Continued violations of this rule will quickly escalate to a *Yellow Card* at the discretion of the Head Referee. (*examples include; placing game elements into opposing alliance robot*)

Game Play <G30>

<G30> Egregious Behavior Egregious *Robot* or *Team* member behavior is not in the spirit of Gracious Professionalism and will not be tolerated at a *FIRST* Tech Challenge event. Egregious behavior includes, but is not limited to, repeated and/or flagrant violation of rules, unsafe behavior or actions, or uncivil behavior towards volunteers, *Drive Team,* competition personnel, or event attendees. In most cases, as determined by the referees, the offending team will result in a Major *Penalty* and issuance of a *Yellow Card* and/or *Red Card*.

Subsequent violations may result in Team disqualification from the competition.

Continued and repeated violations will be brought to *FIRST* Headquarters' attention. *FIRST* Headquarters will work with event staff to determine if further escalations are necessary, which can include removal from award consideration and removal from the event.

In cases where the egregious behavior is deemed to be unsafe, such as physical contact or threatening behaviors to other event attendees, event staff will work with *FIRST* Headquarters to determine if the behavior warrants immediate removal of the team from the event.

Pinning is:

- Preventing (by contact) an opposing robot from movement in <u>ALL directions</u>
- A robot must be actively attempting to move (not parked) for it to be considered pinned
- If a referee declares Pinning, the offending Robot must <u>immediately</u> move away at least 3 feet from the Pinned
- If the robot has not fully withdrawn within 5 seconds, the offending Alliance will receive a <mark>Minor</mark> Penalty and again every five seconds they are in violation
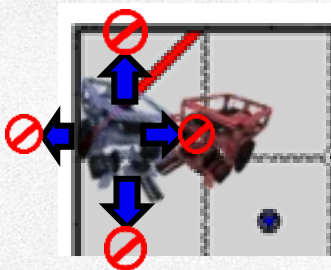
Trapping is:

- Preventing an opposing robot from escaping a constrained area by <u>obstructing ALL paths</u> of travel from the object or area.
- A robot must be actively attempting to move from an area or game element to be considered trapped
- If a referee declares Trapping, the offending Robot must <u>immediately</u> move away at least 3 feet from the Pinned
- If the robot has not fully withdrawn within 5 seconds, the offending Alliance will receive a <mark>Minor</mark> Penalty and again every five seconds they are in violation
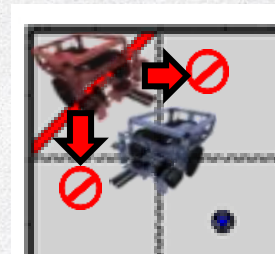
Blocking is:

- Preventing an opposing Alliance Robot from accessing an Area or Game Element for an extended period by <u>obstructing ALL paths</u> of travel to the object or Area.
- A robot must be actively attempting to move towards an area or game element to be considered blocking
- If a referee declares Blocking, the offending Robot must <u>immediately</u> move away at least 3 feet from the Pinned
- If the robot has not fully withdrawn within 5 seconds, the offending Alliance will receive a <mark>Minor</mark> Penalty and again every five seconds they are in violation
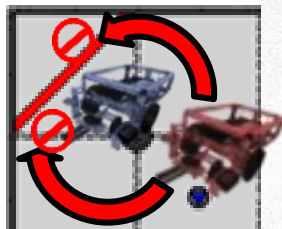
Red obstructing all paths to the (blue) Carousel

Interference is:

- Interaction between opposing Alliance Robots that amplifies the difficulty of a Scoring activity.
- For example, preventing an opposing Alliance Robot from <u>moving in a preferred direction.</u>
- This is a legal defensive move as long as the opposing robot can take an alternate path to or from an area or game element.

Note: In this example, if the red robot was to "shadow" the movement of the opposing Alliance Robot, it would effectively eliminate all paths of travel to the Game Element (Carousel). "***Shadowing" action is considered the same as "blocking"***
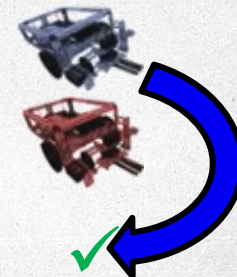
Red robot leaves one path open for Blue to access their Carousel

Team Facing Official Q&A Forum

https://ftc-qa.firstinspires.org/

The Official FTC Game Q&A Forum

The FTC forum is a place where **Teams** can ask questions and receive official feedback about all the game rules (Referees have their own Q&A private forum by can view Team Q&A Forum)

- Questions are Answered by Game Committee Members once or twice a week (Monday thru Thursday)

- Most answers are official "interpretations" of existing rules, but the forum may include "allowances" and "updates" to rules

- Referees MUST be cognizant of forum Q&A prior to an event (frozen Thursday PM thru Sunday PM)

If rules are in conflict with each other, the hierarchy is...........

1. **Q&A Forum rulings take precedence over all information in the Game Manuals**

2. GM2 Safety Rules (<S1-S3>) over-ride general and game Specific Rules

3. Game Specific rules in GM2 <GSxx> take precedence over General Rules GM2 <Gxx>

A running record of all Forum Q&A is published in every Thursday PM on the FTC season game site at
https://www.firstinspires.org/resource-library/ftc/game-and-season-info

> Head Referees Should Review all Forum Q&A before each tournament and communicate any significant updates in the Event Day Referee Meeting & Driver's Meeting

Example : Game Forum Q & A

2 ✓ **Q128** Glide Path and Drone Legality

Q1: In Q100 you cite a "glide path". Is this replacing the "non-ballistic trajectory" Q2: In the new "Is Your Drone Legal?" document, L2 clearly has wings, IL2 clearly has no wings, what is the place where there is "enough wing" between those two designs?

DRONE CONSTRUCTION

asked 7 days ago by FTC 15259

Answer

A1: Glide path and non-ballistic trajectory are interchangeable terms.

A2: FIRST strives to compose robot construction rules that can be applied objectively and consistently across all FIRST Tech Challenge competitions. Despite our best efforts to try and write a subjective rule, the application of is subjective. The Inspectors will be looking for Drone characteristics that have the general configuration of an airplane with a defined fuselage and wings that have a reasonable potential for providing meaningful aerodynamic lift. The "Is Your Drone Legal" guide and the Robot Inspector's guide are two resources we made available to teams and inspectors to help you in building legal drones.

Published 6 days ago by GDC Admin

☆ **Q126** Drone Construction

3 ✓ (a) Can we use glue or tape on the drone? (b) Can we apply water to the paper during construction to help folds in the paper become sturdy / stiff?

DRONE CONSTRUCTION

asked 7 days ago by FTC 21457

Answer

A) No, rule DR05d state that no other materials are allowed. This includes tape, glue, paperclips, etc. B) Providing the water has evaporated and it leaves no residue, it is permissible to wet the paper during construction.

Published 6 days ago by GDC Admin

Official Q&A Forum – Referee Volunteers
https://ftcforum.firstinspires.org/

Head Referee & Referee Volunteer Forum

Place for <u>volunteers</u> to ask questions about the game – not visible to teams

Questions are answered by Game Committee members including FIRST World Championship Chief Referee

https://ftcforum.firstinspires.org/

Request an account, email FTCTrainingSupport@firstinspires.org with role

Check the team facing Q&A forum before asking your questions

Answers are typically posted Wed-Thur, during competition season

You must be logged-in before the Referee / Head Referee forum is visible to you

Ohio 2023-2024 FTC Competitions

2023-2024 Ohio FTC Competitions

Venue	Competition Type	Game Day
~~Van Wert Scrimmage – Van Wert HS~~	~~Scrimmage~~	~~16 Nov~~
~~Loveland Scrimmage – Loveland HS~~	~~Scrimmage~~	~~19 Nov~~
~~NEOH Aurora League Tournament (Preceded by League Meets)~~	~~League Tournament~~	~~09 Dec~~
~~Van Wert – Van Wert High School~~	~~Qualifier~~	~~16 Dec~~
Cleveland – Kirtland High School	Qualifier	06 Jan
USAF National Museum - Dayton	Qualifier	06 Jan
Benjamin Logan HS - Bellefontaine	Scrimmage	18 Jan
Cincinnati - Walnut Hills High School	Qualifier	27 Jan
Oxford – Miami University, Millet Hall	Qualifier	03 Feb
Kent - Kent State University	Qualifier	03 Feb
Newark – OSU Newark	Qualifier	17 Feb
Ohio Championship – Hobart Arena,Troy, OH	Championship	09 Mar

Volunteer Registration User Guide
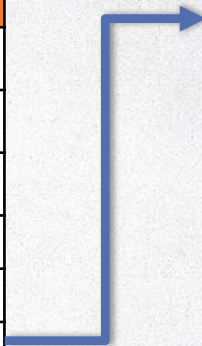
To sign up - login to your FIRST dashboard account at https://www.firstinspires.org/
Click on event volunteering and filter on FIRST Tech Challenge events in Ohio
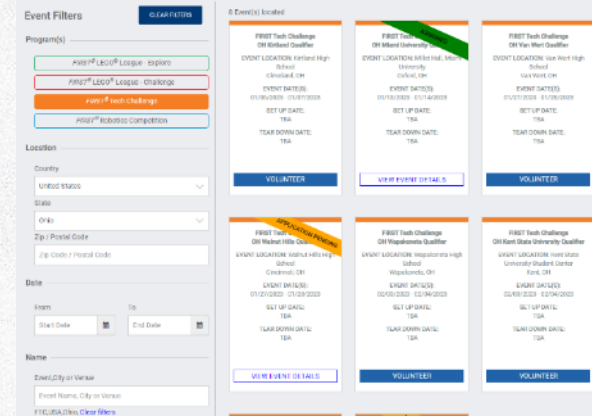
- You may register for as many events as you wish
- You must complete the youth protection screening process before anyone can place you in a tournament (valid 3 years)
- If you want to ref at Championship …you need a Qualifier or League Tournament under your belt
- Please do not volunteer at a tournament if you have a strong affiliation with a team competing at the same event. Exceptions can be made but we strive to avoid any perception of unfairness.
- It is up to the local tournament director or volunteer coordinator to accept your registration and provide you the event details.