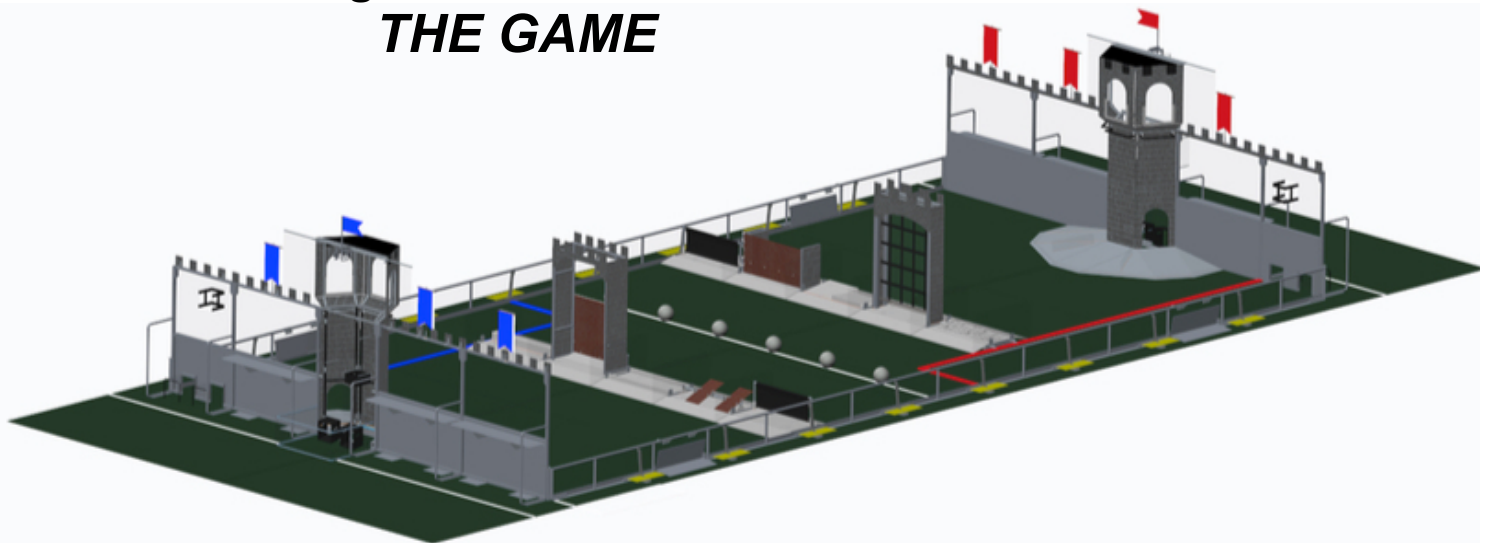


THE GAME



All members of the Drive team must be behind the starting line at the start of and during the Autonomous Period. True False

What is the duration of the autonomous period?

10 seconds 15 seconds 20 seconds 25 seconds 30 seconds

How many boulders start the match on the midline of the field? 3 4 5 6 9 12 15

Maximum number of boulders can be on the field at the start of a match? 3 4 5 6 9 12 15

Each alliance begins a match in control of how many boulders? 3 4 5 6 9 12 15

What is the maximum number of boulders in a castle at any time? 3 4 5 6 9 12 15

Crossing a defense in the AUTONOMOUS period decreases its strength. True False

Defenses cannot be breached during the AUTONOMOUS period. True False

The Spy Bot can start the game with a Boulder and score it in AUTONOMOUS. True False

In the Autonomous Period, How many points for:

Action	Value
Reaching a defense	
Crossing a defense	
Boulder in a low tower goal	
Boulder in a high tower goal	

What are the maximum points available to an alliance in the AUTONOMOUS Period? _____

Explain: _____

Describe autonomous scenarios where an Alliance scores the following points:

- 6 _____
- 14 _____
- 20 _____
- 37 _____
- 45 _____
- 60 _____

What is the duration of the tele-operated period?

- 120 seconds
- 135 seconds
- 150 seconds
- 160 seconds
- 165 seconds

During the tele-operated period, how many points are scored for:

Action	Value
Crossing a defense	
Boulder in a low tower goal	
Boulder in a high tower goal	
Challenging the tower (per Robot)	
Scaling the tower (per Robot)	

Describe 3 ways in which the Human Player can contribute to the score in a match.

- 1. _____
- _____
- 2. _____
- _____
- 3. _____
- _____

Touching an opponents' Robot when it is in their Secret Passage always results in a Technical Foul.

- True
- False

Robots can enter their opponents Secret Passage as long as they don't have control of a boulder.

- True
- False

Once a Tower has been weakened, it can't be strengthened. True False

How many Robots is an alliance allowed to have in their Courtyard? None 1 2 3

When in the match queue, an alliance must select the DEFENSES for the opposing alliance prior to 1 match before 2 matches before 3 matches before

An alliance must agree on which defenses they choose before their match begins. True False
ROBOTS and anything they control, e.g. a BOULDER, may not contact anything outside the FIELD with the exception of brief incursions into the EMBRASURE. True False

All 2016 events will be played with alliances of 3 during the Playoffs. True False

Describe what a team needs to do to get a clarification of a ruling or match score.

ROBOTS may not control more than _____ BOULDER(S) at any time. 1 2 3

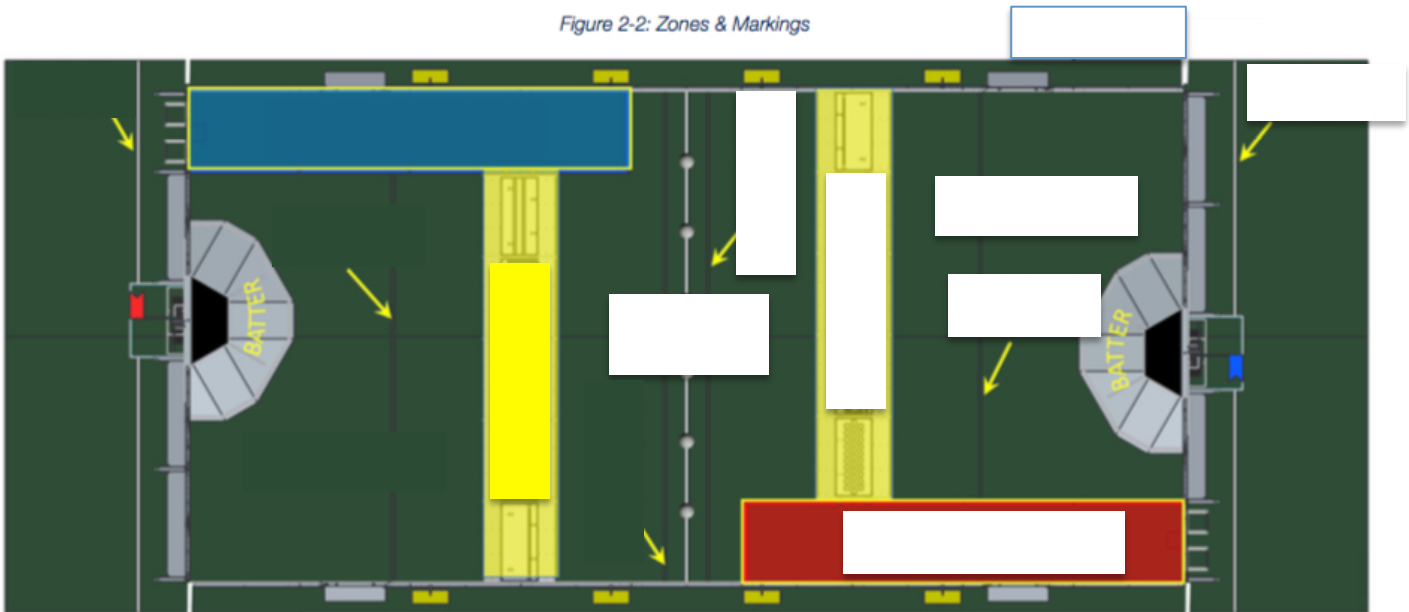
During the final _____ seconds of TELEOP, ROBOTS in their COURTYARD may not contact an opponent ROBOT, regardless of who initiates the contact. 5 sec. 10 sec. 20 sec. 30 sec.

Please fill in the boxes that identify the components of the Playfield.

Zones: COURTYARD NEUTRAL ZONE OUTER WORKS SECRET PASSAGE SPY BOX

Markings: AUTO LINE STARTING LINE ALIGNMENT LINE

Figure 2-2: Zones & Markings



What is the sorting criteria for the rankings?

1st order sort	
2nd order sort	
3rd order sort	
4th order sort	
5th order sort	
6th order sort	

CHOICES: RANKING points CROSSED UNDAMAGED DEFENSE points (AUTO & TELEOP)
 Team NUMBER RANDOM by the FMS SCALE & CHALLENGE points FOUL points
 UNLADEN Swallows AUTONOMOUS points High & Low GOAL points from Auto & Tele-op

If two TEAMS on an alliance receive YELLOW CARDS, the entire ALLIANCE gets a RED CARD.
 True False

When a TEAM receives a RED CARD, they are disqualified from the match and receive no Ranking Points.
 True False

A Robot has fallen over, how much time do they have to right themselves free of interference from the opposing alliance?
 5 seconds 10 seconds 15 seconds 20 seconds

Stronghold Drive Team Test

Name: _____

Who can operate our robot?

- A. Only our teams 2 drivers. B. Any driver on our alliance.
 C. Any precollege student on our alliance. D. Our teams 2 drivers and human player.

ROBOTS must have passed Inspection to play in a scheduled Practice MATCH. True False

Describe the Practice Matches.

What is the "filler line" and how do you get in it?

What is a "Surrogate Robot"?

Point Values

Action	AUTO	TELEOP		Qual.	Playoff
REACHING a DEFENSE				-----	-----
CROSSING an UNDAMAGED DEFENSE				-----	-----
BOULDER in Low TOWER GOAL				-----	-----
BOULDER in High TOWER GOAL				-----	-----
CHALLENGE (per ROBOT)	-----			-----	-----
SCALE (per ROBOT)	-----			-----	-----
BREACH	-----	-----			
CAPTURE	-----	-----			

Indicate which Category each of the following defenses are in (check each appropriate box):

	<i>Cheval de Frise</i>	<i>Drawbridge</i>	<i>Low Bar</i>	<i>Moat</i>	<i>Portcullis</i>	<i>Rampart</i>	<i>Rock Wall</i>	<i>Rough Terrain</i>	<i>Sally Port</i>
A									
B									
C									
D									

During QUALIFICATION MATCHES, if there is a disagreement amongst the teams on an ALLIANCE regarding the specific DEFENSES or their locations on the field, which team has the final say?

Player station 1 Player station 2 Player station 3 ALLIANCE captain.

A robot may not touch the midline boulders in AUTONOMOUS. True False

At the start of the AUTONOMOUS period, a Robot cannot break the plane of the AUTONOMOUS line.

True False

Describe what a team needs to do to get a clarification of a ruling or match score.

You are the spy, what will you do?

How many "Time-Outs" are allowed per team in the Qualifications.

0 1 2 3 4

How many "Time-Outs" are allowed per alliance in the Playoffs.

0 1 2 3 4

How much time does a team have to submit their "Time-Out coupon" to the referee?

30 sec 60 sec 120 sec 180 sec 240 sec

How much time does a time-out allow for?

1 min 2 min 3 min 4 min 5 min 6 min

How much of a time-out is allowed for "back-to-back" matches ?

1 min 2 min 3 min 4 min 5 min 6 min

A team may call their time-out for the opposing alliance to ensure that a match is played fairly.

True False

A second team on an alliance may call an additional time-out to gain more time for their alliance to compete effectively. True False

How many minutes into a "Field Timeout" does a team have to request a backup?

1 min 2 min 3 min 4 min 5 min 6 min

How much time on the "Arena Timer" does an alliance captain have to request a backup team?

1 min 2 min 3 min 4 min 5 min 6 min

During Playoff matches, the Robot is not allowed to be returned to the Pits area. How many additional team members are allowed to assist in the preparation of the Robot for Playoff matches?

0 1 2 3 4

How much time, after the Arena Reset of the preceding match, does an alliance have to submit their "Time-Out" request?

30 seconds 1 minute 2 minutes 3 minutes 4 minutes

An alliance captain may choose to call up a backup team without using their timeout by informing the head referee directly within _____ minutes of the head referee issuing the arena reset signal preceding their match.

30 seconds 1 minute 2 minutes 3 minutes 4 minutes

Light State	Meaning
	FIELD is ready for the MATCH to <u>begin</u> , all personnel should be off the FIELD at this time. Or Tower has been WEAKENED during a MATCH.
	FIELD is safe to enter
	The final twenty (20) seconds of the MATCH has begun
	TOWER has been CAPTURED.

Penalties

Action	Penalty
FOUL	
TECH FOUL	
YELLOW CARD	
RED CARD	

DEFENSE lighting states and meanings

Light State	Meaning
Off	Prior to start of MATCH: _____ _____ During MATCH: _____
Alliance Color (all)	_____
Alliance Color (half)	_____

What is **FMS** an acronym for?

Field Management System
Frank's Message Service

Full Material Score
FIRST Management System

She's a Witch
Field May Start

Playoff MATCH Tiebreakers

Order Sort	Criteria
1 st	
2 nd	
3 rd	
4 th	
5 th	
6 th	
7 th	

FOUL Points Replay the Match Autonomous Points Scale and Challenge Points
 Tower Goal points Crossed Undamaged Defense Points Breach & Capture Points

When placed on the field, each Robot must be:

1. _____
2. _____
3. _____
4. _____

At the top and center of each teams player station, there is an LED with your alliance color.

What does it mean when the light is:

Blinking? _____ Amber? _____ Solid? _____ Off? _____

- Choices:** A) Robot connected during a match B) Robot connected before a match
 C) Robot has lost connectivity to the FMS D) The Emergency Stop Button has been pressed
 E) The FMS is preset for a match F) A foul has been called against your team

Describe 6 actions that will result in a FOUL (there are 28 per the manual):

Describe 6 actions that will result in a RED CARD and explain what happens to a team that receives a RED CARD. (There are 9 listed in the manual)

Explain what happens to a team that receives a RED CARD.

Stronghold Robot Design Test

Name: _____

The total cost of all items on the ROBOT shall not exceed? (USD = US Dollars)

\$2,500 USD \$3,000 USD \$4,000 USD \$5,000 USD \$10,000 USD

The total length of the FRAME PERIMETER sides must not exceed _____ in.

100 110 120 130 140 150 160

The total length of the FRAME PERIMETER sides includes the bumpers.

True False

The total height of the Robot at the start of a match must not exceed _____ inches

36 42 48 54 60 68 72

COTS stands for?

Consumer Operational Transportation Standards
Commercial Off The Shelf

Custom Original Technology Solution
Chief Organization Testing Safety

No individual, non-KOP item shall have a value that exceeds? (USD = US Dollars)

\$250 USD \$400 USD \$500 USD \$1000 USD

BOM stands for

Bill Of Materials Base Operation Metrics Built Original Mechanism Barrier Of Motion

At an Event, Teams may have access to a static set of FABRICATED ITEMS known as a WITHHOLDING ALLOWANCE that shall not exceed.

15 lbs 20 lbs 25 lbs 30 lbs 45 lbs

Which items qualify as being part of the KOP.

Kickoff Kit FIRST Choice Objects obtained via PDV All of the these

“Working” air pressure on the ROBOT must be no greater than.

40 psi 60 psi 100 psi 120 psi

Which of the following are considered pneumatics devices?

a device that creates a vacuum pneumatic tubing air-filled (pneumatic) wheels none of the these.

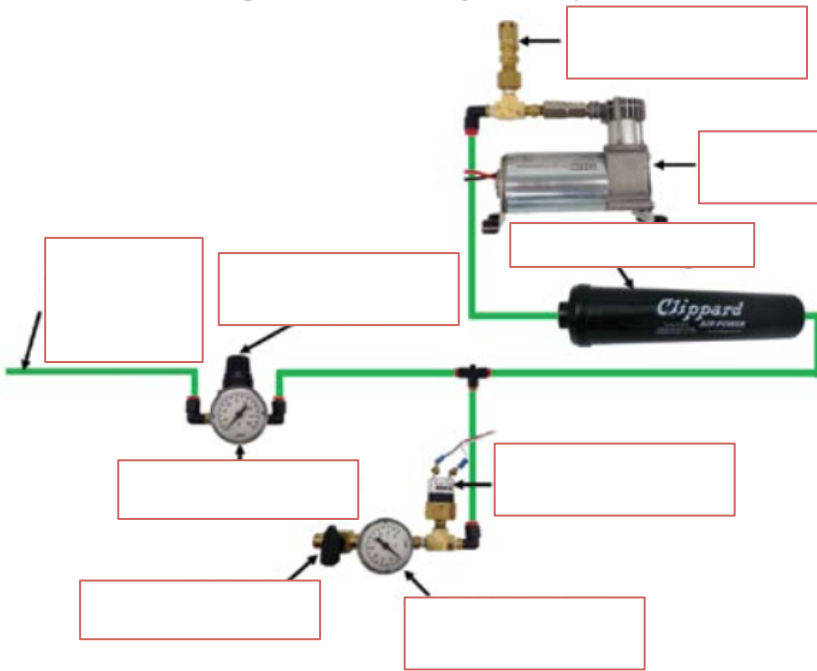
Team Numbers must be displayed on the ROBOT with numbers that are at least _____ inches high and at least _____ inch in stroke width.

How many amps can the 120 VAC power supply at the operator station safely handle? _____

How many team number displays must be on a ROBOT? _____

What documentation should be brought to your ROBOT inspection? _____

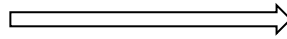
Figure 4-7: Pneumatic System Setup



- Pressure Relief Valve
- “Stored” Pressure Gauge
- “Working” Pressure Gauge
- Compressor
- Pressure Switch
- Air Storage Tank
- Pressure Vent Plug
- “Working” Pressure Regulator
- Air to Working Components

Fill in the Boxes above using the list of Labels to the right.

What is this thing called? _____



What does it do? _____

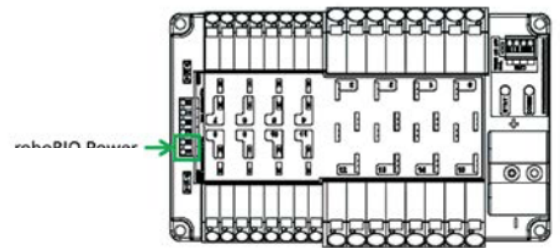
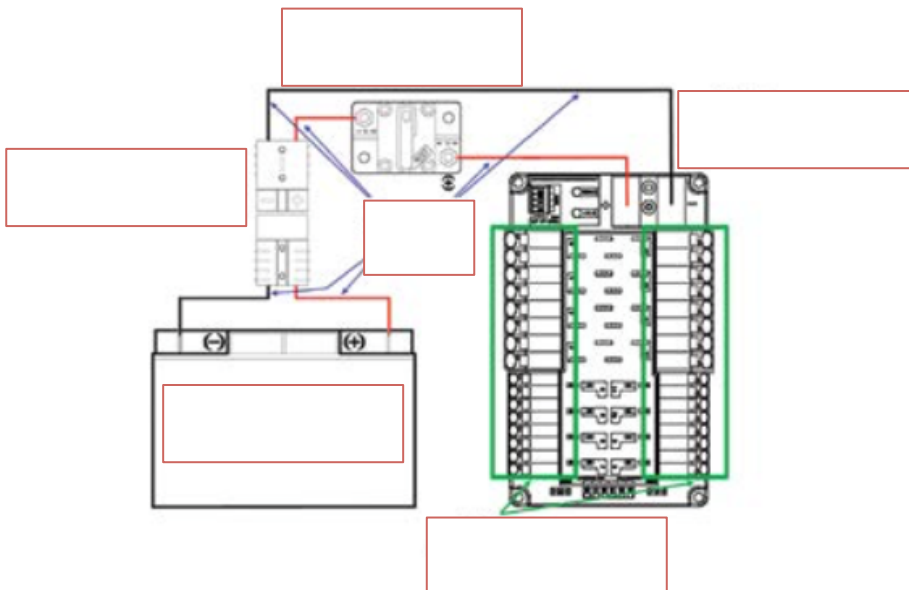


Figure 4-2: Main Power Distribution



- 120-Amp Circuit Breaker
- Power Distribution Board
- 12 VDC Robot Battery
- APP Connectors
- Load Terminals
- What is the minimum gauge wire allowed? _____

Fill in the Boxes above using the list of Labels to the right.