

2019 Skills Ontario Robotics Questions and Answers

This document presents the Questions asked by Ontario Teams and the Answers provided.

The process is:

- Answers are sent directly to the Team asking the question.
- ALL Questions asked, and ALL Answers provided are shared with ALL Teams through the posting of this document to www.SkillsOntario.com
- It is a Team Responsibility to periodically check the web site for updates to this document.

Questions One, Two and Three

Hi Bob,

I have a few questions about the autonomous robot,

1. Is there a maximum size for the autonomous robot?
2. Does the autonomous robot have to be built on site?
3. Can the autonomous task be completed by multiple robots?

Thank you!

Carl Monfils,EAO

Enseignant en éducation technologique 9-12

Coordonnateur de la concentration design

Collège catholique Mer Bleue

Answer One: NOT clearly defining a Maximum Autonomous Robot Size was an oversight. The expectation was the robots would essentially fit onto the Black Starting Squares.

It states in the scope on page 25

“Robots are expected to be Centered on the Black Square, BUT they can overhang the perimeter of the Black Square if the Robot’s Overall Footprint is greater than 12 by 12 inches.”

We are expecting mobile robot solutions Centered on the Black Square.

NOTE: The following text has been added to the scope on page 25 to provide clarity regarding the allowed overhang.

The Maximum Allowed Overhang is 2 inches on all sides of the Black Square making 16 by 16 inches the Maximum Robot Footprint for a Team’s entry.

Answer Two: It is expected that the Autonomous Robots will be built at school and brought to the competition space fully assembled.

Answer Three: Teams may develop entries that involve multiple autonomous robots.

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Question Four

From: Xander Plante

Sent: September 18, 2018 2:14 PM

To: bobtone@rogers.com

Subject: On Clarification Of Skills Ontario Rules

Due to unclear rules about what balls count towards your score I had the following question; If the enemy was to fire a ball onto our side of the court, would you be able to fire said balls back into the opponents Net's or side of court

This was the rule I was confused on:

“points will be awarded for each ball in the opponents net”

Answer Four: YES, a Team can pick up opponent's balls from their own court floor and fire them back either into the opponent's nets or simply onto the opponent's floor.

Questions Five, Six, Seven, Eight and Nine

From: Brant Churchill

Sent: September 18, 2018 6:04 PM

To: Bob Tone <bobtone@rogers.com>

Subject: New skills canada project

Bob I was just looking over the new project (which looks like lots of fun!) and I have a few questions on construction of the arena.

1- On the Center wall ammo box what is the angle on item 2 (looks 45 degrees but I wanted to make sure)

2- Citadel hill. Is there any reason not to just use full sheets of plywood for every level? If there is a reason any chance you have a level by level view of how you want those pieces together instead of the exploded view as I am not sure what level each piece is for.

3- What is Net Handle Tape?

4- How are the "backboards" behind the nets suppose to be secured? are they on top of the wall or outside the wall?

5- The main picture also has side walls connecting the two half's of the arena, how big and what are these.

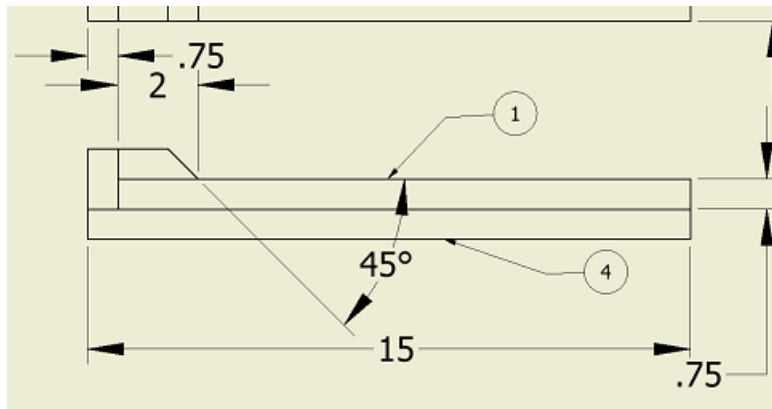
Thanks

Brant

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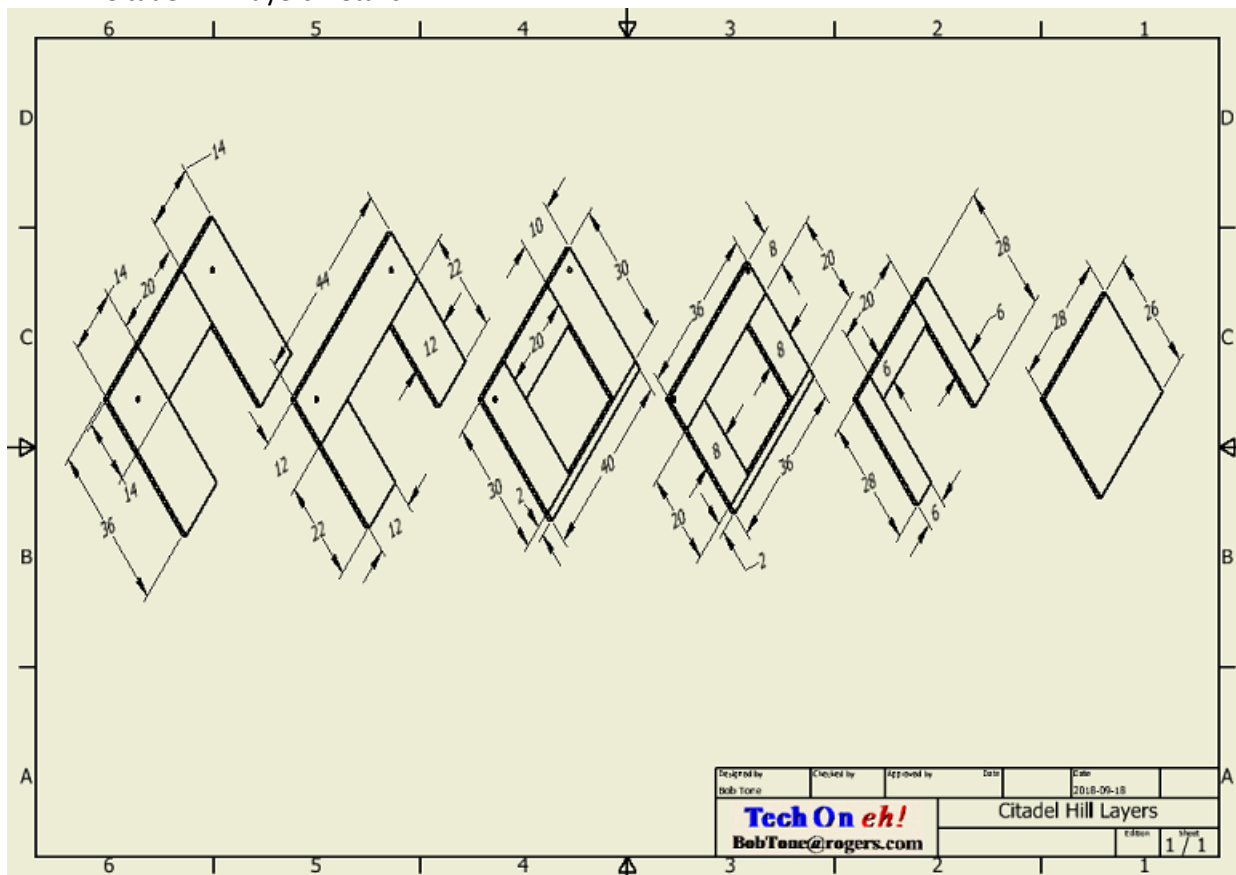
Answer Five:

The angle is 45 degrees.



Answer Six:

I didn't use full sheets given I thought it would lead to a lot of wasted plywood. Here's the Citadel Hill Layers Details.



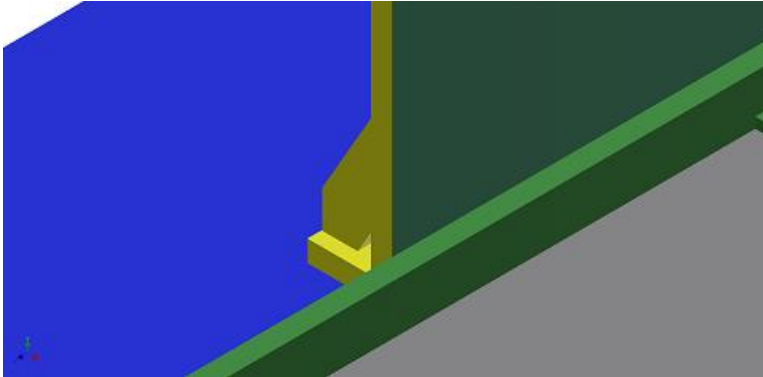
Answer Seven:

The Net Handle Tape would be standard Duck Tape to hold the handle against the L Bracket and prevent the net from rotating.

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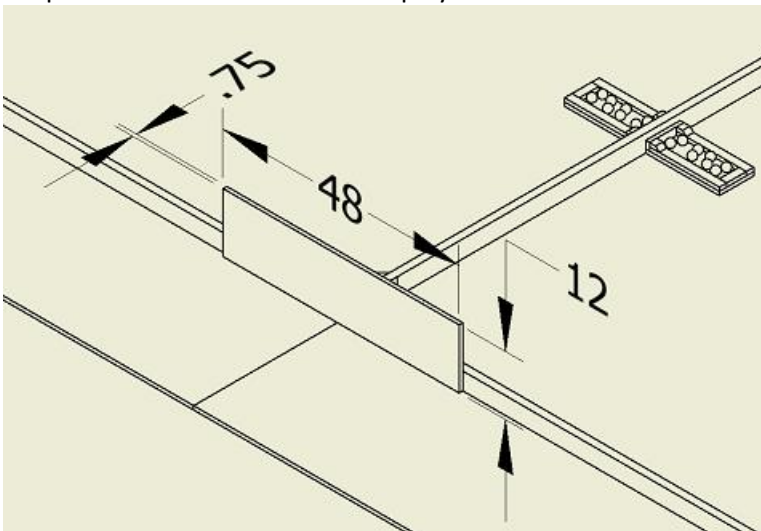
Answer Eight:

The Backboard is attached to the Outside of the court perimeter boards and its' support element is placed against the back side of the backboard.



Answer Nine:

The side wall dimensions are shown in the image below. These small walls are intended to help keep the balls in the court and in play.



Question Ten:

From: Matthew Bonisteel
Sent: September 21, 2018 12:00 PM
To: bobtone@rogers.com
Subject: Re: Robotics Scope Question

Hello Bob,

Can we rotate the pipe (holder) with the net inside of it moving independently or freely?

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Answer Ten:

Hello Matt

The scope states the pipe holding the net must be fixed in place and the National Technical Committee has ruled that means the pipe cannot be mounted in a manner that allows it to rotate.

Question Eleven:

From: Derick Phillips

Subject: Question

Good day Bob,

We here at NPS in Angus have a question:

We read that we could have an autonomous element during the tele-operated game. If we used this element, does it need to be fitted with a net? And if our element moved about the court, does it have to go atop the citadel at the end of the game to count for the 10 marks?

Thanks Bob,

Derick Phillips

Science & Technology Teacher, NPSS

Mentor, Skills Canada Robotics

Answer Eleven:

Hi Derek

If you have an autonomous element in your solution:

- It does NOT need to be fitted with an 'On the Robot Net'.
- It must be ON Top of your team's Citadel Hill at the start of a game.
- It must be positioned in a manner that enables your overall entry to be in compliance with the maximum start of the game entry size limitation
- It does NOT need to return to the Top of your team's Citadel Hill by the end of the game **IF it does not have a net**
- **IF it does have a net** then it must return to the Top of your Citadel Hill in order for your team to qualify for the end of the game 10 points to be awarded.

Bob

Question Twelve:

Hi,

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I've read the new scope and it looks like it will generate a highly engaging competition. However, a few questions came up.

Please define the 'back' of the robot. The scope states that "the net holder must be positioned at the midpoint along the back side of the robot". How is the front side defined? Our team has mechanisms on both sides perpendicular to the drive direction most years so the robot doesn't really have a front.

Another confusion regarding the placement of the net holder is what constitutes the frame of the robot: some designs may include separate frames which may face an independent direction than the wheels are pointing. In that case, is the net to be attached to the frame with the wheels on it or the other one?

Thanks,

Lucas Fink

Response Twelve:

Hi Lucas

The technical committee strives to leave the design options as open as possible for competitors.

It will be a team responsibility to identify / declare what they deem to be the 'Back of their Robot' if it is not obvious when looking at the robot what is the back and what is the front of their robot.

Regarding a complex design with separate frame sections potentially facing in different directions the net holder needs to be attached to a frame element that does not itself move.

Example: If there is a base frame element with a secondary frame mounted on top of it with the potential for this secondary frame element to rotate then the net holder could not be attached to this rotating frame element.

Bob

Question Thirteen:

From: Quinn Parrott

Subject: Questions about the robotics scope

Dear Mr Tone

I received the new scope and the game looks like lots of fun. However, a few questions remain regarding some specifics on the rules.

1. If the Entry has a single tele-operated robot and one autonomous robot, does a net need to be placed on the autonomous robot?

Response: No Net required on the autonomous robot element.

2. Is an Entry disqualified if the net, through no intentional effort of the contestants, gets caught on a part of the robot, preventing its rotation?

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Response: Robots will NOT be disqualified based on 'unintentional snagging of the net' however teams with repeat net snagging experiences will be asked to modify their design to eliminate the net snagging issue.

3. Please clearly define what constitutes a tele-operated robot for the purposes of the number of required nets. For example, does a robot with two frames which are loosely physically attached together, and which has two drive systems need one net or two?

Response: Two connected elements with each having their own independent drive system and controller will be considered as being two separate robots and both would require a net mounted on them. If two controllers are managing elements of a robot (Controller one managing the drive system and controller two managing the ball loader / shooter) then this would be considered a single robot.

4. Can any part of the Entry intersect the vertical plane formed by the sides of the ammo box on top of the citadel at the start of the match?

Response: There are no restrictions related to part of a robot intersecting the vertical plane formed by the sides of the ammo box.

Thanks, Quinn

Question Fourteen:

From: Jaret Brown

Subject: Square game pieces

For the autonomous. What is the material it is made of. The 3/4 inch plywood. Not a 8 foot 4 x4 cut into cubes. Is it hollow or solid in the middle. Thanks

Response Fourteen:

Hi Jaret

The Autonomous Game Blocks will be cut-offs from an 8 ft. by 3.5 by 3.5 in. post.

Bob

Question Fifteen:

From: Mario Blouin

Subject: Autonomous Melamine joint

Hi Bob

What are you going to use to join the 2 sheets of melamine?

Response Fifteen:

Hi Mario

I am planning to use White Duck Tape along the seam between the Melamine Sheets.

Bob

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Question Sixteen:

From: Joel Giesbrecht

Subject: Ball holding area

Hello

I was looking at the ball holders in the course on page 13. I only saw the dimensions written on the side I was wondering if you would have a dimensioned drawing of the ball holder so I know our group builds it properly.

Thanks,

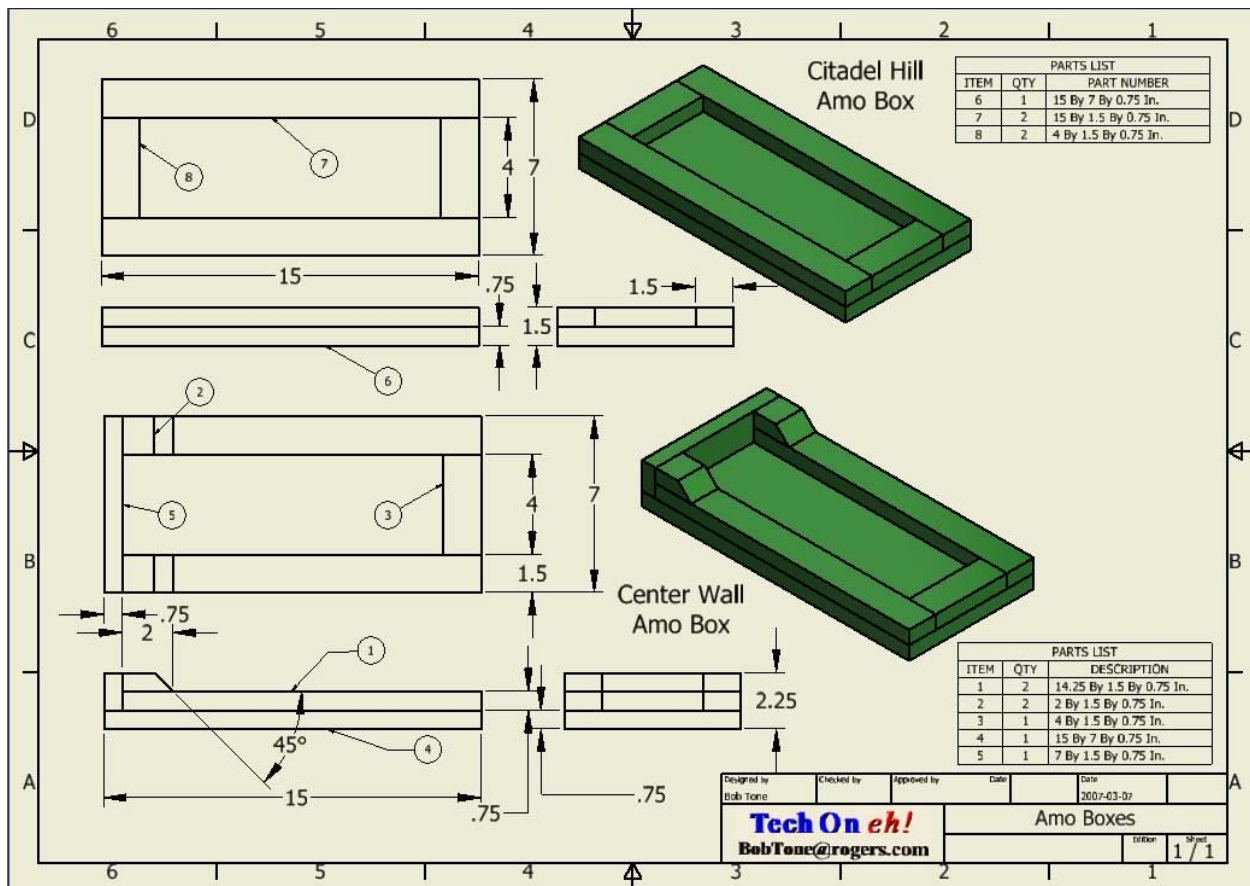
Joel Giesbrecht

Response Sixteen:

Hi Joel

I hope this has the info you are seeking.

Bob



Question Seventeen:

From: Dwight Robinson

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Subject: Questions /re Dueling Citadels

A couple of questions:

1. We are hoping for clarification on the time length for a single game for both the autonomous and teleoperated aspects of the competition
2. For the teleoperated competition, how many on the robot nets does each team have. For example, if you have two teleoperated robots does each robot have one net each, or does only one robot have a net? If you have only one teleoperated robot does it only have one net? If you have autonomous components do they require a net?
3. For the autonomous competition; your robot successfully picks up and retains control of a block for the two possession points. Later in the contest the robot drops the block on the floor in an unsuccessful attempt to place it in the target square (or perhaps drops it trying to pick up a second block). Does the team loose the initial possession points or does it retain them?

Thanks. Dwight Robinson, KHS

Dwight Robinson, Keswick High School

Response Seventeen:

Hi Dwight

Here are the answers to your questions.

- 1) Point 17.6 on page 17: Tournament Games will last 3 minutes (Note: This applies to the Teleoperation Games)
 - a. Autonomous evaluation runs will last 10 minutes (Item 7 on page 26)
- 2) If your entry has two teleoperated robots then they both need to have an 'On the robot net'. If you have an autonomous robot as part of your teleoperation overall entry then (a) the autonomous robot does not need to have a net.
- 3) Autonomous games will be marked in progress so a team will keep the points for taking possession of an object even if they drop it later.

Bob

Question Eighteen:

From: rokc rock

Subject: On Clarification Of Skills Ontario Rules

Hi Bob,

When the scope says "the opponent's 'On the Citadel' nets." in the scoring summary, does it refer to the stationary net in our team's exclusive use space?

Thank you!

Response Eighteen:

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YES.

Question Nineteen:

From: Katelynn Buchanan

Subject: Robotics question

Hi Bob,

We're in the midst of testing ideas and have run into an issue. Using the specified balls and citadel hill net, the balls are occasionally going through the holes in the net. Our concern is that, during competition, our balls will go through the net and then count as being on the court ground.

Thanks,

Katelynn Buchanan

Response Nineteen:

If the Balls passing through the nets becomes an issue we may need to do something along the lines of using thread and a needle to add some strands to the mesh to reduce the potential for balls to pass through the nets.

Question Twenty:

From: Walker Brady

Subject: Skills Canada Robotics Competition rule clarification

Hello Bob,

Walker Brady and Kyle Abbott calling. We are two hopeful members of the FSJ robotics team and need a quick clarification on rules posted for the competition.

It is not mentioned in the rules listed for the Trout Net what angle you are allowed to place the base of the Net if meets all the other criteria, and if it the rest of the net needs to be above 8 inches above the Court.

Our current draft for our Robot has the base of the Net at a hinge which cause the rest of the net to be tilted back temporarily as the robot loads and aims. This does not seem to break any rules that we can find.

Thanks, Walker & Kyle.

Response Twenty:

I checked the scope and the relevant text is on page 9.

The scope says on page 9.

Teams mount a Trout Net on their robot.

- In a 5 inch 1.5 Dia. Vertical Abs Pipe that has an End Cap closing the bottom of the pipe 8 in. above the floor

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Given the Pipe holding the net needs to be vertical and be 8 in. above the floor (I interpret this to mean the pipe is in a fixed in position although the scope does not use the actual word fixed) so no hinge mounted pipes allowed.

Bob

Question Twenty-One:

From: Kevin Chiasson

Sent: October 17, 2018 5:52 PM

Subject: new question

I have a quick question about the challenge this year, moreso for clarification than anything...when we are getting the balls from the ammo box on the top of the hill, it says the robots must be on top of the hill. Does that mean the entire robot must be on top of the hill (the top piece), or does it mean the robot's center must be on top, or just on the hill, or what exactly. Would it be ok if the robot's wheels were on the 2nd or 3rd step from the top, or how exactly are we monitoring that...Just want to get the clarification before we get too far into the plans!

Response Twenty-One:

Hi Kevin

On page 5 the scope says:

“Robots MUST be on top of their own team’s Citadel Hill when they are retrieving balls from the On Top of their Citadel Hill Ball Box.”

The scope text is clear the robot must be on the top of the hill.

This means all of the robot’s wheels / tracks must be on the top of the hill.

It is not a concern if some of a Robot’s frame elements extend out into the air space beyond the perimeter of the hill’s top plate.

Bob

Question Twenty-Two:

From: Jaret Brown

Subject: skills 2019

From Eastwood collegiate,

We need a more accurate description of the rules surrounding "fully/ physically blocking the nets.

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We understand that the net needs to be able to free rotate but want specific parameters around blocking the nets. A diagram with examples would really help.

Also could a mechanism block the net for short periods of time? And what would be a short period of time? Or during a specific action

Thanks

Jaret Brown

Eastwood Collegiate Institute

FIRST Robotics Lead Mentor

Response Twenty-Two:

Hi Jaret

Teams are NOT allowed to actively block access by your opponent to your on the robot net.

The expectation is Teams will not include in their robot design features (such as a net blocking element) intended to interfere with your opponent's ability to complete the task (In this case shoot a ball into the net on your robot').

A related issue is: Can a Team exercise a defensive strategy?

The answer is **YES**.

It is expected and acceptable for Teams to use their robot driver's skill and their robot's mobility capabilities to keep their on the robot net in a position that makes it either not available or less available to their opponent.

Bob

Question Twenty-Three:

From: Ivan Conrad

Subject: Robotics Question: Skills Ontario

Hello Bob,

On p. 23 I can see reference to the robot only carrying one block:

Take possession of each Target Block (one at a time)

Does this mean that the autonomous robot can only be in possession of one block at a time at any time during its run? Can the robot pick up one block, then go get another block, then go deliver them?

Thanks

Ivan Conrad

Teacher

Lasalle Secondary School

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Response Twenty-Three:

Hi Ivan

Robots can only be In possession of 1 Block at a time.

Possession meaning in the gripper or on the robot.

Given you have two blocks being delivered on the same coloured square, it is expected because of the size that they will eventually touch one another, especially when you move them in position. However, the mechanism delivering the object should only be holding one block at a time.

Bob

Question Twenty-Four:

From: Carmen Serpe (Michael Power/St Joseph)

Subject: Nets on the robots

Hi Bob,

If we have two teleoperated robots, do they both have to have nets on them?

Also, do autonomous robots need nets on them?

What if you have a combination of the two?

Thanks in advance,

Carmen

Response Twenty-Four:

Hi Carmen

If you have two teleoperated robots in your citadel hill entry then each of these robots must have a net mounted on the robot.

If you have an autonomous robot as an element of your Citadel Hill Entry then this autonomous robot does not need to have a net on it.

However, the autonomous robot element must start the game on top of your citadel hill but it does not need to return to the top of your citadel hill in order for your team to qualify for the end of game 10 points bonus.

Bob

Question Twenty-Five:

From: manatee _11

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Subject: Robotics skills question

I was looking through the controlled part of the scope and I didn't see anything against dumping the nets that have balls in them is that aloud or no?

If yes can you dump then on the opposing teams side?

Response Twenty-Five:

Here is the response to your questions.

- 1) Teams cannot unload their net onto their opponent's space.
- 2) Teams can gather balls from the open floor in their area and deliver these balls onto the open floor of their opponent's area.

Bob

Question Twenty-Six:

From: manatee _11

Subject: Re: Robotics skills question

Are you allowed to dump the nets tho? I'm still a little confused on that.

Response Twenty-Six:

You are not allowed to dump the nets at any time.

The reason is that during any effort to deliberately dump balls from the net on your robot would always by default need to be taking control of either the complete net or at least the mesh netting putting your robot in a not in compliance with the requirement for the net to be free to rotate during game play situation.

The same rationale means you cannot dump the Stationary Nets mounted on your Citadel Hill.

Bob

Question Twenty-Seven:

From: manatee _11

Subject: Re: Robotics skills question

Do the nets rotate at a fixed speed.

Response Twenty-Seven:

The On the Robot Nets rotate on a random basis as a result of the robot's movement. You cannot assert any direct control over the On the Robot Nets to control the speed or direction of the rotation.

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Question Twenty-Eight:

From: Joe S

Subject: OTSC Robotics 2018 - Question

Hello Bob

We had a couple questions:

1. What material are the blocks for the autonomous portion made of?
2. Are the blocks hollow or solid

Thanks

Joe S.

Response Twenty-Eight:

I am planning to use cut offs from a 4 by 4 fence post so they will be solid.

Bob

Question Twenty-Nine:

From: Carl Monfilis

Subject: Golf Balls

Hi Bob,

I find that the density of the Balls (pride sports) proposed in the scope are inconsistent. Can we use other brands as long as they have the good diameter and colour?

Can i use these ones?

Thank you,

https://www.amazon.ca/Orlimar-Golf-Practice-Balls-18-Pack/dp/B00RHK9LZG/ref=mp_s_a_1_2?ie=UTF8&qid=1544499431&sr=8-2&pi=AC_SX236_SY340_FMwebp_QL65&keywords=orlimar+golf+practice+balls&dpPI=1&dpID=61UyD-kVPnL&ref=plSrch

Response Twenty-Nine:

Regarding the possibility of using different balls the answer must be no. I understand your concerns about the other balls being inconsistent in physical characteristics but if we allow teams to use alternate

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balls that have a more consistent set of physical characteristics then it will likely be construed as allowing them to 'Buy an Advantage'.

Bob

Question Thirty:

From: Thomas Selwyn

Sent: December 11, 2018 2:51 PM

Subject: Robotics Scope 2019

Hey,

I have a few questions about the competition,

For the tele operated component of Citadel Hill, all 3 robots have to fit into a combined 4 cubic feet?

Does the height of any support for the net count towards our overall size? (Like a 3d printed pipe tower to hold it up)

For the autonomous course, does the robot also have to fit into the same 4 cubic ft as the tele operated or is it a different 4 cubic ft? (Basically, are the size limits linked between both courses or are they separate)

We were thinking they are separate due to it saying you have a 14x14 inch starting position and you can also have a 2" overhang...

But we just wanted clarification.

Due to this only saying length and width, I'm assuming no height restriction on this?

Thanks,

Thomas

Response Thirty:

Hello Thomas

Regarding the size of a team's entry in the teleoperated 'Citadel Hill' competition the restriction is the complete teleoperation game entry must fit into the 4 cubic feet size limitation at the start of a game.

There is no restriction on the composition of the teleoperation game overall entry and it could involve:

- 1) A single teleoperated robot
- 2) A pair of teleoperated robots
- 3) A single or pair of teleoperated robots supported by 1 or 2 autonomous robots

A team's entry in the autonomous game is completely separate from the team's teleoperation entry.

There is no height restriction on the autonomous robot entry.

Regarding the height of the on the robot net holder on page 15 the scope provides a very clear description of the expectations related to the net holder.

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Yes, you can use a 3D Printed frame to hold the ABS Pipe but you cannot 3D Print a replacement for the ABS Pipe.

Frame elements exclusively used to support the ABS Pipe Net Holder do not count in calculating the robot's overall size.

Bob

Question Thirty-One:

From: ARYAN CHAWLA

Sent: December 16, 2018 12:10 PM

Subject: Question Regarding Skills Ontario Secondary Competition

Dear Bob Tone,

Our team is participating in the secondary skills ontario competition, for dueling citadels, and we have a question regarding the autonomous challenge. It would be great an answer from you, so we can create a proper code to succeed in this challenge.

For us to properly navigate through the course, we must calibrate our robot's gyroscope, relative to a point on the field. However, basing it on the objects on the field can affect it's calibration as it may not be 100% accurate. As our solution, when we are on the field, before starting, we would like to place our robot against the wall, as it is a straight surface, in order to accurately calibrate our robot. After that, we will place our robot on the black square. We would like to know whether we can do this or not.

Response Thirty-One:

Teams are able to develop their own procedures for positioning their robot on the Black Square ready to start the game.

Teams can place their robot directly on the Black Square by hand and declare it ready to start.

Teams can utilize a prior to the start of the game robot program sequence such as the one you are suggesting related to calibrating the robot's gyroscope by having the robot itself reference the perimeter walls then either (a) the robot moving itself onto the Starting Black Square or (b) the robot being moved onto the Starting Black Square by a competitor after the pre-start-of-the-game sequence has been completed.

Bob

Question Thirty-Two:

From: ARYAN CHAWLA

Sent: January 13, 2019 9:56 AM

Subject: Skills Ontario "Dueling Citadels" Competition

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Hello,

Our group has one more question regarding the autonomous challenge. In the rule book, it never bluntly states the time the robot has to complete the challenge, but we did read somewhere, that a task run takes ten minutes, we are wondering how long the robot has to complete the autonomous challenge.

Thanks,

Aryan

Response Thirty-Two:

Hello Aryan

Autonomous robots will have a maximum of 10 minutes to complete the game task entirely.

Bob

Question Thirty-Three:

From: tony piechota

Sent: January 14, 2019 4:45 PM

Subject: Robotics Team of 4 Question

Hi Bob, For each of the 6 autonomous layouts will the colours of the blocks be exactly as shown in the Scope document or will the colour positioning be random? I am asking this because it has an effect on whether or not colour sensing technology will be required or not.

Thanks, Tony Piechota

Stouffville District High School

Response Thirty-Three:

Hi Tony

I anticipate we will use two of the six autonomous layouts exactly as shown in the scope document.

The layouts used each of the two days will be determined by a roll of a single dice with the restriction that a different layout must be used each day.

Bob

Question Thirty-Four:

From: Ethan Zelmer

Sent: January 18, 2019 1:43 PM

Subject: Size requirement clarifications, Skills Ontario 2019

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Hello there,

I was wondering if the size requirement of the Robotics competition, 4 cubic feet, is to be applied solely to the manual portion of the activity, or to both the manual and the autonomous competitions. Do both the manual and autonomous robots have to add up to 4 cubic feet? Can we have a 4 cubic feet manual robot and a 4 cubic feet autonomous robot?

Thank you for your time,

Ethan Zelmer

Response Thirty-Four:

Hello Ethan

The 4 cubic feet size restriction applies to only the teams entry in the Citadel Hill Game.

This entry can involve a combination of teleoperated and autonomous robots that in combination are positioned so that they fit the 4 cubic feet size restriction at the start of a Citadel Hill Game.

The autonomous game 'Color Correct Delivery' has its' own size limitation.

The autonomous robot must fit onto the black square with the Maximum Allowed Overhang being 2 inches on all sides of the Black Square making 16 by 16 inches the Maximum Robot Footprint for a Team's entry.

Bob

Question Thirty-Five:

From: Joel Giesbrecht
Sent: January 18, 2019 3:43 PM
Subject: Robot nets

Hi Bob my group has two questions about the citadel nets. We have noticed that when firing that the balls some of them tend to go through the net sometimes. Also will the nets on the citadel hills be fixed in position?

Thanks,
Joel Giesbrecht

Response Thirty-Five:

Hi Joel

We are aware of this problem and are experimenting with some solutions. We will ensure referees award the appropriate points for balls that enter the net rim but fall out through the net's mesh.

The Citadel Nets are fixed in position and do not rotate.

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Bob

Question Thirty-Six:

From: Robinson, Dwight

Sent: January 20, 2019 9:11 PM

Subject: Autonomous Posts

Hi. Quick Question about the 4x4 post material used to make the blocks for the autonomous competition. The only 4x4 posts the local lumber store carries are red cedar and pressure treated wood. There is quite a difference between the two materials in texture, density, and colour so I want to ensure the team practices with the same material as in the competition.

Thanks

Dwight Robinson, Keswick High School

Response Thirty-Six:

Hi Dwight

I expect to use standard pressure treated fence posts for the autonomoust court elements.

Bob

Question Thirty-Seven:

From: Brant Churchill

Sent: January 23, 2019 4:46 PM

Subject: Skills Canada

For the trout net mount on the back of robot. It says centered and 8 inches up. Can a part of the robot be behind the trout net holder (still being able to rotate 360) also what is the tolerance on the 8 inches of height and centered.

Brant Churchill

Physics/Robotics Teacher

NPSS

Response Thirty-Seven:

Hi Brant

The only reference to a tolerance value in the document is the + or - ½ inch with reference to the court layout so I guess we will need to apply this same tolerance to the net mounting but I hope teams are all able to hit the 8 inch mark.

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The net holder is supposed to be at the back of the robot. If there are elements of the robot not related to securing the net holder past the net holder pipe then these elements will be used to reference the robot size.

Bob

Question Thirty-Eight:

From: Haashim Rehan <1rehanhaa@hdsb.ca>

Sent: February 18, 2019 12:23 AM

To: bobtone@rogers.com

Subject: Footprint of Autonomous Robot

Hi Bob,

I just wanted to clarify the footprint of the overall autonomous robot. On page 25 it says,

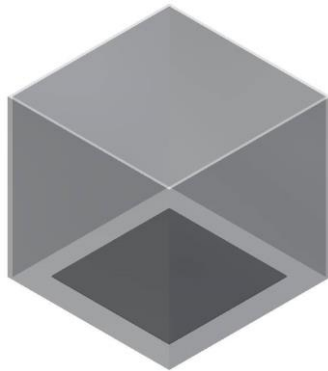
Robots are expected to be Centered on the Black Square, BUT they can overhang the perimeter of the Black Square if the Robot's Overall Footprint is greater than 12 by 12 inches. The Maximum Allowed Overhang is 2 inches on all sides of the Black Square making 16 by 16 inches the Maximum Robot Footprint for a Team's entry

Is footprint of the robot the frame perimeter or does it include mechanisms sticking out. Would a gripper extending out more than the 16in break this rule?

Thanks,

Haashim Rehan

Response Thirty-Eight:



Hello Haashim

The complete robot needs to fit into the 16 by 16 in. square at the start of the game but can expand beyond this size restriction once the game starts.

The image below shows how the 16 In. Square functions as a virtual column defining the overall space available for your autonomous robot.

Bob

Question Thirty-Nine:

From: TheCoaler

Sent: February 26, 2019 5:45 PM

Subject: Skills Ontario : 3 Questions

Hello, I have 3 questions about this year's autonomous robotics challenge.

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1. Is the field at the competition a random one out of the six configurations shown? Or do you have to be able to do all of them? Or do you get to choose which configuration you want to run?
2. Is there a robot height limit (as there is a 16x16 inch base size, but no height was stated), and if there is, what is it?
3. Is the robot allowed to extend outside of the stated 16x16 size limit and whatever height limit there may be once the timer has started?

Thank you for your time.

Response Thirty-Nine:

Hello

Only two of the six autonomous layouts will be used. The choice of layout will be done by the roll of a die at the start of each competition day.

Note: The court layout will be different each day. If the die comes up with the same number on day 2 as day 1 then we will roll again until the roll of the die results in a new number.

There is no height restriction on autonomous robots.

The robots must be in compliance with the 16 by 16 in. size limitation at the start of a task run but are allowed to increase in size once the task run timer has started.

Bob

Question Forty:

From: Haashim Rehan

Sent: March 1, 2019 12:21 PM

Subject: Autonomous robot Field Question

Hi Bob,

I wanted to clarify the game pieces fixed firmly on the field. As per my understanding, the colored Bristol boards are fixed firmly to the field. Are the target block holders also fixed to the field or each other? Or are they just placed on the field loose and potentially be knocked down by the autonomous robot submissions?

Thanks,

Haashim Rehan

Response Forty:

The colored squares will be fixed in place. The block holders will be set in place and subject to moving if a robot hits them.

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Question Forty-One:

From: myc

Sent: March 1, 2019 4:39 PM

Subject: SKILLS ONTARIO COMPETITION QUESTION

May I know how much weight is the 3.5x3.5 cube,thanks

Response Forty-One:

I do not know how much the 3.5 X 3.5 cubes will weigh.

I am not at a school and will not see any blocks until I am at a competition site.

I suggest you weigh the blocks you have made and then calculate the average weight.

The blocks will be solid likely cut-offs from a 4 by Pressure Treated Fence Post.

Bob

Question Forty-Two:

From: ARYAN CHAWLA

Sent: March 2, 2019 5:23 PM

Cc: Bob Tone

Subject: Questions for Upcoming Robotics Competition

Hello,

Our team from Earl of March Secondary School is preparing for upcoming robotics competition, and we had some questions regarding the competition. It is our first year participating in the competition, so some clarification would be deeply appreciated. There are a few so I will list them below:

- What are the criteria for the wiring diagram?
- Are there any conventions that we are supposed to follow for the wiring diagram?
- Does everyone on the team have to prepare a job interview?
- What do we put in the resumes (expectations and criteria)? Usually in resumes, applicants put their experience and education, but none of us have work experience or university degrees, so what should we write?
- What classifies as a robot stand? What are the criteria for a valid robot stand?
- For the wiring diagram, should it be drawn as a circuit diagram, or the port mapping of motors and sensors?
- What does the pressure system circuit diagram look like, can we see a sample, and is it needed for EV3s?

Thanks,

Aryan

Response Forty-Two:

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Hello Aryan

First, welcome to the Skills Ontario Robotics Competition.

Regarding your questions.

With respect to the wiring diagram the expectation is that it clearly displays the competitors understand the wiring / pressure circuits of their robot. Our teams come from a wide array of backgrounds from those with substantial tech course involvement and others with no tech course backgrounds at all.

The primary qualities your circuit diagrams should have are:

- A neat and clear presentation of the relevant information defining the functional aspects of your circuits / the relationship between the elements connected by your circuits
- They can be hand drawn or computer generated
- They can utilize symbols or text labels
- They do not need to present any circuit information related to the internal circuitry of individual components

YES, all members of your team need to submit a one page resume and participate in a Human Resources Interview. The 5 Resume / Interview Marks are assigned based on the average mark of the four team members.

Regarding the Resume / Human Resources Interview I suggest you visit <http://www.skillsontario.com/hr>

A Robot Stand is a structure that will keep your robot on your Pit Area Table if the robot's drive system happens to start unexpectedly.

Bob

Question Forty-Three:

From: Carl Monfils

Sent: December 10, 2018 10:41 PM

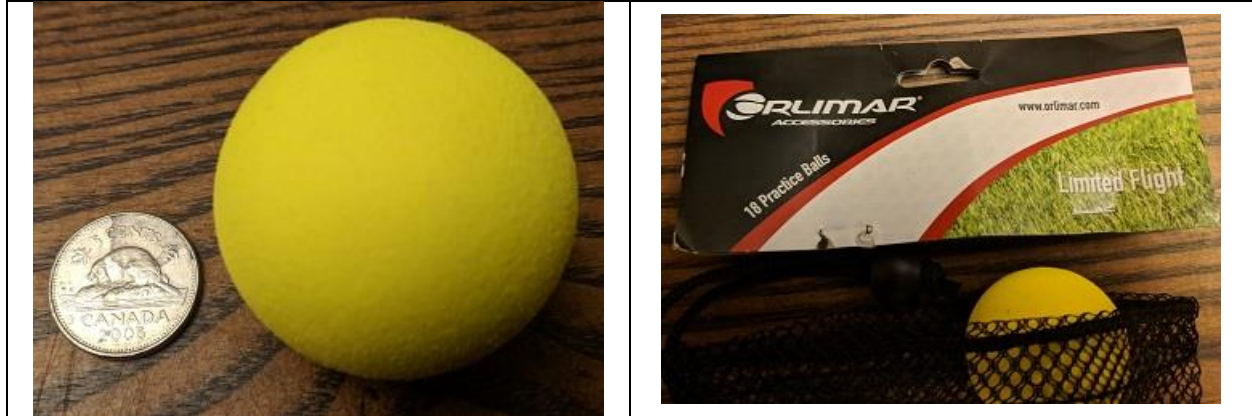
Subject: Golf balls

Hi Bob,

I find that the density of the Balls (pride sports) proposed in the scope are inconsistent. Can we use other brands as long as they have the good diameter and colour?

Can i use these ones? (photos)

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Thank you,

https://www.amazon.ca/Orlimar-Golf-Practice-Balls-18-Pack/dp/B00RHK9LZG/ref=mp_s_a_1_2?ie=UTF8&qid=1544499431&sr=8-2&pi=AC_SX236_SY340_FMwebp_QL65&keywords=orlimar+golf+practice+balls&dpPI=1&dpID=61UyD-kVPnL&ref=plSrch

Response Forty-Three:

Hi Carl

I am updating the Q and A document and discovered that I never replied to this question of yours. Sorry.

Regarding the possibility of using different balls the answer must be no. I understand your concerns about the other balls being inconsistent in physical characteristics but if we allow teams to use alternate balls that have a more consistent set of physical characteristics then it will likely be construed as allowing them to 'Buy an Advantage'.

Bob

Question Forty-Four:

From: Comisso, Gianluca (Michael Power/St Joseph)

Sent: March 6, 2019 9:39 AM

Subject: Autonomous Court Blocks

Hi Bob,

I hope all is well. Will the 2 bigger blocks that act as a stand for the smaller block be fixed in place? Would they be able to withstand some contact from a part of the autonomous robot touching it. Will they be screwed together and screwed to the melamine? Will they be taped? Please let me know.

Cheers, Luca

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Response Forty-Four:

Hi Luca

The 2 stand blocks will just be stacked on one another.

NO Double-sided tape connecting the bottom stack block to the floor.

NO Tape of any kind connecting the top stand block to the bottom stack block.

YES, there is potential for the stack blocks to move / be repositioned either individually or as a pair due to the actions of the robot.

Bob

Question Forty-Five:

From: Eric Fabroa

Sent: March 6, 2019 1:39 PM

Cc: Leo Xie

Subject: autonomous game piece arrangement

Hi Bob,

A question about the autonomous game:

Will the cubes on top of the blocks always be the same colour as the two squares on the mat in front of it (i.e Blue Cube in front of blue squares)? Or will can there arrangements of cubes in front squares with different colours? i.e Blue cube in front of red squares

Thanks,

Eric Fabroa

Teacher, Computer Science

Tech Department

St. Robert CHS

Response Forty-Five:

Hi Eric

The colored squares on the floor will always match the colored tape on the Block at the end of the tape line that separates the two on the floor colored squares.

Bob

Question Forty-Six:

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From: Nabil Mohamed

Sent: March 6, 2019 3:52 PM

Subject: Request for Clarification - Peels Skills Competition

Hi,

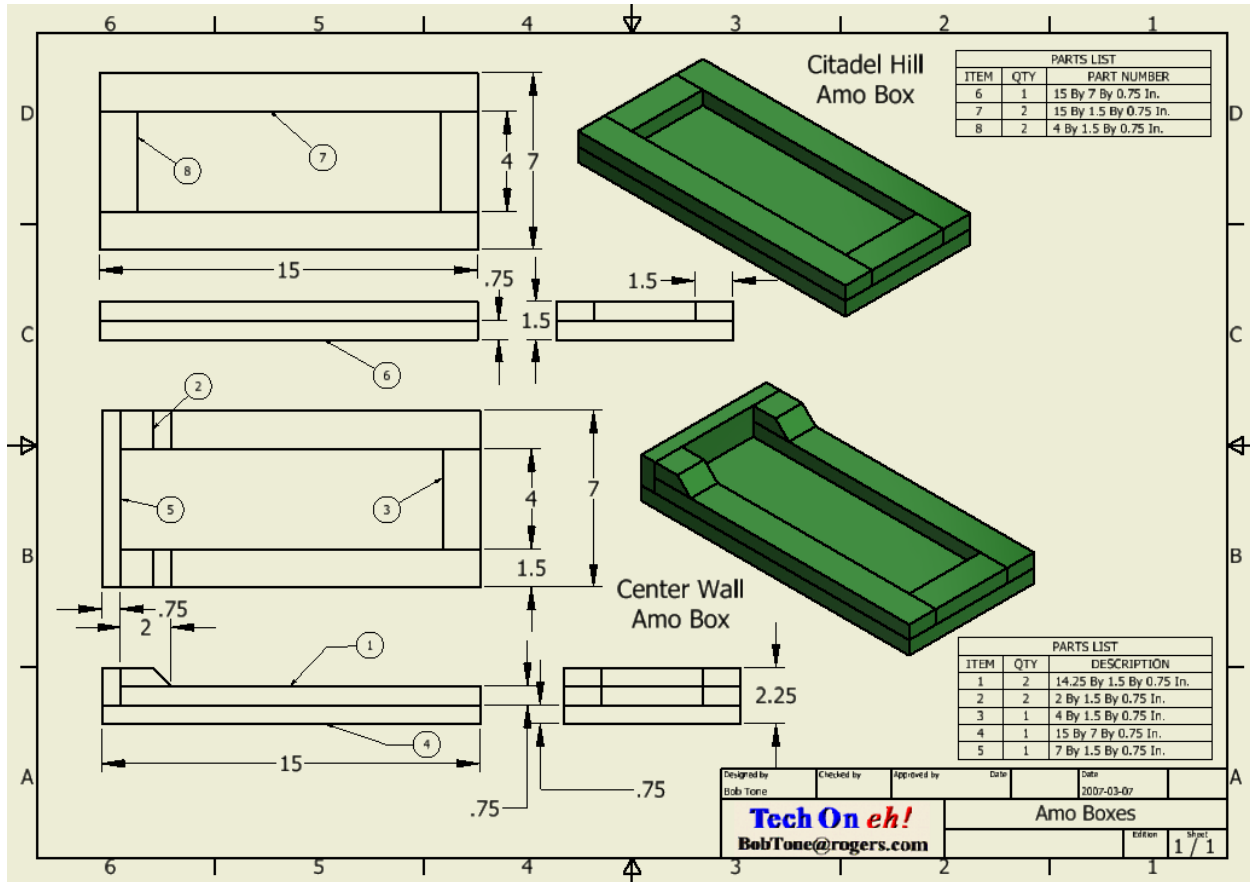
I am participating in the Robotics (Team of 4) Peel Skills Challenge, and would like further clarification regarding dimensions of the court floor ball boxes. How thick are the walls that the balls are enclosed in?

Thanks, Nabil

Response Forty-Six:

Hello Nabil

This image should have all the dimensions you need.



Questions and Responses Forty-Seven to Fifty-Three:

Hello Andrew

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I have inserted the responses to your questions into your original message in Blue Text.

From: Andrew Li

Sent: March 16, 2019 5:31 PM

Subject: Robotics Competition

Hi Bob,

I'm a student and I was wondering if you could please clarify the following points in the 2019 mobile robotics scope:

1. To clarify the answer to Question 21: Is *any* robot whose wheels are on top of the hill considered to be on top of the hill?

YES as long as all of it's wheels / tracks are on the top of the hill.

2. Does the same condition for being on top of the hill apply for the purposes of the 10 points at the end of the match as for collecting the balls in the citadel box?

There is no requirement that the robot be on top of the hill when it collects balls from the on top of the hill ammo box.

3. Can the robot get those 10 points if it goes down to the court surface, then climbs back to the top of the hill at say, 1 minute, then returns to the bottom for the rest of the match?

NO. To be awarded the ten points the robot must be on top of the hill when the end of the game buzzer sounds.

4. What is the tolerance on the net being in the center of the robot? Are the bounds used to find the center based on the measurements for volume (i.e. outer limits of the individual robot or the entire entry) or is it based on the dimensions of the frame?

The only reference in the document to tolerance refers to one half inch so this is the tolerance that will be applied. The same points on the robot used to define the robot's width for calculating the size of the robot will be referenced for determining the on the robot net position.

5. Can the end cap of the pipe be replaced with competitor-made hardware as long as the hardware provides a flat surface for the net end to sit on?

YES but you would need to demonstrate that it provides the same degree of freedom for the net to rotate as the Pipe End Cap provides.

6. Are competitors allowed to deliberately drive in such a way that the balls fall out of their robot nets? To be clear, this can be done with the standard net holder pipe and end cap.

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There is no restriction on how competitors drive their robots. When you say balls can be made to fall out of the on the robot nets then are you saying they can be made to travel out through the net rim or squeeze through the net's mesh?

7. We've noticed that as the net fills with balls, the net becomes taut in about three quarters of the open net area causing many shots to bounce back either onto the same side as the net is on or worse, onto the side of the robot shooting at the net. Do referees also need to count balls which bounce out of the net as they do for ones which go through as in Question #35?

Balls must be IN the nets at the end of the game to be awarded points. If you have successfully filled an On the Robot Net to the point the situation you describe happens then you will need to make a strategic decision to shoot at the Citadel Hill Nets and not at the net where the balls are bouncing off the mesh.

Thanks,

Andrew Li

Question Fifty-Four:

From: Brian Ball

Sent: March 17, 2019 8:23 PM

Subject: Question

Mr Tone

We have a question about returning opponents balls to their side of the court. Are you allowed to pick up the balls and just drop them back on the other side?

Thank You

Martha and Sarah

BBC Robotics

Response Fifty-Four:

Hello Martha and Sarah

Your question is some what ambiguous, so I need to give you a two part answer.

YES, your Robot can pick up balls from the court floor (not balls that have gone out of the court) and your Robot can deliver these retrieved by the Robot balls over the center wall and onto the court floor on your opponent's side of the court.

The Human Competitors **CANNOT** pick up balls at anytime from either the court floor or the floor outside the court and deliver them onto the floor on your opponent's side of the court.

Mr. Tone

Question Fifty-Five:

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From: Brian Ball
Sent: March 18, 2019 8:47 AM
Subject: Re: Question

Mr Tone

Sorry for the confusion.

What we are asking is can our robot pick up the opponent's ball, which is in our court, and drop it back onto their court.

Are we allowed to extend over the center division between the two courts?

Martha and Sarah

Response Fifty-Five:

Hello Martha and Sara

YES, your robot can pick up your opponent's balls or your own dropped balls that are on the floor in your assigned space.

YES, your robot can deliver all the balls that it has picked up into your opponent's assigned exclusive use space BUT this must be done with your robot remaining 100% in your own space.

No part of your robot is allowed to extend past the center wall into your opponent's exclusive use space at any time during a game.

Mr. Tone

Question Fifty-Six:

Can a team use a stream of air from blower to move balls on the floor in their opponent's space.

Response Fifty-Six:

No. The stream of air would be considered part of the robot and cannot be deliberately directed over the center wall. In addition, robots cannot assert direct influence / control over balls that are in their opponent's exclusive use area.

Question Fifty-Seven:

From: Reive, Mat
Sent: March 22, 2019 12:27 PM
Subject: 2019 Skills Robotics

Hi Bob,

We have a question about the autonomous challenge. When placing the blocks into the destination square, the scope says "the block delivered onto the destination square surface". If the 2 blocks are

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stacked but inside the square's vertical planes column, do both blocks count for 2 points even though both blocks are not on the floor?

Thanks,

Mat Reive
Computer Engineering, Robotics, and Computer Studies Teacher
Collingwood Collegiate Institute

Response Fifty-Seven:

Hi Mat

YES, if one block is placed on top of another then points will be awarded for both blocks as long as neither is breaking the implied perimeter vertical plane. If one is breaking the vertical plane and the other is not, then points will only be awarded for the one not breaking the vertical plane.

Bob

Question Fifty-Eight:

From: Edison Wasson

Subject: RE: Robot Size Restriction and Starting Position Relationship

I have a question about a rule we found in the NS description that I never noticed before. It is located after section 5. Scoring Summary and it states:

"The outer edges of the Citadel Hill top plate establish a set of perimeter vertical planes that no part of the robot can be breaking at the start of the game."

I have not seen this listed anywhere else. I was under the impression we had to be within 4 cubic feet and have all our wheels on the top plate? Can anyone help me solve this please.

Also can we manipulate the netting on the trout nets to ensure they wont get tangled? Each net is unique and as they get used the netting changes behaviour and has started to drop and catch corners?

Thanks,

Ed

Response Fifty-Eight:

Hi Ed

The restrictions stated in the scope relative to your question are:

- Complete Team Entries must not exceed an overall size of **4 cubic feet** (6,912 cubic inches) at the start of each game.

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- A Team's Entire Entry **MUST** be positioned **ON TOP** of their Home **Citadel Hill** at the Start of each Game.
- The outer edges of the Citadel Hill Top Plate establish a set of Perimeter Vertical Planes that No Part of a robot can be breaking at the start of a game.

These restrictions are not in conflict with one another and Teams must comply with all of these restrictions in order to compete.

Teams must expect the mesh on their 'On the Robot Net' will stretch as it is repeatedly used. This is a naturally occurring / expected result and teams need to take this into account when designing their robot and game strategy.

Bob



Question Fifty-Nine:

From: MIKHAIL LAVRENOV

Sent: March 27, 2019 11:09 PM

Subject: Skills Ontario Robotics - question

Hello Bob,

There is a question regarding to mounting a Trout Net on the robot. Accordingly to the Scope it needs to be done using 5 inch 1.5 Dia. Vertical Abs Pipe. However, 1.5 Dia Abs Pipe has 41 mm inner diameter: https://www.engineeringtoolbox.com/ABS-drainage-pipe-d_1732.html

Outer diameter of the Trout Net handle is 25 mm, which creates a 16 mm gap between pipe and the handle. This gap is big enough to unbalance the robot, which becomes a problem especially for lightweight robots like ours. We engineered an End Cap that includes 3/4 inch soft steel or cooper tube, which really well fits inside of the Trout Net handle (see attached picture). The gap between the tube and inner part of the handle is less than 1 mm and allows the Trout Net to freely rotate through 360 degrees at all times to comply with the scope. However, in this case Abs Pipe is not needed. We can potentially install it as well to comply with the Scope.

I am wondering whether in this case we still need to install 1.5 Dia Abs Pipe, although in this design it will mainly have decoration function?

Thanks,

Mike Lavrenov, grade 9

Response Fifty-Nine:

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Hello Mike

The string loop is the only thing that can be removed from the net. The net's end of the handle cap must remain in place and not be modified.

Regarding any potential variations in the interior diameter of a 1.5 in. ABS pipe it is not a factor we will measure. If Teams have purchased an ABS pipe labelled as being 1.5 in. then they have met the competition requirements.

Bob