SoutheastCon 2008 Hardware Competition
Frequently Asked Questions (FAQs)
Return to the Moon

SUBJECT TO CHANGE
FAQs last updated on: Tuesday April 1, 2008

Check out the Robotics miniFAQ For Beginners

Hardware Team Registration Form

RFID Design Issues and Discussion

SoutheastCon 2008 Forum NEW!!

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Notes:

1. As stated in the Rules, the maximum robot dimension when moving is 10" x 10" x 11" tall. Thus the max. dimension in the answer to question 48 has been corrected from its previous value as of January 23, 2008.
2. There have been several questions, addressed in this FAQ, about indirect interference with other robots. This unsportsmanlike behavior is discouraged and teams are on their honor not to engage in such behavior.

   Teams are advised to pay particular attention to **Rule VI-8. Destructive Interference**: A team may not take any action that purposely interferes with the course of play or causes damage to the playing field or competing robot. **The penalty for destructive interference is disqualification for that match.**

   Thus, a robot may not emulate the IR Beacons nor attach RFID tags to their robots. These have no function in navigating to, locating, acquiring, or transporting blocks. We also ask that teams not paint their robots specifically to mimic the colors of the blocks. If a team wishes to sport its school colors, the robot may fly a pennant. The pennant may exceed the 11" height of the robot but must have **NO** other function than to display a name or color. This pennant must be removable for the robot size qualification.

General Hardware Competition Q&A

1. My question regards the layout grid for block placement. You mention the grid is imaginary (hence not actually painted on the board). I don't want to add marks to our field that won't be on the official one, and I'd like to know if the blocks will be level or tipped.

   The blocks will be as level as the surface allows. For the pea gravel surface (check the latest rule update, the rocky surface was modified in June), the blocks will probably tilt a little one way or the other. No special attention will be made to make the blocks level; they will simply be placed on the surface.

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2. Will you have a pre-measured 2 inch "landing spot" dead center of each square for placement leaving the blocks flat?

   No. The surface will not be modified for the positioning of the blocks.

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3. Will you place "spots" on the board at the centerpoints of each grid square?

   No. Given the nature of the sandy and rocky surfaces in Zones 2 and 3, any painted spots would wear away during play.

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4. Will the blocks be sitting level or however the surface happens to be at the center point?

   However the surface happens to be at the center point.

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5. Will you use “best guess” each round of rock placement allowing that some variability is expected in a “lunar landscape”?

   A removable grid will be used in the arena to center the blocks before each match and then removed before play begins. Random block placement patterns will be used, so that the set-up for each match will be different.

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6. I am inquiring about the RFID tags that will be used in the student competition at SoutheastCon '08.

   I have several questions about how the tags will be implemented.

   I would like to know what type of encoding will be used with the tags.

   Will you be choosing the standard ASK Manchester encoding or some other variety? Is that RF/32 or RF/64?

   HITAG S256 type tags
   Unique format
   Encoding is: Manchester 64-bit, modulus 64

   Also, which data rate will be selected (2, 4 or 8kb)?

   4 kB

   Will the tags be using the available encryption mode or not?

   No.

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7. I would like to know how to register my team so we can receive our demo tags.

   Complete the registration form and
   email to jpicciri@eng.uah.edu,

   or mail to:
   John Piccirillo, Ph.D.
   Electrical and Computer Engineering
   University of Alabama in Huntsville
   Huntsville, AL 35899

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8. **Bumper**: Can the bumper's 20% opening change locations (i.e., can the bumper close a segment and open another?). Also, can the bumper deform or change shape?

   Yes to all.

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9. **Tournament Structure during Playoffs**: Instead of 1 vs. 2, could the first round consist of 1 vs. 8, 2 vs. 7, etc. In the current system, we feel that the true 'championship' match will be the first match of 1 vs. 2. They should compete through the bracket to end up with the two best teams.

   Implemented in the August 1 rules change.

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10. **Time**: Will time be used as a tiebreaker or an element of the score?

    Tiebreaker.

11. What current will you send through the LED. Will you modulate the signal to the LED? If so, what frequency. (The rules stated a square wave, i.e., 50% duty cycle.)

    Please see Attachment C of the rules. Current is 100 ma, modulation is 4 kHz on the right (seen from the base side of the arena) and 2.5 kHz on the left, 50% duty cycle.

12. **Sonar Interference**: Will there be any rules as to acceptable use of sonar and frequencies during the competition?

    No.

    Block Pushing

    The spirit of the competition is to pick up the blocks, transport them to home base, and deposit them. Some amount of block manipulation, intentional or not, may occur while picking up blocks or moving around the playing field. Blocks cannot score by being pushed into home base.

13. How far can a block be pushed without penalty?

    A block cannot be pushed (or tumbled) for more than two block lengths nor into home base nor into a wall before being picked up. Since there is no practical way to tell exactly how much a block is pushed, scooted, tumbled, kicked, bumped, etc. the judges will be allowed to exercise judgement in determining if the limit has been reached. If the limit is exceeded, the block will score half its value, except that blocks will not score if not picked up on the playing field and deposited or transported to home base. There is no pushing penalty for blocks not scored A block that is picked up and dropped may be picked again without penalty.

14. Will a robot be able to push a block in the process of picking it up?

    Yes. Some inadvertent pushing or manipulating is allowable. A block cannot be pushed more than two block length before being picked up. See the response to the above question.

15. Must the robot avoid non-targeted blocks on the way back to it's home base?

    No. However if those blocks are pushed more than two block lengths they are not eligible for picking up or scoring until they have been disengaged and re-engaged. The same block may not be pushed, disengaged and re-engaged more than once in sequence.

16. In play, can our blocks be stored anywhere?

    As long as you don't violate any of the rules. The blocks can't be stored outside the arena. Moving blocks around is fine. Depositing them anywhere is fine with the possible exception of blocking the opponents home base in a playoff. Holding them on the robot is OK, putting them in Home Base is OK, moving them somewhere on the playing field, including stacking them is OK. Pushing them around is not OK, as noted in the answers to questions 13, 14, and 15 above.

17. Do the blocks count as an extension of our robot?

    No.

18. If our robot is within the 10in x 10in x 11in requirements, but when we pick up a block, the block is not within those dimensions, is there a penalty?

    No.

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19. The directions still call for red paint. Is this left over from when the pebbles were to be painted red and no longer necessary?

    Right now the only thing that's painted RED are a couple of the Blocks.

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20. The quantity of white paint is at one quart; if we use that quart for the sand/paint mixture, what do we use for the white squares that are the "bases"?

    Just mix proportionately. The amount of paint needed for the bases and two blocks is not enough to make any noticeable difference in the texture of the sand/paint mixture.

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21. Are there specifications as to what brand, manufacturer, etc of the paint used for the blocks? Or can we just use more of the same colors from the construction of the court?

    The White, Blue, and Black paint for the blocks is the same as that for the playing field.

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22. Is there any way we can see actual pictures of the court constructed?

    Soon. The court is being re-constructed.

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23. Will you tell the contestants who make it to the head-to-head competition rounds which frequency or which base they will be using prior to the competition?

    VI Rules of Play, number 6 states: "For the playoff rounds, home base assignments will be decided by the flip of a coin by one of the contest officials (13 June)." As stated in Rule III. 3, the beacon on the right will flash the LEDs at 4.0 kHz and the beacon on the left at 2.5 kHz.

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24. Are there any rules about what the robots should do at the end of a round (e.g. return to home base, come to a stop, etc.)?

    No. VI Rules of Play, number 9. "A match is six minutes (13 June) from the point that the verbal start command is given. A buzzer will sound the end of a match and no further points will be scored."

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25. The hoarding limit states that we may collect only four blocks. Does “collect” mean “placed in scoring position” or “gathered at any time during the competition”? Section IV.7 indicates that robots can gather any number of blocks, implying collect = place in scoring position vs. collect = gather; however, the use of “collect” is confusing.

    The current version of the rules does not use the word "collect".

    Section VII.6 states "Hoarding Penalty: Due to limitations in transporting mass back to earth, a robot may only score (31 July) a maximum of four blocks." (Underlining added)

    Section IV.7 says "A robot may transport any number of blocks at a time." (Underlining added)

    A robot may pick-up, transport, gather, collect, or otherwise manipulate (except for pushing around or herding) any number of blocks, however, only four blocks can count for scoring purposes.

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26. In the preliminary rounds, how will the starting base be chosen?

    A team may place their robot in either base.

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27. Can a robot be powered on and "thinking" during the hands off period, or does it have to be completely powered down until the start button is pressed? E.g. in section IV.4, can a robot passively observe the playing field with rangefinders, video cameras, etc.? Could it sweep a rangefinder/camera around with moving the robot's base, or must it remain completely motionless?

    Yes, a robot can be powered on and "thinking", observing, scanning, or whatever before the start button is pressed. A robot cannot begin to move (roll, walk, crawl, etc) until the start button is pressed.

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28. Could a robot have several different start buttons to be pushed based on the block layout? E.g. in IV.5, could there be several start buttons (corresponding to the various positions of the black block after the blocks have been placed)? Could be there be a large grid of buttons, one per field configuration, which tells the robot which scenario it is playing? (Hopefully not, but the rules as written seem to allow this.)

    No. The rule states "a button or switch" singular. Multiple buttons, or a dip switches, would violate the spirit of mineral exploration. There may be many buttons on the robot, but only one, the same one throughout the entire competition, may be pressed to start the robot once the blocks are in place.

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29. The Home Depot SKU number 295-112 refers to 4 inch schedule 40 PVC pipe. The PVC pipe specified in attachment C of the rules for constructing the homing beacons is said to be 4.5 inches in diameter. Is this measurement the outside diameter? As PVC pipe that size is usually only sold in whole inch sizes and measured by the inside diameter.

    The PVC pipe is 4.5 inches in outside diameter, as shown by the IR Beacon radius dimension in Attachment A.

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30. Is there an estimate on how much time there will be between rounds?

    Not presently. We'd like the time between rounds to be relatively short so that the competition can be completed in a reasonable length of time. On the other hand, we would like to give teams time to be ready. We may be able to give an estimate later when we know how many teams will be participating.

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31. The playoff bracket seeding does not seem to follow normal conventions. Most 8 seed playoffs follow the following format.

    #1 vs #8
    #4 vs #5

    #2 vs #7
    #3 vs #6

    The playoff seeding in the rules has the #3 and #4 seeds switched. The pdf link below shows the most common 8-team playoff bracket.
    http://www.carolinaregionvb.org/TrnDir/playoffs.pdf

    Thanks for catching this; we'll make the change.

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32. What are the RFID tags for? Because it seems that the color of the cubes is considered for the points. Do the RFID tags play any role in calculating the points?

Each tag will have a unique number. When the tags are sent, we will provide their numbers and the color of the block to which it will be attached. The RFID tags and the block color provide independent means of identifying blocks. The point values are known from the rules.

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33. It is my understanding our objective is to locate seven different blocks that are programmed with passive RFID tags. Can the reader distinguish between the different frequencies of the tags or are separate readers for each tag frequency required ? Do the different tag frequencies cause interference for the reader?

    There is only one frequency, 125KHz, and each tag has a different identification number. Depending on the RFID reader used, it may or many not have an anti-collision feature (the ID-20 readers we will be sending out, do not) hence 2 or more tags close together MAY not read at all (i.e. they can cause interference with each other). The distance between tags and reader is experimental and should be determined for an individual reader and its environment. One reader is capable of reading all the tags. You may experiment with the tags and readers to test the range, interference between tags, effects of nearby metal objects, and so forth.

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34. What the reason was for having the bumper cover 80% of the vehicles perimeter.

    We'd like to have the bumper cover 100% so that vehicles are assured of not harming each other during the competition but that would make it difficult to deploy a mechanism to retrieve blocks, if that method is chosen. So we opted for 80%, which leaves a large opening in front for those who may which to deploy a pick-up mechanism.

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35. Concerning the radius of curvature and the convex of the bumper, the rules say the outer edges must not be convex and the radius of curvature should not be less than 1/2". Could you elaborate?

    The radius of curvature limit is so that there are no really sharp edges on the bumper. I think you misread the curvature rule. It states, "need not be outwardly convex on all surfaces ". In order words, the bumper may be entirely outward convex, but that is not a requirement. It may also be partly convex and partly concave.

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36. Can the bumper for the vehicle use 1" PVC conduit with 90 degree elbows attached at every end for connecting one bumper to another, thus the bumper would cover 100% of the vehicle. I believe would take care of the convex problem.. Will the 1" PVC work?

    The rules states "The bumper must present a vertical surface at least 1" high", i.e. a flat, vertical surface. The problem with the conduit is that if two robots both using this design collide one bumper is going to go over the other, perhaps locking up both robots.

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37. On the Hardware Competition (robot), will there be any other changes made to the competition rules? I have noticed the modification history and was wondering if there will be any more modifications? If so, when will be the cutoff date for not allowing any additional changes to be made?

    The Hardware Competition rules are considered stable and are not expected to change. Questions, as many of those above, arise about rule interpretations or clarifications and we answer those in this FAQ. However, teams are very inventive in approaching the competition and some times the questions point out inconsistencies, over sights, or intended procedures that would violate the spirit of the rules and in those instances the rules are modified.

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38. Does the entire continuous stretch of the bumper have to be made up of the same material, or can multiple materials make up the bumper as long as they are the outermost structures on the robot?

    The bumper may be made of different materials.

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39. In the rules, it states that the bumper must be the outermost structure while the robot is in motion. How far must the bumper extend past the next outermost part of the machine to qualify as the "outermost structure"?

    Just enough so that a collision between two robots is only between the respective bumpers.

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40. Does the 1" surface that the bumper present have to be completely continuous, or can we have holes in the bumper (say a 1/4" hole for mounting a sensor in, etc)?

    1/4" holes are permissible.

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41. Could we have something sharp that we attach to whatever grabbing/clamping/etc. mechanism that would provide better gripping when trying to acquire blocks? The reason I ask is that it could potentially leave an indentation or even a small hole depending on what design we use, and I did not want to be disqualified due to such occurrences.

    No. There is a potential for damage that may impede block retrieval by teams or damage the RFID tag. Teams are encouraged to avoid retrieval mechanisms that cause damage to a block or RFID tag, potentially risking disqualification.

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42. If all conditions are correct, can the reader at most only read 3 inches in front of it (assuming the tag on the block is directly facing the reader)?

    In our tests, the ID-20 will read the tags from approx. 5 to 6 inches when the tag and reader faces were parallel.

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43. What is the point of having the robot approach a block all the way to being three inches close to it and not picking it up because the point value was too low (assuming the reader read the tag)?

    The method to detect the blocks and the strategy for doing so is a team option. Some readers do not have anticollision capabilities and will fail to read if more than one tag is in range.

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44. A time limit of 6 minutes does not give us the liberty of picking and choosing to this extent.

    We haven't made any assumptions about the capability of individual robots.

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45. Why use such short range readers that we can't even do signal decay?

    The readers are sent as a courtesy; teams may use any reader they choose. Teams are not required to use the supplied RFID or any RFID at all.

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46. Is there some secret about these readers that you are not telling us?

    The data sheets are available at: http://www.id-innovations.com/ID%20EM%20moudule%20SERIES%202005-12-9_%20v21.pdf.

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47. Is there no way to get long range tags/readers now?

    Several firms make long-range readers, as does ID-Innovations, check their site at http://www.id-innovations.com/home%20english.htm. If teams identify themselves as participants in SoutheastCon 2008, they will sell any of their readers at a steep discount. Some have very long ranges.

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48. Can we extend beyond the bumper of the robot while it is in motion if the extending part is still within the original 10"x10" dimensions?

    The bumper, at whatever size, but less than the max dimension of 10"x10", must be the outermost part while the robot is in motion. The reason is so that robot collisions will only be bumper-to-bumper.

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49. What kind of overhead lighting will be over the playing field during the competition and can it cause any type of interference?

    Playing Field lighting is a perennial concern for robot competitions and the answer is usually the same - not guaranteed, since the the space is rented and configured for each event. To the best of our knowledge, the lighting is provided by high-pressure sodium lamps, although this is NOT guaranteed, and there are always complications from camera flashes and video IR rangers.

    Whether or not the lighting causes interference depends on the robot design. Section III, number 6 of the rules states that "The playing field environment lighting is not specified except that it will be well lit. The rules permit flash photography and infrared range finders on cameras and camcorders. Intentional interference with the operation of the robots is not allowed, and may result in sanctions."

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50. Once a match finishes and another match is getting ready to start, is it legal to have sensors scanning the playing field looking for blocks, or do we have to wait to actually start?

    Your robot may begin operating, but not actually moving, between the time the hands off period begins and the start announcement is given. The sequence of events is:

    1. Team(s) place their robot(s) on the playing field.
    2. Hands off announcement is given.
    3. Blocks are placed on the playing field in a unique configuration.
    4. Start announcement is given.
    5. Teams manually start their robots.

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51. We would like to do something a little different this year. Instead of using batteries, we would like to use an external combustion steam engine to power our robot. Since heating the water would require some kind of (rather warm) heat source, we would like some guidance on what would be acceptable. What we would REALLY like to use is a propane burner similar to what you might see in a camping stove. So long as all of the components meet normal, commercial safety standards, is this ok? If not, other less desirable options we've come up with are wood, alcohol (which could also be used in our victory/defeat celebration), and sterno.

    External Combustion is disallowed. Internal hosting facility and IEEE safety rules will not permit combustion or oxygen consuming devices inside during the competition.

---

52. Is it OK to have 90 degree angles in the bumper?

    Yes, but the bend must be rounded with a radius of curvature no less than one half inch.

53. Can the bumper be completely flat?

Yes.

54. Can we have a 1/4" rectangular hole in order of a sensor to look through?

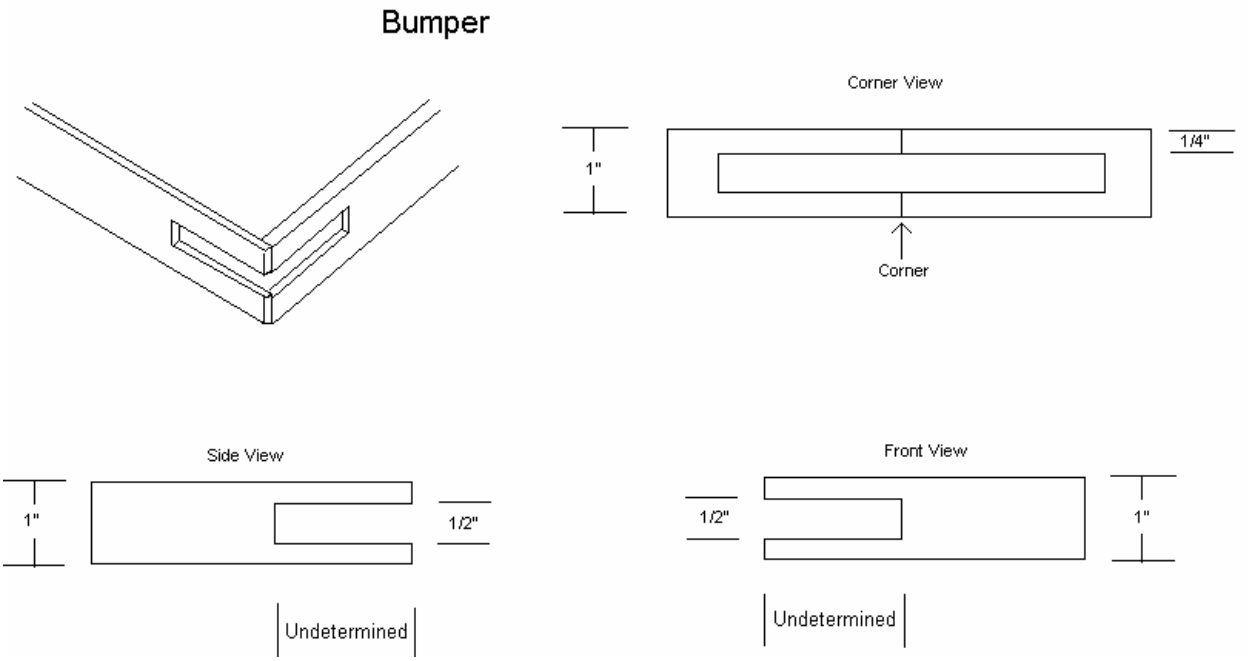
Yes.

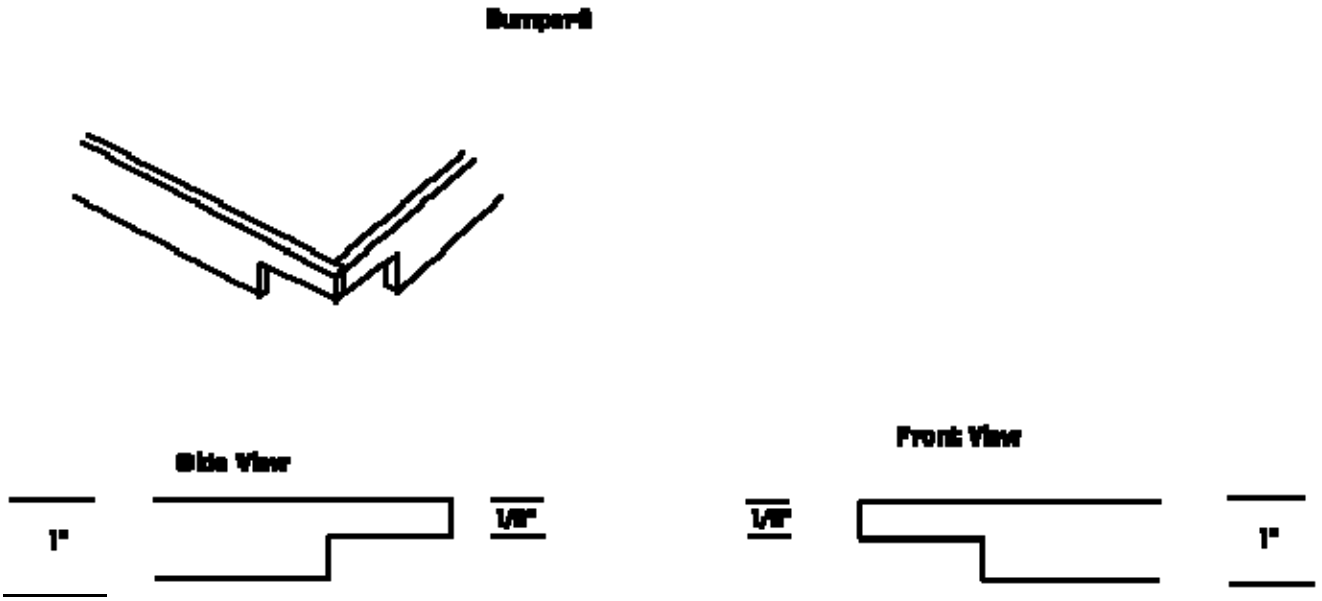
55. How will the blocks be assigned to places on the playing field?

Refer to the diagram in Attachment E in the Hardware Competition Rules.

1. Randomly choose an integer between 1 and 5. Use this to place the Black Block.
2. Put markers for all squares on one side of the central line, except those adjacent to the Black Block, in a "hat".
3. Draw a marker and place a Red Block on that square.
4. Draw a second marker and place a White Block on that square.
5. Draw a third marker and place a Blue Block on that square.
6. Place Red, White, and Blue Blocks symmetrically on the other side of the center line.

56. Attached are two different designs for the bumper that we are wondering if they would be legal. Would you please look at these and let me know if either one is legal?





According to the rules, and slight modification in the FAQ to allow some opening in the bumper, the attached photos do NOT comply with the rules. Beside the minor point that the corner needs to be rounded. Teams have previously requested small holes, 1/4" or so, to allow a sensor to see through, and the FAQ has allowed this. Having a large or as in one of the figures, undefined length to the opening is certainly counter to the rules.

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57. Will the RFID tags be faced so that the text on them is viewable, or will it be faced so that the text is not viewable?

    The tags will have the completely black side facing out.

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58. At the start of play, does every robot have to be oriented in the same direction or is this left to the individual team's discretion?

    A robot may be oriented in any direction as long as it is entirely within its home base.

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59. What are IR beacon LED specifications ? In particular the carrier frequency, the angle (of dispersion the radiated light), the lens size and the peak wavelength.

    Attachment B to the rules gives the IR LED part number: Radio Shack 276-143 .The information on the package gives the following:

peak wavelength	940 nm
lens diameter	5 mm
viewing angle to half intensity	45 deg
current	100 ma

    By carrier frequency I assume you mean the modulation applied to the LED. Part III.3 of the Rules gives the IR beacon frequencies as 2.5 and 4.0 KHz square waves.

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60. Will the RFID cover the color of the block, or it will be painted along with the block?

    The RFID tag will not be painted; it will be placed on the already painted block. The tag side that is all black will face out.

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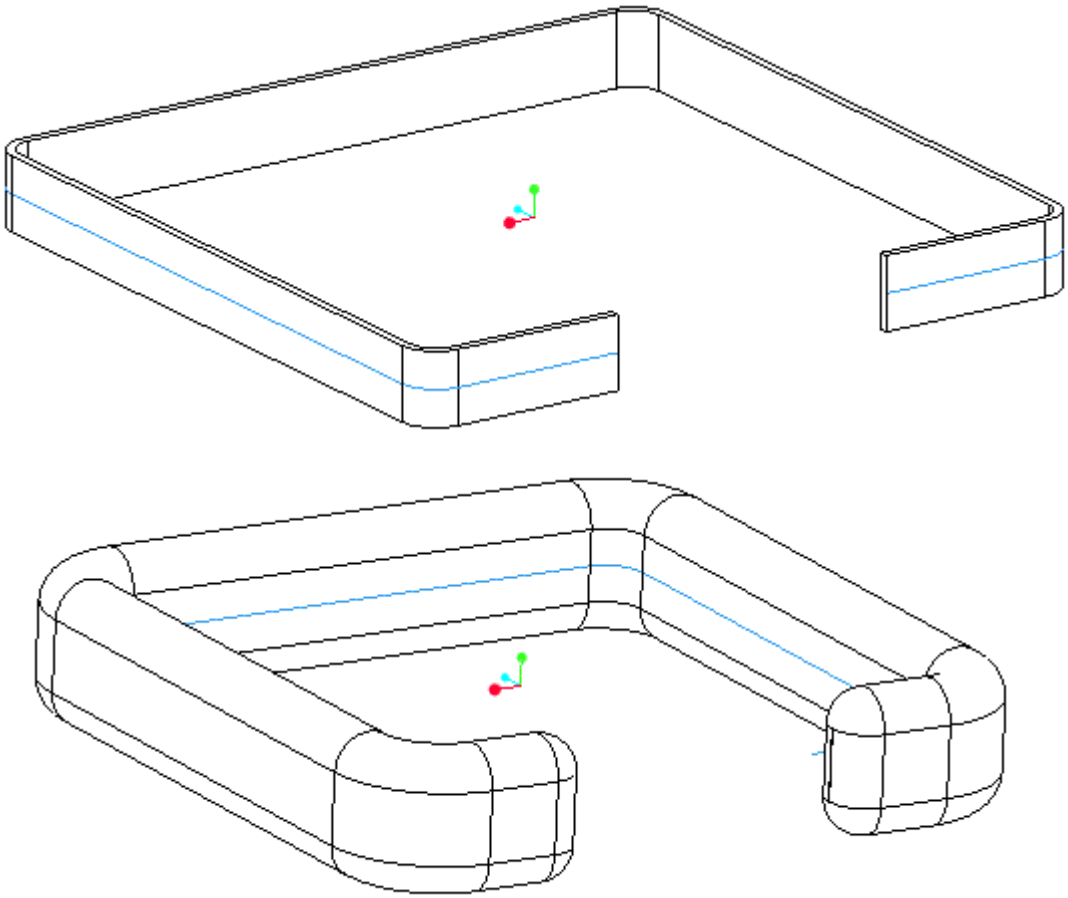
61. Does the bumper have to have a minimum 1/2" radius on ALL surfaces?

The sense of the 1/2" minimum radius rule is prevent sharp bumper features to contact another robot, or its bumper. Thus the "top" and "bottom" of the bumper do not have to meet the 1/2" min radius requirement. The vertical face of the gap in the bumper does not have to meet the 1/2" criterion either. Both of the bumper configurations shown below are compliant with the rules.



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62. Does the specification that the bumper must "cover, at a minimum, the space from 1 1/2 to 2 1/2 inches above the playing field" refer to the 1" vertical surface portion of the bumper, or the bumper as a whole?

There must be at least one inch of vertical bumper. The bumper may cover more than 1 1/2 to 2 1/2 inches.

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63. Once a total of four blocks have been picked up and returned to base, does the clock stop when the robot enters home square or do the blocks have to be dumped first?

By "clock stop" I assume you are referring to the "time taken for the last block scored, will be used as a tie breaker" statement in Rule VIII-3. If the robot has is at its end of play, the time score is when the robot enters the home base. The scoring judge will note this time. You don't have to "dump" the blocks if you are finished, as stated in Rule VII - 3, "If a robot carrying blocks is in any part of the home square at the end of play, all the blocks it carries, up to the maximum number allowed, will score." We may institute some procedure, e.g. team captain holding up hand, for a team to signify end of play.

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64. According to FAQ# 27, the robot can be powered on and "scanning" before the start button is pressed. Does this mean that we can use a rotating servo to scan using sonar or IR as long as the wheels are not moving?

    Yes.

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65. May a robot be painted any color, in particular, the same color as the blocks?

    Yes. Robots may not actively interfere with one another but this potential form of stealth or color recognition confusion is permissible.

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66. I found a 24 Inch Force Sensing Resistor (FSR) Strip that is paper thin and 0.6 inches wide. Will it fit the specifications on the bumper to use such a sensor around the bumper of the robot?

    Yes, you may use this product. The purpose of the bumper is to prevent robots from harming other robots. This product will not violate the description nor purpose of the bumper.

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67. The rules say 10 points is given to a robot that leaves the home base. Is the 10 points awarded for leaving the base at the start of play or after dumping blocks and not being in the base at the end of play?

    For initially leaving home base after the start signal has been given.

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68. The scoring system is set up so that if a robot brings in more than 4 blocks to its base that it receives points for the 4 lowest scoring blocks and the other robot gets points for the excess blocks. This means that a smart robot would, in the case of not having enough points to win, deposit all of its blocks in the opposing team's base. This way, with all 7 blocks in the opposing team's base, only the lowest 4 would be awarded to that team and the robot with no blocks would get the higher 3 and therefore having the winning number of points. How will this case be treated?

    Rule VII-4 states: "During the first three rounds, a block will only score if placed in the robots home square (13 June). If a block is placed in an opponents home square (during the playoff rounds), its value will score points for the owner of that square." The opposing team will score points for ALL the blocks deposited in its home base by the opposing team.

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69. We need an antenna to go with the RFID ID-20 reader and have not been able to locate one. I wanted to know if you know where we can purchase one.

    The ID-20 has an internal antenna and can not be used with an external antenna. Apparently the pin out diagram in the data sheet applies to several readers, some of which use an external antenna.

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70. What is the impedance of the ID-20 RFID reader?

    For information not in the data sheet, direct questions to: help@id-innovations.com and identify yourself as a student team in the SoutheastCon 2008 competition.

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71. Where is the ID-20 RFID reader data sheet?

    The manufacturer link has changed to: http://www.id-innovations.com/EM%20moudule%20SERIES%202007-10-9_wfinal%20v22.pdf

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72. Is it acceptable to mount a servo panning IR sensor to the inside of the bumper, as long as it stays within the size limitations (10" by 10")? The sensor would never be "panned" outside of the bumper coverage. We are also looking to mount switches between the bumper and the chassis; is this acceptable.

    Yes.

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73. We are also planning on mounting several switches around the robot, including several on the very top of the robot. However, per the directions, we have only one obvious "start" button used to start the match. Is having this "multitude of switches" acceptable?

    Yes.

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74. We have been developing a "monitoring" program that is run from a "ground station" but is wirelessly being relayed the status of our servos, sensors, etc. Is this acceptable for use during the competition? Absolutely no communication is being received by the robot; if you wish, we can remove the wireless dongle, completely isolating it from our monitoring program during competition matches.

    We have to rely on the teams to be honorable in following the rules, however, in order to prevent misunderstandings the rule phrase "completely autonomous" is construed to mean that there is no communication, not even one way, between the robot and anything outside the playing field. You may use the monitoring feature during testing but not during play.

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75. The second rule of the robot section states that the maximum size of the robot can be 10"x10"x11" when in motion. However, rule seven states that the robot must fit inside a 10¼"x10¼"x11¼" box to qualify for the competition. Therefore, can the robot be slightly larger than 10"x10"x11" and be eligible for competition as long as it fits inside the 10¼"x10¼"x11¼" box?

    The slightly larger box size is to avoid disqualifying robots due to tolerance variations and disputes over minor differences. A robot that is larger than 10" x 10" x 11" tall is taking a chance on disqualification. However, the size qualification test will be to fit the box size mentioned over the robot. If the box does not easily fit, no pounding allowed, or the robot does not remain on the table when the box is lifted, the robot will be disqualified. A team is allowed to modify the robot and apply for another qualification test after other waiting robots have been tested.

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76. Will we be allowed into the competition area the day before the competition in order to calibrate our sensors to the lighting that will be present during the competition?

    Yes. The competition and practice tracks will be available before hand. See the scheduled posted at: http://ewh.ieee.org/reg/3/secon/08/students.html. Robots may be placed on but may NOT move on the competition tracks before the competition begins. This is avoid degrading the surface. It is not guaranteed that the lighting before the competition will be the same as the lighting during the competition.

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77. I am wondering what type of circuit or device will be used to drive the LED navigation beacons on the official board? Should we expect any variation or tolerance with the given frequencies?

    Appendix C of the rules states: "The timing circuit will flash the left beacon LEDs with a 2.5 kHz (plus or minus 5%), 50% duty cycle square wave, and will flash the right beacon with a 4.0 kHz (plus or minus 5%), 50% duty cycle square wave."

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78. I was just wondering which face they would be fixed to, the bottom, the back side, the top?

Rule III-5 States: "The RFID tag will be positioned to face the front (home base side) of the playing field (13 June)."

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79. How will the RFID tags be affixed to the "mineral deposits" (blocks)? Will they be screwed through the holes in the center of the tags? If so, what type of screw will be used? Will the screw head be flush with the RFID tag? Or, will it be glued? If so, will the color of the block be visible through the tiny center hole?

The RFID tag will be affixed to the blocks with a 1/2" long, #4 brass screw. The screw head will be flush with the surface of the tag.

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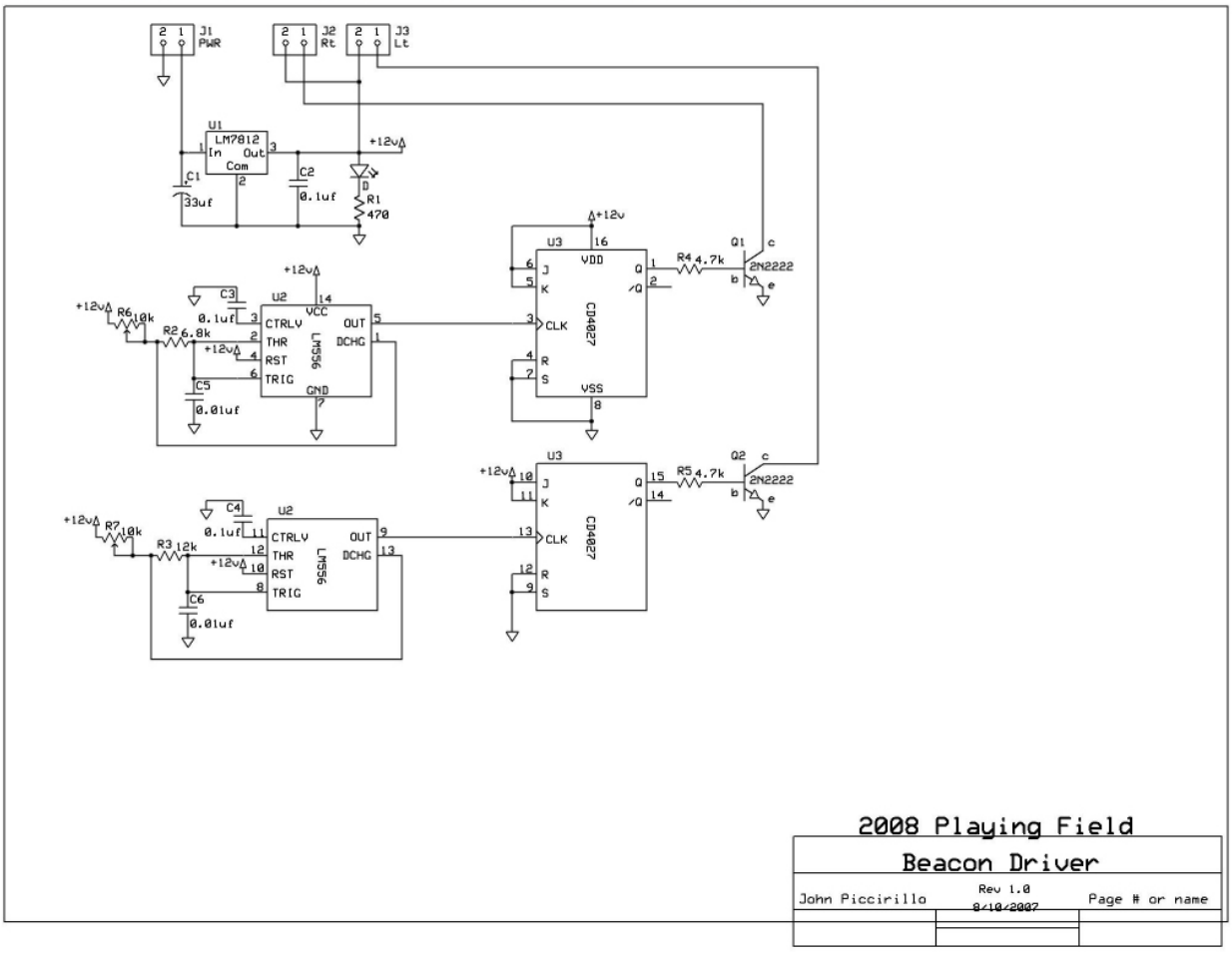
80. Could you please post the schematic for the IR Beacon driver?

This is the IR Beacon driver schematic (click for full size, right click and download using "Save as"):



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81. Is it OK to have #8 pan head screw heads on the outside of the bumper or should we attempt to countersink #8 flat head screw heads into the bumper (I'm not sure how far we can reasonably countersink, as the bumper is only 1/16" thick flat iron).

We would prefer that the screw heads be countersunk, however, you may have a reasonable number (those required to support the bumper) of pan head screw heads exposed on the outside of the bumper.

82. Will we know and be able to tell our robot which frequency its home base is when we set it on the field or does our robot need to figure that out on its own? Also, will all the fields have the same frequency on the right side and the other frequency on the left?

    All the fields will have the 2.5 kHz frequency on the left and 4.0 kHz on the right. The navigation beacon will be on before the robots are placed on their home bases.

83. When will the hardware competition practice tracks be available?

    There will be two competition tracks and six practice tracks. The competition tracks are for the competition only and not for practice at any time. We intend to do all the set-up, competition and practice tracks, on Thursday, April 3. The practice tracks will be open around the clock beginning at 8 am on Friday, April 4th until the end of the competition on Saturday.

84. Will the little orange stickers on the RFID tags be present during competition?

    They are on the underside of the tags and will not be visible.

85. Which RFID tags will be on the playing field?

    All seven of the RFID tags on the playing field will have a unique number; i.e. one each of numbers one through seven.

86. Will the robots start in the center of the home base, or approximately flush with the corner? Is a specific orientation necessary?

    The robots may start anywhere within the bounds of home base (remember there is an IR Beacon in the corner) and in any orientation.

87. In reference to question 15 of the FAQ, I'm wondering if you could provide a little more clarification. What do you mean by disengaged/re-engaged? If a block gets moved from its starting location, will it be placed back onto its original spot once the robot passes it?

    Disengage/re-engage refers to the act of pushing the block a little, backing off, pushing a little, etc. to avoid the prohibition of pushing a block across the playing field. A block will not be repositioned if it is moved from it's starting position. In fact, the answer to question 16 states that blocks may be picked up and "stored" anywhere on the playing field.

88. Are Teams allowed to introduce objects to the field and leave them on the field, or is that seen as an extension of the robot which cannot be more than 6" from the robot?

    A robot is NOT allowed to introduce loose objects on the playing field. Robot extensions must be within 6" of a robot, connected to the robot, and only deployed when the robot is not moving.

89. Are teams penalized for any non-physical interference with another robot?

    As. Rule IV - 8 states: "Destructive Interference: A team may not take any action that purposely interferes with the course of play or causes damage to the playing field or competing robot. The penalty for destructive interference is disqualification for that match. " The judges will interpret "purposely" and "interferes". Since the penalty is severe, robot design should preclude engaging in unsportsbotlike behavior.

90. If we choose to terminate the robot early and the robot is located in the home square, will the points that the robot is carrying count?

    Yes.

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91. While the robot is returning home, it starts to push a block and it is pushed all the way into the home square. Will that block simply be discarded or if that is the 5th block and is lower than what is being carried is it going to be counted?

    This is a complicated scenario from a scoring perspective. According to FAQ Question 13,

    Q. How far can a block be pushed without penalty?

    A. A block cannot be pushed (or tumbled) for more than two block lengths nor into home base nor into a wall before being picked up. Since there is no practical way to tell exactly how much a block is pushed, scooted, tumbled, kicked, bumped, etc. the judges will be allowed to exercise judgement in determining if the limit has been reached. If the limit is exceeded, the block will score half its value, except that blocks will not score if not picked up on the playing field and deposited or transported to home base. There is no pushing penalty for blocks not scored. A block that is picked up and dropped may be picked again without penalty.

    So, according to this rule, the block would either not score or score half its value, depending on whether or not it was just pushed or picked up at some point. If a block is picked up dropped and pushed - half value If a block is pushed around, then picked up and transported to home base - half value. If a block is only pushed into home base - no score. However, there is also Rule VII-6:

    Hoarding Penalty: Due to limitations in transporting mass back to earth, a robot may only score a **maximum** of four blocks. If more than four blocks are placed in home base, points will only be scored for the four lowest value blocks. During the playoff rounds, any blocks in excess of the four lowest scoring will be scored for the opponent team.

    If there are already four blocks scored, then extra blocks will count if they are of lower value. This is to prevent a robot, whether on purpose or not, from sweeping blocks into its home base and denying another team access to those blocks.

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92. We have failed to locate the hardware competition schedule. Please let us know the schedule for practice field access, and the competition schedule.

    The competition schedule is posted at the bottom of the Student Program page on the SoutheastCon 2008 web site. The competition will be from 9am to 5 pm Saturday. The final playoff will be at the society banquet. Practice fields are 8 am to midnight on Friday and all day Saturday (midnight to 5 pm)

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93. Also, will there by a qualification process before the start of the actual matches, and if so what are the requirements to qualify?

    There is a qualification process specified in the Rules. A compilation has been emailed to all the teams, including a new requirement to move off of Home Base.

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