Rookie Conference Call #5

BUILD – Week 2: Design and Development

<u>Chassis Goal for this week:</u> to have a chassis built by end of week (running next week)

Decisions: Wide chassis versus Long chassis

- Wide + larger robot intake + better chance of 3 on the ramp; - may tip easier
- Long - smaller robot intake; - more difficult to get 3 on the ramp; + Less chance of tipping

To get it moving, download the "Default code" from FIRST website

- Test each motor individually to make sure it's wired correctly
- Be sue speed controllers are all hooked up
- Put the robot on blocks so it doesn't "move" right away
- Hook in directly or tethered, to elimiate "wireless issues"
- Make sure you know where the FRC Driver Station is
- Clint can help get you running if needed 810-394-3273

Kit of parts website *– descriptions/diagrams/how to's for all components in kit*
Website is: http://www.usfirst.org/roboticsprograms/frc/2012-frc-kit-of-parts (FRC
-> Game/season info -> Kit of Parts) This link will help you with all the
components and their specs. REALLY Good resource for Rookies.

Q: What do you with the "Classmate"?
   A: Watch the tutorial on ***How to get the classmate up and running***:
   http://www.usfirst.org/sites/default/files/uploadedFiles/Robotics_Programs/FR
   C/Game_and_Season__Info/2012_Assets/Getting%20Started%20with%20th
   e%202012%20FRC%20Control%20System_2.pdf
   - You do need to read through the team updates
     - For example, the connectors in the kits were not manufactured
       correctly, so the team updates have that information – see last
       week's notes – the link is there
   - Try to get the classmate up and running RIGHT NOW. That way, if you
     have problems, it is resolved by the time you need it.

Labview

Q: Can we only load LabView on one computer?
A: No - You can (and should) put it on as many computers as you want – remember this is to be used for your FIRST team only

Vision Information (White Paper): There is a great resource (white paper) on Chief Delfphi, which helps show you how to calculate distances, etc; Look at: http://www.chiefdelphi.com/media/papers/2620

Software Updates website:
Driver Station Software: http://joule.ni.com/nidu/cds/view/p/id/2263
Robot Controls Software Updates(near the bottom of the page):
http://www.usfirst.org/roboticsprograms/frc/2012-kit-of-parts-control-system

Programming

Q: What is Hybrid?
A: Hybrid = first 15 seconds where robot does actions pre-programmed or driven via the Kinect without driver control
- Start brainstorming Hybrid/Auton options NOW
    o You could drive to get in good position for tele-operated (near feeder area possibly)
    o You could score an ball (shoot from the key or drive forward an do a layup)
    o You could go to the ramp
- START SMALL ... then build on it – have the auton move one wheel to see if it all works, then add on.
- Have a "back-up" plan – in case you or your opponents can ONLY do what you were planning on doing
- BE CAUTIOUS ABOUT MID-FIELD LINE and your opponents ramp! Can't cross or will get penalty!

CAUTION with programming and TESTING
- During testing, someone needs the "kill switch" to shut down the robot - just in case it goes crazy – this could be a long cord so the coach can move around with it, or someone standing right there ready to press the space key!
- First time you run auton, put it on blocks so you can do a dry-run before putting it on the floor – this way you can be sure of what to expect

- Be sure people around robot during testing are ***ready and know*** the robot is going to move – don't let people sit on the floor near the robot

Programming Goal for this week:
- Need robot code loaded to robot by end of week – robot should be moving by the weekend!
- Schedule time with the robot for each subteam:
  - For example: mechanical team gets the robot for the 1st hour, programming next hour, etc.

Selecting Drivers – already?
- You may want to start having kids start driving the robot just to get used to the controls
- Will help kids feel more comfortable
- Allows mentors to see who the possible drivers may be
- Utilize down time for drive practice and use by other sub-teams
- Veteran teams look for drivers very early in the season – they need practice!
- Look for a leader, responsible, can handle stress, etc - as a driver
- We will talk more about this on another call

Bumpers: (read rules – begin fabrication)

- Start looking at bumpers now – be sure to understand the rules!
- Put a string around outside of robot (28" x 38" max), this is your bumper perimeter – can't have "concave" area (v-shape is illegal)
- 8" from each vertex or corner needs to be covered by Bumpers

Minimum Bumper protection for a Maximum Size Robot (28" x 38"):

- Must have team number 4" high with ¾" stroke letters - on all four sides – font color must white or outlined in white
- If your numbers are not represented correctly, FIRST will make you
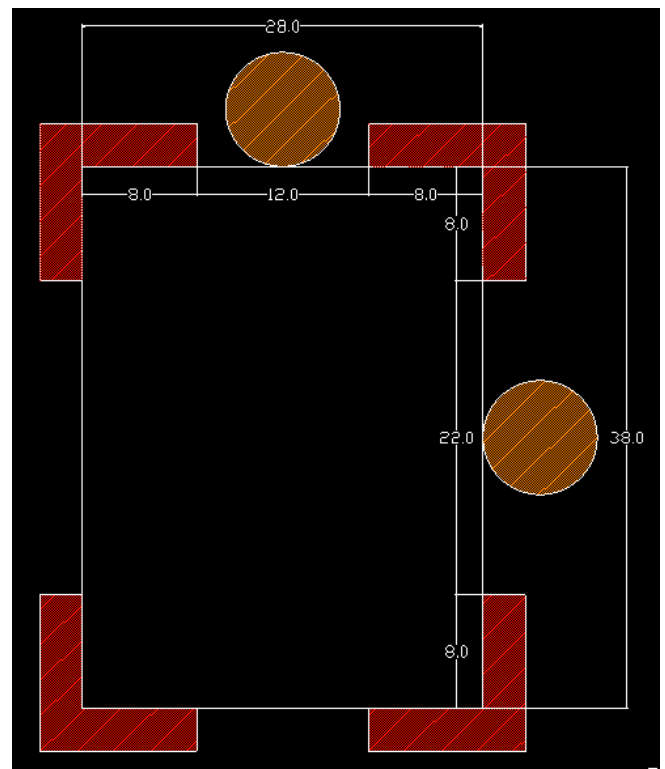
correct your bumpers before competing!

- Need a **set of red bumpers** and a **set of blue bumpers** to identify what alliance you are on when you are on the field
- Can weigh up to 20 lbs
- Weight includes how you fasten your bumper to your robot as long as it is connected to your bumpers
- Use something that is strong and will keep bumpers from falling off during competition but can be easily removed to switch from blue to red if needed
- One idea: use Velcro/snaps to put other color over existing bumpers
- Need to be easily changed – you won't have time between matches to completely remove and reassemble – try not to physically remove bumpers
- BE SURE they won't fall off – could get penalty for that!!!

Q: Can you use Velcro on the bumpers?

A: Yes.You can buy bumper kit from AndyMark for $92 – sells red and blue kits and includes fasteners, pool noodles and cloth
http://www.andymark.com/SearchResults.asp?Search=bumper

- Suggestion: purchase one from AndyMark and then make a "cover" so you only need to make one set, but have a "cover" to change colors.
- Suggestion: design bumpers into overall design, not an after-though
- Want it so bumpers stay on but can be removed if you need access to robot
- Great project opportunity for a parent!
- Will affect drivers practice – robots will act different with bumpers vs without (they stick together when the bumpers are on)
- If building own bumpers, try to find fabric now – may be limited supply of durable fabric in correct colors
- You don't have to use the cloth in the kit - JoAnn fabric has "duck" fabric that is durable and was on sale last weekend

Object Manipulator - balls

If you are going to score balls, you need to know by now HOW
- Make sure your method is consistent
- Consistent scoring will be looked upon more favorably in picking for elimination matches
- If you can consistently shoot 2 pointers, that is more favorable than someone who can only periodically score 3 pointers!
- Autonomous - keep in mind there is only 1 point difference in the middle hoop than the top hoop

Shooter Goal for this week – Research and Prototyping:

- Check out teams from past games to see old robots (Especially 2006 for Shooters and 2001 for Ramps/Barriers)
- *Go on ChiefDelphi – they have galleries from previous years (this has been mentioned in past calls too)*
- Continuously prototype – the goal is to learn something from prototyping!
- Visibility of picking up balls is important! Keep in mind that you score on the opposite end of the field, relative to the drivers = limited visibility!
    - May want to pick up from floor for better visibility
    - Utilize camera if possible to help with visibility
    - Feedback if you are on Target or not
    - Will want feedback to know that you have 1, 2, or 3 Balls
    - Some ideas: use a light/limit switch on the robot, feedback to the computer, or vibration on an Xbox controller
    - Whatever is easiest feedback for the driver/coach to get is best – don't want them to have to look away from field!
- Be cautious about having drivers use camera for seeing on the field
    - Could have some lag
    - Ask yourself if you REALLY want the drivers taking their eyes off the field? Veterans would say, "No". Never have their eyes leave the field!
- Can connect directly to wireless if you only want feedback (instead of going through CRio)

Q: Can you toss the balls onto the field anywhere?

A: No, you can only toss the balls through the human player ball shoot - until the last 30 seconds in the game. Then you can send them over the glass.

Q: Can you send a link to Bill of Materials?

A: We will discuss this on a later call; this was the 2011 Bill of Materials
http://www.usfirst.org/roboticsprograms/frc/competition-manual-and-related-documents (coming soon) Get started now by gathering data on what you use on your robot!

Business update

- Update sponsors/social media/website – invite sponsors to come and see what you are doing!
- Uniforms – start the process soon (will talk more later on this)
- JCP GRANTS – check to see if they will provide t-shirts for JCP teams –
    - Contact Gail Alpert to find your JCP contact

- - Contact your JCP person and invite them over to see what you are doing!
- Travel arrangements – start the process – takes a long time to get permission – check to see if you need travel permission from your Board of Education, or what the procedures are. Sometimes it takes a lot of time – don't delay on this
- Calendar of important dates (when awards are due, ship date, etc.) – check on FIRST website! http://www.usfirst.org/roboticsprograms/frc/frc-season-calendar
- Pay attention to the UPDATES!
- General Notes: Set overall timing goals and post them where people can see them! This will help keep everyone achieving their deadlines – improves communication! Post in shop/classroom/etc. for all to have access to!

Read about the "Rookie All-Star Award"

6.4.2 First-Year (Rookie) and NASA Grant Teams ⬆

Because the Chairman's Award recognizes sustained excellence and impact, not just a one (1) year team effort, it is not possible for a first year (rookie) team to receive this honor. *FIRST* does, however, invite and encourage rookies to develop a Chairman's Award submission which may be evaluated by the judges determining the winner of the **Rookie All-Star Award**. This submission will document where the team started its *FIRST* journey and will also provide background for documenting the results of the team's efforts – it will be a great way to start the team's efforts to *earn* the Chairman's Award *in the future*.

Rookie Teams: If you prepare a Regional Chairman's Award submission, *you must* print a copy to give the Judges when they visit you at your Pit Station. Judges will not be viewing them online.

Teams receiving **NASA Grants** must provide a copy of this submission as part of the grant.

All teams are encouraged to print a copy of their final submission for their records and to confirm for themselves that the submission was accepted.