

The Cyber Cycle

The Highlanders FRC



“The Cycle of Success”



The 2016 Season Kicks Off!

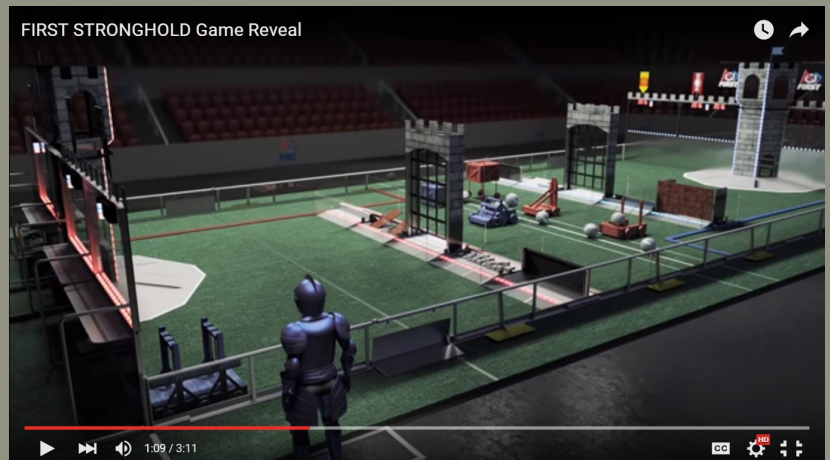
With only 8 returning members, the Highlanders have spent the summer and fall recruiting—and now number 22! New students range from 7th to 12th grades, and come from a variety of schools, but all have one thing in common—the desire to learn, build and be a part of a team. We are ready to go!



This year's game is called Stronghold. It is going to be a wild and crazy game—lots going on, lots of different ways to score points. We're back to 3 teams per alliance and alliances going directly against each other; that means that defense (and bumpers) will once again be a part of this game. Alliances score points by putting playground-sized balls into goals in a

castle on the opposing alliance's field. To get to that side of the field, though, robots must pass over or under a variety of defenses. This is where the real fun will be happening. Robots will need to pull down a drawbridge, lift up a gate, open a door, drive across a 4x4 and cross a see-saw, among other things. It looks like it will be a very cool game this year, and lots of fun both to play and to watch.

Check out the game reveal video—you can find it on our team website, www.highlanders.com.



Getting ready to conquer Stronghold...



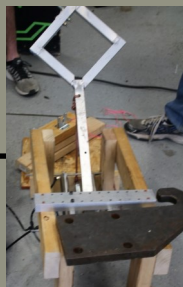
First came lots and lots of thinking—strategy, brainstorming, research. We talked about what goals we have for the season (win a regional, of course), and what we need to do in this game to make that happen.



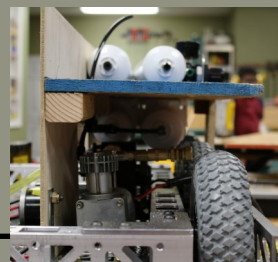
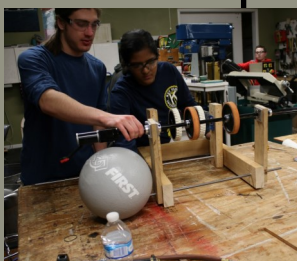
Once we decided what to focus on, we started thinking about what methods we could use to take in a ball, hold it, shoot it, and what kind of a drive train we need. With all of that thinking came food and fun, as well, of course!



Stronghold requires a lot of field elements—far more than we've ever had before this. To build them we involved team members, mentors and families. We've got them all built, but now we need a robot to go over them!



The next step, of course, was prototyping. To the left you can see a couple of versions of the catapult, and an early trial for the intake. To the right is the progression of the electronics boards; the mechanical pieces need all of the room in the center of the robot, so electronics are getting pushed out—and up—to still have room.

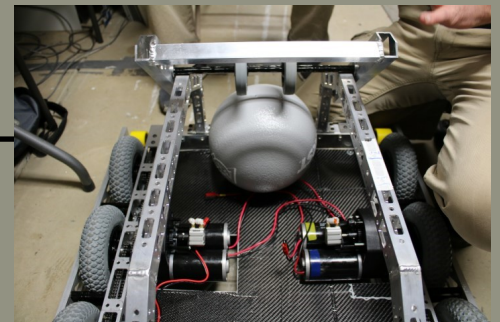
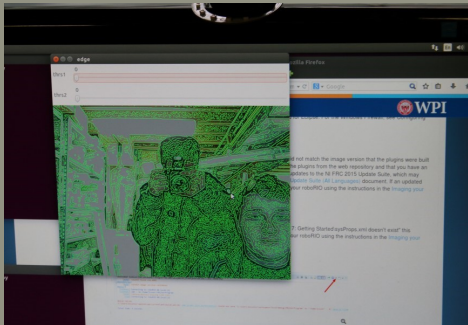
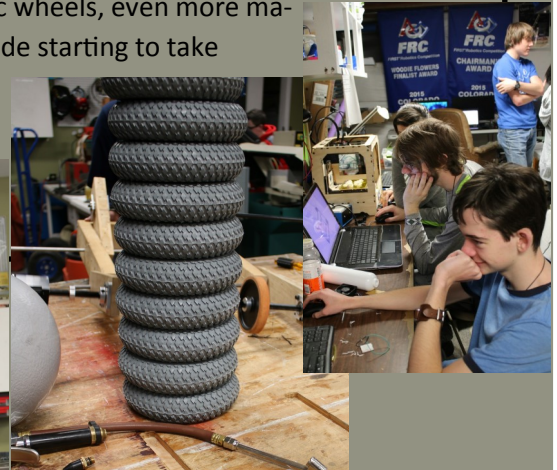


And then comes the work...

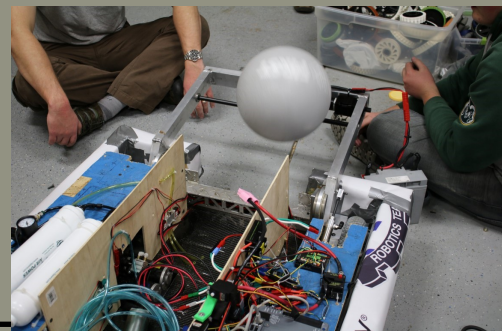
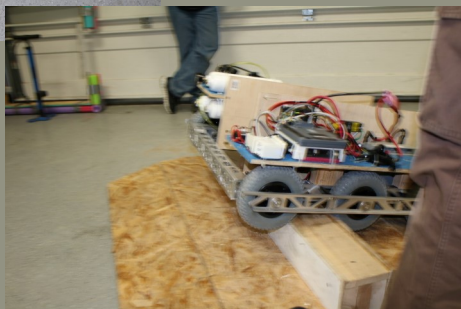
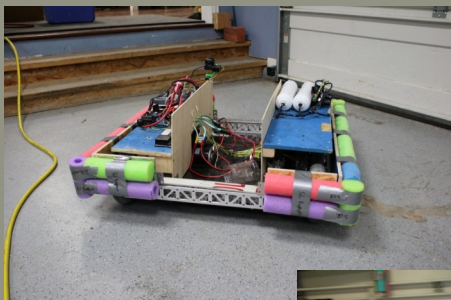


(From top left) Machining, making a carbon fiber board, working CAD, more machining, planning the electronics

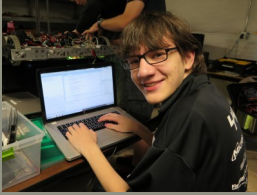
board layout, a huge stack of pneumatic wheels, even more machining (seeing a trend here?), vision code starting to take shape, and ordering parts to keep up with the demand.



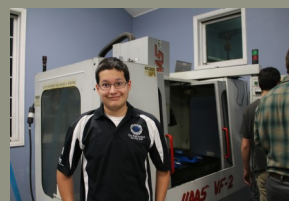
The robot has gone through many revisions, and no doubt it will go through many more before February 23rd, when we need to put it in a bag and not touch it again until we get to Flagstaff.



Meet the Team...



Adam is a Sophomore at Fossil Ridge High School and enjoys programming. He's working on the Nav-X this year, and hoping to get that fully functional for us soon.



Alex is in his fourth year on the team, and is a junior at Liberty Common High School. He's build team lead, and safety-co-captain.

Andrew is in seventh grade at Severence Middle School. He has taken on the CNC plasma cutter, and is our bumper guy this year. Go Andrew!



Annie is a Junior at Liberty, and has become a key member of the electronics team. Maybe some programming, too?



Ben is a senior at Liberty. As well as being a key member on our build team, he is leader of our OSE (non-robot focused) team.



Daniel is a junior at Liberty. He is splitting his time between the FTC team there and the FRC team here. In a head-to-head battle, we'd win.

Dawson is a sophomore at Rocky Mountain High School, and is in his 3rd year on the team. He's our shop safety lead as well as a builder, and will be on the drive team.



Evan is a ninth-grader at Liberty Common and is on both the soccer and basketball teams there, and on the build team here.

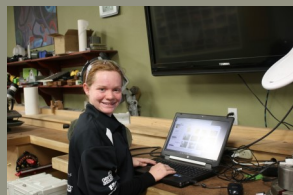


Hunter is a senior at Fossil Ridge and puts his skills at metalworking to work for us. He's also become a great welder!



Jack is a junior at Liberty, and is in his second year as a Highlander. He's electrical team lead this year, and puts in a bit of time programming, too.

Jamie is in 7th grade at Liberty Common, and is on our build team as well as being our photographer. Thanks, Jamie!



Jocelyn is an eight grader and is new to the team but not to FIRST—she did many years of FLL before coming to us (all the way from Arvada!)



Meet the Team...continued.



John is a senior at Liberty, and is in his third year on the team. He's team captain, programming lead and drive team coach. Busy guy!

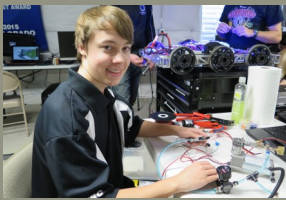


Liam is in seventh grade at Webber Middle School. He's learning tools as fast as he can, making parts whenever he's able.

Michael is a Junior at Fossil Ridge and is in his 4th year on the team (the only original member left!) He's the strategy team lead and a driver.



Nela is a 10th grader at Fossil and in her 2nd year on the team. She's really taken to prototyping this year, and is heading up Chairman's.



Nick is a senior at Liberty. He's doing great things prototyping and building, and is the pneumatics guy this year.

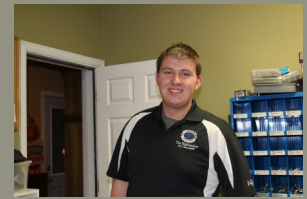


Ryan is a freshman at Liberty and a three-season athlete. We hate to have to share him, but not everyone's life is all about robots.

Simon is an 8th grader at Liberty Common School and new to the team. He's on the knowledge bowl team at there and on the scouting team here.



Stephen is a senior at Liberty Common and a whiz at machining. His new favorite is the Haas CNC Mill, and when he's at the shop he can often be found there.



Tyler is a sophomore in his second year on the team. He's on the programming team and drives up from Thornton for practices!



Zach is a freshman at Liberty Common High School and is on our build and scouting teams.

As always, thank you to our sponsors...we couldn't do this without you!

