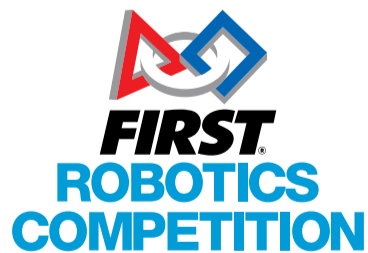
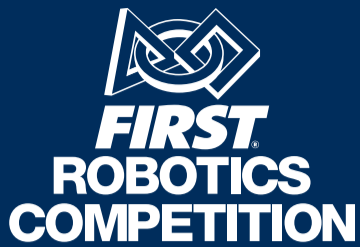


2016 *FIRST*[®] Robotics Competition

Team Updates



200 Bedford Street
Manchester, NH 03101, USA
<http://www.firstinspires.org/frc>



Team Update 1

01/12/2016

GENERAL

- The following resources have been posted:
 - » Unencrypted versions of the [Game Manual](#)
 - » Unencrypted versions of the [Field Drawings](#)
 - » Unencrypted versions of the [Kickoff Kit Checklists](#)
 - » Versions of the Admin Manual and the Game Manual will be posted in the *FIRST* app shortly. Additionally, the pdf versions can be viewed and searched using the Adobe Acrobat app.
 - » [Google Cardboard images](#) of the *FIRST STRONGHOLD* field from Kickoff
 - » [2016 Motor Spec sheet](#)
 - » [2016 Pneumatics Manual](#)
- The official Q&A opens tomorrow at noon (Eastern). Information is [here](#).
- General formatting and typo corrections were made (and probably will be made) throughout the Admin and Game Manuals. Such inconsequential edits will not be noted in Team Updates.

ADMIN MANUAL

Section 3.4.5 Technical Contact Responsibilities

- Use the Inspection Checklist that will be **posted** ~~listed in the *FIRST* Robotics Competition Game Manual – Section 4~~ after Kickoff.

Section 6.4.8 Interview Process and Video Requirement

- **Returning this Year:** Written feedback forms. Teams desiring written feedback from Judges will be able to receive it upon request. ~~More details to follow soon.~~ To receive feedback, teams submitting for Chairman's Award must fill out their Team Number and Team name on the Chairman's Award [feedback form](#) and provide it to the Judges at the beginning of their Chairman's Award interview. Completed forms will be available at the end of the event. We are requiring teams to request feedback before they receive it to help ensure Judging resources are not invested in teams not interested in receiving feedback.

Section 6.4.7 Submission Process

- Important Note: Chairman's Award Judges also review the information entered in the Judges Information Page as part of the Chairman's Award submission. This information is entered as part of the Team Information Management System (TIMS) at <https://my.firstinspires.org/frc/tims/site.lasso>. ~~Refer to Section 1 Communications for more details about the Judges Information Page.~~

Section 7 Team Advancement

- Published

GAME MANUAL

Section 2.2.2.1 DEFENSES

- The Cheval de Frise is a series of four (4) independently tilting, weighted polycarbonate HDPE platforms.
- The Moat is a 2-1/2 in. high, 4 ft. 2 in. wide, and ~~2 ft.~~ 1 ft. 8 in. deep u-shaped channel, formed by vertical rectangular steel tubes.
- The Rough Terrain is constructed from thirty-one (31) pieces of square or rectangular steel tubing.

Section 2.2.2.2 SECRET PASSAGE

- BERMS consist of a the steel barrier, 1 in. tall and 3 in. wide that defines the border of the SECRET PASSAGE.

Section 3.1.3 DEFENSES and the OUTER WORKS

- Once a ROBOT CROSSES a DEFENSE in AUTO, any additional DEFENSES that ROBOT REACHES or CROSSES by that ROBOT during the AUTO period will not decrease DEFENSE STRENGTH nor contribute points to the ALLIANCE.

Section 3.4.3 General Rules

- **G11** Blue Box added:

G11 does not apply for strategies consistent with standard gameplay, e.g. a TEAM obtaining a BOULDER from their SECRET PASSAGE, CROSSING an opponent DEFENSE, etc. G11 requires an intentional act with limited or no opportunity for the TEAM being acted on to avoid the penalty. Examples include:

- A. A Blue ROBOT, with twenty (20) seconds left in the MATCH, is parked in front of the middle face of the Blue TOWER. A Red ROBOT, attempting to SCALE that face, runs into the blocking Blue ROBOT. This results in a violation of G28 by the Blue ROBOT. Because the Red ROBOT was not solely making an attempt to cause that Blue ROBOT to violate G28, but rather to complete a Game Action (a SCALE), they are not in violation of G11.
- B. A Red ROBOT is parked in the NEUTRAL ZONE near the Blue SECRET PASSAGE. A Blue ROBOT pushes the Red ROBOT into the Blue SECRET PASSAGE, then drives away. There is no violation of G21 by the Red ROBOT, as the Red ROBOT was forced by the Blue ROBOT into the SECRET PASSAGE. The Blue ROBOT has violated G11 by forcing the Red ROBOT into the SECRET PASSAGE for the sole purpose of causing them to violate G21.
- C. A Red ROBOT is parked completely within the Blue SECRET PASSAGE. A Blue ROBOT, attempting to reach the Blue BRATTICE, makes contact with the Red ROBOT. The Red ROBOT receives a G21 penalty. There are no violations of G11 because the Blue ROBOT was trying to access their BRATTICE and not solely trying to cause the Red ROBOT to violate G21.

- **G12-1** ROBOTS may not use FIELD elements, e.g. BOULDERS, to interfere with the operation of other FIELD elements, e.g. DEFENSES

Violation: FOUL. For every five (5) seconds in which the situation is not corrected, FOUL

Section 3.4.5 ROBOT Rules

- **G19-1** ROBOTS must be in compliance with [Section 4.7: BUMPER Rules](#) throughout the MATCH.

Violation: DISABLED

Section 3.4.6 ROBOT to ROBOT Interaction

- **G21** A ROBOT contacting carpet in the opponent's SECRET PASSAGE may not contact opposing ROBOTS, regardless of who initiates the contact.

Violation: TECH FOUL

TEAMS should take note that they are putting themselves at great risk for TECH FOULS if they choose to enter their opponent's SECRET PASSAGE

Section 3.5.10 DEFENSE Rules

- **G43** ROBOTS on the same half of the FIELD as their ALLIANCE TOWER may not interfere with opponent ROBOTS attempting to traverse OUTER WORKS (regardless of direction). A ROBOT is considered traversing the opponent's OUTER WORKS if any part of its BUMPERS are within the opponent's OUTER WORKS.

Violation: FOUL. For every five (5) seconds in which the situation is not corrected, FOUL

This rule protects a ROBOT so long as their BUMPERS are within the OUTER WORKS whether a traversal ~~CROSSING~~ attempt is successful or not.

Section 4.7 BUMPER Rules

- R22 Blue Box added:

This measurement is intended to be made as if the ROBOT is resting on a flat floor (without changing the ROBOT configuration), not relative to the height of the ROBOT from the FIELD carpet.

Examples include:

- A. A ROBOT that is at an angle while traversing a DEFENSE has its BUMPERS outside the BUMPER ZONE. If this ROBOT were virtually transposed onto a flat floor, and its BUMPERS are in the BUMPER ZONE, it meets the requirements of R22.
- B. A ROBOT deploys a MECHANISM which lifts the BUMPERS outside the BUMPER ZONE (when virtually transposed onto a flat floor). This violates R22.

Section 4.8 Motors and Actuators

- R29, Table 4-1:

Table 4-1: Legal Motors

Motor Name	Part Numbers Available	Max Qty Allowed
BaneBots	M7-RS775-18 / RS775WC-8514 M5-RS550-12 / RS550VC-7527 / RS550	Unlimited

Section 4.9 Power Distribution

- **R52, Item A. ii:** SD540 Motor Controller (P/N: SD540x1, SD540x2, SD540x4, SD540Bx1, SD540Bx2, SD540Bx4)

■ R53, Table 4-4:

Table 4-4: Legal Power Regulating Device Use

Electrical Load	Motor Controller	Relay Module	Pneumatics Controller
CIM	Yes	No	No
AndyMark 9015			
WCP RS775 Pro			
VEX BAG/MiniCIM			
BaneBots motors			

Section 5.3.3 Ranking Score (RS)

■ Exceptions to A-DE are as follows...

Section 6 Glossary

- BACKUP TEAM - a Team used to replace an inoperable ROBOT on an ALLIANCE during Playoff Elimination MATCHES per [5.5.6 TIMEOUT and BACKUP TEAM Rules](#)
- SCALE: an act performed by a ROBOT, such that at the conclusion of the MATCH, it is ~~fully supported by the TOWER,~~ is in contact with ~~at least one~~ a unique RUNG, and has all of its BUMPERS fully above the height of the low GOALS. (~~update in manual and fix "at least one RUNG"~~)

GENERAL

- General copyright release has been added to the end of each Admin and Game Manual Section:

Official *FIRST*® Robotics Competition teams and Partners are permitted to make reproductions of this manual for team and Partner use only. Any use, reproduction, or duplication of this manual for purposes other than directly by the team or Partner as part of *FIRST*® Robotics Competition participation is strictly prohibited without specific written permission from *FIRST*.

- A recommended update to the C++ and Java Eclipse plugins has been released. This update fixes a number of WPILib, Eclipse Plugin, and RobotBuilder bugs discovered by teams after Kickoff which may cause program crashes. For complete details, see the [changelog page here](#). For instructions on updating the plugins, see the steps near the bottom of [this article](#).

ADMIN MANUAL

No changes beyond the added copyright release described above.

GAME MANUAL

Field Drawings

- GE-16030: Removed additional instance of this drawing from the package
- GE-16045_REV_A: Updated the drawing to specify part numbers for the springs in the Drawbridge Assembly
- GE-16155: Added drawing to package
- GE-16226_REV_A: Updated the material note from polycarbonate to Aluminum
- GE-16227_REV_A: Updated the material note from polycarbonate to Aluminum
- GE-16228_REV_A: Updated the material note from polycarbonate to Aluminum
- GE-16229: Added drawing to package
- GE-16230: Added drawing to package
- TE-16045_REV_B: Updated the drawing to specify part numbers for the springs in the Drawbridge Assembly

Section 1, Figure 1-1

- Images 1-1 has been updated to represent the Flag Flipper as depicted in Drawing GE-16215.

Section 2 (throughout)

- Images 2-1, 2, 3, 4, 22, 23, 24, and 36 have been updated to represent the Flag Flipper as depicted in Drawing GE-16215.

Section 2.1 Zones and Marking

- OUTER WORKS: an infinitely tall volume bordered by, but not including, the GUARDRAIL, the SECRET PASSAGE, and the bottom edges of its PLATFORM Ramps ~~COURTYARD and the NEUTRAL ZONE~~. The OUTER WORKS is positioned 7 ft. 2 in. from the MIDLINE.

Section 2.2.2 OUTER WORKS

- The OUTER WORKS is an infinitely tall volume bordered by, but not including, the GUARDRAIL, the SECRET PASSAGE, and the COURTYARD and the NEUTRAL ZONE bottom edges of its PLATFORM Ramps. The OUTER WORKS is positioned 7ft. 2 in. from the MIDLINE. It hosts ~~consists of~~ a series of five (5) DEFENSES, five (5) PLATFORMS, and five (5) Shields arranged in a line across the FIELD and is designed to impede the passage of ROBOTS and BOULDERS in to the COURTYARD.

Section 2.3 BOULDERS

- Single balls and ~~A~~ six (6) packs of rainbow colored balls may be purchased at gophersport.com (6-pack Item Number: 47-121, Single ball Item Number: 99-634).

Section 3.4.5 ROBOT Rules

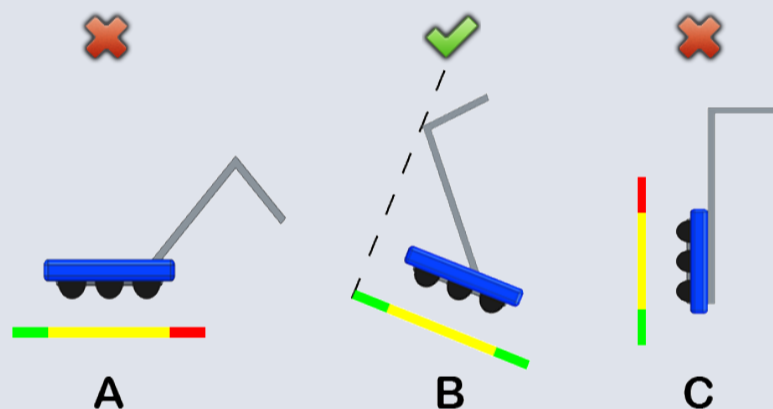
- **G18** ROBOTS may not extend more than 15 in. beyond their FRAME PERIMETER.

Violation: FOUL. If repeated, offending ROBOT will be DISABLED.

Examples of compliance and non-compliance of G18 are shown in Figure 3-2.

Yellow bars represent the measurement of the FRAME PERIMETER and are drawn in the same orientation of the ROBOT'S FRAME PERIMETER. Green bars represent a measured extension from the FRAME PERIMETER that has not been exceeded. Red bars represent a measured extension from the FRAME PERIMETER that has been exceeded (violating G18). ROBOTS A and C violate G18, whereas ROBOT B does not.

Figure 3-2: Examples of G18 compliance and non-compliance.



Section 3.4.7 ROBOT Gameplay

- **G25** D. blocking more than one of the opponent's HUMAN PLAYER STATION openings while not contacting the carpet in the opponent's SECRET PASSAGE
- **G28** During the final twenty (20) seconds of TELEOP, ROBOTS in their COURTYARD may not contact an opponent ROBOT, regardless of who initiates the contact.

Section 3.4.9 BOULDER Rules

- **G40-1** A ROBOT may not hold a Low Bar flap open for the purpose of allowing a DRIVE TEAM member to transfer BOULDERS into their opponent's COURTYARD.

Violation: TECH FOUL per BOULDER

Section 3.4.8 Human Actions

- **G34** No more than six (6) BOULDERS may remain in a CASTLE ~~at any time~~ during TELEOP. If the BOULDER count ever exceeds six (6), excess BOULDERS must be introduced to the FIELD immediately.

Section 4.9 Power Distribution

- **R52 A. v.** Talon SRX Motor Controller (P/N: 217-8080, am-2854, 14-838288),
- **R52 A. viii.** Victor SP Motor Controller (P/N: 217-9090, am-2855, 14-868380)

Section 4.11 Pneumatic System

- **R77 J.** Pneumatic cylinders, pneumatic linear actuators, and rotary actuators,

Section 5.5.9 Special Equipment Rules

- The language was assigned a “T” number as it’s actually a rule, **T26-1**, and edited to include Items B, C, E and F also apply to the DRIVE TEAM Member in the SPY BOX.

Violation: MATCH will not start until situation remedied.

Section 6 Glossary

- OUTER WORKS: an infinitely tall volume bordered by, but not including, the GUARDRAIL, the SECRET PASSAGE, and the bottom edges of its PLATFORM Ramps. ~~2 in. white gaffers tape (The OUTER WORKS includes the white gaffers tape, but does not include the GUARDRAIL or SECRET PASSAGE).~~ It hosts consists of a series of five (5) DEFENSES, five (5) PLATFORMS, and five (5) Shields arranged in a line across the FIELD and is designed to impeded the passage of ROBOTS and BOULDERS in to the COURTYARDS.