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1 INTRODUCTION

1.1 A Message from the Woodie Flowers Award Recipients

The Woodie Flowers Award is the most prestigious mentoring award in *FIRST*. The recipients have created an important message for all *FIRST* Robotics Competition teams to consider as we start the new season.

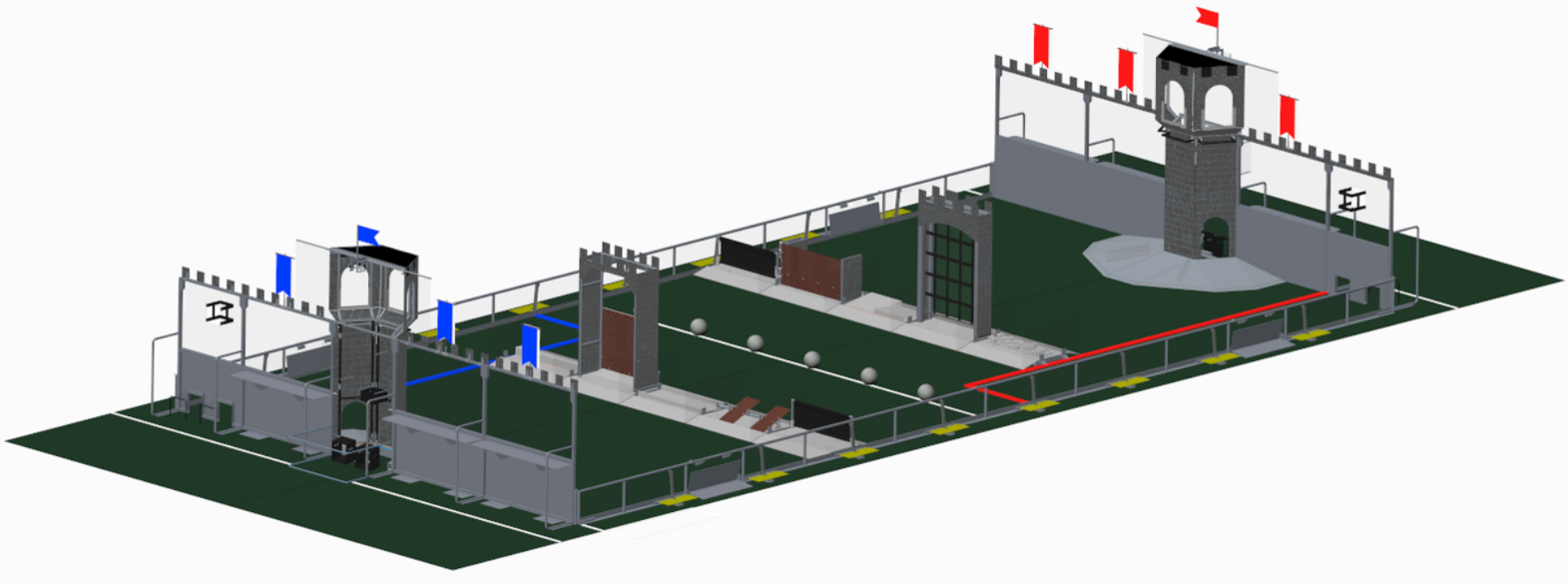
Message from the Woodie Flowers Award Recipients

> Performing at your best is important. Winning is important. This is a *competition*. However, winning the right way and being proud of what you have accomplished and how you have accomplished it is *more* important. *FIRST* could create rules and penalties to cover almost any scenario or situation, but we prefer an understandable game with simpler rules that allow us to think and be creative in our designs. We want to know that our partners and opponents are playing at their best in every match. We want to know they are playing with integrity and not using strategies based on questionable behaviors.
>
> As you create your robots and award presentations, prepare for competition and match play, create and implement game strategies, and live your daily lives, remember what Woodie has said time and time again, and let's "Make your Grandmother proud."

The Woodie Flowers Award Recipients - Woodie Flowers, Liz Calef (88), Mike Bastoni (23), Ken Patton (51, 65), Kyle Hughes (27), Bill Beatty (71), Dave Verbrugge (67), Andy Baker (3940, 45), Dave Kelso (131), Paul Copioli (3310, 217), Rob Mainieri (2735, 812, 64), Dan Green (111), Mark Breadner (188), John Novak (16), Chris Fultz (234), John Larock (365), Earl Scime (2614), Fredi Lajvardi (842), Lane Matheson (932), Mark Lawrence (1816).

1.2 Introduction

Figure 1-1: FIRST STRONGHOLD Arena



FIRST STRONGHOLD[SM] is played by two alliances of three teams each. Alliances compete against each other to breach their opponents' defenses, known as outer works, and capture their tower. They score points by crossing elements of their opponents' outer works, scoring boulders in their opponents' tower goals, and surrounding and scaling their opponents' tower itself.

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1.3 Description

Full game play details may be found in later sections of this manual. The description below is a brief summary of key elements. Please read all sections of the manual very carefully.

FIRST STRONGHOLD is played on a 27 ft. by 54 ft. field. Each alliance commands one tower, five defenses, and a 'secret passage' which allows their robots to restock on ammunition, called boulders.

One defense in each alliance's set of five, the low bar, is a permanent part of the field. Three defenses are selected strategically by the alliance prior to the start of their match. The final defense changes periodically by audience selection.

Each *FIRST STRONGHOLD* match begins with a 15-second autonomous period in which robots operate independently of human control. During this period, robots attempt to cross opposing defenses and score in the opposing tower. Points for this period are shown in Table 1-1.

Table 1-1: Auto Point Values

Action	Value
Reaching a defense	2
Crossing a defense	10
Boulder in a low tower goal	5
Boulder in a high tower goal	10

During the remaining 2 minutes and 15 seconds of the match, called the teleop period, robots are controlled by student drivers from behind their castle wall at the end of the field. Teams on an alliance work together to cross defenses, weaken the opposing tower by scoring boulders in it, and finally surround, scale and capture the tower.

Points for the match are awarded as shown in Table 1-2.

Table 1-2: Teleop Point Values

Action	Value
Crossing a defense	5
Boulder in a low tower goal	2
Boulder in a high tower goal	5
Challenging the tower (per Robot)	5
Scaling the tower (per Robot)	15

Alliances are ranked by a combination of their Win-Loss-Tie record, breach success, and tower capture success. A win is determined by comparing total match points between alliances at the end of the match and earns an alliance two ranking points. Ties earn an alliance one ranking point. Capturing an opponents' tower at the end of the match earns each team on the alliance one ranking point. Breaching an opponents' outer works by crossing four of the five defenses twice earns an additional ranking point.

Ranking points are the primary way teams are ranked during qualification rounds, so are very important. Note that while only one alliance can win a match, either, both, or none may capture a tower or breach outer works.

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1.4 Manual Conventions

Specific methods are used throughout this section to highlight warnings, cautions, key words and phrases. These conventions are used to alert the reader to important information and are intended help teams in constructing a robot that complies with the rules in a safe manner.

Key words that have a particular meaning within the context of the *FIRST* Robotics Competition and *FIRST STRONGHOLD* are defined in Section 6: Glossary, and indicated in ALL CAPITAL letters throughout Sections 2 through 6.

References to other sections of this manual, the Administrative Manual, or external articles appear in italics.

The rule numbering scheme uses an indication of the section in which the rule is stated plus a serial numbering system. The Game rules begin with "G," the Robot Rules begin with "R," and the Tournament Rules begin with "T". References to specific rules use this scheme (e.g. "G1" is the first rule in Section 3: Game).

> Warnings, cautions and notes appear in blue boxes. It is strongly recommended that you pay close attention to their contents as they're intended to provide insight into the reasoning behind a rule, helpful information on understanding or interpreting a rule, and/or possible "best practices" for use when implementing systems affected by a rule.
>
> While blue boxes are part of the manual, they do not carry the weight of the actual rule (if there is an inadvertent conflict between a rule and its blue box, the rule supersedes the language in the blue box).

The intent of this manual is that the text means exactly, and only, what it says. Please avoid interpreting the text based on assumptions about intent, implementation of past rules, or how a situation might be in "real life." There are no hidden requirements or restrictions. If you've read everything, you know everything.

1.5 Team Updates

Team updates are used to notify the *FIRST* Robotics Competition community of revisions to the official season documentation (e.g. the manual, field drawings, etc.) or important season news. Between kickoff and stop build day, team updates are posted each Tuesday and Friday. Between stop build day and the week before the *FIRST* Championship, team updates are posted each Tuesday. Team updates are posted here and are generally posted before 5 pm, Eastern Time.

Generally, team updates will follow the following convention:

- Additions will be highlighted in yellow. This is an example.
- Subtractions will be indicated with a strikethrough. ~~This is an example.~~
- Notes that are added for clarity or explanation for the change but are not retained as part of the manual appear in bold-italic. ***This is an example.***

1.6 Question and Answer System

Questions about the Administrative or Game Manuals may be asked to *FIRST* using the official Question and Answer System (aka "the Q&A"). Details on the Q&A can be found at here. The Q&A is intended to help clarify rules and sometimes the responses result in revisions to the text in the official manual (which is communicated using team updates).

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The Q&A is not a resource to get rulings on hypothetical match strategies or situations or a design review of a robot system for legality. The responses in the Q&A do not supersede the text in the manual, although every effort will be made to eliminate inconsistencies between the two. While responses provided in the Q&A may be used to aid discussion at each event, per Section 5: Tournament, the Head Referee and Lead Robot Inspector are the ultimate authority on game rules and robot rules respectively. If you have concerns about trends of enforcement of rules by these volunteer authorities, please notify *FIRST* using frcteams@firstinspires.org.

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