



# Mountain Mayhem (BB Edition) Manual

This manual is based on the original Mountain Mayhem [manual](#), with modifications and clarifications for the workshops and competitions that will be held at Bloomberg.

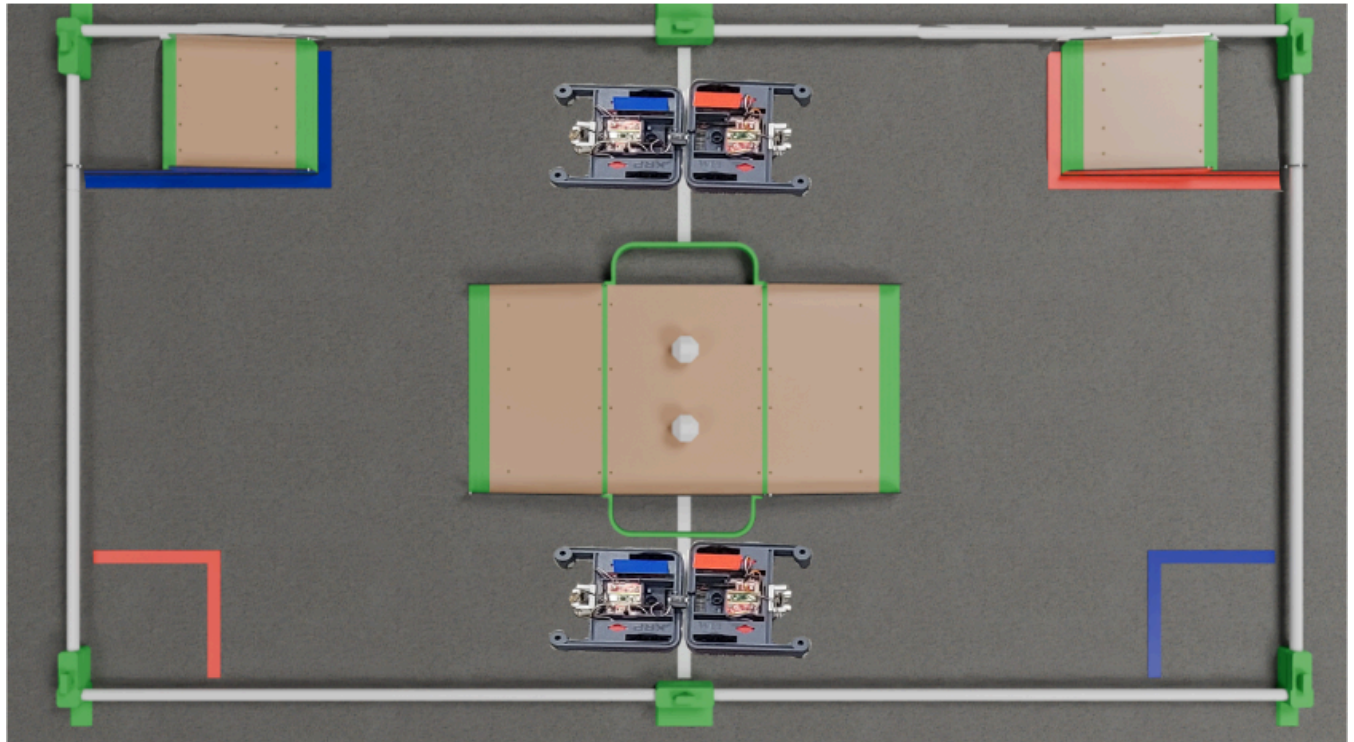
Last updated: 10/15/2024

## Quick Access Links

Game Animation	Original Mountain Mayhem Manual
	
<a href="https://bit.ly/mm-animation">https://bit.ly/mm-animation</a>	<a href="https://bit.ly/mm-manual">https://bit.ly/mm-manual</a>

## 1 Game Overview

In Mountain Mayhem, 2 ALLIANCES (an ALLIANCE is a cooperative of up to 2 teams) are tasked to clear the playing field of ROCK and SNOW from a previous landslide. Teams score points by depositing SNOW and ROCK into the RESERVOIR and QUARRY, as well as parking in specific zones as the match concludes.



1. The challenge will begin with a 30-second AUTONOMOUS period (See starting positions above)
  - 1.1. Robots can score points by navigating to the RESERVOIR, scoring preloaded SNOW. Each piece of SNOW scored is worth 10 points
  - 1.2. Robots can navigate onto the PASS and move ROCKs into the QUARRY. Each ROCK in the QUARRY will earn 10 points
  - 1.3. Robots that position themselves at the end of the AUTONOMOUS period in the center of the RESERVOIR SLOPE will score an additional 10 points.
  - 1.4. Robots that park on the PASS will score an additional 5 points.
2. After the 30-second AUTONOMOUS phase, teams will be given 30-seconds to transition to the TELEOPERATED phase.
3. The 2-minute TELEOPERATED phase will then begin
  - 3.1. During TELEOP, robots can move SNOW and ROCKs from the SLIDE AREA and place them in the RESERVOIR or QUARRY.
  - 3.2. HUMAN PLAYERS may assist the robots by placing additional SNOW in the SLIDE AREA.
  - 3.3. Each SNOW and ROCK deposited in the correct area earns 5 points.
4. The last 30-seconds is the ENDGAME
  - 4.1. Robots that park on the PASS will earn 10 points
  - 4.2. Robots may also earn points for parking in the cleared SLIDE AREA, worth 5 points

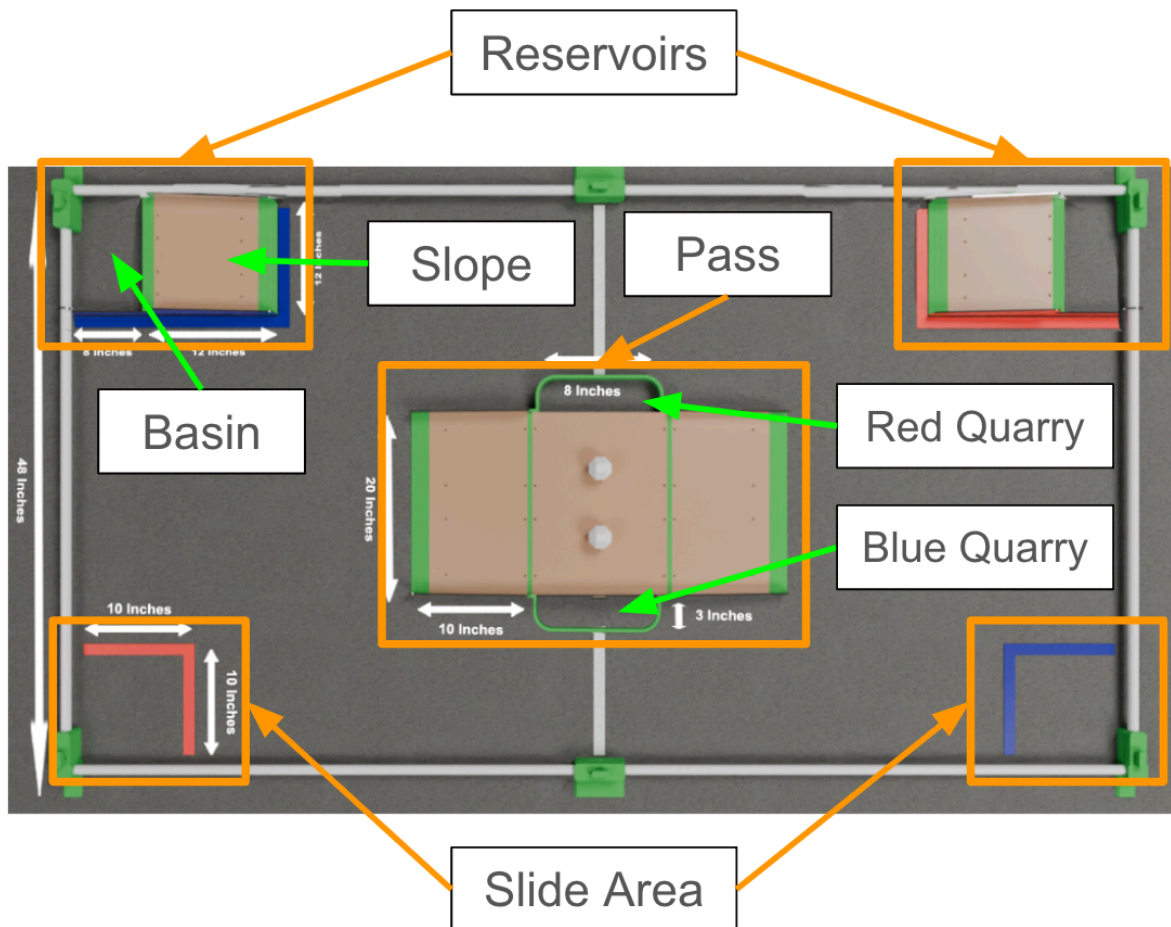
- 4.3. If all 4 ROCKs are in the QUARRY at the end of the game, there is a 15-point bonus added to both teams scores.
- 4.4. If a red and blue robot are parked on the PASS at the end of the game, an additional 10-point bonus is awarded to both teams.

## Scoring Summary

		MATCH points	
		AUTO	TELEOP
<b>RESERVOIR</b>	Park on SLOPE	10	
<b>GAME PIECE</b>	SNOW Scored in RESERVOIR BASIN	10	5
	ROCK Scored in Alliance QUARRY* <small>* Points will be assessed based on how many ROCKs are in each alliance quarry, regardless of which alliance scored it.</small>	10	5
<b>PARK</b>	Park on PASS	5	10
	Park in <u>cleared</u> SLIDE AREA		5
<b>COOPERTITION</b>	If all 4 ROCKS are in QUARRY at endgame		15
	If red and blue robot PARKED on PASS		10

## 2 Field Overview

The Mountain Mayhem field measures 48" x 96" (4 feet by 8 feet). It consists of a foam tile floor (similar to FTC field tiles), tape markings (red, blue and white/gray), and is bounded by a field wall (either an FTC style wall, or a PVC pipe based perimeter).



## Scoring Locations

The Mountain Mayhem field contains several scoring locations.

### 1. RESERVOIRS

- 1.1. Each ALLIANCE has a RESERVOIR. A RESERVOIR has two parts: a SLOPE and a BASIN. Robots can score SNOW in the BASIN by pushing up and over the SLOPE or by lifting it over the BASIN wall. Robots can also PARK on the SLOPE for additional points.
  - 1.1.1. The SLOPE is 12" wide, 12" deep and 2" tall
  - 1.1.2. The BASIN wall is 18" wide and 2" tall

2. PASS
  - 2.1. The PASS is an elevated structure in the center of the field. There are slopes on either end of the PASS. Robots can PARK on the PASS for additional points.
    - 2.1.1. Each slope up to the PASS is 20" x 10" with a 2" rise
    - 2.1.2. The top of the PASS is 8" x 20"
3. QUARRY
  - 3.1. The QUARRY is a scoring area for ROCK located on either side of the PASS. Each side of the PASS has its own QUARRY. Each QUARRY will also be color-coded with alliance colored tape. Robots can score ROCK in their alliance QUARRY by pushing up and over the PASS or lifting over the QUARRY wall.
    - 3.1.1. Each QUARRY measures 3" x 8" and is 2" tall
4. SLIDE AREA
  - 4.1. Each alliance has its own 10" x 10" SLIDE AREA.
  - 4.2. At the beginning of the MATCH, each SLIDE AREA will start with five (5) SNOW and one (1) ROCK.
  - 4.3. Once the SLIDE AREA is fully cleared, a robot can park within it for 5 additional points.

## Other Field Locations

1. CENTERLINE
  - 1.1. The CENTERLINE divides the field. Robots may not cross the CENTERLINE (except for on top of the PASS) until TELEOP begins.
2. HUMAN PLAYER AREA
  - 2.1. The HUMAN PLAYER AREA is located adjacent to each SLIDE AREA.
  - 2.2. At the beginning of the match, Up to 10 SNOW will be stored in this area.

### 3 Robot Construction Rules

1. Each robot must follow these rules in order to pass inspection and compete.
  - 1.1. A robot in its starting configuration must fit inside a 8.5" x 8.5" x 8.5" cube.
  - 1.2. After the match begins, a robot can extend at most 3" in any single direction (front, back, left, right).
    - 1.2.1. Example: a robot has mechanisms on the left and right side, both of which are capable of extending 3" past their starting configuration. Only one of these mechanisms may be fully extended at a time.
  - 1.3. A robot must weigh no more than 2.2lbs.
2. A robot may not contain materials or components that could cause damage to the playing field.
3. A robot should have a method of safely storing energy; for example, no launching of rubber bands.
4. Robots must prominently display their ALLIANCE color and team number during matches.
  - 4.1. Acceptable markers
    - 4.1.1. Blue or Red tape with team number clearly visible
    - 4.1.2. Clip on indicators (either team provided, or provided by event organizers)
5. Note: Additional rules may be necessary as the workshop season progresses. These will be published in a separate update document.

## 4 Tickets / Penalties

Breaching the following rules will result in a TICKET or a RED CARD.

1. TICKET (2 points to the offended alliance)
  - 1.1. Pinning a robot for 5 or more seconds
  - 1.2. During AUTONOMOUS:
    - 1.2.1. Drive teams may not interact with the robot or operator controls
    - 1.2.2. Robots should remain on the side of the field with their corresponding RESERVOIR (except if on the PASS)
    - 1.2.3. HUMAN PLAYERS may not touch any of the SNOW in the HUMAN PLAYER AREA
    - 1.2.4. Robot continuing to move 5 seconds after AUTONOMOUS ends
  - 1.3. Robots cannot enter the other alliance's SLIDE AREA
  - 1.4. Robots may not block access for more than 10 seconds in the area between the QUARRY and FIELD WALL.
  - 1.5. A robot may not damage nor functionally impair another robot or the playing field.
  - 1.6. Robots may possess only 1 game piece at a time (1 TICKET per excess game piece that is held more than momentarily)
  - 1.7. Robots may not intentionally detach or leave parts on the field.
  - 1.8. A robot may not launch, shoot or throw a game piece
  - 1.9. No one can enter the field during a match, with the exception of the HUMAN PLAYER in their alliance's SLIDE AREA.
  - 1.10. HUMAN PLAYERS must not touch the robots, or place/roll game pieces out of the SLIDE AREA
    - 1.10.1. Note: HUMAN PLAYERS can assist in putting game pieces on robots, as long as they are not directly in contact with the robot.
  - 1.11. A HUMAN PLAYER may not load a robot unless that robot is completely contained in the SLIDE AREA
2. RED CARD (Disqualification from the match)
  - 2.1. Excessive, ungracious or unprofessional behavior will result in a RED CARD
  - 2.2. Throwing game pieces at anyone is considered an automatic RED CARD.
  - 2.3. Teams must send at least 1 team member to their scheduled match, whether the robot is there or not.
  - 2.4. Repeated and egregious violations of TICKET-able offenses may result in a RED CARD.

## 5 Match Play

### Match Setup

1. During match setup, teams put their robots in their starting positions (see diagram at beginning of this document) and preload SNOW if desired.
  - 1.1. Preloaded SNOW should come from the stash of 10 SNOW pieces in the HUMAN PLAYER AREA
  - 1.2. Please make sure to avoid stepping on the field elements while putting robots on the field.
2. Starting positions
  - 2.1. Robots begin the match with all mechanisms within their starting configuration and must be on their side of the field (i.e. red robots should be on the side of the field closest to the red RESERVOIR)
  - 2.2. Robots must start with their chassis extending over the CENTERLINE tape, facing their corresponding RESERVOIR.
3. Initial Game Piece placement
  - 3.1. The table below indicates the initial positions for game pieces.

Game Piece	Quantity	Location
SNOW	5	RED Slide Area
SNOW	5	BLUE Slide Area
ROCK	1	RED Slide Area
ROCK	1	BLUE Slide Area
ROCK	2	On top of PASS (See Diagram)
SNOW	10	(HUMAN PLAYER AREA) Next to RED Slide Area
SNOW	10	(HUMAN PLAYER AREA) Next to BLUE Slide Area

### AUTONOMOUS Period

1. Each match begins with a 30-second AUTONOMOUS period.
  - 1.1. A sound will play to signal that the AUTONOMOUS period has started.
  - 1.2. At the start of the AUTONOMOUS period, each driver should switch to the Autonomous mode in the Simulator Driver Station



- 1.3. After that, drivers may not touch their controls until the start of the TELEOP period.
- 1.4. A sound will play to signal the END of AUTONOMOUS. At this point, drivers should switch to the Disabled mode in the Simulator Driver Station.

## Transition from AUTONOMOUS to TELEOP

1. After AUTONOMOUS is completed, there will be a 30-second transition period for referees and scores to complete AUTONOMOUS scoring, and for teams to prepare for TELEOP.

## TELEOP Period

1. After the transition period, a 2 minute TELEOP period will begin.
  - 1.1. A sound will play to signal that the AUTONOMOUS period has ended and the TELEOP period has begun.
  - 1.2. During TELEOP, drivers are free to touch their controls.
  - 1.3. Once there are 30 seconds left in TELEOP, a sound will play to signal that the ENDGAME phase has begun.
  - 1.4. A sound will play to signal that TELEOP has ended.
  - 1.5. Once TELEOP has ended, drivers must stop providing input to their robots, and switch to Disabled in the Simulation Driver Station.

# 6 Competition Setup

The competition will consist of randomly selected 2 vs 2 matches. The number of matches to be played will vary depending on how many teams are registered. The team with the highest average score after the final match is declared the event winner.

Judges will also be interviewing teams to ask about their approach to building a robot for the challenge. Awards may also be given out to teams based on programming, mechanical design, and other factors as a result of these interviews.

# Change Log

Date	Change Description
10/15/2024	Initial publication