

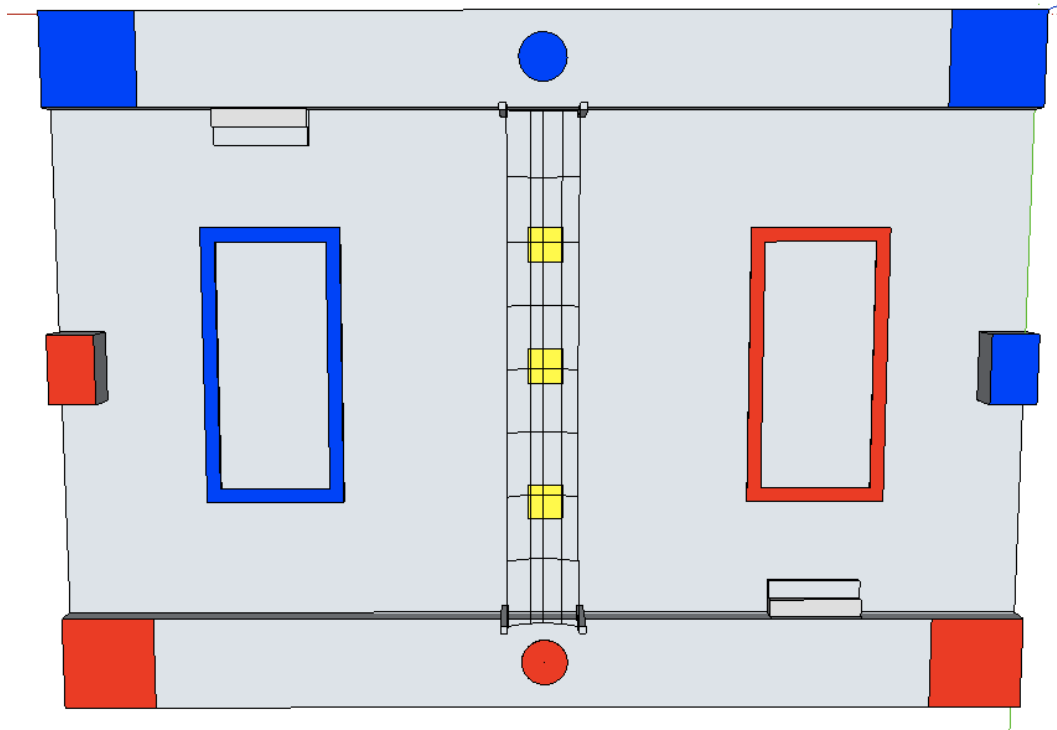
2010 Milwaukee Mentor Vex Competition



1. Objective

The objective of Sea Shore Smash is to design and build a radio-controlled robot that will allow you and your partnered team to earn a higher Match score than the opposing alliance.

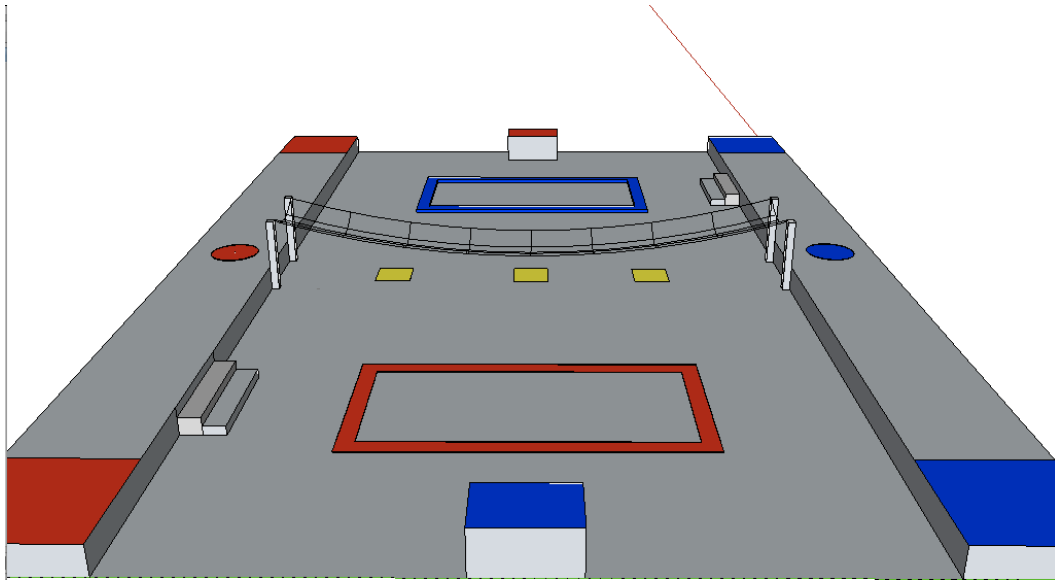
2. The Field



2.1 The Official Midwest Vex Programs Field measures 10 feet by 14 feet and is viewable on www.midwestvex.org. The surface of the playing area consists of 2' x 2' interlocking foam floor tiles, smooth side up, available from www.softtiles.com.

2.2 All official field dimensions will be within +/- 1/2" tolerance. Robots must be built accordingly.

2.3 Platform: There will be two platforms located on the sides of the field, measuring 14' long by 16" wide by 4" tall. Stairs will be located 28" away from the wall on the far side of the field from the corresponding alliance's goal. The dimensions of the stairs are 1 3/8" tall by 16" wide by 3" deep. One platform will be for the blue alliance and one platform will be for the red alliance.



2.4 Balloons: A deflated balloon will be located in the middle of the platform and correspond to the color of that platform's alliance color.

2.5 Starting Zones: Robots must start the match in one of their alliance's Starting Zones located at the corners of the field on top of the platform. These zones are marked by colored tape. The dimensions of a single Starting Zone are 16" x 16".

2.6 Scoring Box: The Scoring Boxes, or Treasure Chests, are the portions of the field where points are received for scoring pieces contained within them. These boxes are located on either end of the field- one for each alliance and outlined with the corresponding color of each alliance. The measurements of the boxes are 12" long, 8" wide and 6" tall and can be found here: http://www.centurynovelty.com/detail_265_014-50356.html. The boxes will be velcroed to the floor and reinforced with two-ply cardboard on the inside of the box. The box will be filled with a plethora of marbles and 1/2" of plastic pirate coins found here: http://www.centurynovelty.com/detail_76_209-030.html. A game piece must be fully supported by the Scoring Box (on the rim or in the bottom) in order to count towards the alliance's score.

2.7 Netting: Netting will be located in the middle of the field with the dimensions of 12" wide by 100" long. It will be attached to the sides of the platform with 12" tall dowels and drape across the length of the field. The apex of the netting will be 4" above the field.



(Picture of Netting makes 2 nets)

2.8 Beanie Babies: 10 Beanie Babies for each alliance will be located in a 4' long by 2' wide rectangle on the opposite side of the corresponding alliance's Scoring Zone. Seven of the Beanie Babies will be large and three of the Beanie Babies will be small. They will be marked with a band of Red or Blue Electrical tape corresponding to the alliance color. Beanie Babies will be placed randomly within the rectangles.



(Large Beanie Babies)



(Small Beanie Babies)

2.9 Yellow Bean Bags: There are three yellow bean bags that will be placed under the netting in the middle of the field. Each bean bag is a 5" by 5" square and will be placed approximately 1.5' away from one another. The bean bags will be filled with rice. Either alliance can take these bean bags and score them for points.



(All Yellow Bean Bags- includes backups)

3. Scoring

3.1 All scoring will occur at the end of the two minute match, after all robots and scoring objects have come to rest, or eight seconds after the match ends; whichever comes first.

3.2 Robots may score by gathering the Beanie Babies banded with your alliance color and deposit them into your Scoring Zone.

3.2.1 Each Beanie Babies in the corresponding Alliance's Scoring Zone is worth THREE points.

3.2.2. Each Yellow Bean Bag in the Alliance's Scoring Zone is worth SEVEN points.

3.2.3 No points will be given for any Beanie Babies or Yellow Bean Bags that are outside the Scoring Zone.

3.2.4 An alliance that inflates, ties, and then pops their respectively colored balloon, within the last 30 seconds of the match, will receive a TEN point bonus.

3.2.5 A robot ending the match completely within the Home Zone will give the respective team a TWELVE point bonus. In order to score the bonus points, the robot must have completely left the Home Zone earlier in the match.

4. Matches

4.1 The competition will consist of Qualifying Matches followed by Elimination Matches. Each match is a 2v2, two minute match. There is no autonomous period.

4.2 Field Crew: Each team is allowed to bring one driver, one coach, and a human player to the field. The coach and driver may switch positions at any time during the match.

4.2.1 All members must remain in the Player Station for the entire duration of the two minute ~~and thirty second~~ match. Failure to do so will result in a TEN POINT penalty. If a member is stepping out of the box to touch the robot on the field out side of the home zone only ONE TEN point penalty is awarded.

4.2.2 Teams are expected to be present for each of their scheduled matches; however, if a robot is unable to compete for a scheduled match, the team is required to send one representative to stand in the driver's area for the duration of the match.

4.3 Match Safety: Safety glasses are required at all times in the pit area and on the competition field. Teams will not be permitted to compete unless all team members on the competition field are wearing safety glasses. Teams must provide their own safety glasses for the event; no safety glasses will be supplied by the event coordinators. It is recommended that teams bring extra safety glasses to events for any team visitors.

4.4 Qualifying Matches

4.4.1 All teams will play in the same number of Qualifying Matches. The number of qualifying matches at each event will be determined by the length of the event, and the number of teams competing. Teams may be asked to play in surrogate matches that do not count towards their Ranking Points in order to ensure all robots have played an equal number of matches.

4.4.2 Teams will be given their schedule of qualification matches before the start of the

first match. The qualification match schedule will show the match number, the alliances competing in each match, and the color that each team is assigned for that match.

4.4.3 At the end of each qualifying match, the Ranking Score for each alliance will be modified based on the Match Score. Ranking scores will be determined as follows:

Three (3) points for a Win

Two (2) points for a Draw

One (1) point for a Loss

4.5 Ranking

At the end of the qualifying matches, teams will be ranked from 1 to N (N being the total number of teams present) based on the following:

-Highest Ranking Score

-Highest Match Score

-Most times a yellow beanbag was scored

-A One Vs. One, 75 second shoot out match (all other rules apply)

4.6 *Elimination Matches*

4.6.1 The number of teams participating in Elimination Matches will be no less than 4 but may be increased prior to the start of the event based on the number of teams participating.

4.6.2 Alliance selection procedure for the Elimination Matches will be run like the FRC elimination alliance selections. The top ranked teams become “Selecting Teams” and are able to select their own alliance partners. In the first round of selections, the highest seeded team will pick first and the lowest seeded team will pick last. If a team is picked that is ranked as a “Selecting Team”, then the next seeded team is bumped up to pick. A “Selecting Team” may refuse an invitation from a higher seeded team, but may not then accept an invitation from a different “Selecting Team”. A team outside of the top seeded teams may not accept an invitation from any team if a previous invitation is refused. To allow more teams to participate in the Elimination Matches, it may be determined prior to the start of the tournament to use three team alliances. In this case, the second round of selections will be conducted in reverse, with the lowest seeded team making the first selection and the highest seeded team making the last pick. Each team of the three team alliance must play in at least one Elimination Match.

4.6.3 The number of top seeded teams that earn the right to select their alliances partners will be determined prior to the start of the tournament based on the number of attending teams.

4.6.4 The elimination tournament requires two victories in a round to advance to the next round. Therefore each round will consist of a minimum of two matches.

5. General Rules

5.1 Disqualification: Robots may be disqualified based on their actions which violate the rules of the game. If a referee calls for a disqualification during a match, the robot will be disabled and they will receive a Ranking Score of zero for the match. If disqualification is not determined until the completion of the match, the offending robot will receive a Ranking Score of zero for the match. The alliance partner of a disqualified robot will still receive the score earned by all robots during the match, provided that they are also not disqualified. In both situations, the opposing alliance will receive a score based on the points that they earned. The disqualification of one robot during the Elimination Matches will disqualify the entire alliance.

5.2 Safety Hazards:

5.2.1 Referees may request that teams alter any portion of their robot that is considered a safety hazard. It is the right of the referees to prevent teams from playing in matches until such changes are made to the robot.

5.2.2 Referees will disqualify any robot that they deem to be a repeat safety hazard. A safety hazard is any direct action of, or mechanical failure on said robot which may increase the possibility of immediate damage to other robots, field objects, or personnel.

5.3 Loss of Parts: All parts of the robot must remain attached to the robot for the duration of the match and must not cause any hazard of entanglement to any other robot, or else that robot's team may run the risk of disqualification. Minor pieces which become detached from the robot and do not affect the outcome of the match will not result in a disqualification.

5.4 Out of Bounds: If a robot leaves the playing field for any reason so that it must exert force on the ground outside of the field border, the robot will be immediately disabled. If a robot is forced out of bounds by an opposing robot, both robots will be disabled and the aggressor will be given a 5 point penalty.

5.5 Pinning: Pinning occurs when an opposing robot is held against an obstacle and cannot move, in any direction, because of your robot's presence. Pinning will be visibly counted out by the closest referee for a duration of 5 seconds. If a robot is being pinned for five seconds, the team doing the pinning must back off for at least five seconds before they can resume pinning. Failure to do so will result in a 5 point penalty of the aggressor. If a robot continues to engage in this behavior, they may be disqualified.

5.6 Flipping: Robots may not flip an opposing team's robot. The flipping robot will be disqualified from the match if in the referee's decision they initiated an action which results in flipping. In incidents where the flipped robot initiates action or both robots are in motion, disqualification may not occur and will be at the discretion of the referees.

5.7 Intent to Destroy: Strategies resulting in the destruction of or damage to an opponent's robot or the field and field element is not in the spirit of the competition and will not be allowed.

5.8 Fouls: If a robot receives a penalty from the Referee the offended teams' Fowl Marker will be thrown (by the Referee) onto the field, near the spot of the infraction. The Fowl Marker can then be used by the offended team as an extra Beanie Baby, worth FIVE points if properly scored in the Scoring Zone. FIVE points will be automatically deducted from the offending teams score.



(Fowl Markers)

5.8 Starting Zone: At the start of the match, teams may place their robot anywhere inside either of their Starting Zones. Only one robot may start in either of your alliance Starting Zones. The tape, which defines the Starting Zone, is considered part of the zone and robots may be in contact with it. The exterior edge of the tape forms an infinite vertical plane which robots must begin entirely within. Teams must make a joint decision as to which Starting Zone their robots will be placed in before each match.

5.9 Balloons need to be brought into the Starting Zone before a human player can attempt to obtain the balloon. This action must be done in a manner as to not endanger the competing robots or human players.

5.10 A human player can only blow up, tie, and pop a balloon in the last 30 seconds of a match. In order to receive the TEN BONUS POINTS the balloon must be tied and popped.

5.11 The only acceptable method to pop a balloon is by sitting on it.

5.12 Scoring Objects: Any scoring object which leaves the playing area during a match will be returned to the field near the point at which it exited at the referee or volunteer's earliest convenience.

5.13 Robot Control: Team members may interact with their robot during a match only

through the normal operation of the VEX control system. Only designated drivers may be in contact with the controls during the match.

5.14 Robot Modification: Teams are allowed to modify their robots in between matches as long as the robot remains compliant with all specifications and rules after the modification. Any modification should be brought to the attention of the referees or head inspector prior to the start of the team's next match. Teams may be subject to re-inspection at the discretion of the referees/head inspector.

5.15 Robot Identification: Teams must have their team number clearly marked on four sides of their robot, such that it is visible from 15 ft. away. Teams must also have the ability to designate Red or Blue alliances with a color insert or flag. These inserts must be provided by the team and must not be a functional part of the robot.

5.16 Rule Clarification: All questions or requests for rule clarifications should be submitted to mentor.vex.qa@gmail.com. Questions and answers will be publicly posted on the event website.

5.17 Referee Rulings: All referee decisions regarding rules of play and scoring are final. If there is a question regarding a referee decision the driver may approach the head referee for clarification immediately following that match.

6. The Robot

6.1 Size Restriction: At the start of each match, every part of the robot must fit, unconstrained, in a stable position, within a cube with 15 inch sides. The robot may only contact the surface of the field in starting position. Robots will be measured before the beginning of Qualification Matches.

6.2 Controls: Teams will be required to use one (1) Vex FM remote control and one (1) Vex V0.5 Microcontroller to control their robots. Frequency modules will be provided by the competition coordinators and are not allowed to be brought to the competition site.

6.3 Pit Operation: Teams must use their own tether for robot control in the pit area. Robots may not be operated outside of the competition field or pit area. Failure to follow this rule may result in forfeiture of the next round of competition.

6.5 Construction Restrictions:

6.5.1 A robot must be designed to operate by reacting only against features within the confines of the playing field boundaries and may not interact with anything outside the boundaries of the playing field excluding the human players.

6.5.2 Gaining traction by use of adhesives or by abrading or breaking the surface of the playing field is not allowed and will be considered to be damaging the playing field and is subject to disqualification.

6.5.3 A robot may not contaminate the playing field or an opponent's robot with lubricants or other debris.

6.5.4 Teams may use 7.2V NiCd batteries of any manufacture, but only one battery (six cells) may be used on the robot at a time. The battery cost does not count towards the cost limit listed below.

6.5.5 It is preferred that parts solely come from VEX Robotics Design System Starter Kit, but additional (non-vex) parts may be used as long as the robot maintains the general aesthetic and capability of a Vex robot and can be controlled using the VEX microcontroller.

6.5.6 Modifications are permitted to the mechanical parts of the kit. Teams may opt to buy their own replacement or spare parts but these may not be used as part of the robot until the part fails. Teams may NOT intentionally modify the Vex Microcontroller. Teams may not modify PWM wiring nor may teams modify any motors or servos from their "out of the box" performance. Modification of any other items is permitted.

6.5.7 A parts outline from the VEX Robotics Design System Starter Kit can be found at <http://www.vexrobotics.com/vex-robotics-design-system.shtml>.

6.6 Materials: Teams are restricted to the contents of any Vex Robotics parts as well as additional building materials up to \$200. Additional materials may be used as outlined below. Each team must submit a Bill of Materials outlining their parts and expenses before their first match.

6.7 Additional Materials: The robot must maintain the identity of a VEX robot and the integrity of the competition. If robots are significantly stronger/faster/more durable than an average vex robot, it may be ineligible to compete. All motors must be of equivalence to VEX motors, and controlled through the VEX control system (VEX OI and controller).

6.8 Energy Sources: The energy used by the devices in the competition must come solely from: -A change in altitude of the center of gravity of the device -Electrical energy delivered by the battery to the electronics and motors provided with the kit.
- Stored energy by deformation of parts allowed above (rubber bands) provided the stored energy does not pose a safety hazard at release.

Beanie Babies are a registered trade mark of Ty Inc.