September 2025

The Rules of the Collegiate Robotic Football Fall Combine

This document sets forth rules of the Collegiate Robotic Football Fall Combine. These rules are subject to change in accordance with the evolution of the competition.

The 2025 event will be hosted at the University of Notre Dame's Stepan Center on Saturday, November 15th from 8am to 3pm. There will be an hour and a half lunch and networking event immediately following the Combine, after which the hour-long Oklahoma Drill Tournament will commence. A summary of the Events is provided on the next page, and the Rules can be found afterwards

TITLE	POSITION	TESTS
1. Speed Test	QB, WR, RB, & D	Speed
2. Three-Cone Drill	WR, RB, & D	Agility and Maneuverability
3. Shuttle Run	WR, RB, & D	Speed and Control
4. Strength Test	C & D	Power
5. Block & Tackle	WR, C, & D	Power and Agility
6. QB Accuracy	QB, C, & WR	Throw Accuracy
7. Longest Pass	QB	Throw Power
8. Coffin Corner Punt	K, Any	Kick Power and Accuracy
9. Kicker Accuracy	K	Kick Accuracy
10. Longest Field Goal	K	Kick Power
11. Oklahoma Drill Tournament	Any 3	Running, Blocking, Tackling

Every Robot & Driver combination completes the Combine events based on the position for which they are submitted. A Robot cannot be listed at more than one position; however Drivers can be used more than once. If a Robot breaks down, a different Robot can be submitted after the deadline or partway through the competition; however, the scores will not be combined for the 2 Robots. Only 1 Robot's scores will be counted across all categories per position, and the Robot to count will be determined by the one with the highest aggregate score across all events. Teams must submit a Robot & Driver for each of the following positions at this link by 11/13/2025 at 9:00 pm EST.

POSITION	ROBOT NAME	DRIVER NAME
QB - Quarterback		
C - Center		
RB - Running Back		
WR - Wide Receiver		
D - Defensive Player		
K - Kicker		

A. **General**
   1. The Fall Combine will consist of 10 Drill Events and 1 Tournament Event. *(See Fall Combine Events Appendix for further details)*
      a. Speed Test
      b. Three-Cone Drill
      c. Strength Test
      d. Shuttle Run
      e. Block & Tackle
      f. QB Accuracy
      g. Longest Pass
      h. Coffin Corner Punt
      i. Kicker Accuracy
      j. Longest Field Goal
      k. Oklahoma Drill Tournament
         1. This event now counts towards seeding, the Combine Championship, and any prizes
   2. Teams will be encouraged to compete in person, but will be permitted to compete virtually if necessary. *(Further details in Section D)*
   3. Every Robot that is submitted will receive 3 attempts in each Event provided for their position. The best score of their attempts will be scored.
   4. The 10 Events will be run in 3 phases with the events in each phase running simultaneously. Teams will be expected to organize themselves to get their eligible robots through all 3 attempts at the events for which they are signed up.
      a. Phase 1
         1. Three-Cone Drill
         2. Shuttle Run
         3. Kicker Accuracy
      b. Phase 2
         1. Strength Test
         2. QB Accuracy
         3. Coffin Corner Punt
      c. Phase 3
         1. Speed Test
         2. QB Longest Pass
         3. Longest Field Goal
         4. Block & Tackle
   5. There will be a 40 minute time limit for each Phase with 5 minutes of transition time between Phases.

B. **Prizes**
   1. Fall Combine Championship Award
      a. The team ranked the highest across all Events will be crowned the Fall Combine Champion and awarded with the Fall Combine Championship Award.

1. If a tie occurs, it will be broken by the team with the better score in the Quarterback Rankings.
    a. If there is still a tie, performance of each position will be assessed according to the following priority:
        i. Running Back
        ii. Wide Receiver
        iii. Defender
        iv. Center
        v. Kicker
    b. If still tied move to the next position, if still tied after all positions are exhausted, flip a coin

b. Only the best score from each event will be considered.

2. Positional Champion Awards
    a. An award will be given to the best robot at each position.
        1. There will be an award for each Positional Champion of the Virtual League separate from the main award. *(Further details in Section D)*
    b. The Robot ranked the highest across all eligible Events within their position will win this Positional Champion Award.
        1. If a tie occurs, it will be broken by the team with the better score in the applicable drill for their position.
            a. The performance of each drill will be assessed according to the following priority:
                i. QB Accuracy
                ii. Longest Pass
                iii. Three-Cone Drill
                iv. Shuttle Run
                v. Speed Test
                vi. Block & Tackle
                vii. Strength Test
                viii. Kicker Accuracy
                ix. Coffin Corner Punt
                x. Longest Field Goal
            b. If still tied move to the next applicable drill, if still tied after all drills are exhausted, flip a coin
    c. Robots can only be entered as one position prior to the event.
    d. Position eligible Events are listed below:
        1. Quarterback
            a. Speed Test
            b. QB Accuracy

        c. QB Longest Pass
    2. Running Back
        a. Speed Test
        b. 3-Cone Drill
        c. Shuttle Run
    3. Wide Receiver
        a. Speed Test
        b. 3-Cone Drill
        c. Shuttle Run
        d. Block & Tackle
        e. QB Accuracy
    4. Center
        a. Strength Test
        b. Block & Tackle
        c. QB Accuracy Test
    5. Defensive Player
        a. Strength Test
        b. Block & Tackle
        c. Speed Test
        d. 3-Cone Drill
        e. Shuttle Run
    6. Kicker
        a. Kicker Accuracy Test
        b. Coffin Corner Punt
        c. Longest Field Goal

C. **National Championship Tournament Seeding**
    1. Seeding for the National Championship in April will be determined at this Fall Combine by the aggregate of scores across all events.
        a. This Combine also serves as the qualifier for the National Championship Tournament. A non-zero score is required in each event to qualify, but winning an event is not necessary.
    2. Due to competing on different surfaces that may pose unfair advantages and different officials timing the events, teams competing in the Virtual League will be seeded after all teams in the Physical League. They will still be considered for scores against other Virtual League Teams.
    3. Playoff seeding will be determined among teams eligible to compete in the Tournament with the top seed being given according to the top ordinal ranking across all positions.
        a. If a tie occurs, it will be broken by the team with the better score in the Quarterback Rankings.
            1. If there is still a tie, performance of each position will be assessed according to the following priority:

a. Running Back
b. Wide Receiver
c. Defender
d. Center
e. Kicker

2. If still tied move to the next position, if still tied after all positions are exhausted, flip a coin

D. **Hybrid Nature**

1. The Combine will consist of two leagues: the Physical League and the Virtual League.
2. Playoff seeding is affected by which League a team is admitted into, with Virtual League teams being considered behind all Physical League teams.
3. Physical League
    a. All teams who attend in person are admitted to the Physical League.
    b. Teams in the Physical League are eligible to compete for preferential Tournament seeding, the Combine Championship Award, and Positional Champion Awards.
4. Virtual League
    a. All teams who compete in the event from their own venue are admitted to the Virtual League.
    b. Teams in the Virtual League are not eligible to compete for the Combine Championship Award; however, they are eligible to compete for deferential Tournament seeding, and Virtual League Awards.

Fall Combine Events Appendix

This document sets forth rules guiding the Events of the Collegiate Robotic Football Fall Combine. These rules are subject to change in accordance with the evolution of the competition.

#1 Drill: Speed Test

Purpose: This drill measures pure speed.

Equipment: Floor tape; however, a barrier to prevent a failure to decelerate after crossing the finish line may be necessary, depending on available space.

Description: A robot runs the length of a 60-foot lane and is timed, starting from a dead stop. There is no penalty for deviating from the lane or a straight line, so long as the robot finishes between the finish line cones. Safety concerns demand that the lane and the area around it be kept clear during this event.

Measurement: The time in seconds taken to run the lane from start to finish.

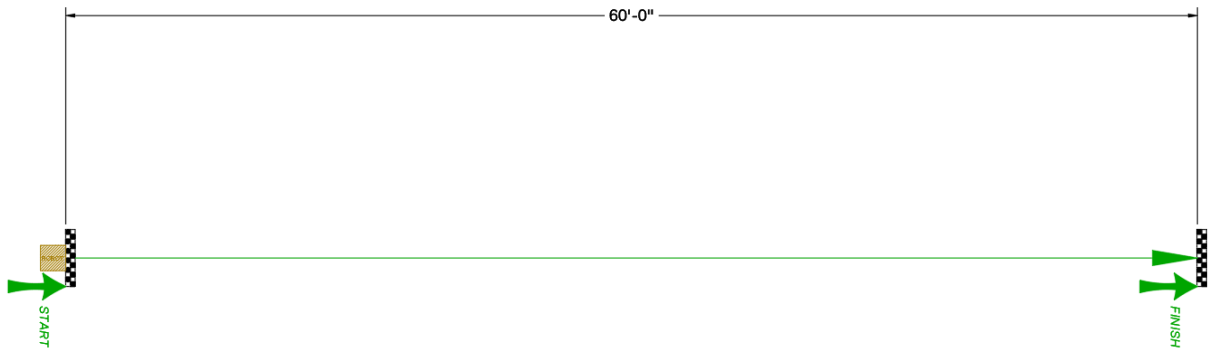

Figure 1: Speed Test. Green represents the optimal path that the robot can travel.
(Start/Finish line can be simple tape, does not need to be checkered.)

#2 Drill: Three-Cone Drill

Purpose: This drill tests the maneuverability and agility of the robot

Equipment Needed: Three orange cones, floor tape

Description: This drill consists of 3 cones in an L-shape and spaced 15 feet apart center-to-center. The robots start and finish on either side of cone #1. See the Events Layout document for the path around the cones (the path shown is illustrative and approximate). The robot will start from rest at cone #1 with its leading edge just behind the start line. The path is timed from when the robot begins to cross the start line to when its leading edge crosses the finish line. A successful path is one that negotiates a nearly 360° turn (cone #2), a 180° turn (cone #3), and a roughly 90° turn (cone #2).

Measurement: The time required, in seconds, to travel from the start cone along the path to the finish line, with one second added for each time the robot touches a cone with any part of its surface. Officials or teammates replace hit cones as needed.

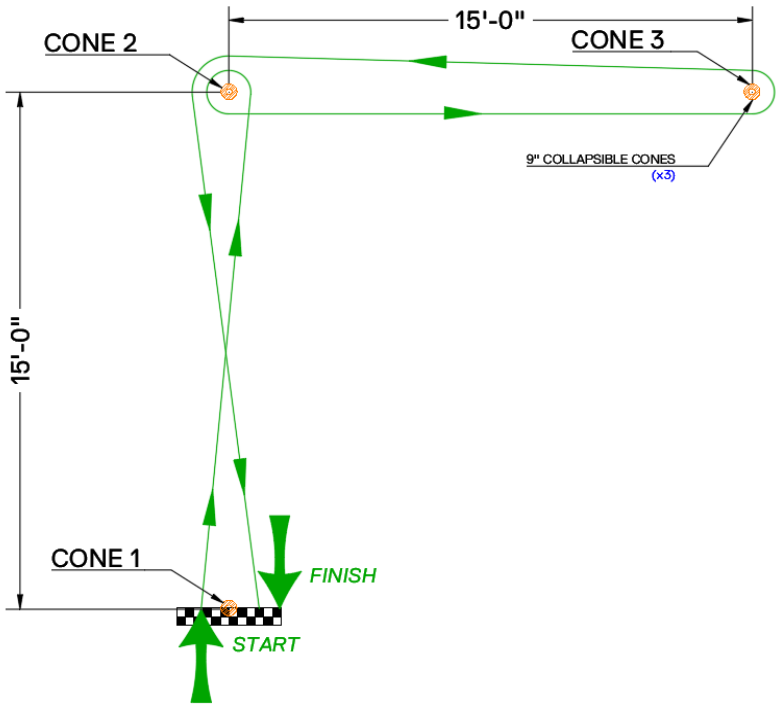

Figure 2: Three-Cone Drill. Green represents the path that the robot must travel. An example of acceptable orange cones can be found here. (*Start/Finish line can be simple tape, does not need to be checkered.)*

#3 Drill: Shuttle Run

Purpose: Measure the ability of the robot to shuttle (reverse direction) in a controlled but speedy manner.

Equipment Required: 30 small orange cones, floor tape

Description: The drill consists of a start line and a finish line halfway in a rectangle 3 x 30 feet. (See Events Layout document) A straight line, marked by tape, is placed 15' from either end, marking the start and finish line. Starting from a stop, the robot must shuttle to one end, reverse direction, move to the other end, reverse direction again, and cross the finish line. The time to perform that action shall be measured in seconds. The timing official will measure the time and count the number of times the robot touches a cone along the side boundary line (called an infraction). One second shall be added for each infraction.

A run is immediately disqualified if the robot exits the area between the two lines of cones and doesn't immediately return.

Measurement: The time taken to shuttle from the starting line to the finish line in the lane in seconds, with one second added for each time the robot touches a cone with any part of its surface. Officials or teammates replace hit cones as needed.

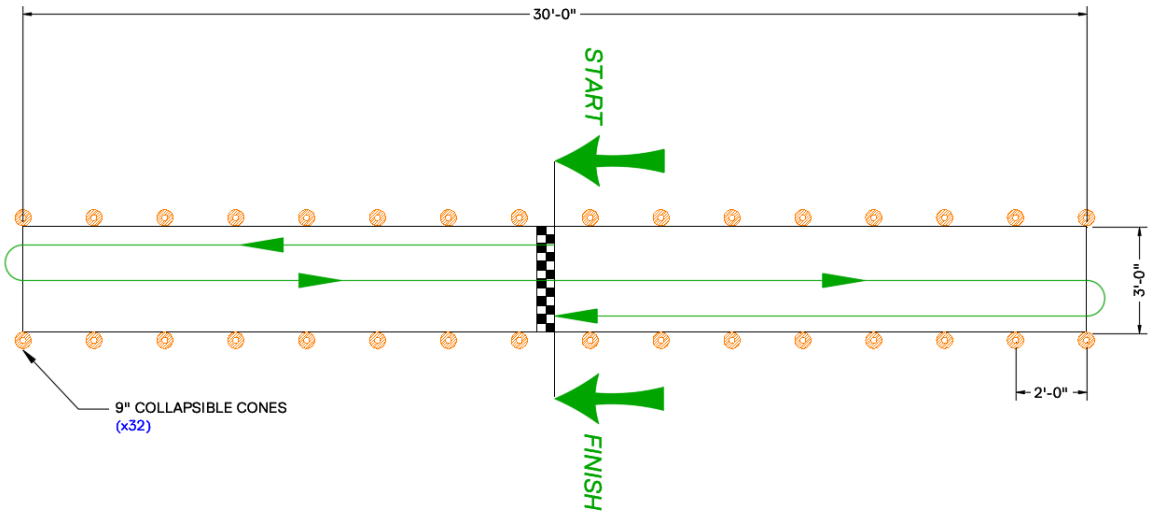

Figure 3: Shuttle Run. Green represents the path that the robot must travel. An example of acceptable orange cones can be found here. (*Start/Finish line can be simple tape, does not need to be checkered.)*

#4 Drill: Strength Test

Purpose: This drill tests the overall strength of the robot.

Equipment: A dummy robot lineman (no motors) on casters. The dummy robot has a pole in the center around which weights (like those used in gyms) are placed to add mass and therefore inertia. Floor tape is needed as well.

Description: The robot will start from rest in contact with an amount of weight chosen by the team on a dummy robot. Without initial momentum, the robot must overcome the dummy robot's inertia and push it a distance of 10 feet. If the robot fails to move the stack across the finish line, they earn a score of zero and lose that attempt. See the Event Layout document for a diagram. The robot does not have to follow a straight line, but the weights may or may not be ideally symmetrical on the dummy robot, so control is a factor. For each of the attempts the team chooses how much weight is placed on the chassis.

Measurement: The highest weight in pounds that can be pushed across the finish line within 3 attempts.

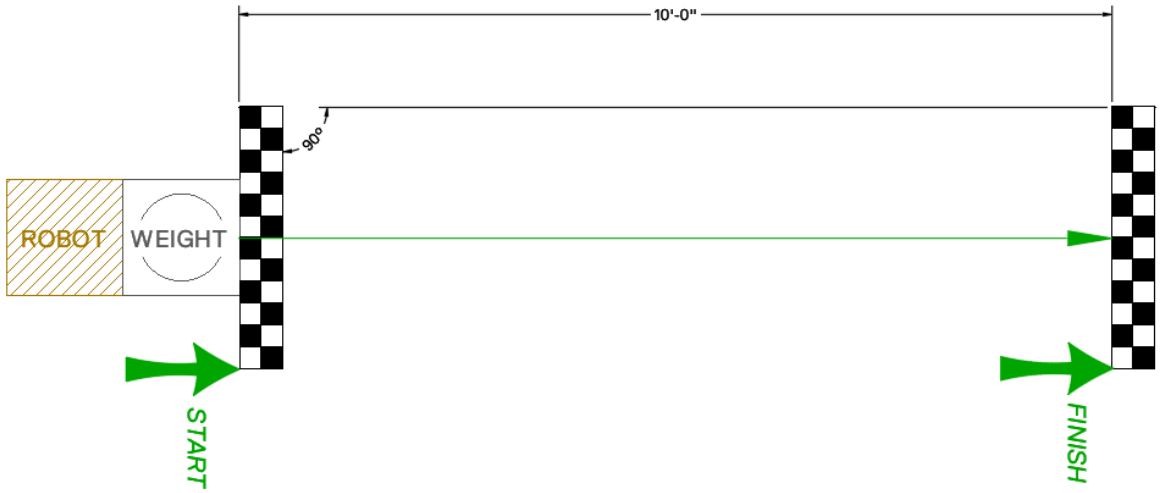

Figure 4: Strength Test. Green represents the optimal path that the robot can travel.
(Start/Finish line can be simple tape, does not need to be checkered.)

#5 Drill: Block & Tackle

Purpose: Measure the ability of a robot to produce enough force to tackle another robot.

Equipment Required: Trash Can, weighted filler as necessary

Description: The robot will need to knock down the three targets in any order. Once all three targets have been tackled the Event is complete. If a robot is unable to knock down a target and the driver elects to accept the penalty, 30 seconds will be added to their time. If no targets are able to be tackled, a score of zero will be assessed.

Measurement: The amount of time it takes from crossing the start line to the third target hitting the ground.

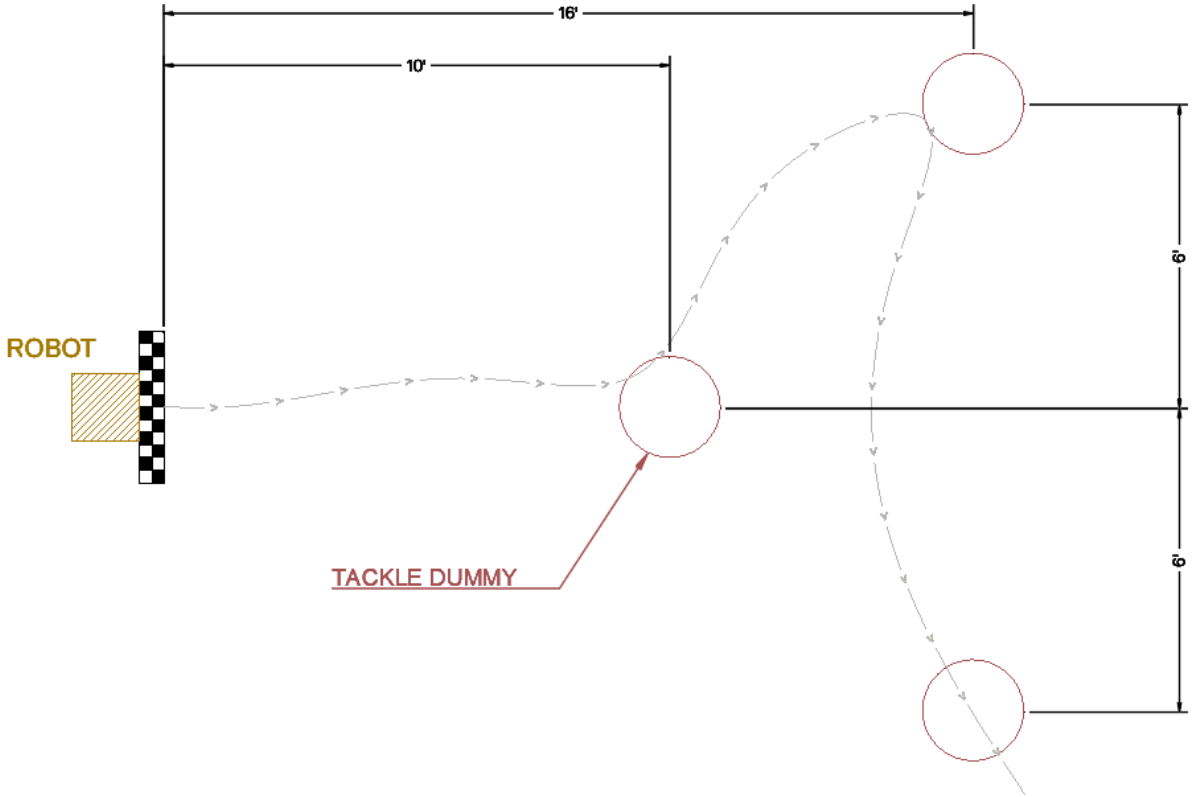

Figure 5: Block & Tackle. Gray represents an optional path that the robot can travel. (*Start/Finish line can be simple tape, does not need to be checkered.)*

#6 Drill: QB Accuracy Test

Purpose: This drill tests how accurately the Quarterback can throw to a specific location, how consistently the Center can snap the ball, and how effectively the Wide Receiver can retain a pass.

Equipment: Floor tape

Description: Nine "X" marks are placed on the floor at distances of 6, 12, and 18 feet and at roughly 45 degrees from a line where the QB is stationed. The Center is on the other side of the line in position to hand off to the QB. The WR is maneuvered so that it sits over an "X". The quarterback passes to the wide receiver. If the football hits any part of the receiver but is not caught, the QB is awarded 1, 2, or 3 points for 6', 12', or 18', respectively. The score is doubled (2, 4, or 6 points, respectively) if the wide receiver truly catches and retains the ball. No points are awarded for a miss. If the Center is inoperable or missing for even a single passing attempt such that the pass begins with the ball in the QB's possession without a snap, the scoring for the entire 2-minute attempt is quartered. Once a catch or touch-catch is made, the WR must move to another "X" and no "X" may be repeated until a non-zero score is achieved for each "X". There are 2 total minutes allotted for the players to score as many points as possible. If a completed pass is accomplished for each "X", the team may start again at any "X" for additional points.

Measurement for Quarterback: See the Formula below for scoring detail.

$$Score = \frac{(3l_C+2m_C+1s_C)+(6l_R+4m_R+2s_R)}{4\ (if\ no\ snap)}$$

Measurement for Center: See the Formula below for scoring detail. A successful snap is defined as a snap that leads to the Quarterback passing the ball. If the Quarterback is unable to pass the ball after the snap due to the failure of the Center or the placement of the ball, that is considered an unsuccessful snap.

$$Score = \frac{Successful\ Snaps}{Total\ Snaps} \times 100 \times (1 - e^{-0.2\ x\ Total\ Catches})$$

Measurement for Wide Receiver: See the Formula below for scoring detail. A retention is defined by the WR possessing the ball after the ball has come to a stop. A touch catch is any pass that makes contact with the WR. This will measure how effectively the WR design can retain passes.

$$Score = \frac{Retentions}{Total\ Catches} \times 100 \times (1 - e^{-0.2\ x\ Total\ Catches})$$

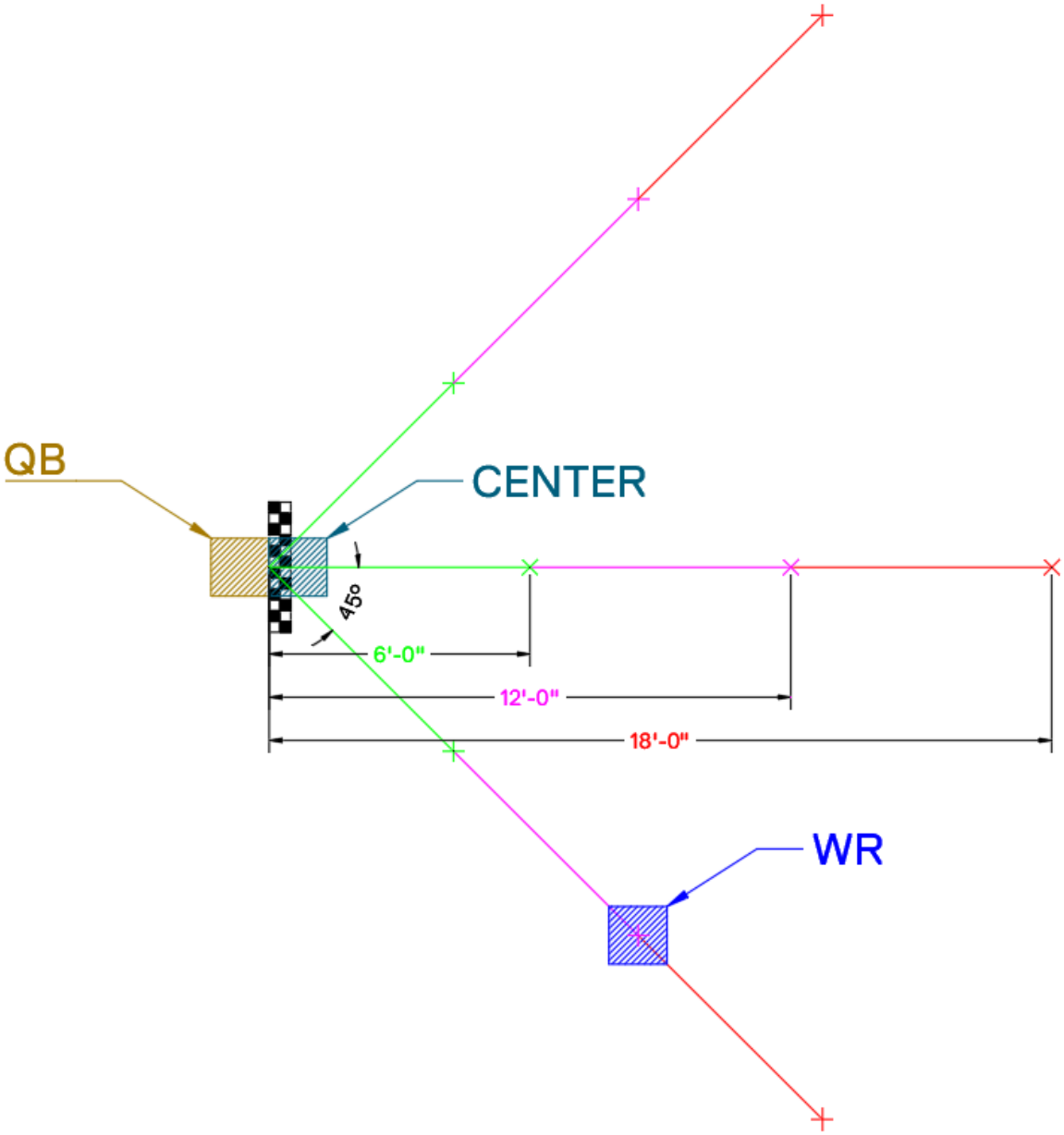

Figure 6: QB Accuracy Test. All lines are on 45°, and all X's are on 6', 12', and 18'.
(Start/Finish line can be simple tape, does not need to be checkered.)

#7 Drill: Longest Pass

Purpose: This drill tests the throwing strength of a Quarterback.

Equipment: Floor tape, measuring tape

Description: The Quarterback lines up at the line of scrimmage as defined by the floor tape. Each throw should be measured and recorded.

Measurement: Measure the distance from the line of scrimmage perpendicularly to the spot where the ball contacted the ground. The drill is executed three times and the highest score is considered.

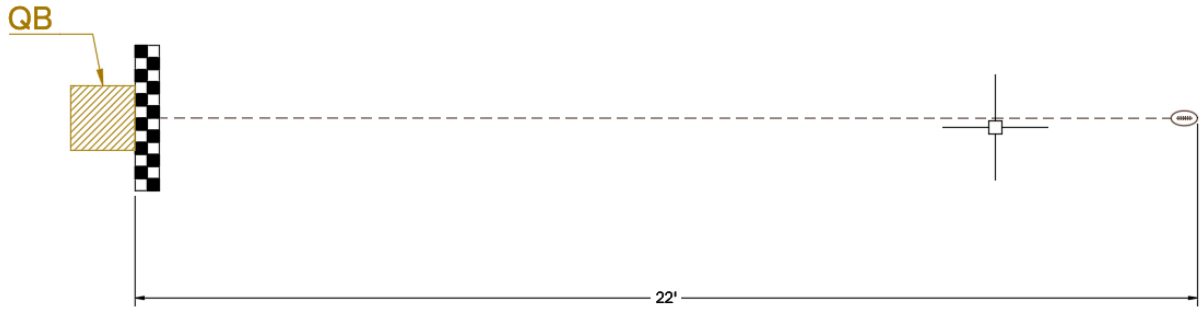

Figure 7: QB Longest Pass. Only a start line and open space ahead are needed.
(*Start/Finish line can be simple tape, does not need to be checkered.)*

#8 **Drill**: Coffin Corner Punt

Purpose: This drill tests both the precision of kicking as well as the skill of covering a punt by a Wide Receiver.

Equipment: Floor tape

Description: The kicker lines up 50 feet from a goal line taped on the floor no wider than 46 feet and 15 feet from an out-of-bounds line running 50 feet up the field (pre-existing lines on the floor on, say, a basketball court can be used instead of tape). The kicker kicks the ball toward the goal line, and as soon as the ball is kicked a "gunner" situated behind the line of scrimmage on either side races to recover the ball by making contact with it.

Measurement: The distance from the goal line perpendicularly to the spot where contact was made by the Wide Receiver and the ball or where the ball crossed out of bounds. If the ball crosses the goal line before being recovered, the distance is 33 feet. If the ball fails to be kicked, the distance is 50 ft. The drill is executed three times and the distances are averaged for the final score. Three failed attempts are considered a zero score. Shortest average distance wins.

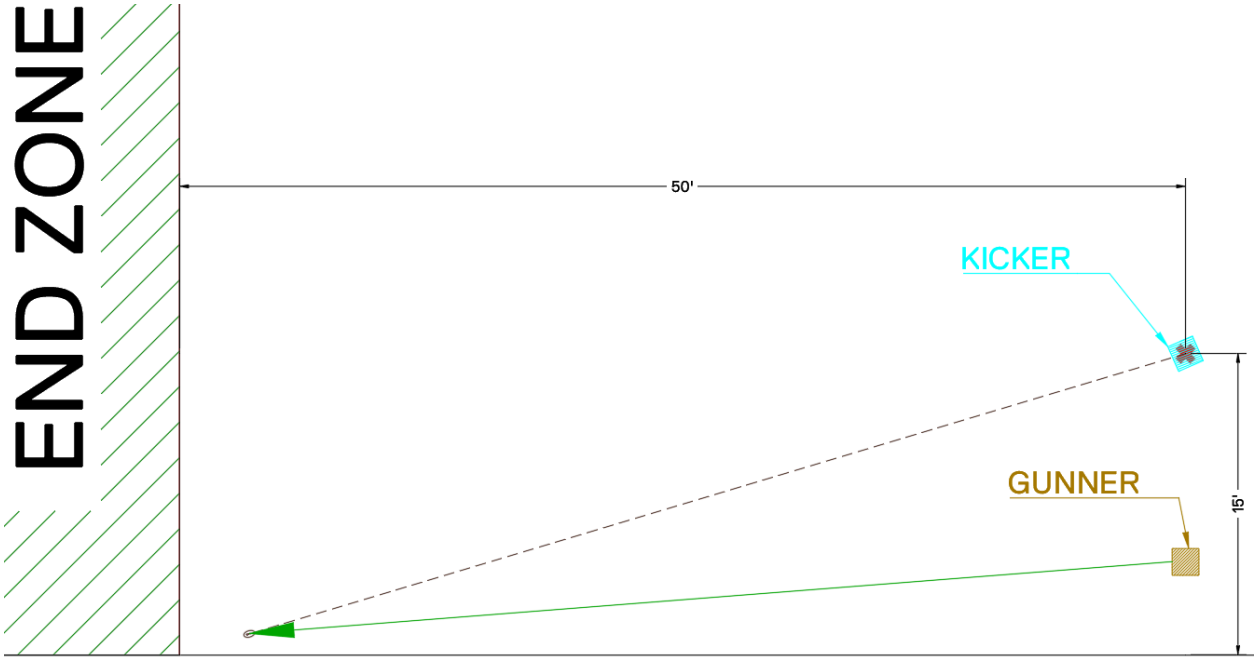

Figure 8: Coffin Corner Punt. Only an "X", sideline, and goalline are needed.

#9 Drill: Field Goal Accuracy

Purpose: This drill tests the ability of a Kicker to make accurate kicks.

Equipment: Goal posts; measuring device to place tape for kicker marks, floor tape

Description: Marks made with tape will be placed at the set locations as defined by the Event Layout document. A 2 minute timer will be set and the team will be able to score as many field goals as possible in this time. A team can only kick 1 field goal attempt from each mark. After completing an attempt, they must move to a new mark of their choosing. The 3 closest marks are worth 1 point, the middle 3 are worth 2 points and the furthest 3 marks are worth 3 points. There are 3 Bonus Marks on the field that will change each year. These marks are worth 5 points each, but the kicker must successfully strike the crossbar or uprights to score (the ball is not required to successfully pass through the posts. If a team attempts all 12 kicks before time expires, every remaining second is worth an additional point rounded to the nearest second.

Measurement: The accumulated scores for completed kicks in the time allotted

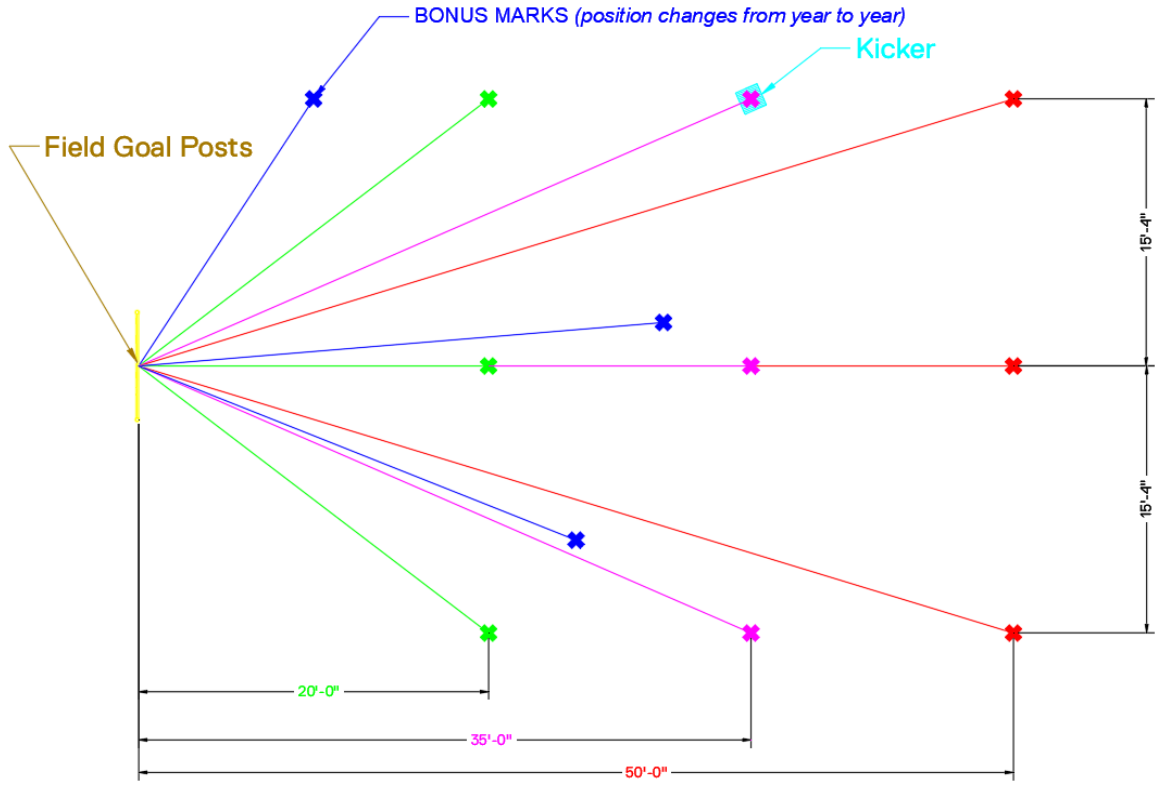

Figure 9: Field Goal Accuracy. The Bonus Marks can be set by the setup team for each event but no wider or further than the normal marks.

#10 Drill: Longest Field Goal

Purpose: This drill tests the furthest distance a kicker can kick a field goal

Equipment: A single set of goal posts; sufficiently long measuring device

Description: The kicker lines up at the distance of the operator's choosing from the field goal posts. Each successful kick that passes through the uprights should be measured and recorded.

Measurement: The distance from the ball's placement in or in front of the kicker and the goal post as measured along the floor perpendicular to the goal posts. Furthest completed distance is kept of the 3 attempts.

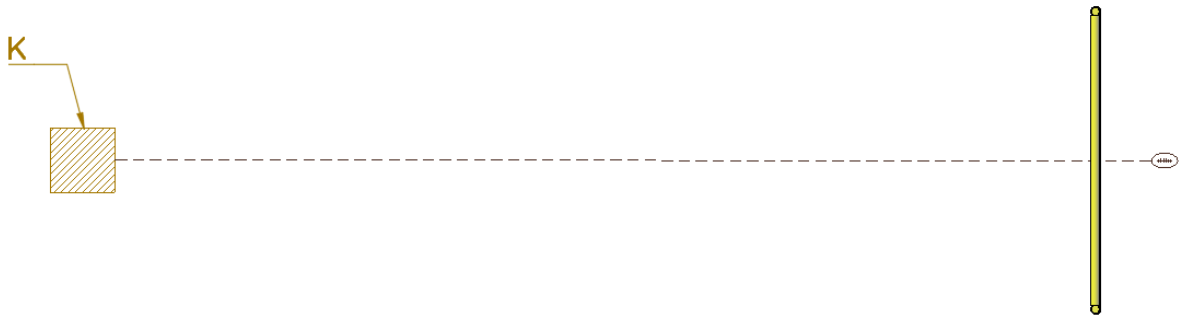

Figure 10: Longest Field Goal. A tape measure is laid out before the kick to measure the attempt distance.

#**11 Event**: Oklahoma Drill Tournament

Purpose: This event tests the ability of a small team to block, run the football, shed blocks and tackle. It will now contribute to the overall Combine scoring.

Description: The inspiration for this event is the "Oklahoma Drill" designed by the University of Oklahoma Sooners football team. This event operates in the format of a tournament including all teams admitted to the Physical League, one Player must be equipped with a tackle sensor and must be capable of carrying the football. The playing field is defined by the lane of an NCAA basketball court. The Line of Scrimmage is the baseline of the court and the Goal Line is the free throw line. The Offense can place two Offensive Linemen anywhere along the Line of Scrimmage with the Running Back positioned anywhere the Offense desires behind the Line of Scrimmage. The Defense can place two Defensive Linemen anywhere along the Line of Scrimmage with the Defensive Back positioned anywhere behind the Line of Scrimmage. The football begins in the possession of the Running Back.

A coin toss is managed by the referee and called by the Visiting Team. The winner of the coin toss can choose to go on Offense or Defense first. Play begins on the first movement of the Ball Carrier, after which all players can begin to move. The goal of the Offense is to score a point by crossing the Goal Line without getting tackled or stepping out of bounds. The goal of the Defense is to prevent the Offense from crossing the Goal Line. The game consists of 3 Offensive possessions for each team alternating between which team is on Offense. A Round consists of each team having 1 Offensive attempt. Crossing the Goal Line counts for 1 point to the Offense. If the Offense fails to cross the Goal Line in a Round, the position they are tackled at will serve as the line of scrimmage for their next attempt if available (unless they are tackled for a Safety in which case they return to the Base Line for the next possession). The team with the most points after 3 Rounds wins. If there is a tie, the teams will continue to play Rounds in a similar manner to NCAAF Overtime Rules. This means that if a team has the lead after any successive Round they will win.

Teams will compete in a round-robin format playing every other eligible team once to establish rankings. They will then finish with a single-elimination tournament to determine the winner and overall standings for the drill. Any Robots regardless of position can play in this competition and be subbed in and out as the team pleases.

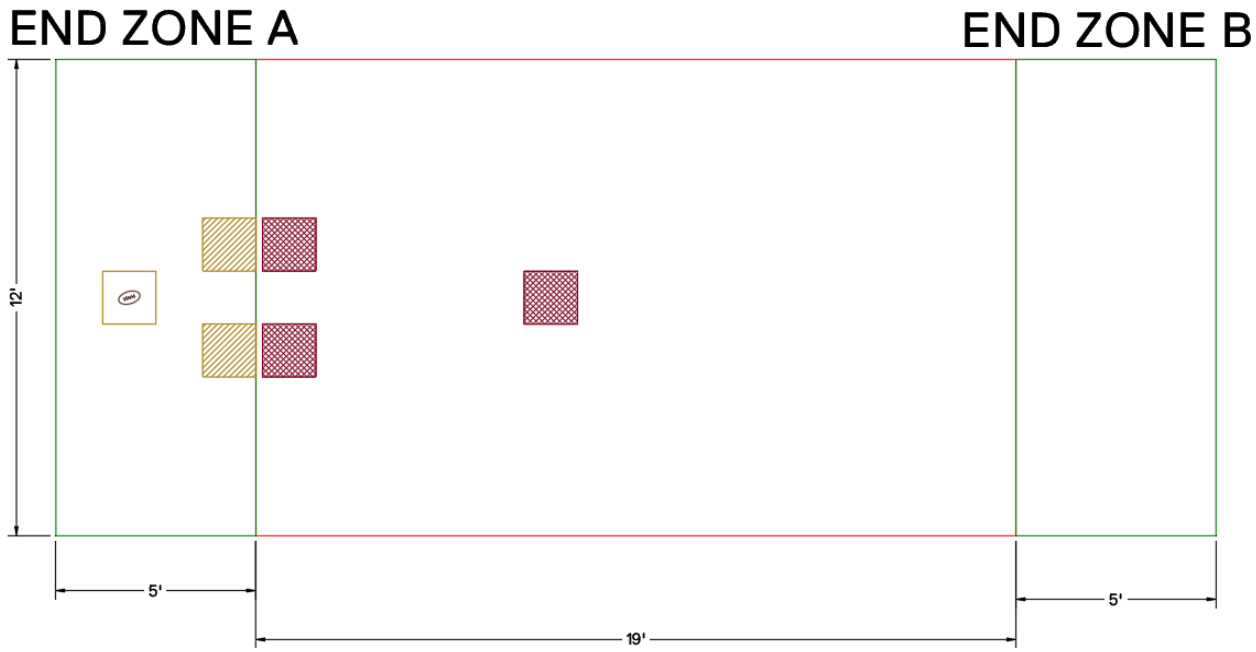

Figure 11: Oklahoma Drill Field. Cones can additionally be used to mark the corners of the endzones.

#**12 Optional Experiment**: Oklahoma Passing Tournament

Purpose: This event tests the ability of a small team to pass the football and to defend the pass. It will not contribute to the overall Combine scoring.

Description: This event operates in the format of a tournament including all teams admitted to the Physical League, one Quarterback and pass catching robots are required. The playing field is defined by the lane of an NCAA basketball court. The Line of Scrimmage is the baseline of the court and the Goal Line is the free throw line. The Offense can place two Wide Receivers anywhere along the Line of Scrimmage with the Quarterback positioned anywhere along the Line of Scrimmage as well. The Defense can place one Defensive Linemen anywhere along the Line of Scrimmage with 2 Defensive Backs positioned anywhere behind the Line of Scrimmage. The football begins in the possession of the Quarterback.

A coin toss is managed by the referee and called by the Visiting Team. The winner of the coin toss can choose to go on Offense or Defense first. Play begins on the first movement of the Quarterback, after which all players can begin to move. The Quarterback is not permitted to run the football downfield and may only throw the football. The referees will count 5 seconds after which they will signal that the Defense is allowed to cross the Line of Scrimmage to attempt sacking the QB. Note that all catches must be made beyond the Line of Scrimmage. The goal of the Defense is to prevent the Offense from completing passes and crossing the Goal Line. The game consists of 3 Offensive possessions for each team alternating between which team is on Offense. A Round consists of each team having 1 Offensive attempt. The Offense scores 1 point for a Touch Catch and 2 points for a Retained Catch as well as 1 point for crossing the Goal Line. The Defense scores 1 point for a Touch Interception and 2 points for a Retained Interception. If the Offense fails to cross the Goal Line in a Round, the position they are tackled at will serve as the line of scrimmage for their next attempt (unless they are tackled for a Safety or their Defense recovers a turnover at a better position). The team with the most points after 3 Rounds wins. If there is a tie, the teams will continue to play Rounds in a similar manner to NCAAF Overtime Rules. This means that if a team has the lead after any successive Round they will win.

Teams will compete in a single-elimination tournament to determine the winner and overall standings for the event. Any Robots can play in this competition and be subbed in and out as the team pleases.