

## NERC 2018- CONTEST THEME

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The focus of NERC 2017 was to create autonomous robots which can simulate disaster management operations. This year, the theme of NERC-2018 is “Ordinance Supply to Warzone”.

The robots will act as Service Corps which have to supply weapons and ammunition to a War Zone and swiftly make their way out of the War zone without getting hit. They can drop these supplies (balls) at “army units” denoted by colored boxes. Unfortunately the robot has no knowledge of its own location in the territory. The robots must localize itself to reach the “army unit” and deliver the supplies. One of the supplies will be delivered to the “army units” from over the bridge. The first team to deliver all supplies and exit the Warzone will be declared the winner.

1. The Contest arena shown in **Error! Reference source not found.** consists of two sub arenas, both the sides are identical to each other and their colored boxes locations are similar.
2. Laminated wooden sheets (lasani) are used for the construction of the arena. The floor of each will be of the white colour shown in the map.
3. The walls have a height of 4 inches throughout the arena.
4. Each Sub arena is divided in to two zones Z1 and Z2.
5. Zones Z1 and Z2 are connected via a bridge.
6. Each sub arena has 3 units. Z1 has one unit. Z2 has 2 units. The location and color of the units are fixed.
7. The robot will enter the arena from Z1 and exit from Z2.
8. The robot can only enter in zone Z2 from Z1 by crossing the bridge. The bridge is as shown in Figure 1. Contest Arena. The robot must cross the bridge.
9. The starting position of the robot in Z1 will be random. The robot will be placed on any one of the 10 cross section points marked with blue circles in **Error! Reference source not found.**. The orientation of the robot will also be random.
10. The robot will follow the colored lines in order to localize itself and find the unit placed in Z1.
11. After reaching the unit in Z1, the robot can pot the supplies in the unit from any direction. The color of the unit (box) is green.
12. The robot or an extension of the robot must be present in the Region B in order to pot the supply in the unit.
13. The robot must reach inside the region B and drop the ball (irrespective of correctly potted or not), only then will the robot be allowed to climb the bridge.

14. For Z2, the supplies must be dropped in the unit while standing on the bridge.
15. There will be a unit placed on both sides of the bridge. The unit on the left side of the bridge is red and the unit on right hand side of the bridge is blue.
16. The robot will sense the color on the centre of the bridge and then must drop the supply in the correct colored box. The color of the bridge centre will be either red or blue.
17. The task of the robot will be completed successfully after reaching the Finish point.
18. The robot should choose between Path 1 or Path 2 in order to reach the Finish point. The robot will strictly follow the chosen Path and ensure that the line remain between any two wheels of the robot at all times.
19. The supplies are considered to be white tennis balls. The units are the colored boxes.
20. The size of the unit in Z1 is 4x4x4 inches while the size of the units in Z2 is 6x6x6 inches.
21. The robot should have the balls preloaded.
22. Though the locations and colour of the units in Z2 are fixed, the colour of the centre of the bridge is not fixed. It can either be red or blue.
23. The robot must fit in a 12x12 inch square at the time of measurements with its extensions closed. The maximum weight of the robot must not exceed 10 kg.

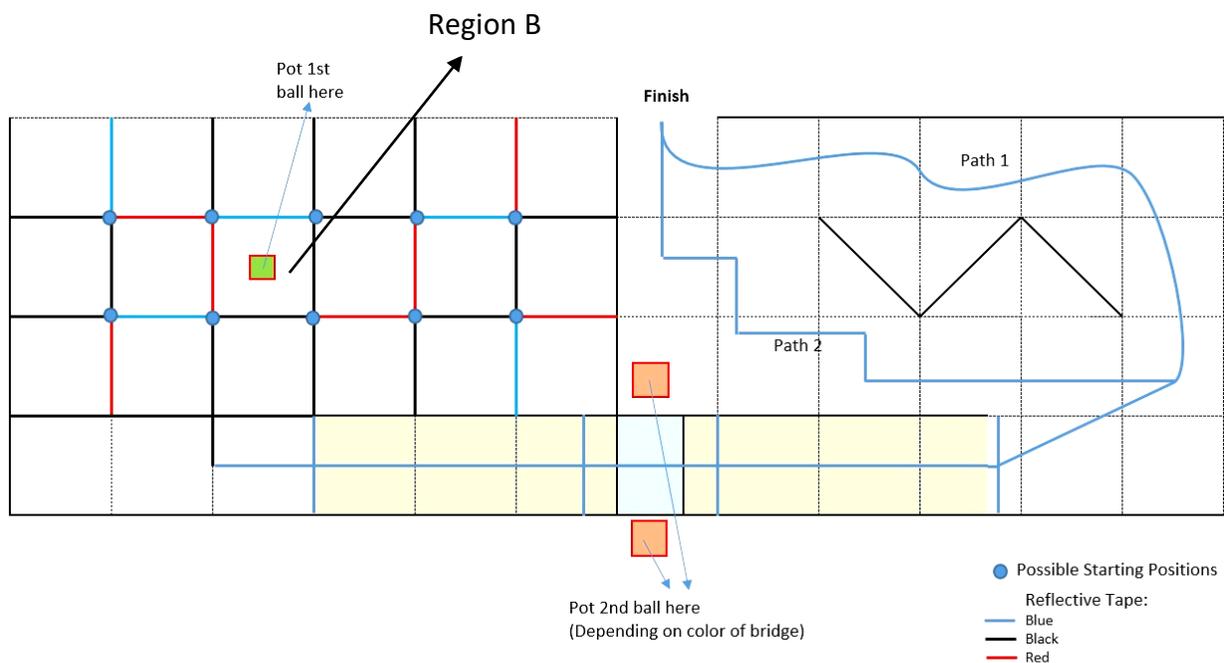


Figure 1. Contest Arena

**DISCLAIMER: This is the short draft of the theme. Minor changes may occur when the complete theme is released.**