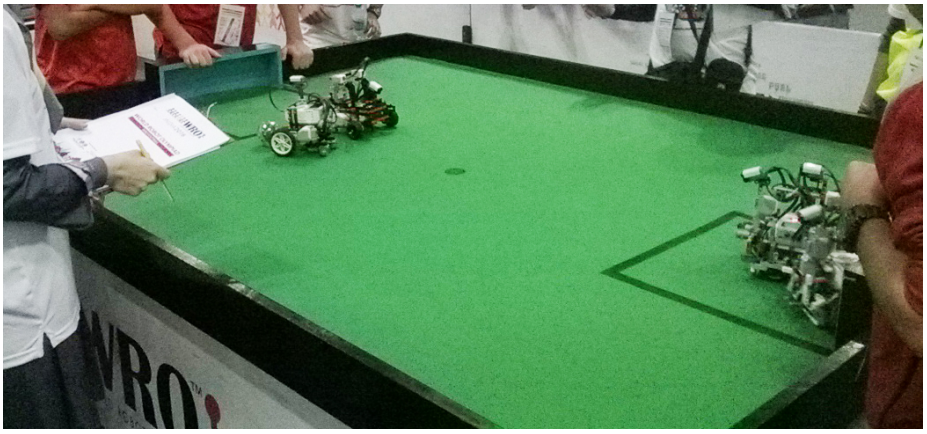
World Robot Olympiad 2019

WRO Football Field

Version: December 1st

WRO International Premium Partners



WRO Football Field

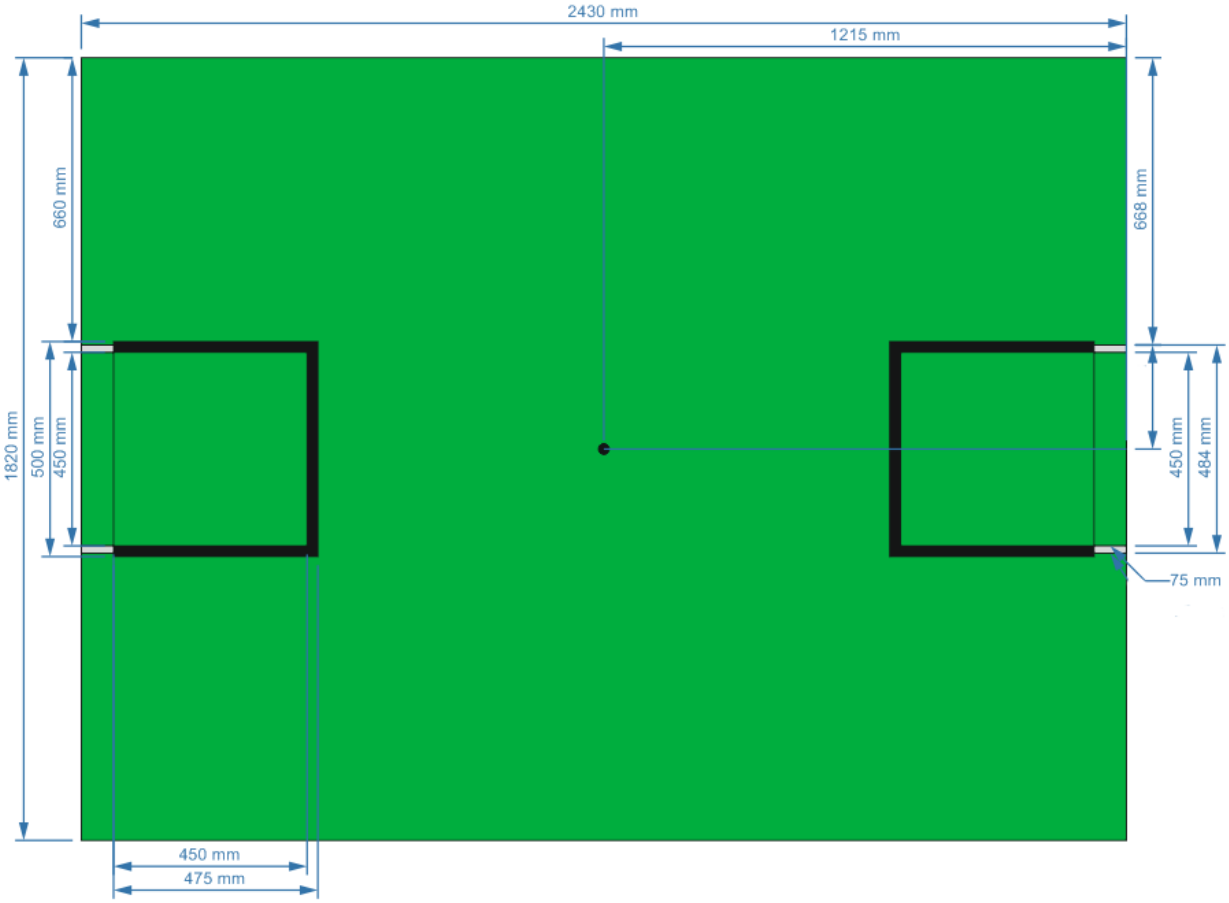
1. The Official WRO Football playing field is 1830 mm by 2430 mm. Local organisers may choose to use 1143mm by 2362 mm Regular League Table or any size variation between the two. See below.
2. The official floor will be green carpet. The recommended carpet is 3-5 mm thick dark green outdoor or industrial carpet. Carpet fibers should be less than 10 mm. The carpet should show a reading of 3 or above when using the EV3 Color Sensor in Reflected Light intensity Mode. See below.
3. The carpet will be marked with penalty boxes marked with 2.5 cm black lines with the inside of the line starting at the inside of the goal post. The penalty box line will start at the front of the goal posts
4. A thin black line 3mm wide is drawn between the goal uprights to clearly mark the goal line.
5. A 2.5 cm radius circular back spot will be painted in the center of the field. See the Appendix for field marking suggestions.
6. If appropriate carpet is not available, local organisers can choose to use plastic or vinyl mats.
7. The field should be placed on a **wooden or plastic** table or on the floor. Magnetic conditions need to be checked if the field is on the floor or if the table has metal supports.
8. For wider fields, event organisers may elect to use 30 cm X ~1cm inclines from GEN II Fields along the side walls, if they consider this will improve game play. The aim of inclines is that the ball will roll from the top of the incline to the centre of the field. The height of inclines may vary with field surface composition. Inclines will be used in WRO World Tournaments.
9. Event organisers must inform competitors of any local variations to the field sizes and specifications prior to the event.
10. Matte black walls are placed all around the field, including behind the goals.
11. The walls must be at least 10 cm high above the playing surface.
12. The walls and goals must be constructed of at least 5mm ply wood or pine as they need to withstand robot collisions and reflect ultra-sonic signals effectively.
13. The width of each goal is 45 cm**.**

14. The back and sides of the goal interior are painted sky blue. R: 80 G: 200 B: 250. The floor is dark green carpet. The external sides of the goals are painted matte black.
15. The official depth of each goal is 7.5 cm. with the back of the goal in line with the end of field. Local organisers may choose to place the back of a pre- constructed goal against the end of the field.
16. Depending on goal construction, the goal may extend 7.5cm – 8 cm into the playing area, to allow for the thickness of the back wall of the goal.
17. Each goal will have a black cross bar with the top 14cm above the playing surface.
18. Teams must come prepared to calibrate their robots based on the lighting and magnetic conditions at the venue. Organizers will attempt to keep IR light levels as low as possible and locate soccer fields away from magnetic fields such as under floor wiring and metallic objects. However sometimes this cannot be avoided.

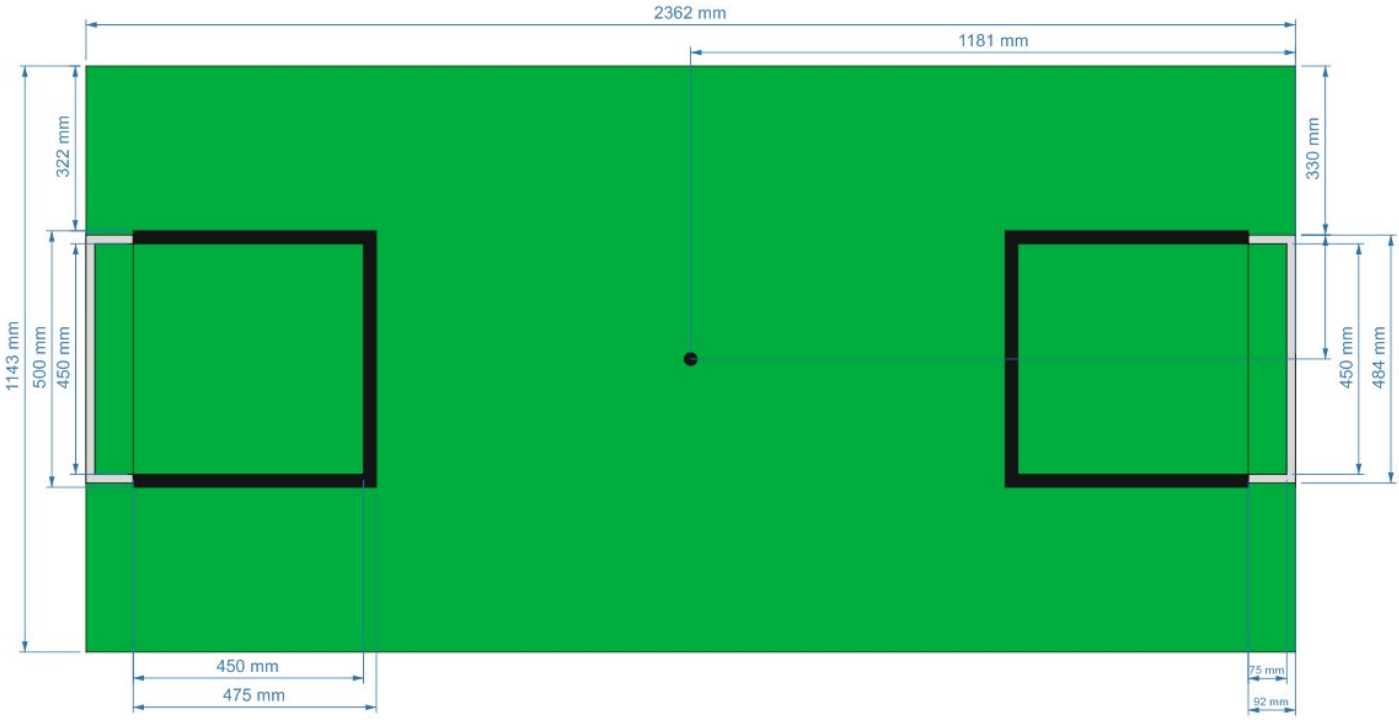
Field Construction

Field Design

The Official WRO Football Table to be used at WRO Titles:

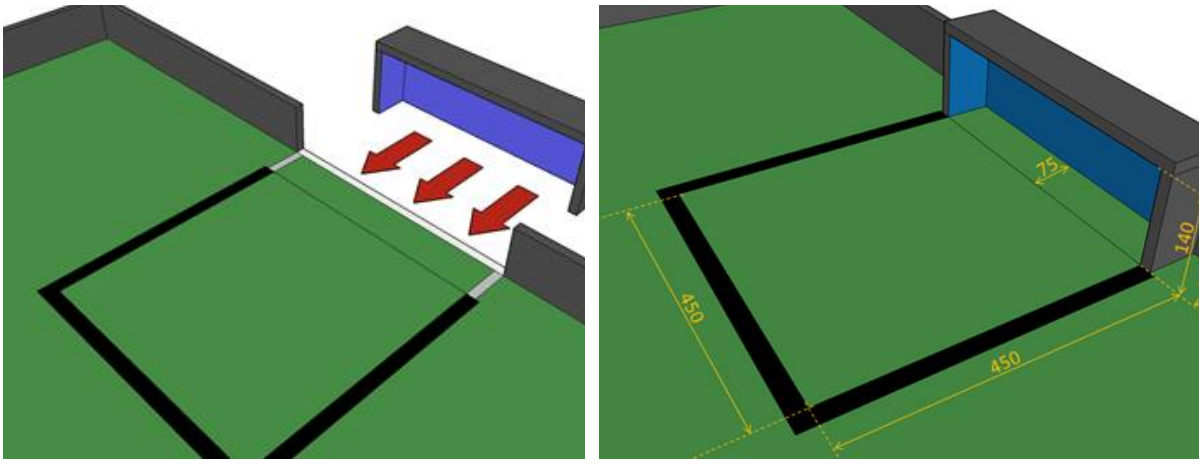


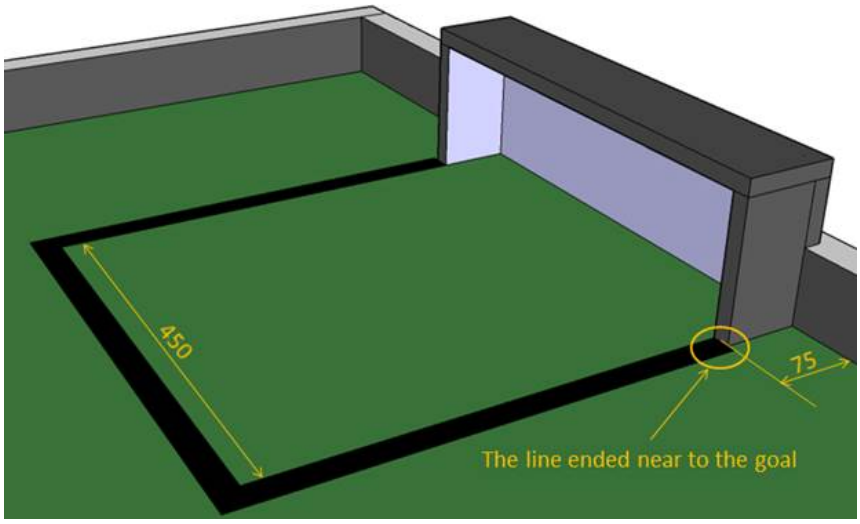
An alternative table can be made from a Regular CategoryTable:



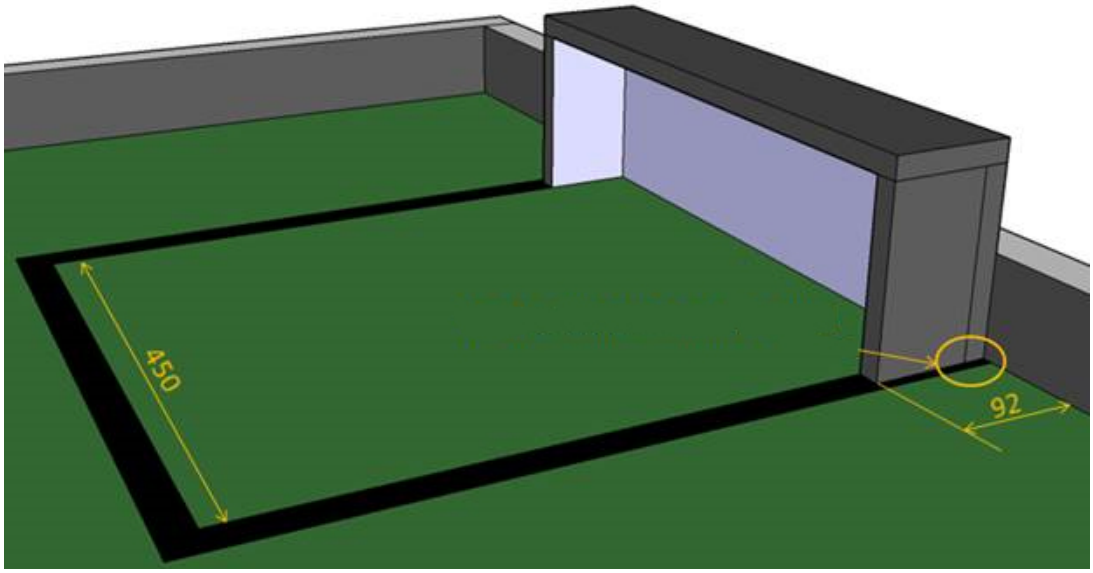
Goal Design
The Official WRO Football Goal options to be used at WRO 2019:

Notes
Materials for goals can be solid wood(pine) or plywood 5 to 17 mm thick(recommended)
The WRO Football rules allow for adjustments depending on the table and materials that you are starting with.



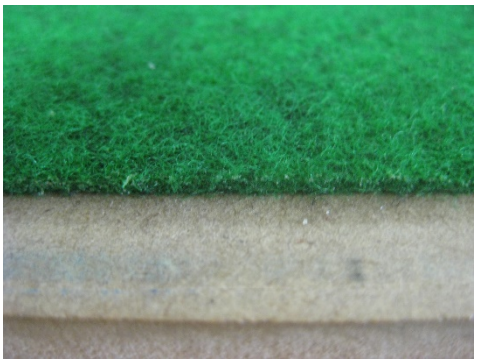


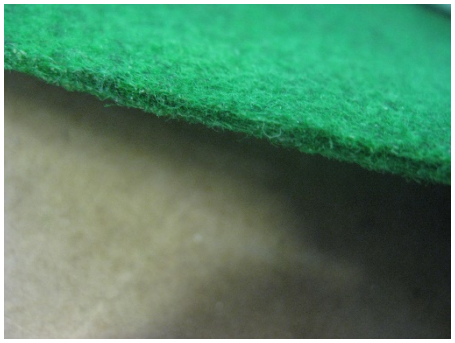
Acceptable design is:



Field Marking

Recommended Field Material - Outdoor Carpet



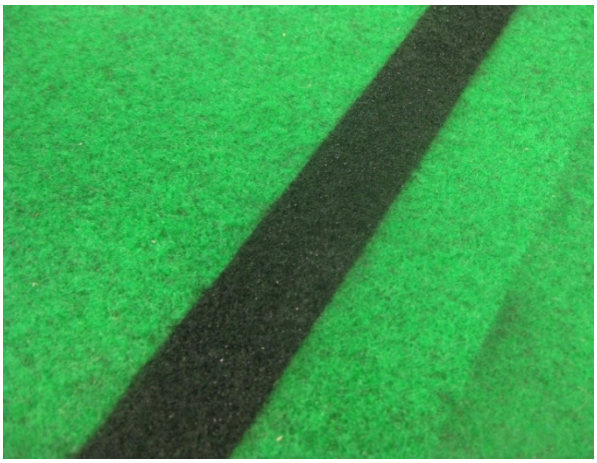


Short Fibre, Thickness 3-5 mm, EV3 reflected light reading 3 or above

- Lines can easily be marked using Flat Black Enamel from a spray can.
- Areas can be masked using tape or a laser cut template as shown below.
- Laser cut templates are advantageous for “touch up” during tournaments.
- It has been found that spray enamel dries quickly and is very durable over the duration of a tournament.

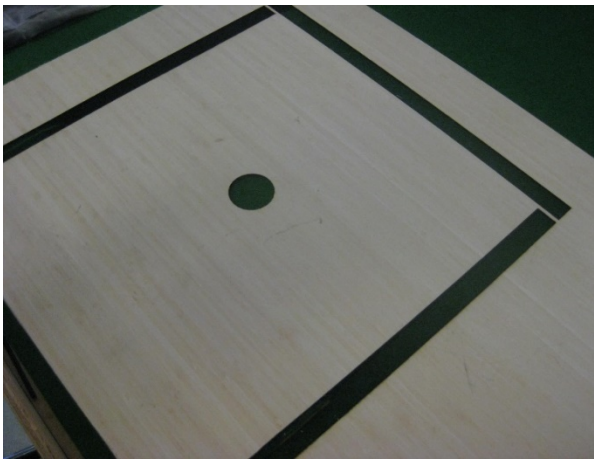
An alternative to spray enamel is black 25mm cloth(gaffer) tape. This has been found to be durable and is easily repaired during a tournament

Line Spray Using Masking Tape

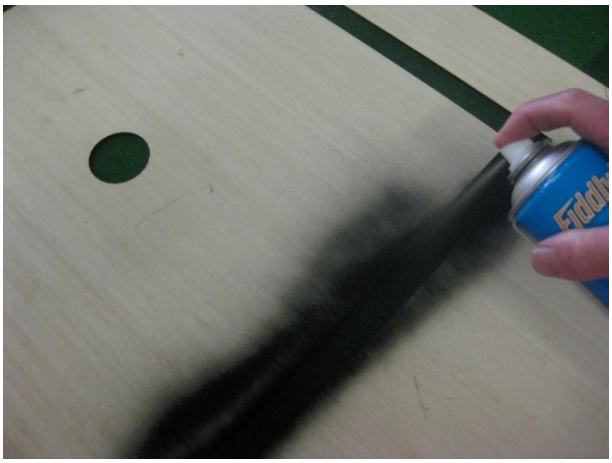


Lines should give an EV3 Reflected Light Reading of 0

Line Marking Using Spray Paint and Template



- A template can be made from a single veneer of wood (shown) or thin ply wood.
- It can either be laser cut or cut using a sharp knife
- The centre circle can also be cut into the template
- Note the fillets to make the template more stable



The template is moved forward by 2.5cm to spray fillet areas.