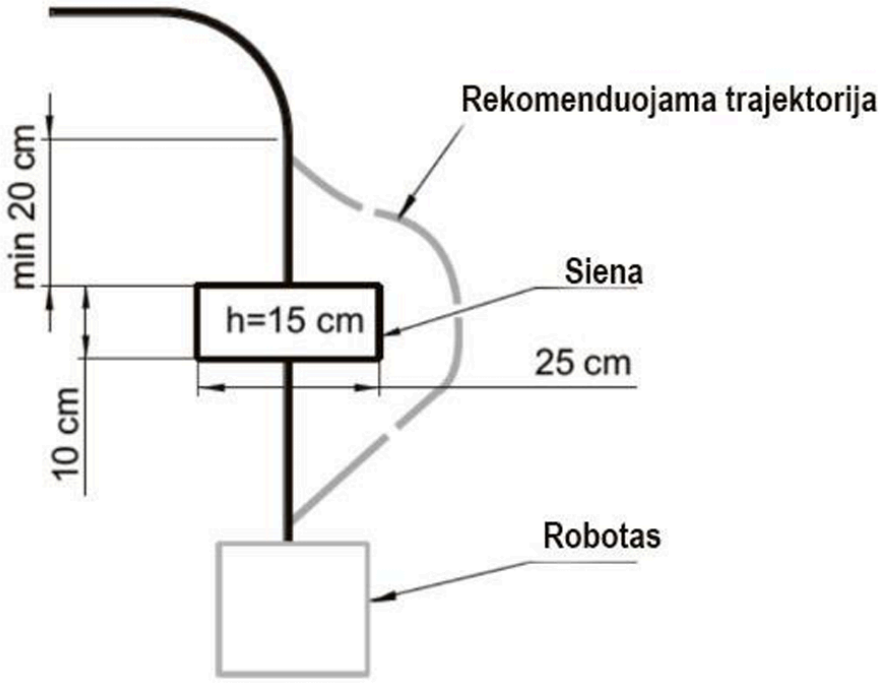
Line Following with Obstacles Competition Rules

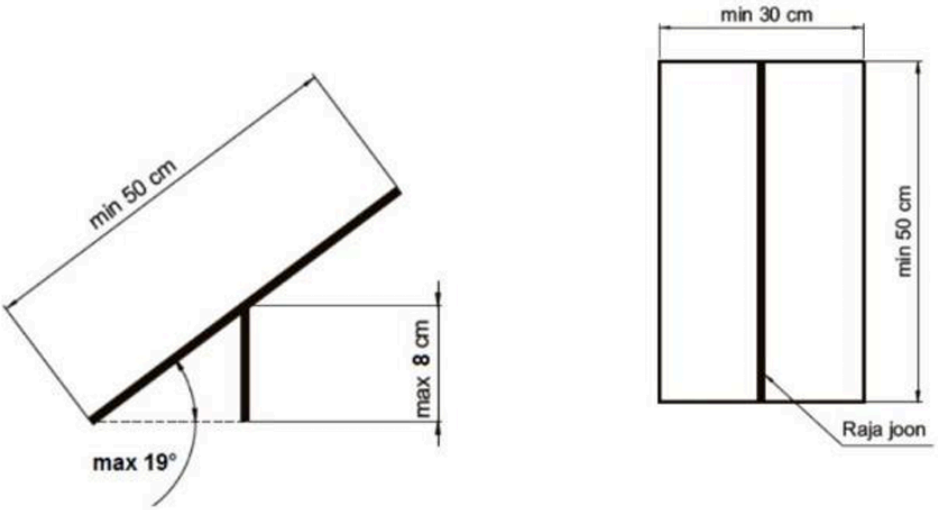
1. COMPETITION FIELD

The competition field is a white synthetic board with an area of 3–10 m².
The line marking the track is 15 mm wide (±3 mm).
The track may include sharp corners with angles ≥ 90°.
Minimum turning radius of the line: 7.5 cm.
There must be 25 cm of free space on both sides of the line, except at intersections.
Lines may intersect only at right angles. Before the intersection, lines must be straight for at least 20 cm.
At intersections, lines are perpendicular for at least 20 cm. The robot must follow the straight line at intersections (it cannot turn onto the intersection line, otherwise the attempt will not count).
The track is closed, with start and finish at the same point.
The track surface may consist of components joined so that gaps and irregularities are minimized as much as possible.

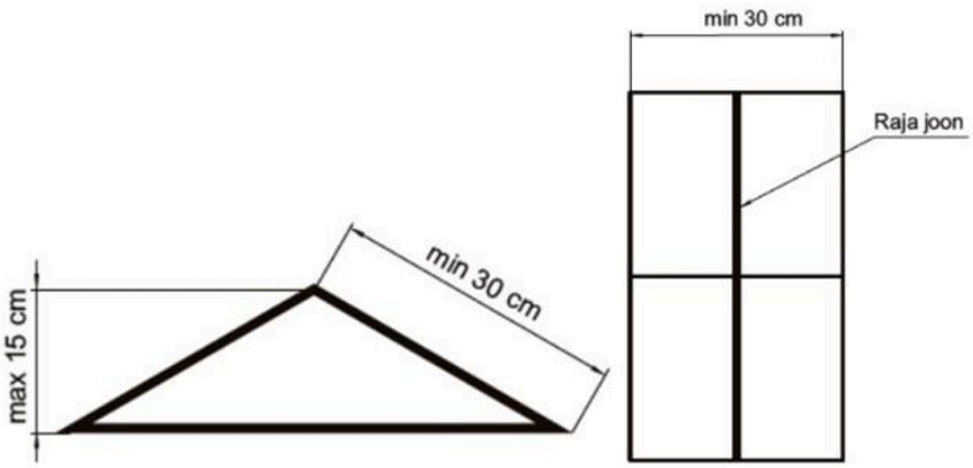
- **Solid obstacle on the line**: Dimensions 25 × 15 × 10 cm (±1 cm). The robot must bypass the obstacle and resume line following within 50 cm. Contact with the obstacle is allowed for sensor activation. Color and material are not specified.



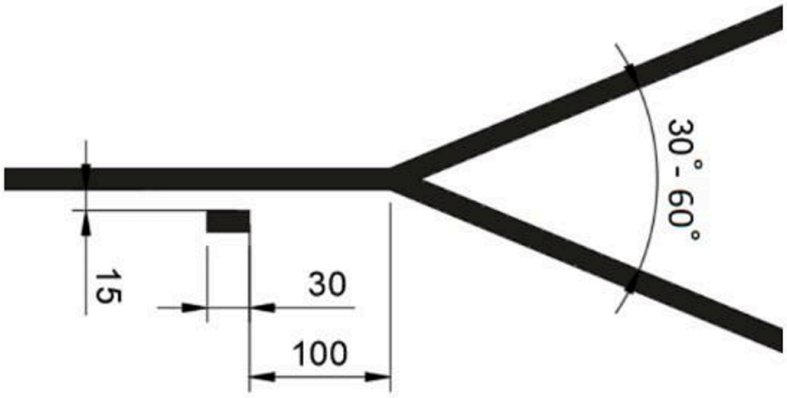
Swing: The robot must cross the swing and continue following the line. Bypassing is not allowed. Swing length ≥ 50 cm, width ≥ 30 cm, pivot point ≤ 8 cm above surface. Standard line continues on the swing. At least 20 cm straight line after the swing.



Hill: Viewed from the side, the hill is an equilateral triangle; from above, a rectangular obstacle. Height ≤ 15 cm, triangle side ≥ 30 cm, width ≥ 30 cm. The robot must cross or climb the hill and continue following the line. Standard line continues on the hill. At least 20 cm straight line after the hill.



Road split: The track splits into two paths. One path is longer. The shorter path is marked before the split with a black sign (15 × 30 mm ±2 mm) placed 100 mm ±10 mm before the split and 15 mm ±2 mm from the main line. At least 20 cm straight line before the sign. Split angle: 30–60°.



2. ROBOT REQUIREMENTS

The robot must be autonomous (self-operating).
Maximum dimensions: 30 cm × 30 cm × 30 cm (length × width × height).
Maximum weight: 3 kg.
Maximum allowed voltage: 48 V.
The robot may use active elements to increase grip, including EDF.
The robot must have a start/stop button or remote control (recommended).
Any other communication with the robot during the run is prohibited, except for remote start/stop.

The robot must be designed so that it can start after the referee's signal, with a 2s delay for the operator to step back.

The robot must not be sensitive to environmental conditions such as lighting, smoke, sound, laser effects, or other event elements.

During the event, camera flashes and other intense light sources are prohibited.

Note: The track may be illuminated with incandescent, halogen, CFL, CCFL, LED, and other light sources with dimming functions.

The robot is prohibited from:

a. changing its size.
b. damaging the track surface, barriers, timers, or injuring people.
c. emitting gases, liquids, or dust.

3. COMPETITION FORMAT

The competition format is determined by the tournament organizers based on the number of participants. The format is published on www.roboklubas.lt.

The competition consists of two stages:

a. Qualification stage: Participants may perform unlimited attempts in a live queue, taking one attempt at a time and then returning to the end of the line. If all robots fail to finish within three minutes, those closest to the finish qualify.
b. Final stage: The four fastest participants advance to the final. Organizers may adjust the number of finalists or cancel the final depending on the number of participants who completed the track. (If the final is not held, winners are determined by qualification times.)
   In the final, the participant with the slowest qualification time starts first.
   In the final stage, each participant has 5 minutes and unlimited attempts. Time starts when the robot first crosses the start line. The last attempt counts if the robot crosses the start line before the 5-minute limit.
   The participant with the best time in the final stage becomes the winner of this event. If all robots fail to finish within three minutes, results are based on proximity to the finish.

Driving procedure:

a. Before the attempt, the participant must place the robot at the start line.
b. After the referee's signal, the robot is started.

c. While driving, the robot must cover the line with its body.
d. If the robot loses track, it may return to the same point where it lost the track or an earlier point on the track.
e. An optical timing system records the track completion time at the start/finish position.
f. The robot is considered to have crossed the start or finish line if the automatic timer is triggered (sensor height from the track surface is 2 cm ±1 cm).
g. Each run time is measured from the moment the robot crosses the start line to the moment it crosses the finish line.
h. All parts of the robot must cross the start/finish lines.
i. Each attempt has a 3-minute limit.
j. If the robot fails to cross the start and/or finish line within 3 minutes, the attempt does not count, and the participant may return to the end of the line for a new attempt.

4. ORGANIZATION

The robot must be registered before the competition.
During registration, the robot is assigned a number that must be affixed in a visible location. Compliance with Section 2 requirements is also checked.
The competition schedule is published on www.roboklubas.lt.
All disputes arising during the competition are resolved by the chief referee.