# DROID TROOPER 3.0

TASK

> The teams have to build a manual robot (wired or wireless) which has to place the cubes at their respective destination points at different locations in the track after crossing different terrains which is divided into zones.

> The teams will be awarded points for the above task and also for crossing zones in the stipulated time limit.

ARENA

The schematic views of arena is as follows
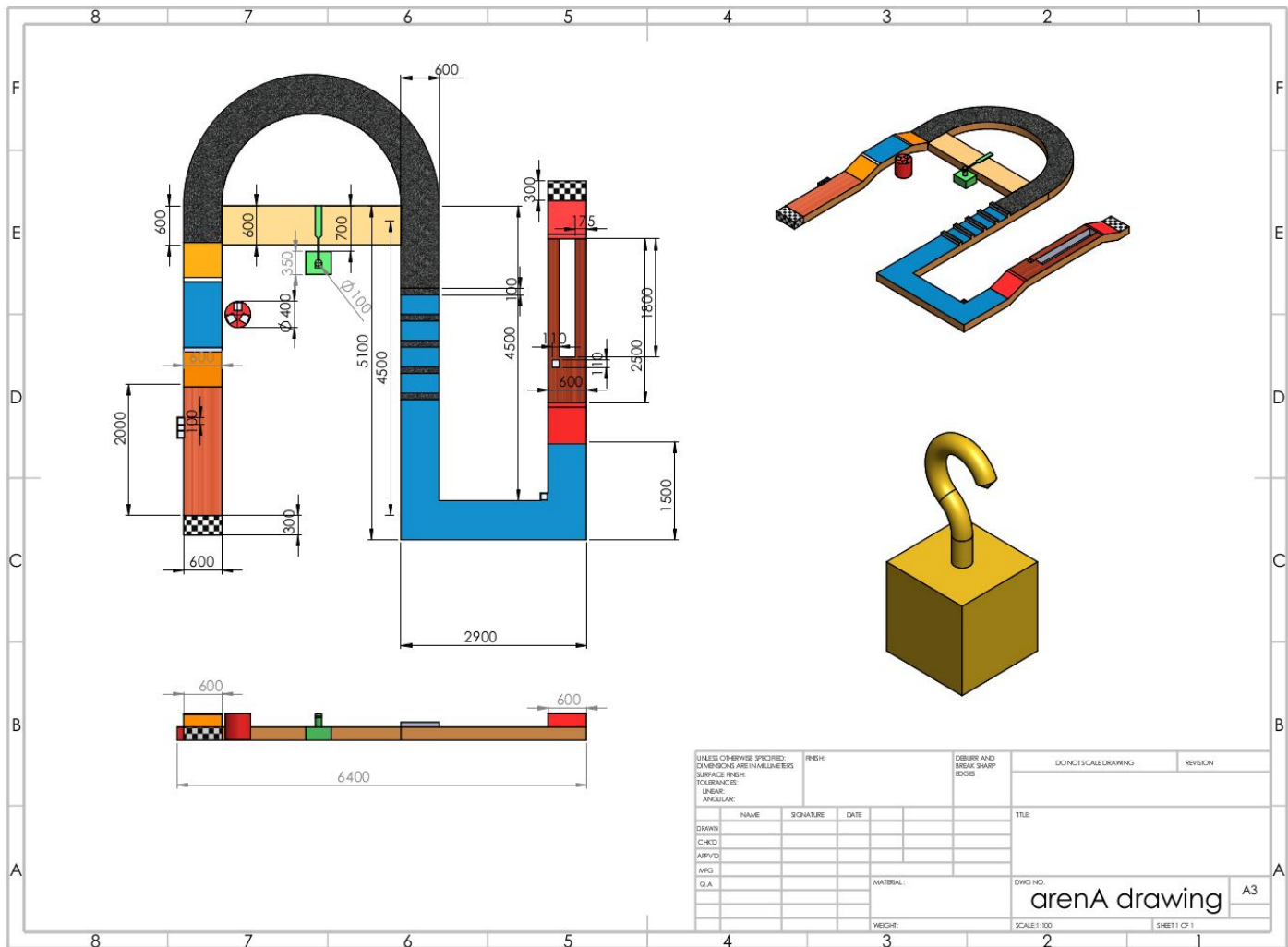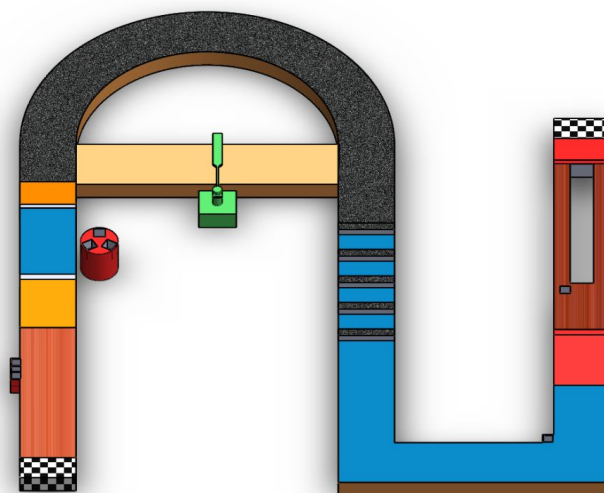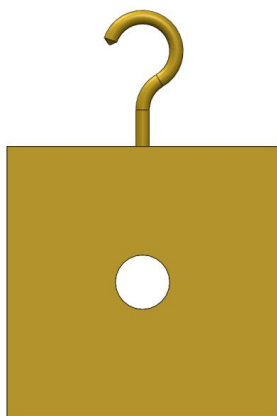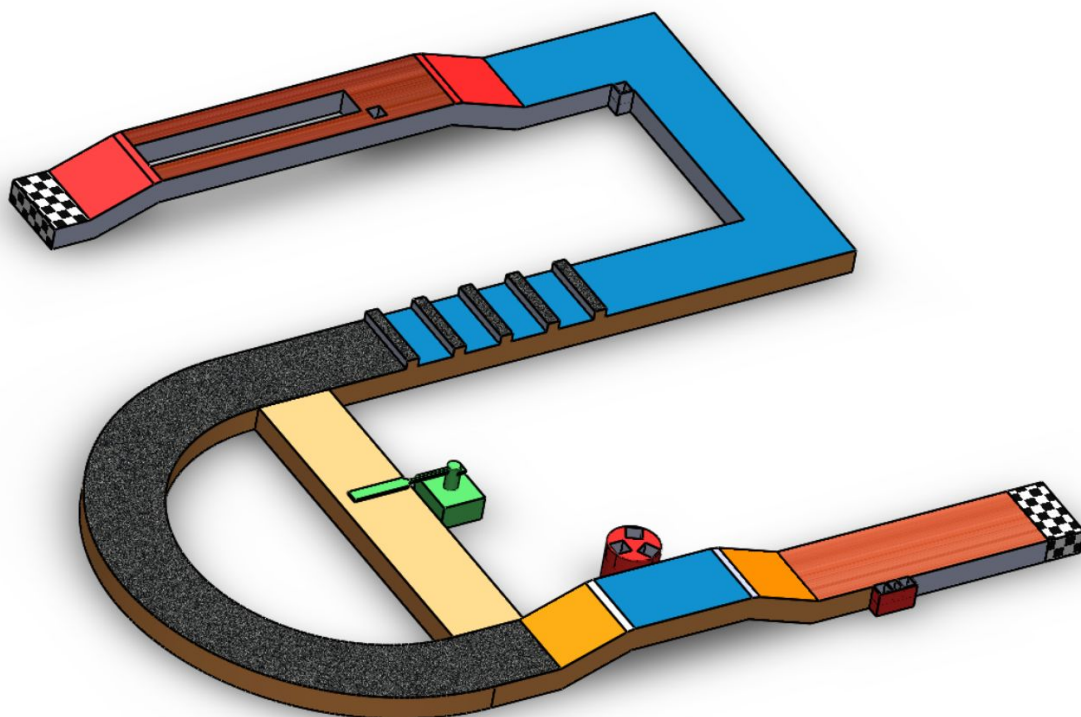
NOTE:
To have a 3-D view of arena and the cube click [here](.).

The arena consists of four zones:

ZONE 1:

It consists of the start line and a plain track with three cubes placed on the left.Towards the end of this zone, **the track has inclined surfaces(20 degrees) on both sides of the top surface**.The task is to place those cubes into the slots made on the **rotating circular disc(30rpm-50rpm)** placed to the right of the track after the first inclined surface.**The teams are free to use any technique to perform the task**, but they need to make sure that they do not get off or damage the track.

ZONE 2:

There are **two paths** which come under ZONE 2, one is the **curved path** where the terrain is very rocky and covers a larger distance.The **straight path** is rocky and has a **rotating obstruction**, which will rotate(**45rpm-60rpm**) in a circular motion in **horizontal plane** i.e. plane parallel to the plane of the path as shown in the figure, the bot will have to successfully pass **dodging the rotating blades** failing which, it will **restart from the beginning of the zone**. There will be no penalty for the above case. Hence the team can choose any of the paths.

ZONE 3:

It consists of **boulders** of 30 mm diameter (extended across the sides of the track) and two steep and narrow turns of 90 degrees.At the second turn, **another cube** is placed at the corner which needs to be **picked up and carried on to the next zone**.

ZONE 4:

This zone starts with a 630mm long inclined path inclined at 20° followed by a **leveled incomplete path**. The contestant has to **complete this path by placing the cube (picked up at the end of Zone 3) in the square hole** and then proceed to the gapped bridge (refer figure). The bot, here, must traverse in a manner such that its left wheels are on one side of the gap and right wheels on the other. A 630mm long path declined at 20° connects the bridge to the finish line.

NOTE:
1. The dimensions of the cube is 100mmx100mmx100mm and that of the square holes is 110mmx110mmx110mm.
2. There would be a hole of diameter 20mm on a lateral side of the cube running across the cube to the other side.
3. The size of the hook on top of the cube would be taken such that it would provide least hindrance to the bot while performing any task.
4. Before the start of the game, the cubes would be placed on the same plane as that of the track.
5. There could be an error of +- 10% in the dimensions of the arena.

GAMEPLAY

> The 1 st round or initial shortlisting round will be time based, where the bots have to traverse the whole arena (without the cube (the hollow section before the start of bridge in zone 4 would be occupied by the cube)) and the teams performing the traversal in the minimum time will move to the second round.

> The 2nd round will be point based according to the POINTS ALLOCATION section below.

> The bot should start from START line only.

> The bot and the cube should not go out of the boundary lines at any cost. (There will be a penalty for it).

> In the 2nd round, any one of the zones can be left out but **only after at least three tries**. The team doing so will see a **heavy deduction** in point as would be specified further in the points deduction section.

BOT SPECIFICATIONS

> The maximum dimensions of the bot should not exceed 300mmX300mmX300mm.

> The bot should be manual.

> Any type of control including wired, bluetooth, RX TX etc can be used.

GAME RULES

> The bot would be checked for safety before starting and will be disqualified if found unsafe for other participants.

> Only one team member is allowed to handle the bot.

> The bot will be liable for disqualification if it causes any kind of damage to the arena.

> If a bot gets disoriented in any zone then it can be placed in its original position but it has to start from the beginning of that zone. There will be a **penalty of 25s in Round 1** and **no** penalty in Round 2.

> Once the timer starts there will be no stop to it unless the bot has reached the final line or the time limit is crossed.

> The teams taking least time will qualify for Round 2.

> **The 2nd round has a time limit of 4 minutes**.

> **In case of any disputes / discrepancies, the organizers' decision will be final and binding.**

> **The organizers reserve the rights to change any or all of the above rules as they deem fit.** Change in rules, if any will be highlighted on the website and notified to the registered teams.

POINTS ALLOCATION

The points are allocated as follows:

1. Crossing the first zone: 20 points

2. Placing a cube on the rotating disc: 30 points

3. Crossing the second zone: 30 points

4. Crossing the third zone: 20 points

5. Successfully completing path before bridge: 40 points

7. Crossing the third zone: 40 points

POINTS DEDUCTION / PENALTIES

Points will be deducted in following cases:

1. If the bot/cube goes out of the track: -20 points

2. If the bot falls off the bridge in zone 4: -25 points

3. If the bot is unable to traverse the track in 4 minutes: -1 point per second after 4 minutes.

4. If the contestant wants to skip a zone(only after at least 3 tries): -130 points

QUALIFICATIONS

The top teams taking least time will be selected for the 2nd and final round. The number of teams selected for the final round will be decided on the day of play by the organizers.