

# PERTANDINGAN ROBOCON MALAYSIA 2020 SESITAKLIMAT TEKNIKAL #1

SELASA, 8 OCTOBER, 2019



KEMENTERIAN  
PENDIDIKAN  
MALAYSIA

JPT | JABATAN  
PENDIDIKAN  
TINGGI

الجامعة الإسلامية العالمية ماليزيا  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA  
بونتريسني المشارة انبازا اجنسا بللسنا

co-organisers:  
UNIVERSITY  
TEKNO  
NAGIONAL

*Menggapur Halangan, Menjulung Kejayaan*

**ROBOCON**  
**MALAYSIA 2020**

# PENGENALAN

- Pertandingan ROBOCON MALAYSIA 2020 merupakan pertandingan robotik peringkat kebangsaan yang terbuka kepada semua Institusi Pendidikan Tinggi (IPT) di Malaysia.
- “Menggempur Halangan, Menjulung Kejayaan” merupakan slogan bagi ROBOCON MALAYSIA 2020 yang menggambarkan cabaran yang bakal dihadapi oleh setiap pasukan demi menempah kejayaan di pertandingan ROBOCON MALAYSIA 2020. Proses pembikinan robot yang rumit akan memberikan pelajar-pelajar pengalaman dan ilmu yang berguna.

# OBJEKTIF

- Objektif utama ROBOCON MALAYSIA adalah untuk mempertingkatkan pengetahuan teknologi robotik dalam kalangan mahasiswa Institusi Pendidikan Tinggi di Malaysia di samping memberi ruang kepada mahasiswa untuk mempamerkan kemahiran, inovasi dan daya kreativiti mereka dalam penciptaan robot.

# ROBOCON MALAYSIA 2020

- Peraturan ROBOCON MALAYSIA 2020 adalah berdasarkan peraturan ABU ASIA-PACIFIC ROBOT CONTEST (ROBOCON) 2020 yang akan dilangsungkan di Suva, Fiji.
- Website Rasmi ABU ROBOCON: <https://www.aburobocon2020.com.fj>
- Video: [https://www.youtube.com/watch?v=\\_xAYY9qSZiY](https://www.youtube.com/watch?v=_xAYY9qSZiY)

# ROBOCON MALAYSIA 2020

- Cadangan Tarikh Pertandingan: **10-12 April 2020**
- Tempat: **Dewan Sri Sarjana, UNITEN, Kajang Selangor**
- Penganjur:
  - Kementerian Pendidikan Malaysia (KPM) - Jabatan Pendidikan Tinggi (JPT), International Islamic University Malaysia (IIUM), Radio Televisyen Malaysia (RTM), Universiti Tenaga Nasional (UNITEN)
- Website Rasmi: <https://roboconmalaysia.com/>
- Facebook Page: <https://www.facebook.com/RoboconMalaysia/>

# ATURAN PERTANDINGAN

- UJIAN PADANG – 9 April 2020
- PUSINGAN BERKUMPULAN – 10 dan 11 April 2020
- PUSINGAN AKHIR – 12 April 2020

# INISIATIF “KNOWLEDGE SHARING”

- Sesi perkongsian semasa sesi taklimat kedua oleh juara ABU ROBOCON yang lampau seperti dari pasukan Vietnam, China, Jepun atau Malaysia.
- Penerbitan “ROBOCON MALAYSIA Handbook Series” yang akan menghimpunkan laporan-laporan tentang teknologi robotik yang digunakan oleh setiap pasukan didalam ROBOCON MALAYSIA 2020.
- Perkongsian mengenai perjalanan dan teknologi oleh pasukan antarabangsa di ABU ROBOCON 2020 di Suva, Fiji yang akan dipersembahkan didalam sesi taklimat ROBOCON MALAYSIA pada tahun yang akan datang.
- Penganjuran Mini ROBOCON atau ROBOCON Jr. bagi pelajar-pelajar sekolah rendah dan menengah semasa ROBOCON MALAYSIA 2020 berlangsung.

# PENDAFTARAN PASUKAN

- Pendaftaran akan dibuka secara Online.
- Semua nama ahli pasukan termasuk ahli pasukan tambahan perlu didaftar.
- Deposit RM500 perlu dibayar dan akan dipulangkan kepada semua pasukan yang datang bertanding dan menghantar laporan teknikal.

## LAIN-LAIN

- Laporan Teknikal adalah wajib.
- Video untuk Video Check adalah wajib.
- Social media contest akan dijalankan seperti tahun yang lepas.

# SYARAT PERTANDINGAN (RULES)



# RULEBOOK

- Rules are adapted from the original ABU Asia-Pacific Robot Contest (ROBOCON) 2020 Fiji rulebook
- Malaysia rulebook can be downloaded from the official ROBOCON MALAYSIA website:  
<https://roboconmalaysia.com/malaysia-robocon-rules/>

# RULES SUMMARY (SET UP)

- Game Procedure and Competition Tasks
  - Setting of robots
    - one minute
    - 3 team members and 3 pit crew members
  - Deployment
    - The robot must fit into the start zone including its space above.
    - If a robot is manually controlled, the operator is allowed to be inside the game field.
    - PR is allowed to enter the Kicking Zone and Passing Zone only.
    - TR is allowed to enter Receiving Zone, Passing Zone and Kicking Zone.
    - Both robots must not enter the space above opponent team's field.
    - The robots can enter the space above the fence outside the field.
  - Try Ball and Kick Ball
    - Each team uses Five Try Balls, Seven Kick Balls (shared), Five Tees

# RULES SUMMARY (PASS AND RECEIVE)

- Task in the Passing Zone
  - PR travels to the Ball Rack and picks up one Try Ball to pass the Try Ball to TR.
  - PR can pick only ONE Try Ball at a time.
  - PR can pass the Try Ball to the TR only when in the Passing Zone.
- Task in the Receiving Zone
  - TR travels to the Receiving Zone to receive the Try ball from PR.
  - TR can receive the Try Ball only in the Receiving Zone.
  - Then TR can go to score a Try in one of the 5 Try Spots.
  - TR can touch the Obstacles but cannot break it which leads to disqualification.
  - If the Try Ball enters the opponent's field, they will receive 10 points.
  - If the ball moves out of the game field, it cannot be used again.
  - PR can pick up the next Try Ball after TR scored a Try or if Try Ball is out.

# RULES SUMMARY (KICK)

- Task in the Kicking Zone
  - After TR has made a try with ONE Try Ball, ONE Kick Ball can be used.
  - A maximum of three Kick Balls can be used at the same time.
  - A team member is allowed to pick the Kick Ball after informing the referee. Then, the team has to choose one of the following:
    - A team member sets the Kick Ball/Kick Balls in the Kicking Zone using a Tee for each ball.
    - A team member loads the Kick Ball/Kick Balls into PR or TR inside its respective Start Zone. The team member can load the Tee/Tees during this time or before the game starts.
- Others
  - In case of an emergency, with permission from referee, team members can enter the field to push the hardwired emergency stop button.

# RULES SUMMARY (RETRY)

- Retries of the Robots
  - A retry can be made only after the referee's permission.
  - Both robots must restart from Start Zone.
  - There is no limit for retry.
  - If a retry is required before the 'receive', the Try Ball must be placed on the Ball Rack.
  - If a retry is required after the 'receive', the Try Ball must be placed into the TR.
  - A retry is compulsory when the robots drop the Try Ball in the Kicking Zone and Passing Zone or did not make a Try.

# RULES SUMMARY (WINNER)

- Deciding of the Winner
  - The team that earns higher score is the winner.

Tasks	Points
TR receives the ball successfully from the PR.	1 point for each ball
TR makes the try successfully.	2 points for each try
Successful Goal kick from the Kicking Zone 1 (KZ1).	5 points for each successful Goal
Successful Goal kick from the Kicking Zone 2 (KZ2).	10 points for each successful Goal
Successful Goal kick from the Kicking Zone 3 (KZ3).	20 points for each successful Goal
If the opponent's Try Ball or Kick Ball lands in your field without touching the conversion post.	10 points for each ball

- If in case of a tie, the winner is the team with the most successful Goal kick from the farthest Kick Zone or as decided by the judges.

# RULES SUMMARY (ROBOT DESIGN)

- Total weight of two robots, controller, cable, the primary set of batteries used in the game must not exceed 50 kg.
- Air pressure must not exceed 600kPa.
- PR and TR can be either a manual or automatic robot.
- PR must start with (1m x 1m x 1.2m) and be no larger than (1.2m x 1.2m x 1.2m).
- TR must start with (1m x 1m x 1.5m) and be no larger than (1.2m x 1.2m x 1.5m).
- Robots can be operated through a connected cable (1m to 3m) or wireless (WIFI, Zigbee or Bluetooth).

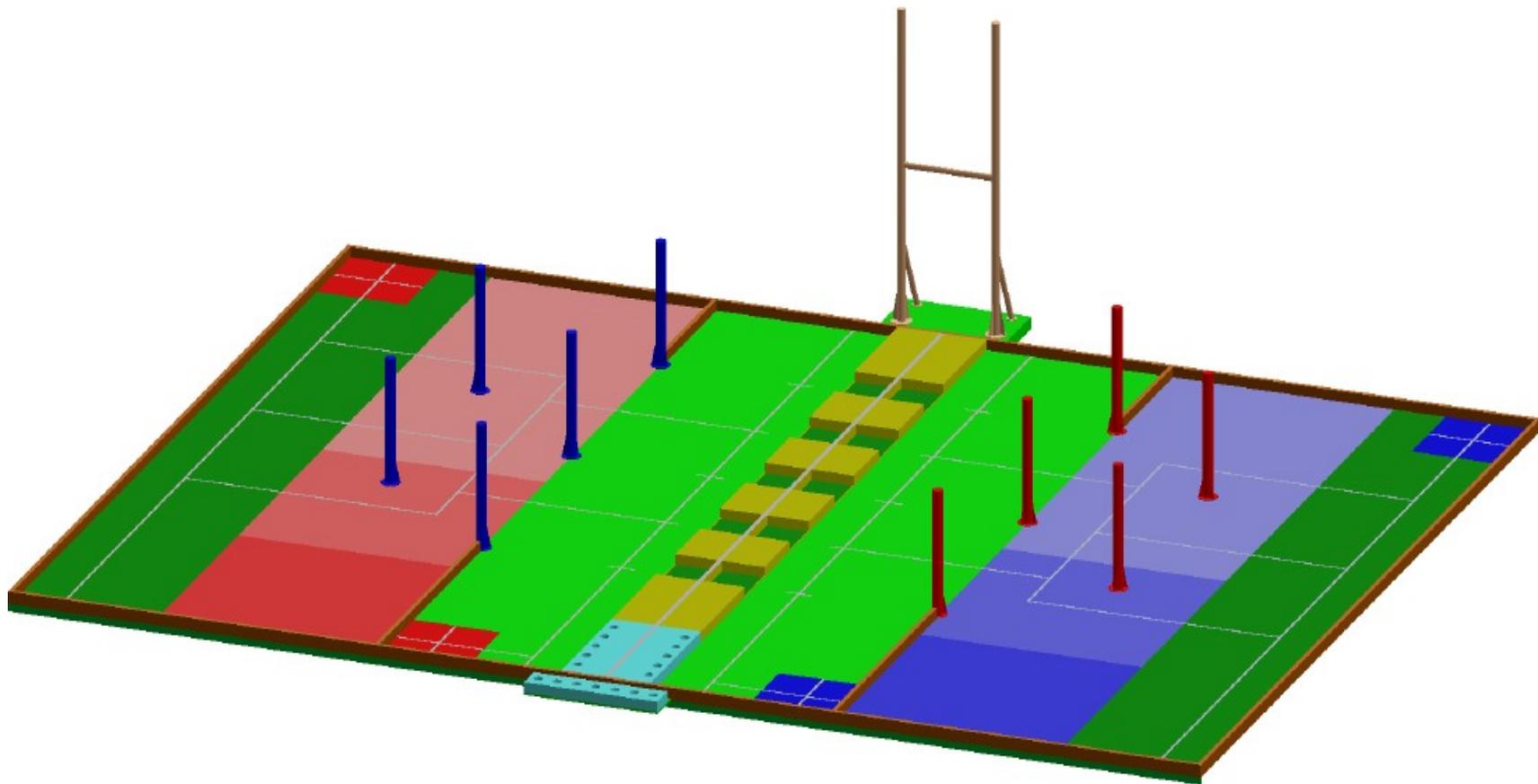
# RULES SUMMARY (FOULS & DISQUALIFICATION)

- Fouls (A retry is compulsory) :
  - Any part of any robots lands out of the game field.
  - Any part of any robot enters an area that is not allowed during the current task.
  - Any team member touches any part of robot except controller or cable of robots and the situations this rulebook allows.
  - Other actions that infringe on the rules without mentioning in the disqualification are considered a foul.
  - The Try Ball lands and comes to a stop on the Border Zone.
  - The robots enter the opponent's game field (including the space above).
  - The team makes a false start. Both teams must bring their robots to the Start Zone and the game will be restarted.
- Disqualification:
  - The team intentionally damages or tries to damage the field, facilities, equipment or opponent's robots.
  - The team performs any acts that are not in the spirit of fair play.
  - The team fails to obey instructions or warning issued by referees.
  - The team has made the false start two times in the same game.

# RULES SUMMARY (SAFETY & TEAMS)

- Safety
  - All robots must be designed and manufactured as to pose no danger of any kinds.
  - Hardwired emergency stop buttons must be built on all robots.
  - Accumulator, lead-acid batteries are prohibited.
  - If the laser is used, it must be of class 2 or less.
- Teams
  - A team consists of students and one instructor who all belong to the same IPT.
  - Participation of graduated students is not permitted.

# GAME FIELD



# TERMS AND DEFINITIONS

<b>Pass Robot (PR)</b>	<b>Either a manual or an automatic robot to pick up the Try Ball, pass the Try Ball and may kick the Kick Ball.</b>
<b>Try Robot (TR)</b>	<b>Either a manual or an automatic robot to receive the Try Ball, score try with the Try Ball and may kick the Kick Ball.</b>
<b>Try Ball</b>	<b>A standard size 3 rugby ball. It is only used to score tries in the Try Spots. At the start of the game, five rugby balls will be placed in the Ball Rack by the organiser. Red colored balls for the red team and blue colored balls for the blue team.</b>
<b>Kick Ball</b>	<b>A standard size 3 rugby ball colored yellow. 7 balls will be shared by the red and blue teams. It is only used for kicking through the Conversion Post. At the start of the game, seven rugby ball will be placed in the Ball Rack by the organiser.</b>
<b>Tee</b>	<b>An object that must be used to securely support the Kick Ball. Teams must place the Tee on the ground in the Kicking Zone, and then place the Kick Ball on top of the Tee for kicking.</b>
<b>Pass Robot Start Zone (PRSZ)</b>	<b>The Start Zone for the Pass Robot. The size of the Pass Robot Start Zone is 1000mm x 1000mm.</b>
<b>Try Robot Start Zone (TRSZ)</b>	<b>The Start Zone for the Try Robot. The size of the Try Robot Start Zone is 1000mm x 1000mm.</b>
<b>Passing Zone</b>	<b>The zone from which PR must pass the Try Ball to the TR.</b>
<b>Receiving Zone</b>	<b>The zone in which TR must receive the Try Ball from PR.</b>
<b>Kicking Zone(KZ)</b>	<b>The zone from which PR or TR must kick the Kick Ball. The Kicking Zone is divided into three sections, KZ1, KZ2 and KZ3. Teams can gain different points depending on the section where the Kick Ball is placed and kicked provided the Goal is successful.</b>
<b>Try Spots</b>	<b>The spots where the TR will score the try. Both teams have five Try Spots each and only one Try Ball can be placed in each Try Spot.</b>

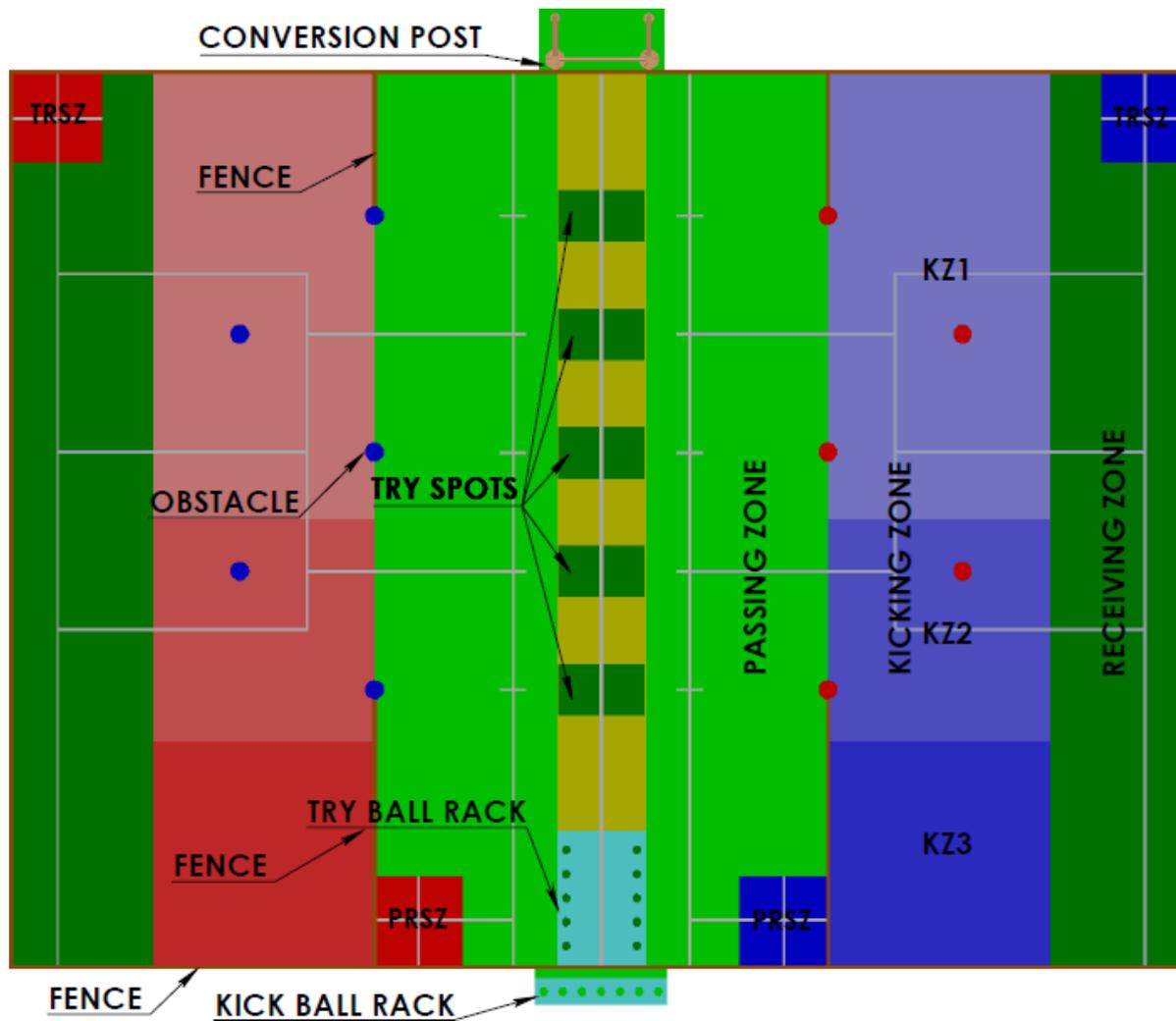
# TERMS AND DEFINITIONS

<b>Obstacles</b>	<b>The obstacles (stationary cylindrical posts) placed on each side of the game field representing five defending players for each team.</b>
<b>Ball Rack</b>	<b>The racks used to hold the Try Balls and Kick Balls.</b>
<b>Conversion Post</b>	<b>The H-shaped stationary post at which the Goal Kick is aimed.</b>
<b>Fence</b>	<b>The barriers used to restrict the movement of the robots. Robots cannot touch the top surface and outer side of the Fence. However, they can enter the space above the Fence and touch the inner side of the Fence.</b>
<b>Border Zone</b>	<b>The yellow area that divides the Try Spots. Robots cannot touch the top surface of the Border Zones. However, they can enter the space above the Border Zones and touch the sides of the Border Zones.</b>
<b>Pass</b>	<b>Throwing the Try Ball in the air and/or rolling the Try Ball on the ground by the Pass Robot.</b>
<b>Receive</b>	<b>Receive means for TR to hold the Try Ball that has been passed on from PR. If PR rolls the Try Ball to the Receiving Zone, TR must pick the Try Ball only in the Receiving Zone. A successful 'Receive' means TR holds the Try Ball and the Try Ball is not in contact with the surface of the game field.</b>

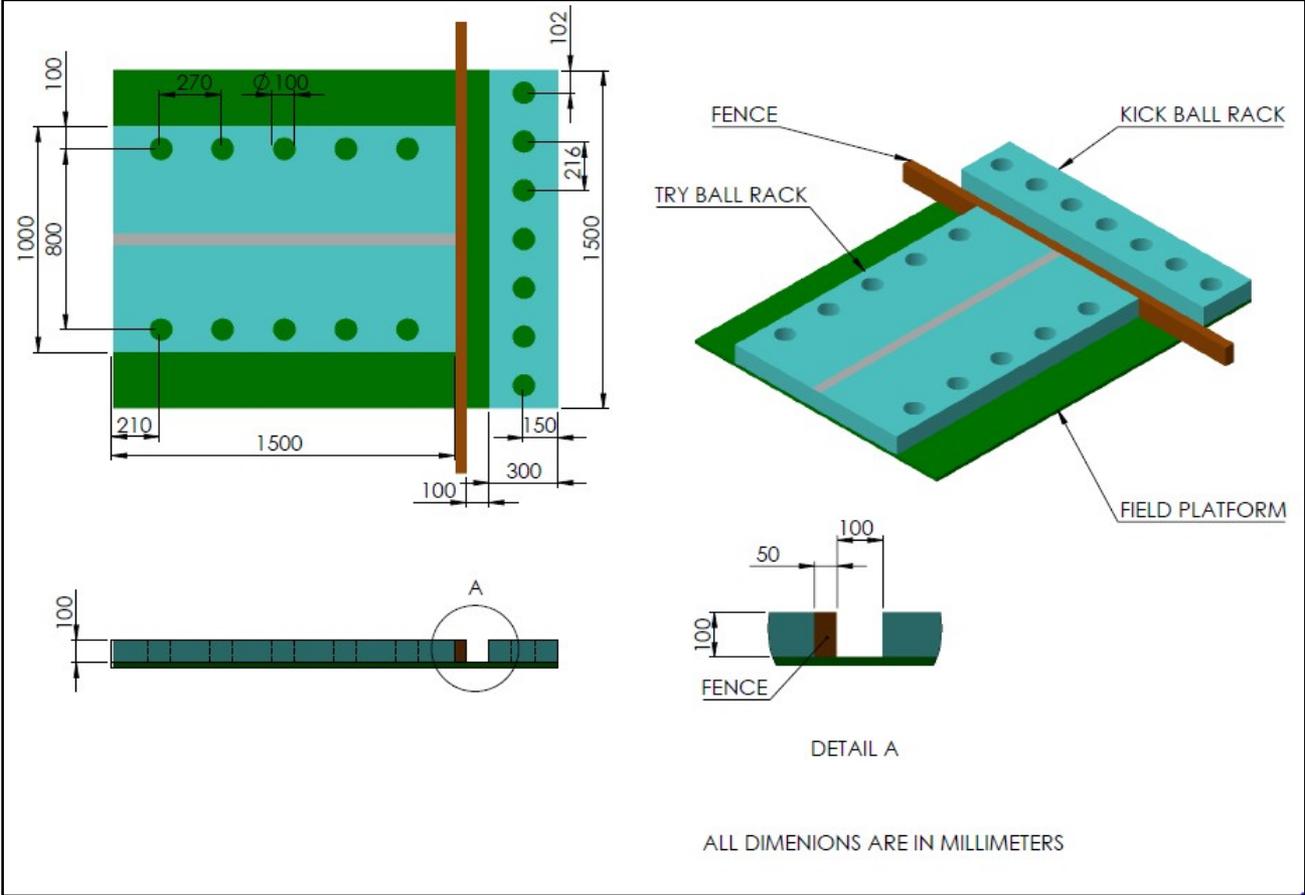
# TERMS AND DEFINITIONS

<b>Try</b>	<p><b>Try means placing the Try Ball in one of the 5 Try Spots. A successful Try means:</b></p> <ul style="list-style-type: none"><li>• when the Try Ball touches the surface of the Try Spot for the first time, TR and Try Ball has to be in contact with each other.</li><li>• <b>With the moment of a), the Try Ball must not touch the boundaries of the Try Spots.</b></li><li>• <b>After the Try, the Try Ball must remain within the Try Spot.</b></li></ul>
<b>Kick (Goal Kick)</b>	<p><b>The 'Kick' must satisfy the following five conditions:</b></p> <ul style="list-style-type: none"><li>• <b>The robot must not stay in touch with the Kick Ball before it starts the kicking. (Before starting the kicking process, the kicking robot must come to halt in the following status. The orthogonal projection to the field of the robot must not overlap the orthogonal projection to the field of the ball &amp; tee)</b></li><li>• <b>The surface of the robot which comes in contact with the ball must be limited to <u>one flat surface</u> or <u>one convex surface</u>. The use of soft and flexible materials is not allowed.</b></li><li>• <b>When the moment robot's contact surface comes in contact with the ball, the contact surface of the robot must not reduce the speed to zero.</b></li><li>• <b>The contact surface of the robot with the balls must not have grabbing or bonding function.</b></li></ul>
<b>Goal</b>	<p><b>For a successful Goal, the Kick Ball must pass over the cross bar in between the sticks of the H-shaped stationary post (Conversion Post)</b></p>

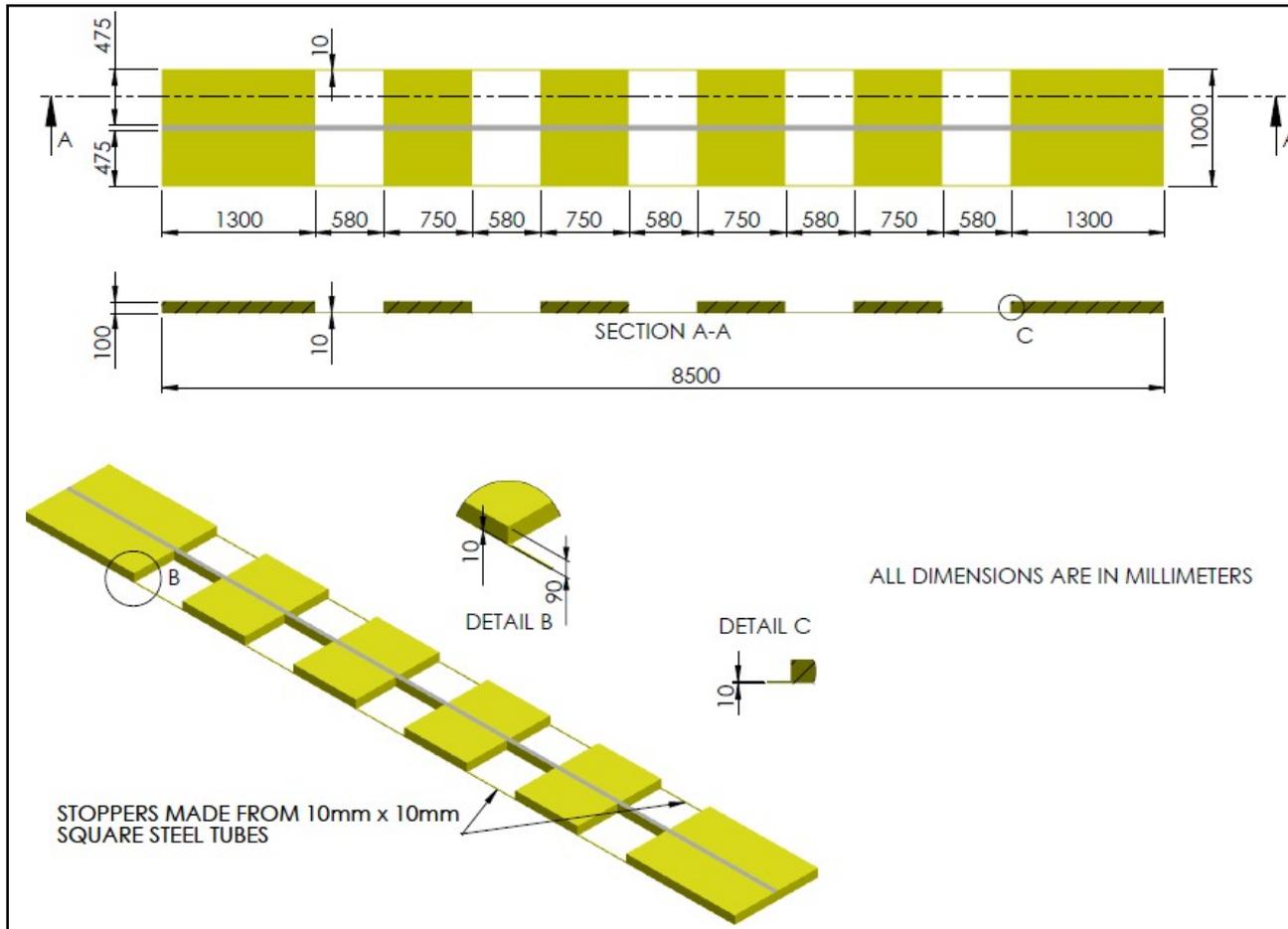
# GAME FIELD – AREAS, ZONES AND OBJECTS



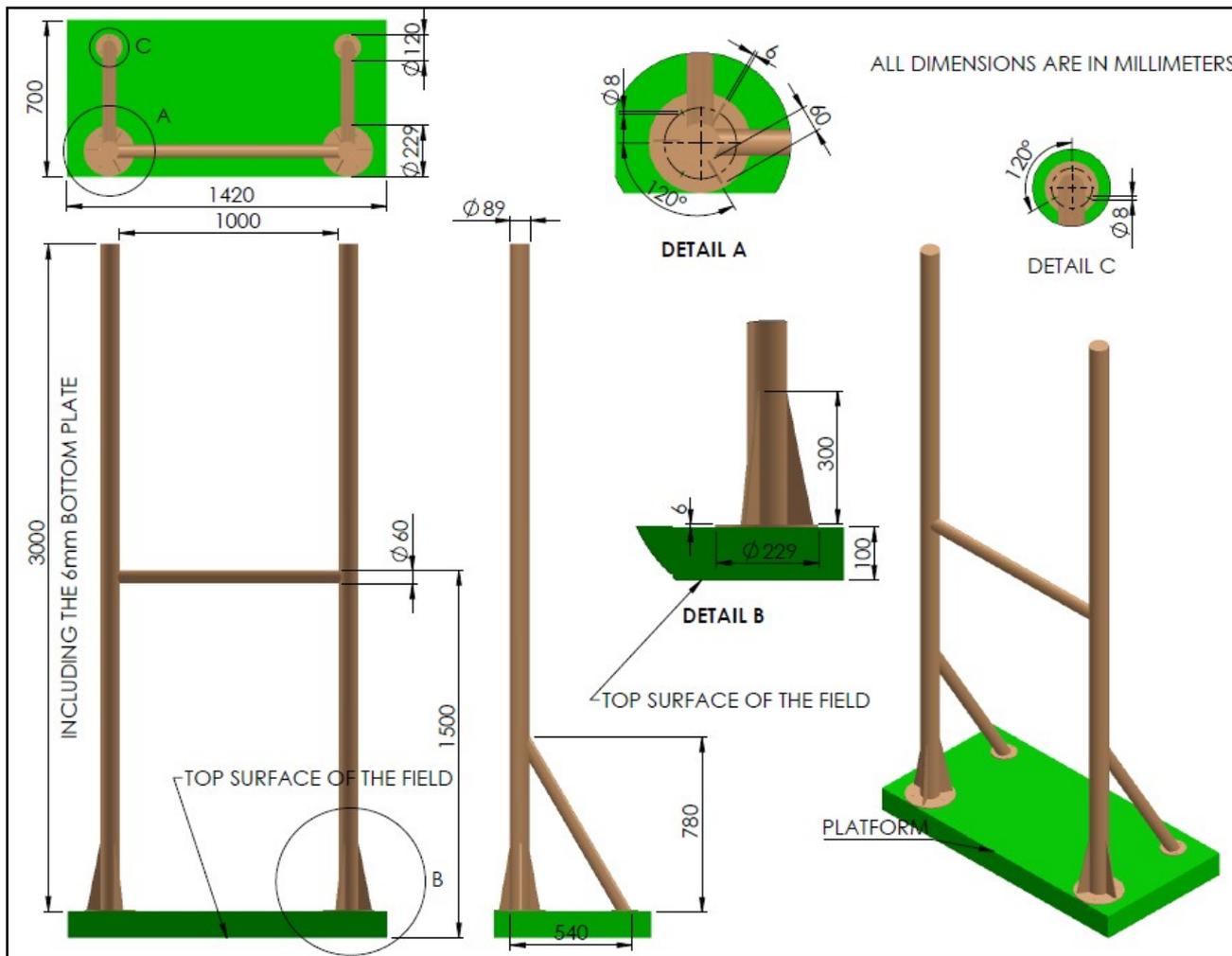
# BALL RACKS



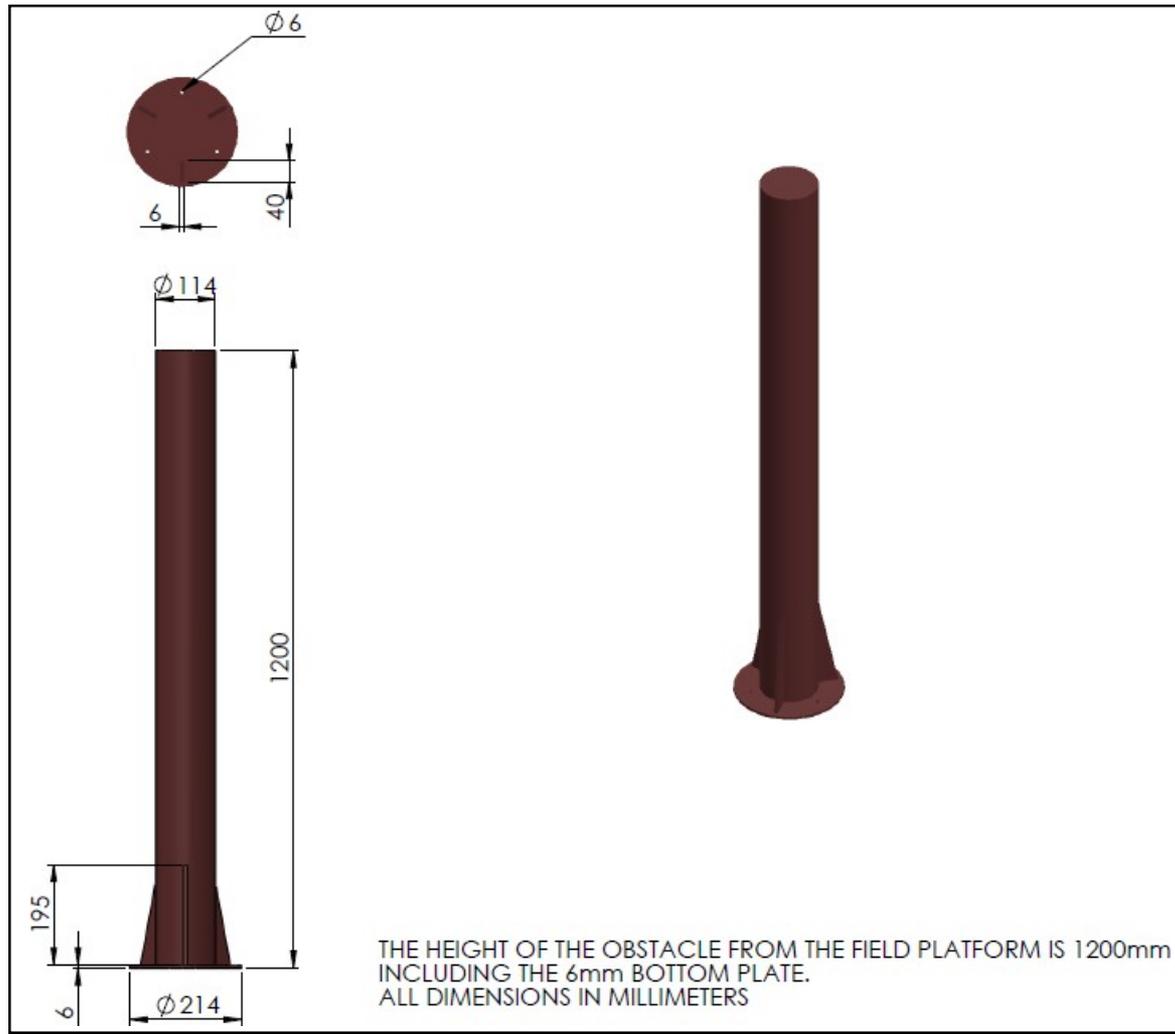
# TRY SPOTS AND BORDER ZONE



# CONVERSION POST



# OBSTACLE



# BALL AND TEE

Try Ball Specification	Kick Ball Specification	Tee Specification
<p>Name: Gilbert G-TR4000 Training Ball            Color: Blue and Red            Size: 3            Inflated pressure: 9.5-10 psi</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Red</p>  </div> <div style="text-align: center;"> <p>Blue</p>  </div> </div>	<p>Name: Gilbert G-TR4000 Training Ball            Color: Yellow            Size: 3            Inflated pressure: 9.5-10 psi</p> <div style="text-align: center;"> <p>Yellow</p>  </div>	<p>Name: Gilbert 450 Precision Kicking Tee            Color: Black            Size: High Fit            Weight: 450 grams</p> <div style="text-align: center;">  </div>

# BALL AND TEE

Correct way of placing the Tee (allowed)

Top View



Side View



Side View



The Tee should be placed on the ground.

Correct way of placing the Tee and the Kick Ball (allowed)

Side View



Side View



Side View



The ball can be placed on the Tee at any angle as long as it is stable and not touching the ground.

In-correct way of placing the Tee and the Kick Ball (not allowed)

Top View



Side View



# SESI SOAL JAWAB



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