

ABU

Asia-Pacific Robot Contest 2026

Hong Kong, China



Hong Kong, China
ABU Asia-Pacific Robot Contest

Theme & Rules: “Kung Fu Quest”

August 2025

Asia-Pacific Robot Contest 2026 Hong Kong, China
Organising Committee
[<https://rthk.hk/aburobocon2026>]



THEME

The theme for ABU Robocon 2026, “Kung Fu Quest”, invites teams to embark on an exhilarating robotic journey that celebrates the timeless art of Kung Fu and the pursuit of excellence. Set against the backdrop of an ancient martial arts tradition, this competition symbolizes the path of a Kung Fu disciple striving to achieve mastery through discipline, strategy, and teamwork. Each team, consisting of two robots, will navigate a dynamic arena where they must collaborate to assemble powerful weapons, collect sacred Kung-Fu Scrolls, and engage in a strategic Tic-Tac-Toe showdown. This journey mirrors the rigorous training and mental fortitude required to earn the title of a Kung Fu master, blending cultural heritage with cutting-edge technology.

The game begins with Robot 1 and Robot 2 working in unison to gather resources, reflecting the harmony and coordination essential in martial arts practice. As they construct weapons, teams demonstrate precision and ingenuity that are key virtues of Kung Fu. The quest for Kung-Fu Scrolls unfolds in the Meihua Forest, a multi-tiered test inspired by the iconic Meihua Blossom Poles, a cornerstone of Chinese Martial Arts training. Traversing these levels demands stability, precision, and foresight, much like a martial artist. In the game, Robot 2 must autonomously identify the correct Scrolls, chart an optimal path, and execute the task with confidence and agility. The climactic Tic-Tac-Toe match tests their strategic prowess, where every move counts, echoing the intellectual depth of martial arts philosophy. This theme not only honours the legacy of Kung Fu but also inspires innovation, encouraging participants to push the boundaries of robotics while respecting tradition.

This competition promises to be a celebration of skill, culture, and technological advancement, leaving a lasting legacy for future generations of robot enthusiasts.

THE IMPORTANCE OF SAFETY

Safety is the highest priority in ABU Robocon. Teams must prioritize safety during all stages, including robot design, manufacturing, and contest participation. Full cooperation with organizers is required to ensure a safe environment for everyone involved (team members, spectators, officials, and the surroundings. All team members must wear organizer-specified safety gear during games and practice sessions.

Contest

All domestic competitions selecting teams for ABU Robocon 2026 Hong Kong, China must adhere to the rules in this rulebook. However, if specified materials are unavailable for domestic contests, local organisers should use the best possible replacements available in their country/region.

Contest Dates

21/8/2026 (Fri)	Arrival
22/8/2026 (Sat)	Test-run, Rehearsal
23/8/2026 (Sun)	Contest Date
24/8/2026 (Mon)	ABU General Meeting
25/8/2026 (Tue)	Departure

Contest Venue: Queen Elizabeth Stadium, Wan Chai, Hong Kong



Hong Kong, China
ABU Asia-Pacific Robot Contest

1 Game Field

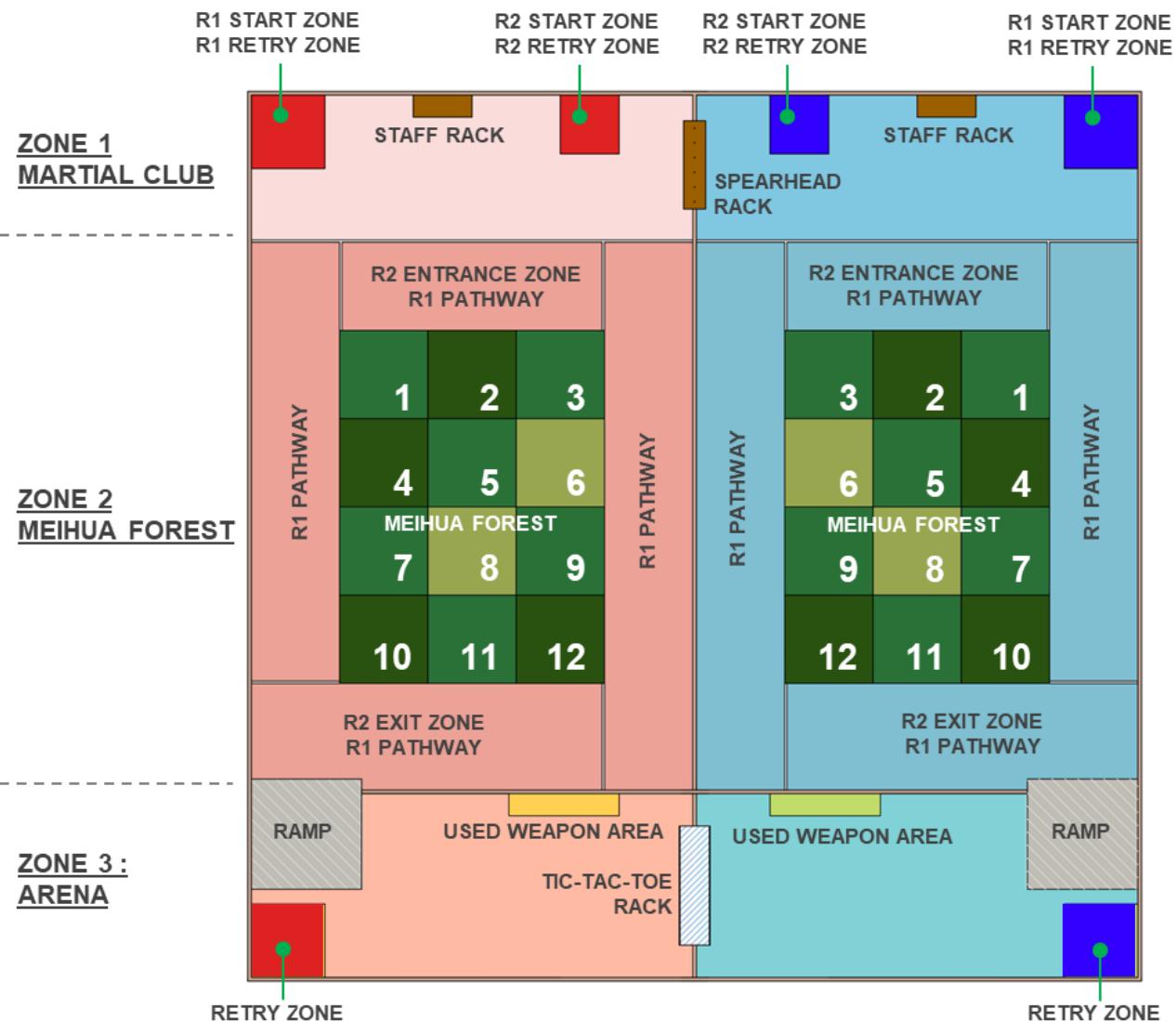


Figure 1: Game Field – Top View

*Detailed specifications for all Game Field components are provided in Section 16. The number shown in the Forest area is intended only to indicate location in the rulebook. This number may not appear on the actual game field.

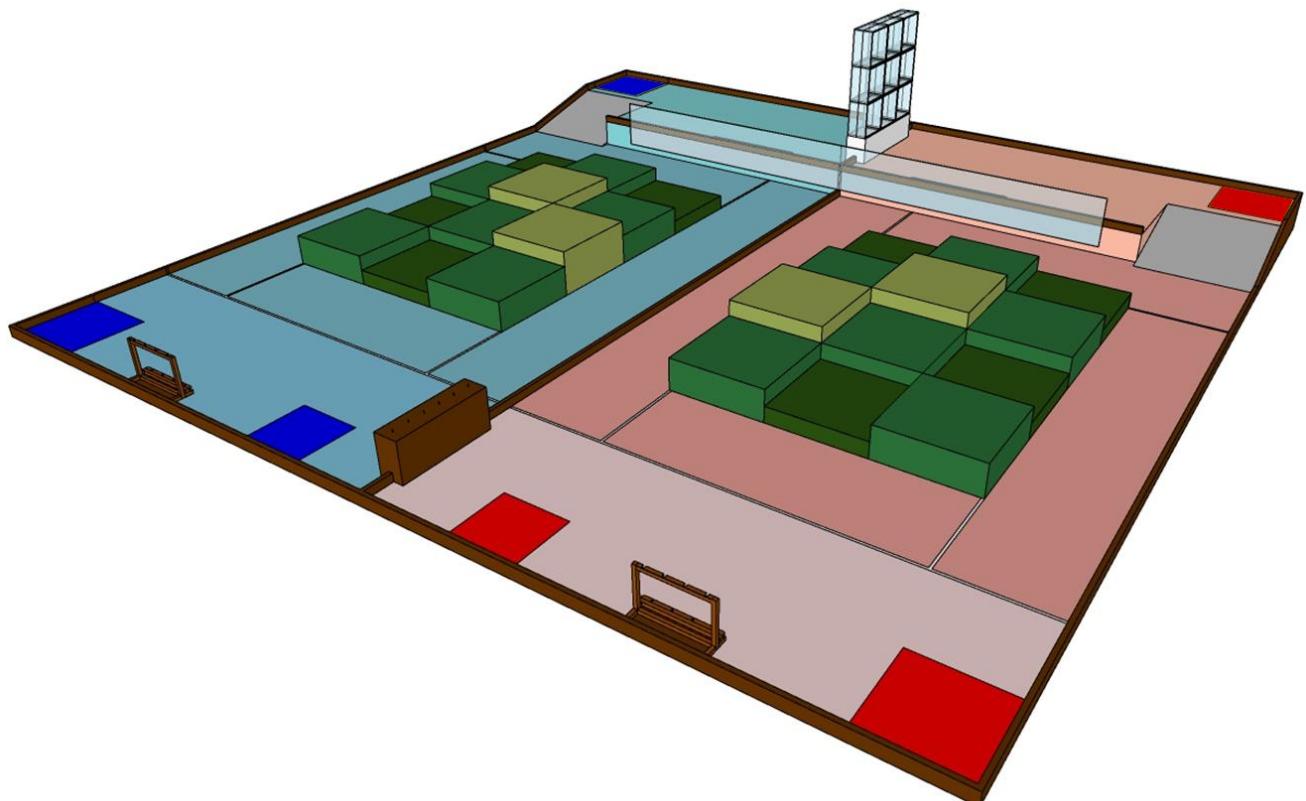


Figure 2: Game Field – Isometric View 1

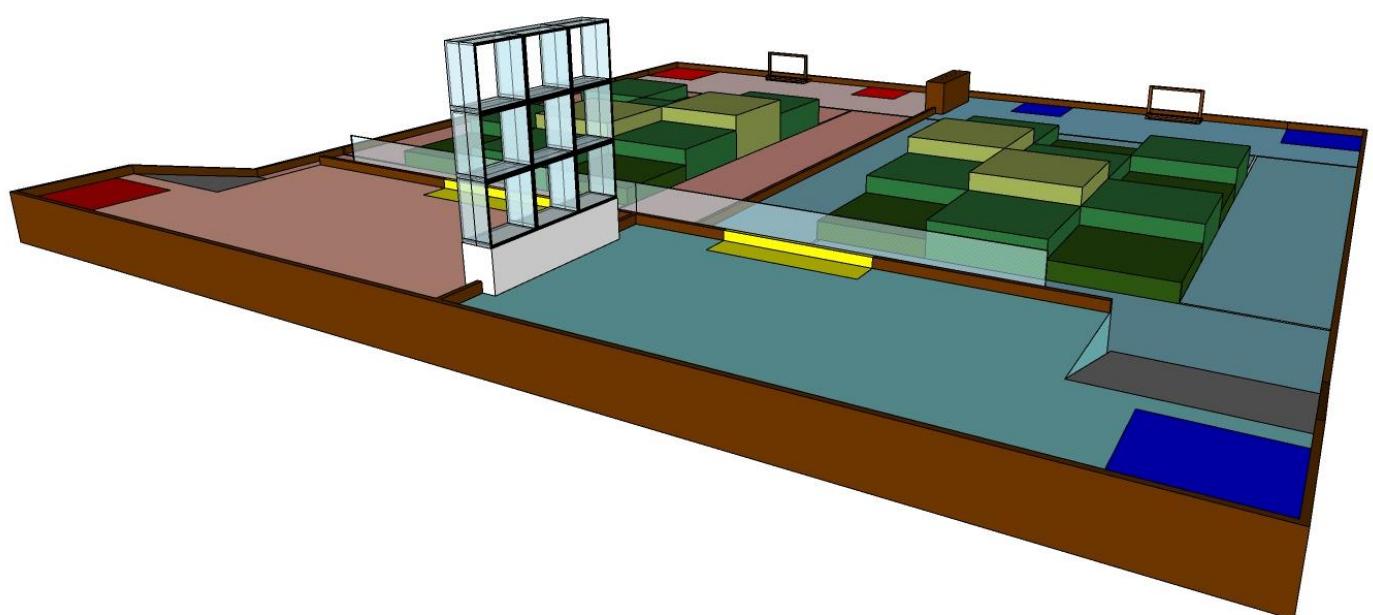


Figure 3: Game Field – Isometric View 2

2 Terms of Reference

Robot 1 (R1)	<ul style="list-style-type: none"> Operates only in the following areas: <ol style="list-style-type: none"> Martial Club (MC); Meihua Forest (MF) – R1 Pathway; and Arena. Robot 1 is a Manual or Automatic Robot. It can be operated manually by a team member or autonomously without manual control.
Robot 2 (R2)	<ul style="list-style-type: none"> Operates only in the following areas: <ol style="list-style-type: none"> Martial Club (MC); Meihua Forest (MF) – R2 entrance zone or R2 exit zone; Meihua Forest (MF) – Forest; and Arena. Robot 2 must be an Automatic Robot. It should operate autonomously without manual control once the game starts.
Martial Club (MC)	<ul style="list-style-type: none"> The area where robots assemble Weapons. It contains: <ol style="list-style-type: none"> Start Zone (SZ): Where both robots begin the game and retry. Staff Rack (SR): Holds initial Staffs and Assembled Weapons. <ul style="list-style-type: none"> At the start, four staffs are placed in each team's SR. Spearhead Rack (SHR): A shared rack holding Spearheads. <ul style="list-style-type: none"> At the start, six spearheads (three types with two pieces each) are positioned in the shared SHR on the centre line.
Meihua Forest (MF)	<ul style="list-style-type: none"> The area where robots retrieve Kung-Fu Scrolls (KFS). Comprises: <ol style="list-style-type: none"> Forest: Area with twelve blocks per team side. Pathway: Perimeter path around the Forest blocks.
Kung-Fu Scroll (KFS)	<ul style="list-style-type: none"> Game pieces marked with a Chinese character from a specified dictionary. The dictionary contains fifteen 'True' characters and fifteen 'Fake' characters. KFS allocation per team (placed by opponent during setup): <ol style="list-style-type: none"> Three R1 KFS: Robocon logo marked on 5 sides (excluding bottom). Four R2 KFS: Oracle Bone Characters marked on 5 sides (excluding bottom). One Fake KFS: Random patterns marked on 5 sides (excluding bottom), with a 15mm × 150mm ribbon attached to the bottom.
Arena	<ul style="list-style-type: none"> The final area where teams compete in Tic-Tac-Toe using collected KFS and Assembled Weapons. Contains: <ol style="list-style-type: none"> Ramp: Provides access for R1 and R2. Tic-Tac-Toe Rack: 3x3 Rack for KFS placement. Retry Zone (RZ): Designated area for retries initiated within the Arena. Used Weapon Area: Designated location for R1 to place weapons after an attack attempt.



Kung Fu Master	<ul style="list-style-type: none"> • A team achieves "Kung Fu Master" by placing three of their KFS in a single column (Vertical line) or diagonal on the Tic-Tac-Toe Rack. • This team wins immediately.
----------------	--

3 Game Outline

- 3.1. A game between two teams (Red Team and Blue Team) takes place within three minutes. The two teams compete simultaneously. Each team has two robots, namely Robot 1 (R1) and Robot 2 (R2).
- 3.2. Game field is divided into three areas: Martial Club (MC), Meihua Forest (MF), and Arena.
- 3.3. Before the match starts:
 - In Martial Club:
 - 3.3.1. Four staffs are placed in the Staff Rack.
 - 3.3.2. Six Spearheads are place in the Spearhead Rack.
 - In Meihua Forest (MF):
 - 3.3.3. Three R1 Kung-Fu Scrolls (R1 KFS) are placed by the opponent team onto any of the blocks set around the boundary of the Forest adjacent to the Pathway.
 - 3.3.4. Four R2 Kung-Fu Scrolls (R2 KFS) are placed on any of the vacant blocks within the Forest.
 - 3.3.5. One Fake Kung-Fu Scroll (Fake KFS) are placed on any of the vacant blocks within the Forest except the entrance blocks (1,2,3),
- 3.4. When the game starts, robots go to the Martial Club (MC) to assemble weapons using staffs and Spearheads.
- 3.5. R1 must carry at least one assembled weapon before entering Meihua Forest (MF). R2 follows.
- 3.6. In the Meihua Forest (MF):
 - 3.6.1. R1 manoeuvres along Pathway to collect R1 KFS.
 - 3.6.2. R2 manoeuvres in Forest to collect R2 KFS.
 - 3.6.3. R1 and R2 are not allowed to touch or move Fake KFS.
 - 3.6.4. Both robots store their respective KFSs for the final Arena battle.
- 3.7. R1 must carry at least one assembled weapon, and/or one R1 KFS before entering Arena. R2 must carry at least one R2 KFS before entering Arena.
- 3.8. In the Arena:
 - 3.8.1. R1 places R1 KFS onto Tic-Tac-Toe Bottom Row slot(s).
 - 3.8.2. R2 places R2 KFS onto Tic-Tac-Toe Middle Row slot(s).
 - 3.8.3. R2, carried by R1, places R2 KFS onto Tic-Tac-Toe Top Row slot(s).
- 3.9. The game ends when a team successfully places three consecutive KFSs in the same vertical column or diagonally and is declared the "Kung Fu Master."
- 3.10. If there is no "Kung Fu Master" victory after three minutes, the team with the highest total score wins. In case of a tie, the result will be determined according to the section 7.



4 Game Procedure

4.1 Set up (1 minute)

- 4.1.1. Each team move the robots into the Start Zone before the one-minute setup time begins.
- 4.1.2. Each team has one minute to set up and placed opponent KFS of the Meihua Forest (MF).
- 4.1.3. Eight KFS (Three R1 KFS, Four R2 KFS, One Fake KFS) are placed onto the marked positions of Forest blocks in the Meihua Forest (MF) by the opponent team.
- 4.1.4. Fake KFS is not allowed to be placed at the entrance blocks (1,2,3) of the Meihua Forest (MF).
- 4.1.5. KFS must be placed within the marked square boundary (350mm on each side), and on the centre area of the Forest block. KFS must be oriented so that the blank surface (without image) faces downward.
- 4.1.6. Three team members and up to three pit crew members are allowed to participate in the set-up.
- 4.1.7. Set-up time starts right after the signal from referee and ends right after one minute.
- 4.1.8. If a team fails to complete the setup of its own robots within the set-up time, the team may continue the set-up after the game begins, but only with the referee's permission.
- 4.1.9. If the opponent team fails to complete the setup of your KFS within the setup time, any unplaced KFS will be placed in the MF by your own team within 30 seconds.
- 4.1.10. The Robots (including the control unit) must fit within the starting zone, including its space above.

4.2 Start of the Game

- 4.2.1. When the set-up time is over, referees will signal to start the game.
- 4.2.2. Teams that complete their set-up after the start of the game shall obtain permission from the referee to commence moving their robots.
- 4.2.3. Team members are not allowed to be on the field during the game. They must obtain permission from the referees to enter the field.
- 4.2.4. Pit crew members have to stand inside the pre-assigned area out of the game field.
- 4.2.5. Team members are not allowed to touch the robots without the permission of the referee.

4.3 Martial Club (MC)

This is the starting point where robots collaborate to assemble weapons for use in the Arena to displace the opponent's KFS in the Tic-Tac-Toe Rack.

- 4.3.1. Both robots are initiated simultaneously.
- 4.3.2. R1 picks up one or more staffs from its team's Staff Rack. Each team has its own rack containing four staffs.
- 4.3.3. R2 picks up a Spearhead from the central Spearhead Rack. This rack contains six Spearheads and is shared between both teams.
- 4.3.4. R2 can only touch, pick up or move one Spearhead at a time.
- 4.3.5. R1 and R2 collaborate to assemble a weapon by placing the Spearhead onto the staff.
- 4.3.6. R1 shall exclusively hold its staff during assembly, and R2 shall exclusively hold its spearhead; During assembly, R1 cannot touch R2's spearhead and vice versa. Additionally, no part of R1 and R2's bodies should come into physical contact with each other throughout the entire assembly process.
- 4.3.7. R2 must complete the assembly of its current Spearhead with the staff before picking up another Spearhead.
- 4.3.8. Completed weapons can only be carried by R1 or stored back in the Staff Rack.
- 4.3.9. R1 must exit Martial Club to Meihua Forest (MF) with one or more assembled weapons.
- 4.3.10. R2 exits Martial Club to Meihua Forest (MF) only after R1 exits.
- 4.3.11. Any staff or Spearhead that falls outside the game field cannot be reused.
- 4.3.12. Only R1 can pick up a staff that has fallen within the team's MC area.



- 4.3.13. Only R2 can pick up a Spearhead that has fallen within the team's MC area.
- 4.3.14. Only R1 can pick up an assembled weapon that has fallen within the team's MC area.

4.4 Meihua Forest (MF)

Robots collaborate to collect Kung-Fu Scrolls for placement in the Arena final battle.

For R1:

- 4.4.1. R1 moves along the MF Pathway to collect R1 KFS.
- 4.4.2. R1 can pick up one or more KFS at a time.
- 4.4.3. R1 can go around the MF Pathway as many times as needed.
- 4.4.4. R1 must carry one or more R1 KFS to enter the Arena.
- 4.4.5. The team decides how many R1 KFS are required for the Arena Tic-Tac-Toe game.
- 4.4.6. Dropped R1 KFS outside MF cannot be reused.
- 4.4.7. R1 can pick up dropped R1 KFS inside MF.
- 4.4.8. Dropped assembled or dismantled weapons outside MF cannot be reused.
- 4.4.9. R1 can pick up dropped assembled weapons inside MF.
- 4.4.10. Dismantled assembled weapons cannot be reused.
- 4.4.11. The team can request R1 or both R1 and R2 when in MF to retry and return to the Martial Club Retry Zone (RZ).
- 4.4.12. R1 must not move R2 KFS and Fake KFS, or it will be treated as a violation.

For R2:

- 4.4.13. R2 must enter MF via R2 Entrance Zone.
- 4.4.14. R2 must collect its first KFS from blocks 1, 2, or 3 from the R2 Entrance Zone.
- 4.4.15. R2 can pick up KFS from adjacent blocks of its current position. R2 cannot pick up R2 KFS that are not adjacent to the block it is on.
- 4.4.16. R2 should only collect R2 KFS.
- 4.4.17. R2 must collect and carry at least one R2 KFS to exit MF - Forest.
- 4.4.18. Dropped R2 KFS outside MF - Forest cannot be reused.
- 4.4.19. R2 can pick up dropped R2 KFS inside MF-Forest.
- 4.4.20. R2 must exit MF - Forest via one of the designated blocks (10, 11, or 12).

4.5 Arena

Final battle grounds between the two teams. Robots collaborate to formulate attack and defence with each team's assembled weapons for attacks and KFS to occupy any of the Tic-Tac-Toe vertical columns or diagonal slots with its KFS to declare as the ultimate "**Kung Fu Master**".

R1 and R2 must enter and exit Arena by the ramp.

For R1:

- 4.5.1. R1 enters the Arena under one of the following conditions:
 - 4.5.1.1. Carrying one or more assembled weapons without any R1 KFS
 - 4.5.1.2. Carrying one or more R1 KFS
 - 4.5.1.3. Both (a) and (b)
- 4.5.2. R1 can place R1 KFS onto vacant slots in the Tic-Tac-Toe bottom row.
- 4.5.3. R1 can only use an assembled weapon to attempt to remove an opponent's KFS occupying any Tic-Tac-Toe slot.
- 4.5.4. Each assembled weapon can only be used once.
- 4.5.5. Each weapon is regarded as "used" when it touches any KFS (own or opponent's) and releases.
- 4.5.6. When a weapon is used, R1 must place all parts of the used weapon in the "Used Weapon Area", before touching any KFS on the tic-tac-toe slot again.
- 4.5.7. Dismantled weapons cannot be used.
- 4.5.8. R1 can pick up a fallen assembled weapon.



- 4.5.9. R1 can pick up fallen R1 KFS that land on its own side.
- 4.5.10. Fallen R1 KFS on the opponent's side cannot be reused.
- 4.5.11. R1 can pick up fallen R2 KFS and pass them to its own R2.

For R2:

- 4.5.12. R2 enters the Arena carrying one or more R2 KFS.
- 4.5.13. R2 can place R2 KFS onto vacant slots in the Tic-Tac-Toe middle row.
- 4.5.14. R2 can pick up fallen R2 KFS that land on its own side.
- 4.5.15. Fallen R2 KFS on the opponent's side cannot be reused.
- 4.5.16. R2 can pick up fallen R1 KFS and pass them to its own R1.
- 4.5.17. R2 must be lifted or carried by R1, and must not touch the ground while placing the KFS in the top row of the Tic-Tac-Toe.

5 End Game

The game shall end when:

- 5.1. A team wins the "Kung Fu Master" title by filling a vertical or diagonal line in the Tic-Tac-Toe Rack with KFS; or
- 5.2. The three minute game time is over; or
- 5.3. One of the teams is disqualified.

6 Scoring Points

Points awarded are as follows:

- 6.1. Weapon Assembly: 10 points for each weapon assembled.
- 6.2. KFS collection: 10 points for each KFS successfully carried into Arena by R1 or R2.
- 6.3. Tic-Tac-Toe:
 - 6.3.1. Each KFS occupying the bottom row – 30 points
 - 6.3.2. Each KFS occupying the middle row – 40 points
 - 6.3.3. Each KFS occupying the top row – 80 points

7 Deciding the Winner

The winning team is determined in the following order:

- 7.1. The team that achieves absolute victory as the "Kung Fu Master"
- 7.2. The team with the higher total score
- 7.3. If two teams have the same score, the winner is decided in the following order:
 - 7.3.1. The team with the higher total score in Tic-Tac-Toe
 - 7.3.2. The team with the higher total score from KFS on the Arena
 - 7.3.3. The team with the higher total score in Martial Club
 - 7.3.4. If still tied, the judges will decide the winner

8 Violations

A forced retry is imposed for any violation, including:

- 8.1. R1 enters opponent game field areas
- 8.2. R2 enters opponent game field areas
- 8.3. R1 touches a Spearhead in the Martial club area
- 8.4. R2 touches a staff in the Martial club area
- 8.5. R1 exits Martial Club without carrying an assembled weapon
- 8.6. R2 exits Martial Club before R1 exits
- 8.7. R1 touches R2 KFS, except in Arena
- 8.8. R2 touches R1 KFS, except in Arena
- 8.9. R1 or R2 touches Fake KFS



- 8.10. R2 moves onto an MF block when there is a KFS
- 8.11. R2 violates the adjacent neighbouring pickup rule, please refer to 4.4.15
- 8.12. R1 enters the Arena without carrying an assembled weapon or a R1 KFS
- 8.13. R2 enters the Arena without carrying a R2 KFS
- 8.14. R1 use an assembled weapon more than once in the Arena
- 8.15. R1 touches another KFS on the Tic-Tac-Toe grid with another assembled weapon before disposing the used weapon in the used weapon area
- 8.16. R1 or R2 falls from the Meihua Forest or Arena
- 8.17. R1 or R2 damages the game field
- 8.18. A team member touches a robot without referee permission

9 Retry

9.1 General Retry Rules

- 9.1.1. A retry can be requested by a team or imposed by a referee for robot violations. A team may request a retry at any time by calling out "Retry".
- 9.1.2. There is no limit to the number of retries.
- 9.1.3. During a retry, the game clock continues to run.
- 9.1.4. During a retry, team members may re-adjust the positions of game field items held by the robot, including:
 - 9.1.4.1. KFS; and
 - 9.1.4.2. Staff, Spearhead, Assembled Weapon, or Dismantled Weapon.
- 9.1.5. During a retry, team members are not allowed to adjust any other items on the game field that are not held by the robot.
- 9.1.6. Retry commences upon the referee's signal.

9.2 Martial Club Retry

- 9.2.1. Team can request:
 - 9.2.1.1. R1 to Martial Club's R1 Retry Zone
 - 9.2.1.2. R2 to Martial Club's R2 Retry Zone
 - 9.2.1.3. R1 and R2 to Martial Club's Retry Zones respectively
- 9.2.2. Forced Retry: Violated robot to Martial Club's Retry Zones

9.3 Meihua Forest Retry

- 9.3.1. Team can request:
 - 9.3.1.1. R1 to Martial Club's R1 Retry Zone
 - 9.3.1.2. R2 to Martial Club's R2 Retry Zone
 - 9.3.1.3. R1 and R2 to Martial Club's Retry Zones respectively
- 9.3.2. Forced Retry: Violated robot to Martial Club's Retry Zones

9.4 Arena Retry

- 9.4.1. Team can request for:
 - 9.4.1.1. R1 to Arena's Retry Zone or Martial Club's R1 Retry Zone
 - 9.4.1.2. R2 to Arena's Retry Zone or Martial Club's R2 Retry Zone
 - 9.4.1.3. R1 and R2 to Arena's Retry Zone or Martial Club's Retry Zones respectively
- 9.4.2. Forced Retry: Violated robot to Arena's Retry Zone

10 Disqualifications

A team shall be disqualified if they are deemed to have committed the following actions intentionally:



- 10.1. The design and construction of the robot do not comply with the requirements of the competition rules.
- 10.2. Acts that pose danger to the game field, its surroundings, the robots, and/or people.
- 10.3. Acts that are not in the spirit of fair play.
- 10.4. The team fails to obey instructions or warnings issued by referees.
- 10.5. Intentional or attempt to damage the game field, facilities, equipment, or opponent's robots.
- 10.6. The use of drones, flying mechanisms, projectiles for locomotion, or any form of aerial movement.
- 10.7. Sending commands to control R2 to complete any task after the game starts.

11 Teams

- 11.1. Each participating country or region shall be represented by one team. Hong Kong as the hosting region will be represented by two teams.
- 11.2. A team consists of three team members who are students and one instructor, all belonging to the same higher education organisation/university/college/polytechnic.
- 11.3. Three additional students from the same institution can be registered as pit crew members to assist during setup and in the pit area.
- 11.4. Postgraduates cannot participate.

12 Robots

- 12.1. Each team is allowed to bring two Robots: R1 (manual/automatic) and R2 (automatic).
- 12.2. R1 is manually controlled by an operator or automatic one capable of operating independently.
- 12.3. R2 must be an automatic robot capable of operating independently.
- 12.4. Dimensions of R1 should be within W1000 x L1000 x H1000 mm before game starts.
- 12.5. Dimensions of R2 should be within W800 x L800 x H800 mm before game starts.
- 12.6. During the game, when fully extended, dimension of R1 must not exceed W1000 x L1800 x H1300 mm.
- 12.7. During the game, when fully extended, dimension of R2 must not exceed W800 x L1300 x H1300 mm.
- 12.8. The total weight of both robots, including batteries, controllers, cables, must not exceed 50 kg.
- 12.9. For radio frequency communication, teams can use only Wi-Fi (IEEE 802.11), Zigbee (IEEE 802.15), and Bluetooth for the communications between controller and robot.
- 12.10. The organizer will not control the environment of Wi-Fi, Zigbee or Bluetooth.
- 12.11. R1 and R2 are not permitted to communicate with each other via wireless transmission during the game.
- 12.12. Teams can use only batteries, compressed air, and/or elastic force as power sources.
- 12.13. The nominal voltage of any battery used in the robot, controller, and any other devices during the game shall not exceed 24V. When connecting batteries in series, the total voltage must be 24V or less.
- 12.14. Power circuits of Robots should be designed so that any actual voltages in the circuits should be 42V or less. If the power supply system includes multiple isolated circuits voltage in each system must be 42V or less.
- 12.15. Teams using compressed air must use either a container made for the purpose or a plastic bottle in pristine condition prepared appropriately. Air pressure must not exceed 600 kPa.
- 12.16. The following devices are not permitted to be used:



- 12.16.1. Lead-acid batteries, adhesive-sealed batteries, explosive and high temperature energy sources, and any items that can damage the game field or hinder the competition.
- 12.16.2. When using lasers, the teams must use Class 1 or 2 products that comply with IEC 60825-1 and must take safety measures based on the standards.
- 12.17. Robot Transportation: The Organising Committee will arrange transportation of robots for all teams participating in ABU Robocon 2026. Each team can prepare two (2) transportation boxes with dimensions of 700 mm x 700 mm x 700 mm (L x W x H) per box and a maximum weight of 57 kg per box. Items exceeding the size or weight limits will not be accepted for transportation.

13 Safety

- 13.1. The design and build of robots should not pose any kind of danger to any person at the competition scene.
- 13.2. All robots must have a clearly visible red emergency “STOP” button.
- 13.3. Robots must be designed and manufactured to ensure the safety of team members, opposing teams, surrounding people, and the game field.
- 13.4. Team members must wear appropriate safety gear as mandated by the organiser during the games and test runs.
- 13.5. The use of dangerous power sources or mechanisms that could damage the field or harm participants will be prohibited.
- 13.6. The use of flying mechanisms or drones as part of the robot design is strictly prohibited due to safety concerns and conflict with intended game mechanics.

14 Others

- 14.1. Situations not mentioned in this Rule Book shall be subject to the decisions of the Referee and the Organising Committee.
- 14.2. The dimensions, weight, etc., of the game field described in this Rule Booklet may have a tolerance of $\pm 5\%$ unless otherwise specified.
- 14.3. All inquiries should be directed to the official website of ABU Robocon 2026 at [<https://www.rthk.hk/aburobocon2026>]. The FAQ section will be provided on the website of the contest.
- 14.4. Any changes to the Competition Rules will be updated on the official website of the ABU Robocon 2026 Organising Committee. [<https://www.rthk.hk/aburobocon2026>]
- 14.5. Teams must comply with the instructions of the Organising Committee and the referees to ensure the safety of the robots and/or humans involved.



15 Material* and colours of game field

Items	Color	Material	R-G-B
Start Zone (Red)		Plywood, Water Paint	223-34-34
Zone 1 (Red)			250-220-218
Start Zone (Blue)			50-0-255
Zone 1 (Blue)			128-199-226
Staff Rack			155-95-0
Spearhead Rack			155-95-0
Guild line			255-255-255
Fence			100-62-0
Zone 2 Pathway (Red)			236-162-151
Zone 2 Pathway (Blue)			128-191-209
Meihua Forest (200mm)		Plywood, Water Paint	41-82-16
Meihua Forest (400mm)			42-113-56
Meihua Forest (600mm)			152-166-80
Ramp			192-189-182
Zone 3 (Red)			254-186-163
Zone 3 (Blue)			129-210-214
Used weapon area			255-255-0
Retry zone (Red)			223-34-34
Retry zone (Blue)			50-0-255
Tic-Tac-Toe Rack		Base: Plywood, Water Paint Rack: Acrylic, Transparent Edge: Non-Shiny Vinyl Tape	255-255-25 - 0-0-0

*All items dimension and specification should refer to the APPENDIX Documents

16 Texts/ Symbols on KFS

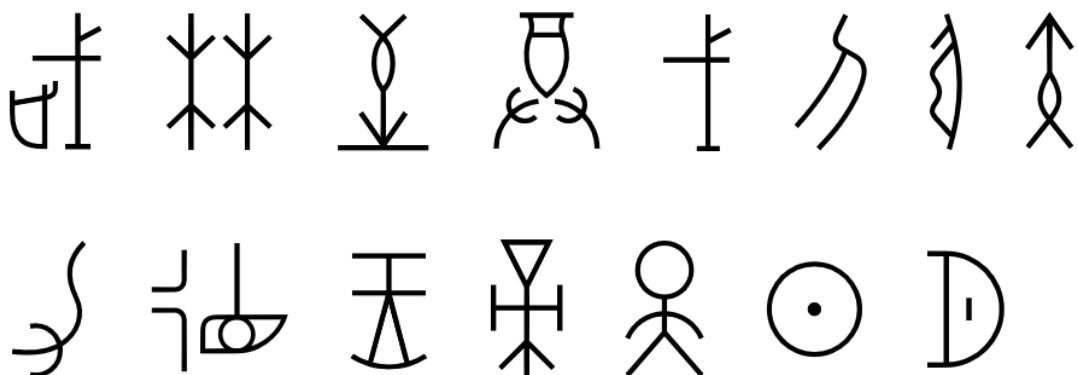
16.1. Symbols will be stick on R1 KFS:



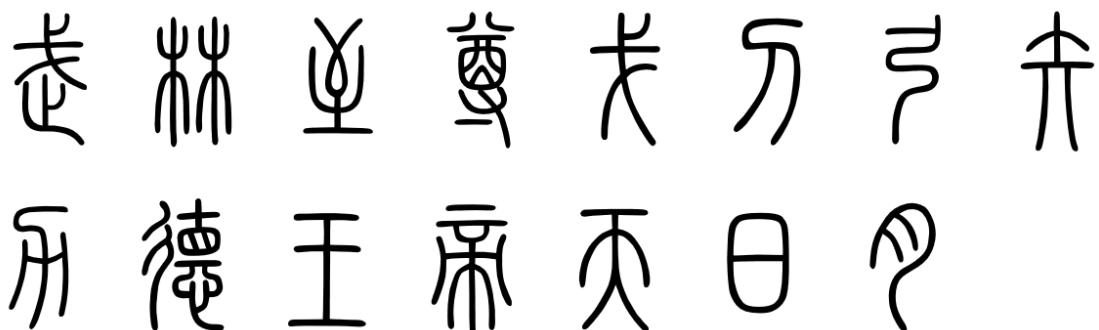
Hong Kong, China
ABU Asia-Pacific Robot Contest

16.2. Lists of texts/symbols will be stick on R2 KFS:

16.2.1. Real KFS [Oracle Bone Character(甲骨文)]:

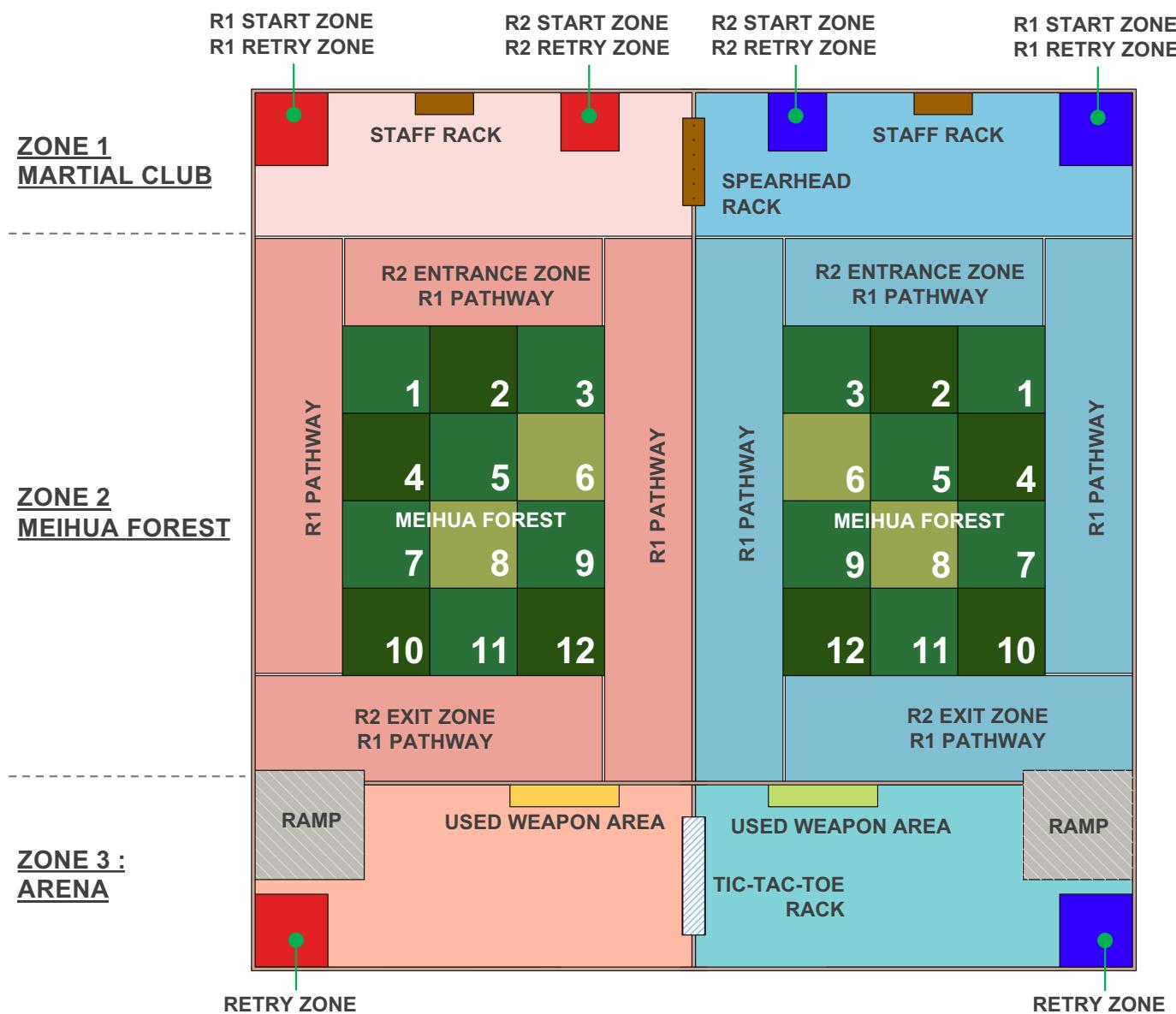


16.2.1. Fake KFS [Random Pattern]:

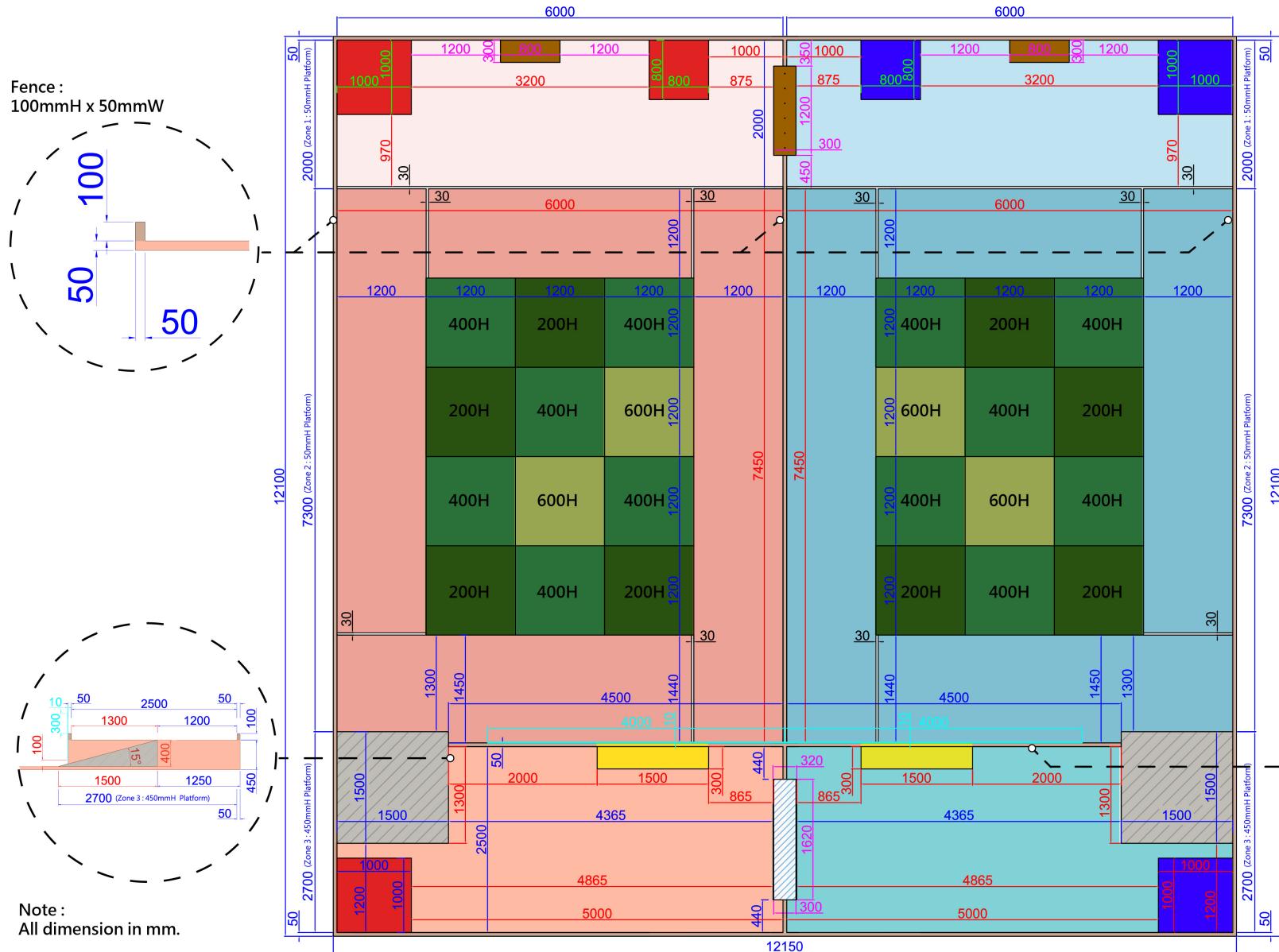


Hong Kong, China
ABU Asia-Pacific Robot Contest

Appendix 1 – Game Field



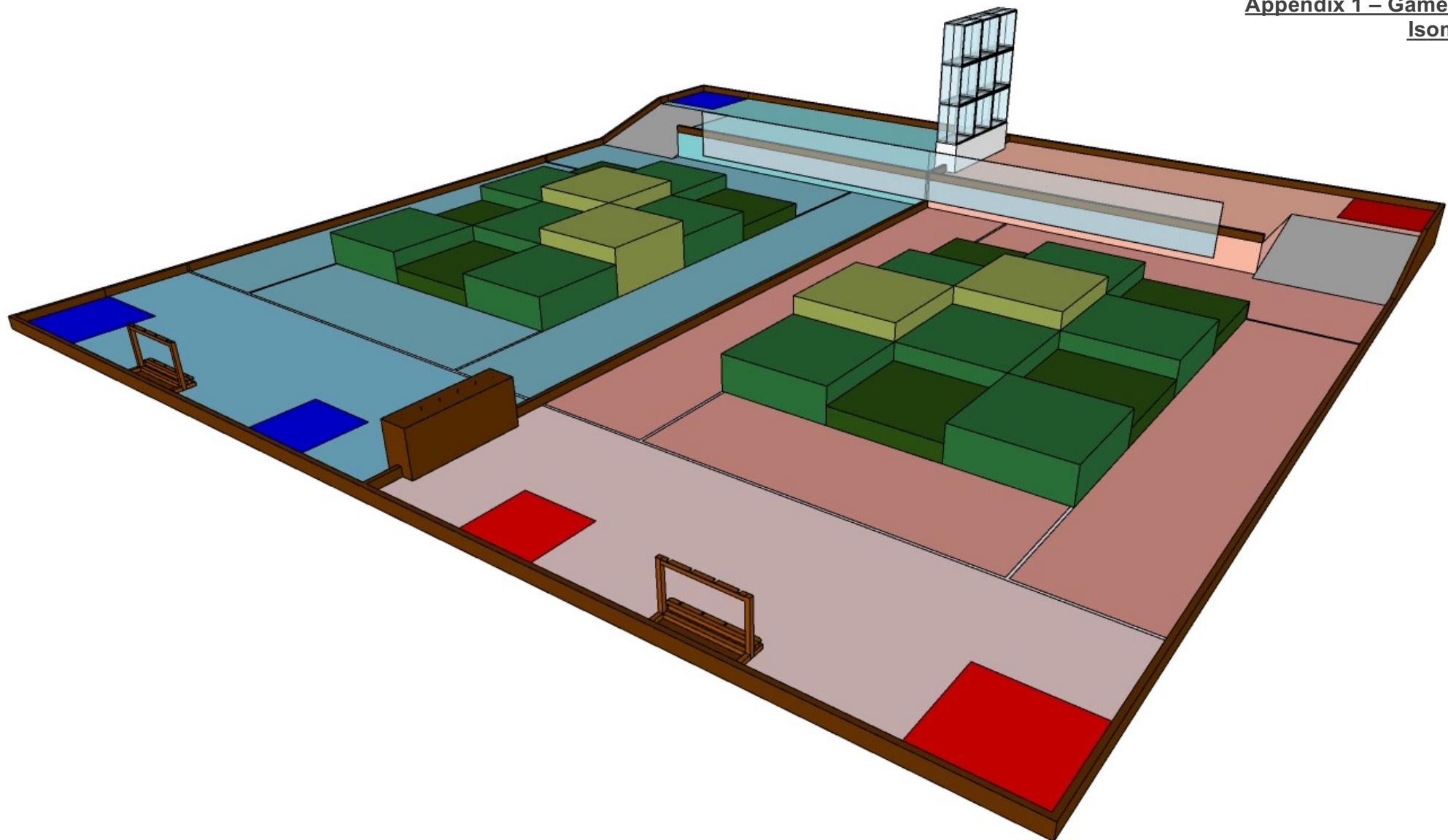
Appendix 1 – Game Field Dimension



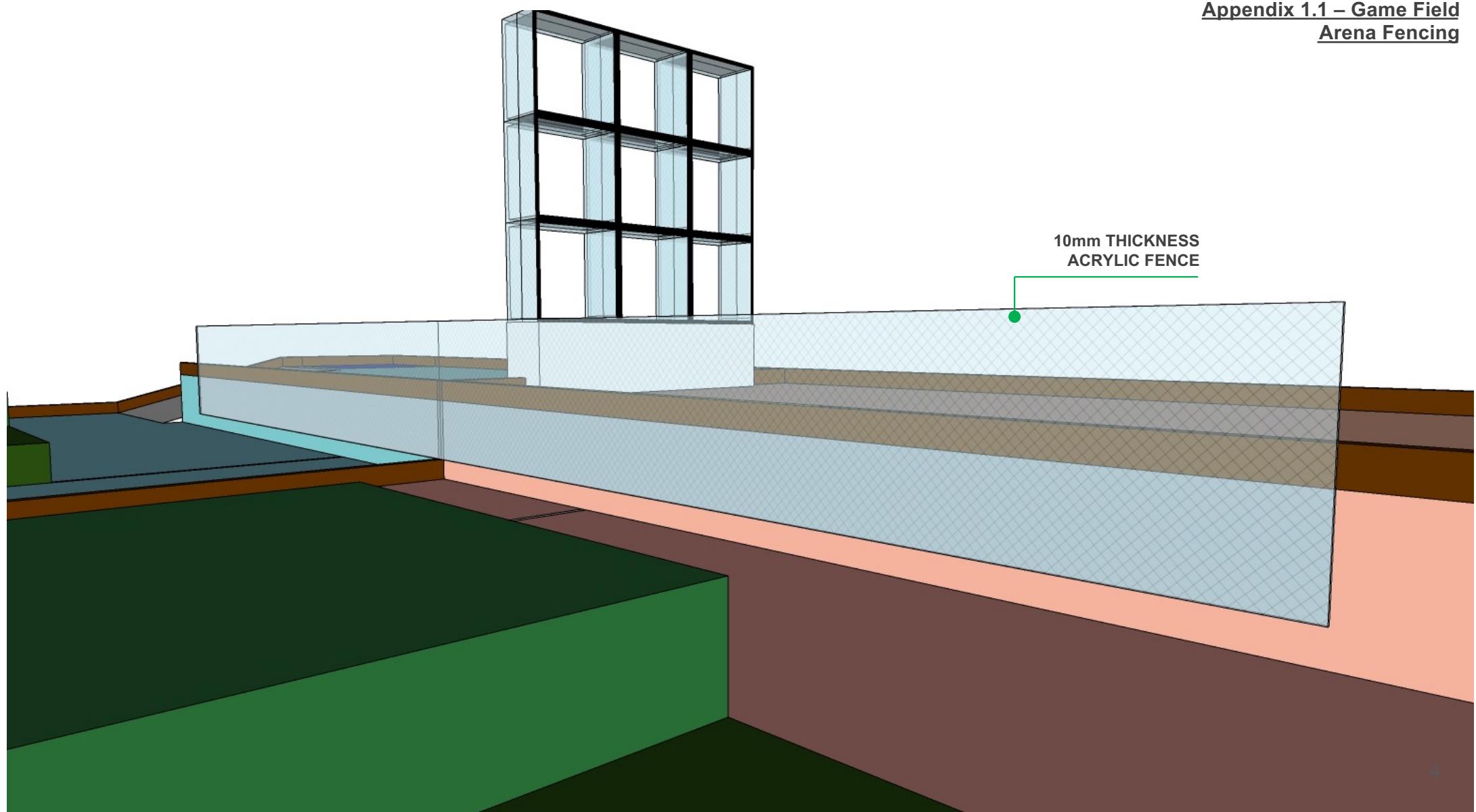
Note :
All dimension in mm.

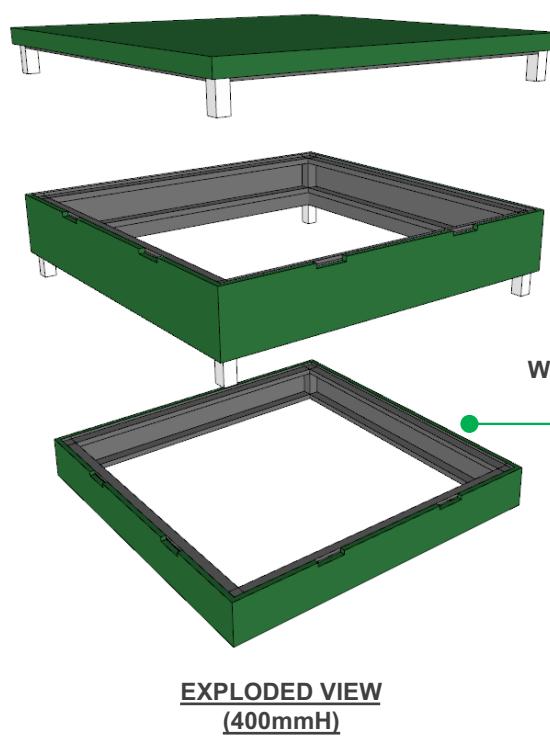
2

Appendix 1 – Game Field
Isometric

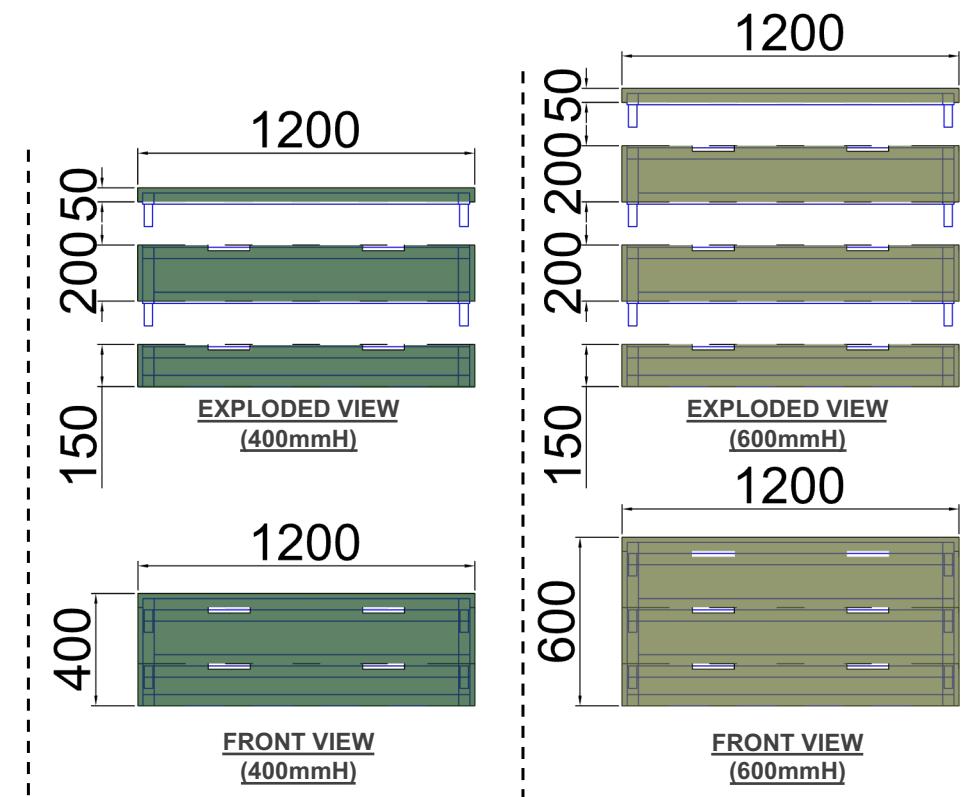
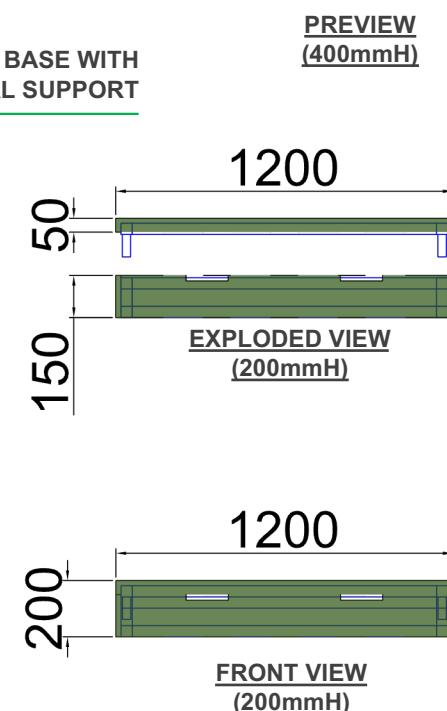


Appendix 1.1 – Game Field
Arena Fencing

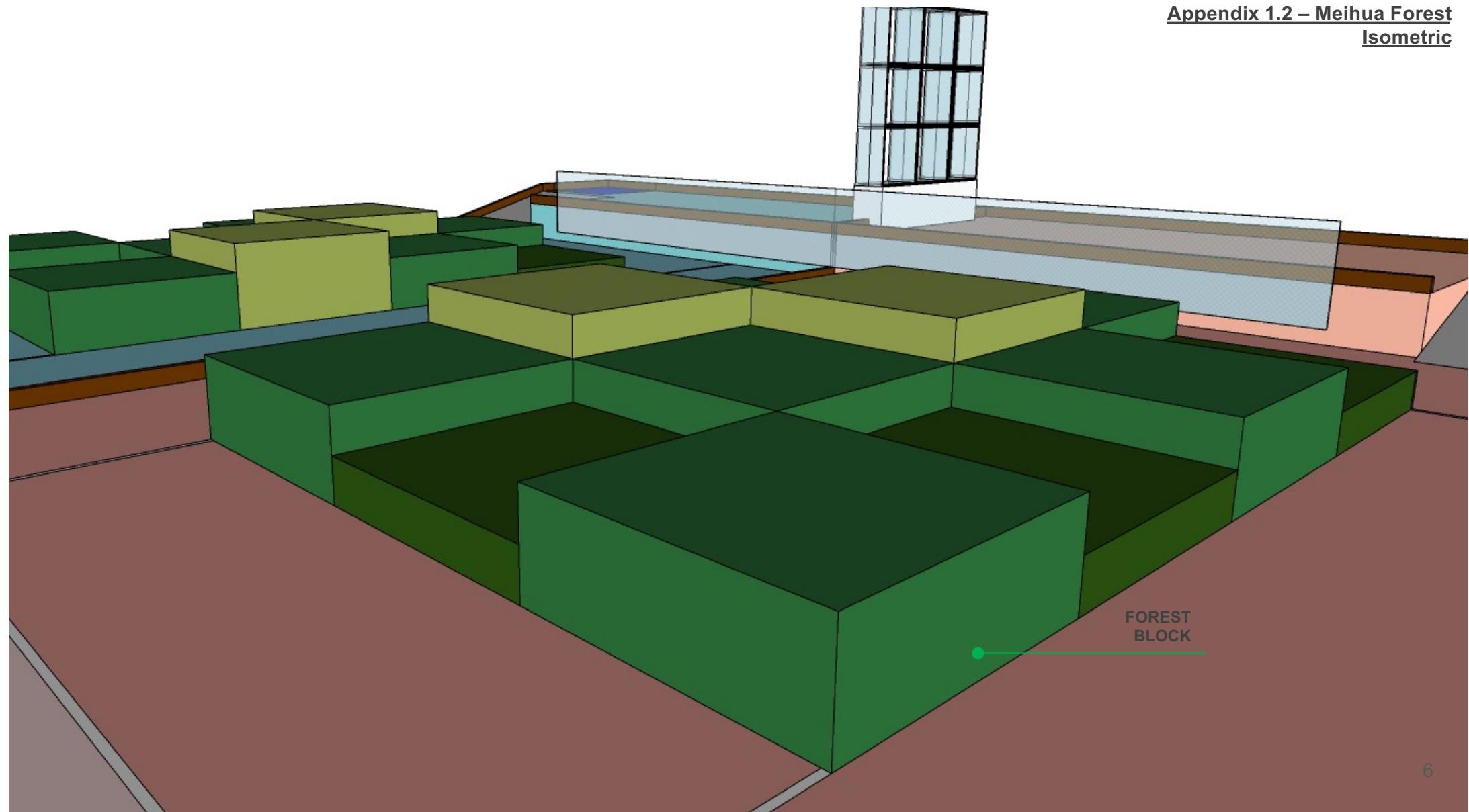




NOTE:
ALL DIMENSION IN MM.



Appendix 1.2 – Meihua Forest
Isometric





30PM Quick Coupler



PVC wall thickness



PVC Diameter

Assembled staff

Material: PVC pipe glued with assemble connector (POM Quick Coupler)

PVC Pipe: Length 1000mm, Outer Diameter 20.3mm ($\pm 1\%$); Wall thickness 2.0mm ($\pm 1\%$)

POM Quick Coupler: 30PM, Weight: 6g

Total Length: 1027mm ($\pm 0.5\%$)

Total Weight: ~195g ($\pm 3\%$)

Appendix 2.2.1 – Spearhead (Fist)

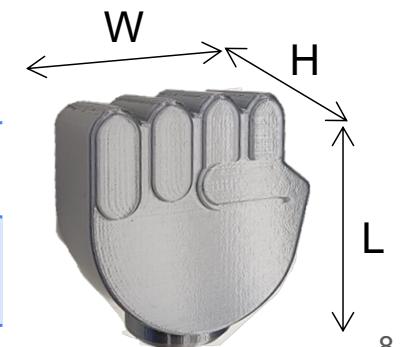


Assembled Item	Material	Assembled Length	Assembled Weight
Spearhead – Fist (3D printing link)	PLA assemble with connector (Plastic Quick Coupler)	128mm ($\pm 1\%$)	85g ($\pm 5\%$)

Items	Material	Model	Weight	Length
Connector (Quick Coupler)	POM	40SM	22g ($\pm 5\%$)	52.5mm ($\pm 0.5\%$)



Items	Material	Methodology	Wall Thickness	Infill	Thread	Dimension (LxWxH)	Weight
Fist	PLA	3D printing	1.6	10%	G1/2-14	89x84x50mm ($\pm 5\%$)	63g ($\pm 5\%$)



Appendix 2.2.1 – Spearhead (Palm)



Assembled Item	Material	Assembled Length	Assembled Weight
Spearhead - Palm (3D printing link)	PLA assemble with connector (Plastic Quick Coupler)	80mm ($\pm 1\%$)	81g ($\pm 5\%$)

Items	Material	Model	Weight	Length
Connector (Quick Coupler)	POM	40SM	22g ($\pm 5\%$)	52.5mm ($\pm 0.5\%$)



Items	Material	Methodology	Wall Thickness	Infill	Thread	Dimension (LxWxH)	Weight
Fist	PLA	3D printing	1.6	10%	G1/2-14	133.6x84x41mm ($\pm 5\%$)	59g ($\pm 5\%$)



Appendix 2.2.1 – Spearhead (Spear)

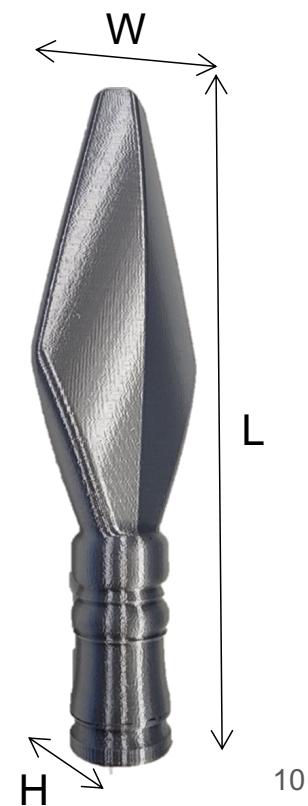


Assembled Item	Material	Assembled Length	Assembled Weight
Spearhead – Spear (3D printing link)	PLA assemble with connector (Plastic Quick Coupler)	288mm ($\pm 1\%$)	106g ($\pm 5\%$)

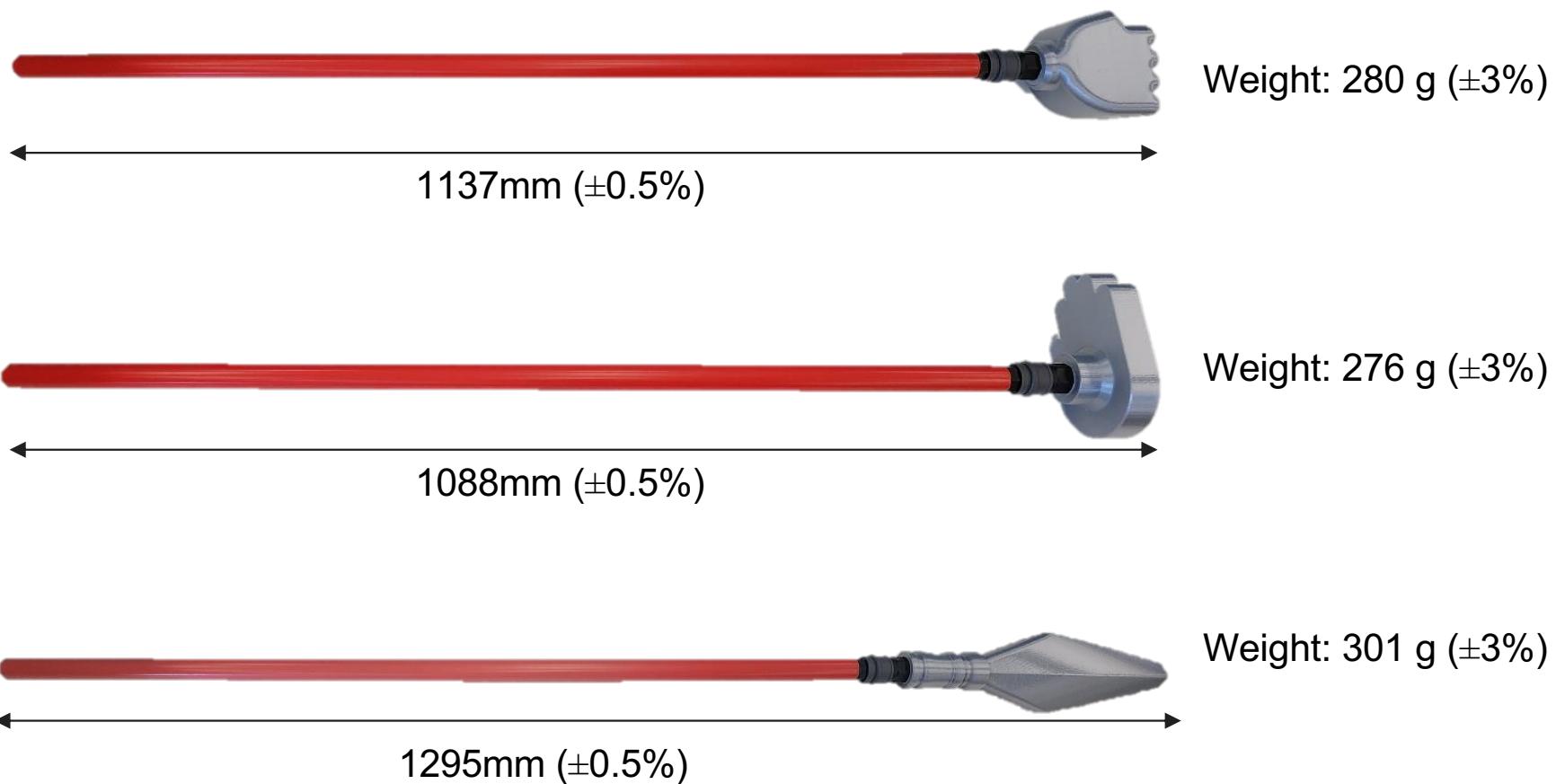
Items	Material	Model	Weight	Length
Connector (Quick Coupler)	POM	40SM	22g ($\pm 5\%$)	52.5mm ($\pm 0.5\%$)



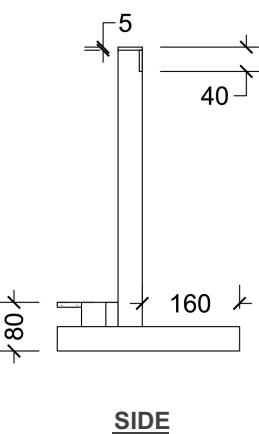
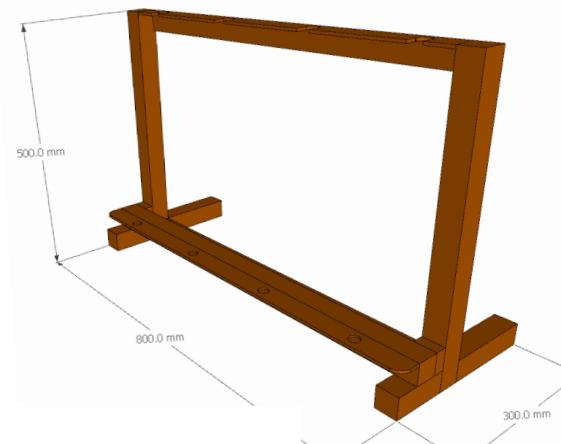
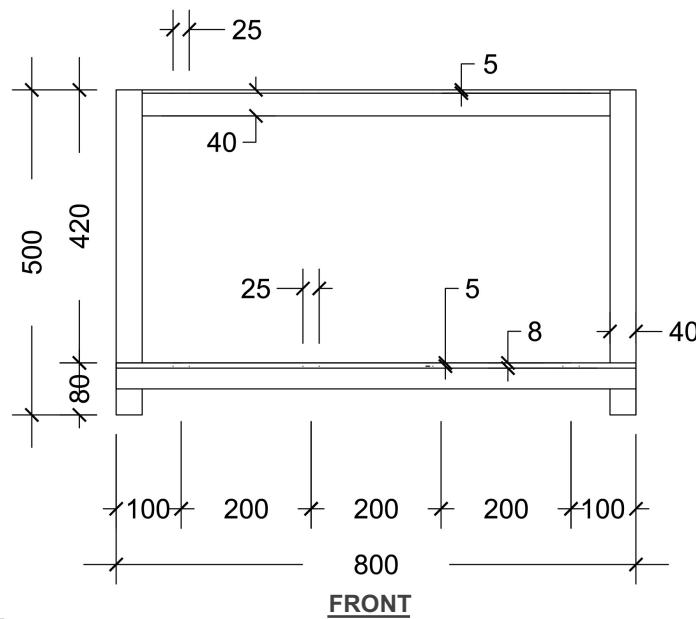
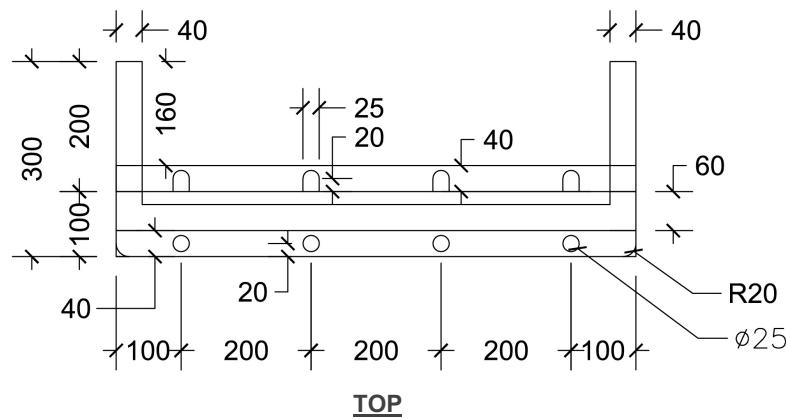
Items	Material	Methodology	Wall Thickness	infill	Thread	Dimension (LxWxH)	Weight
Fist	PLA	3D printing	1.6	10%	G1/2-14	251x77x35.8mm ($\pm 5\%$)	84g ($\pm 5\%$)



Appendix 2.2 – Weapon assembled length

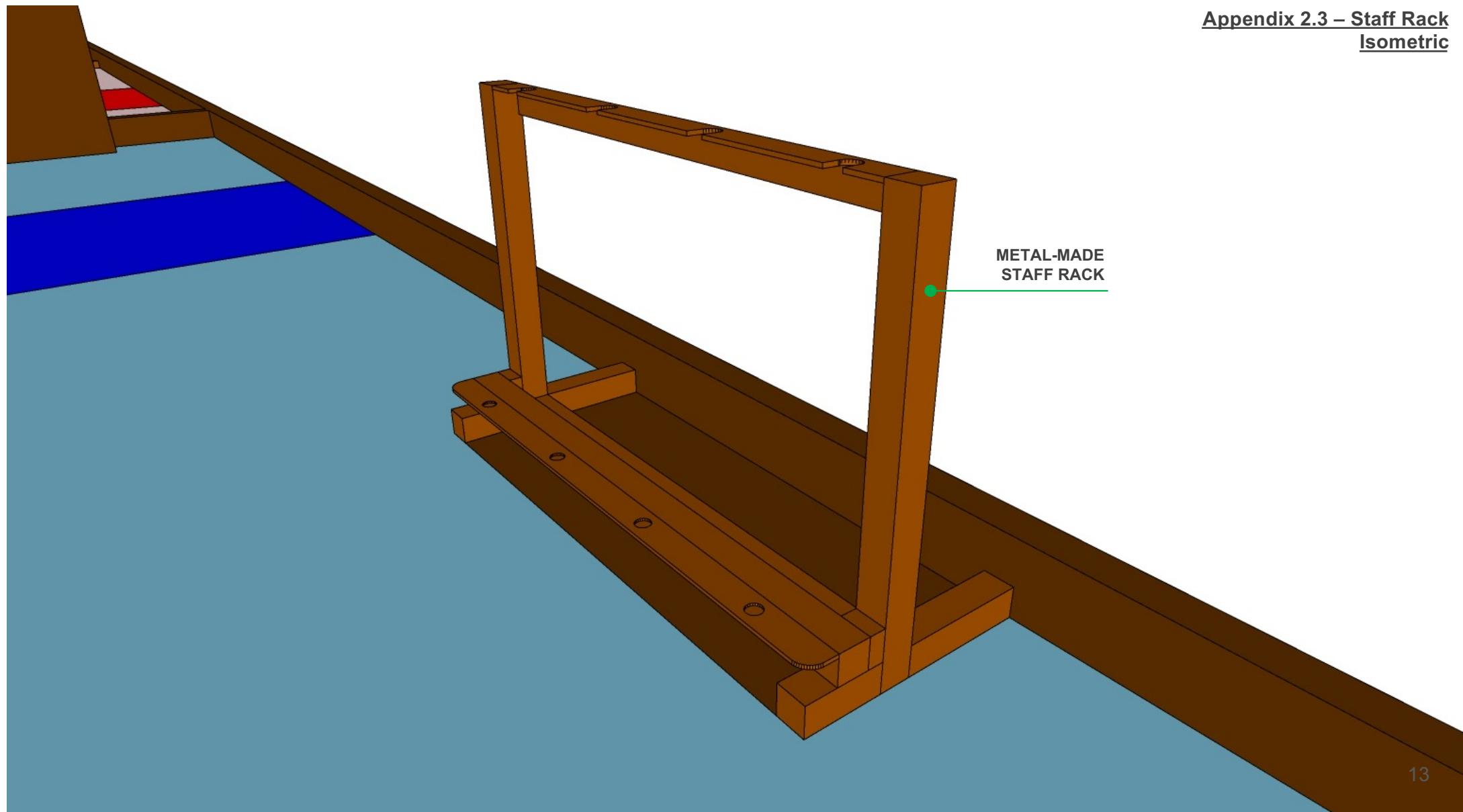


Appendix 2.3 – Staff Rack

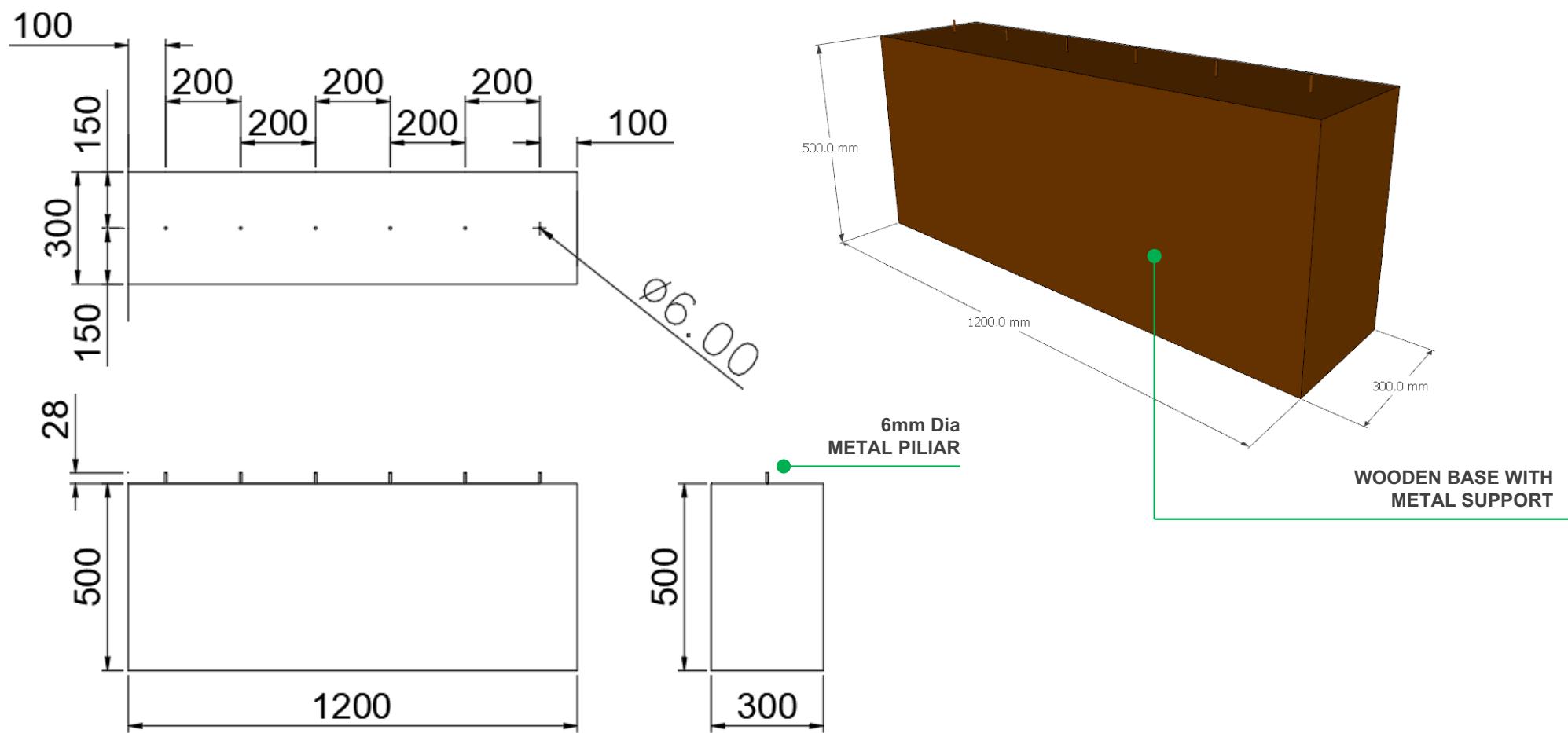


NOTE:
ALL DIMENSION IN MM.

Appendix 2.3 – Staff Rack
Isometric



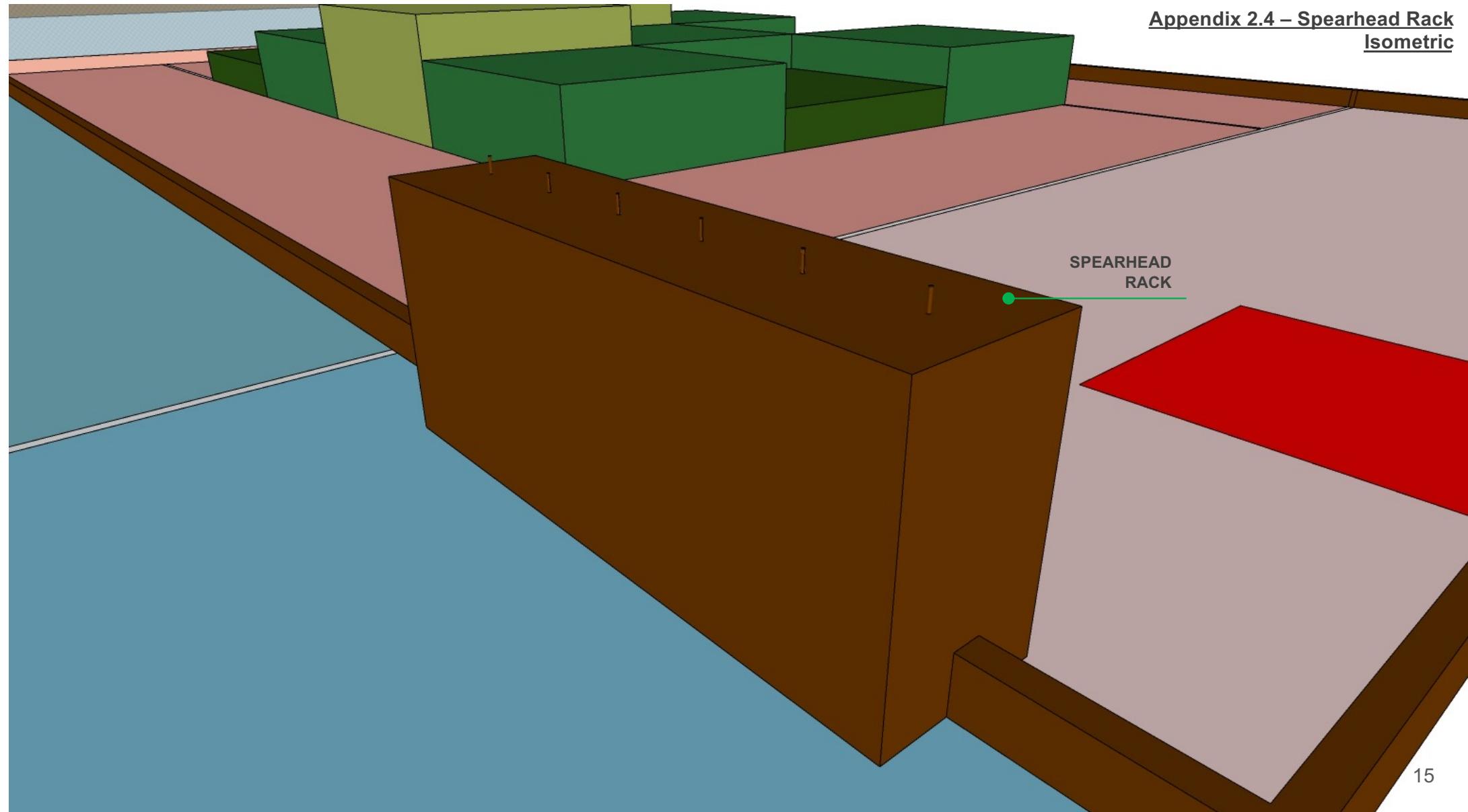
Appendix 2.4 – Spearhead Rack



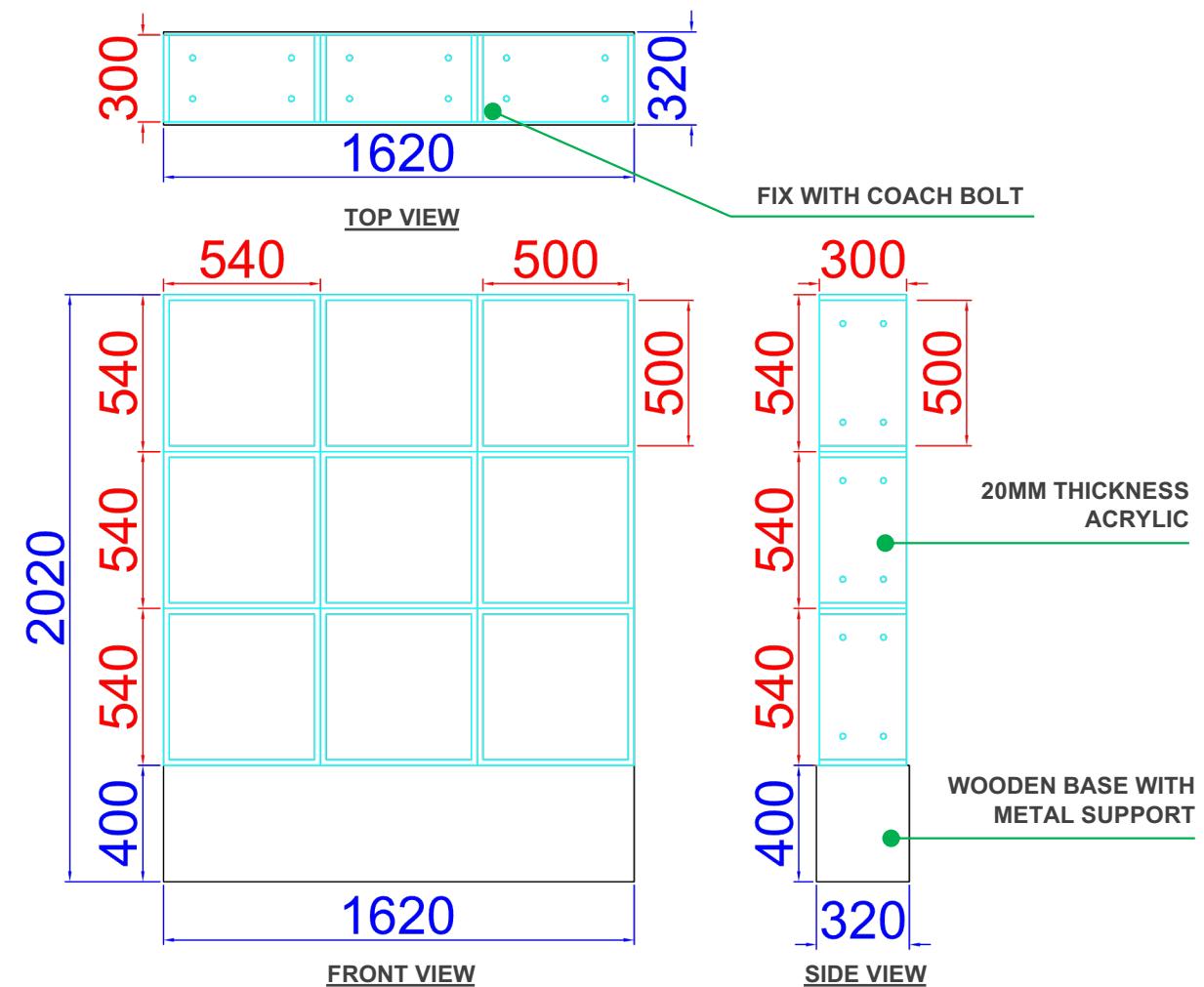
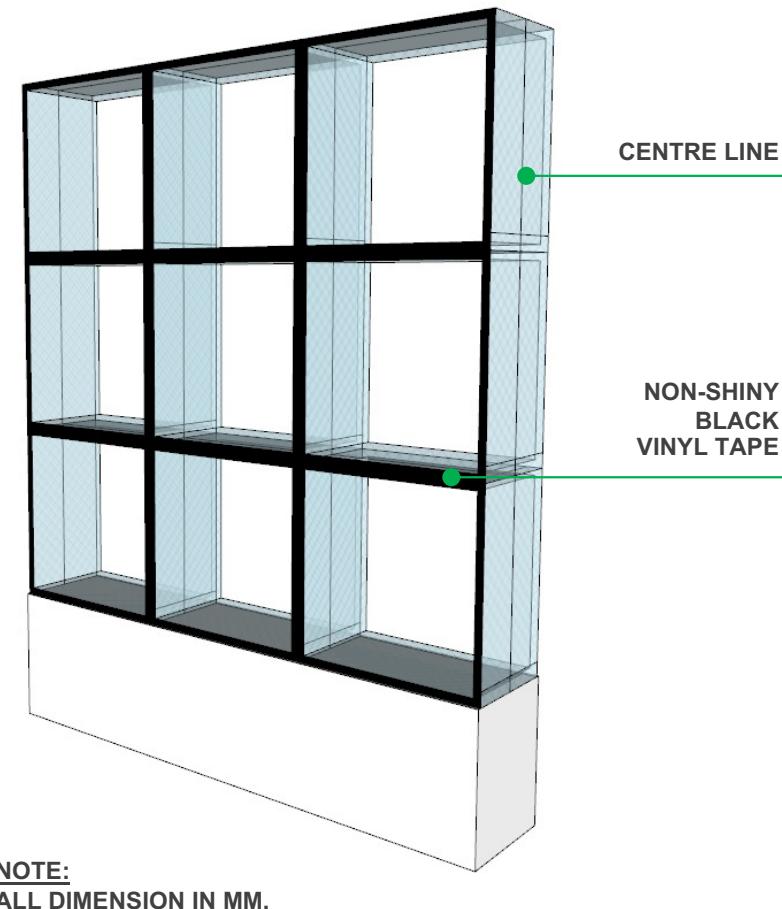
NOTE:

ALL DIMENSION IN MM.

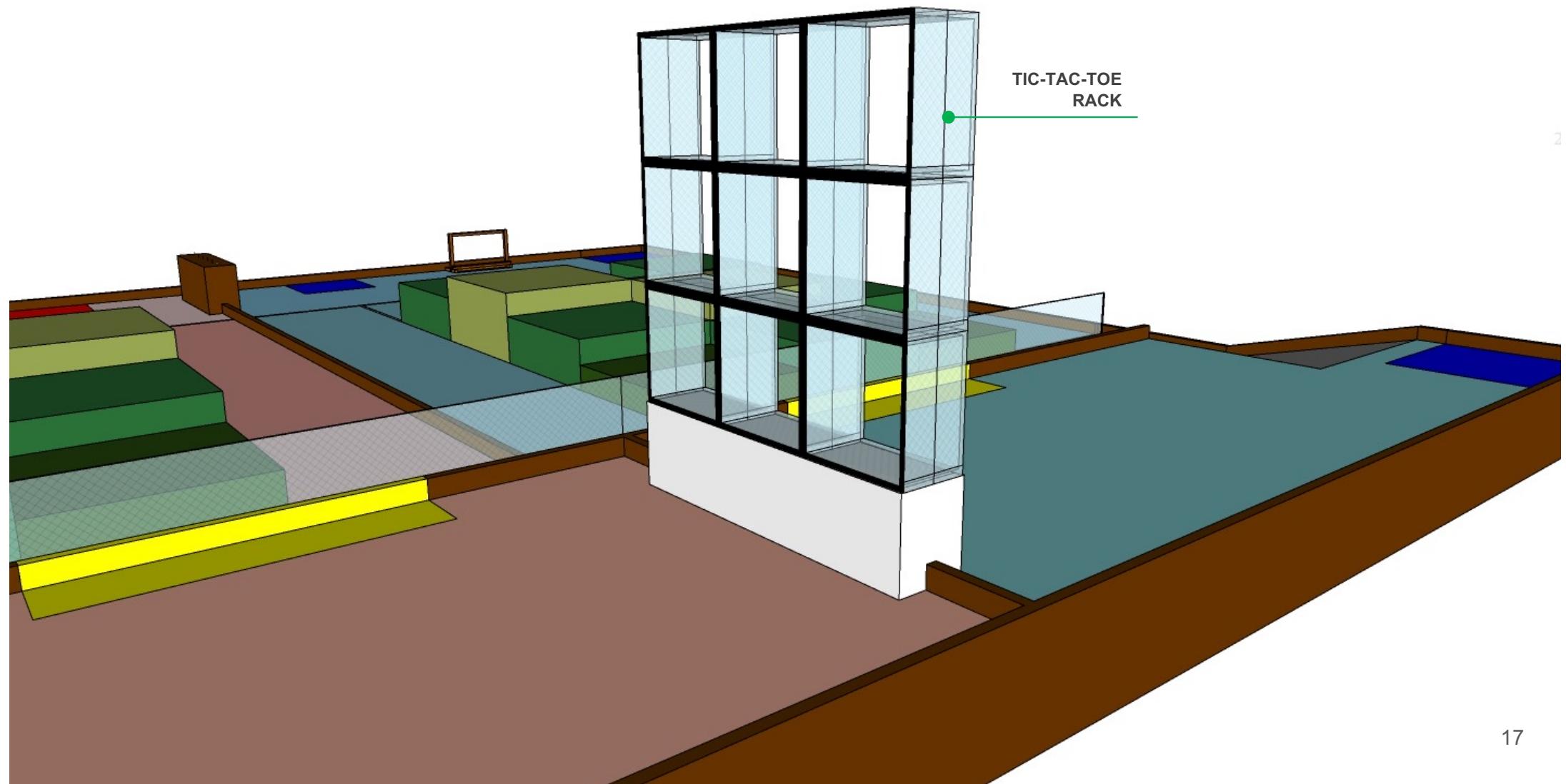
Appendix 2.4 – Spearhead Rack
Isometric



Appendix 3 - Tic-Tac-Toe Rack



Appendix 3 - Tic-Tac-Toe Rack
Isometric





R1 KFS

Dimension: 350mm x 350mm x 350mm($\pm 5\%$)

Material: 3 layers Carton Box, cover by 6 sides of sticker

Weight: 630g ($\pm 20\%$)

*The same symbolic texts/pictures are sticked on 5 sides of the KFS for recognition, no images on the bottom surface.

R2 Real KFS

Dimension: 350mm x 350mm x 350mm($\pm 5\%$)

Material: 3 layers Carton Box, cover by 6 sides of sticker

Weight: 630g ($\pm 20\%$)

*The same symbolic texts/pictures are sticked on 5 sides of the KFS for recognition, no images on the bottom surface.

R2 Fake KFS

Dimension: 350mm x 350mm x 350mm($\pm 5\%$)

Material: 3 layers Carton Box, cover by 6 sides of sticker

Weight: 630g ($\pm 20\%$)

*Different symbolic texts/pictures are sticked on 5 sides of the KFS for recognition, no images on the bottom surface.
A ribbon will be applied on the bottom surface.

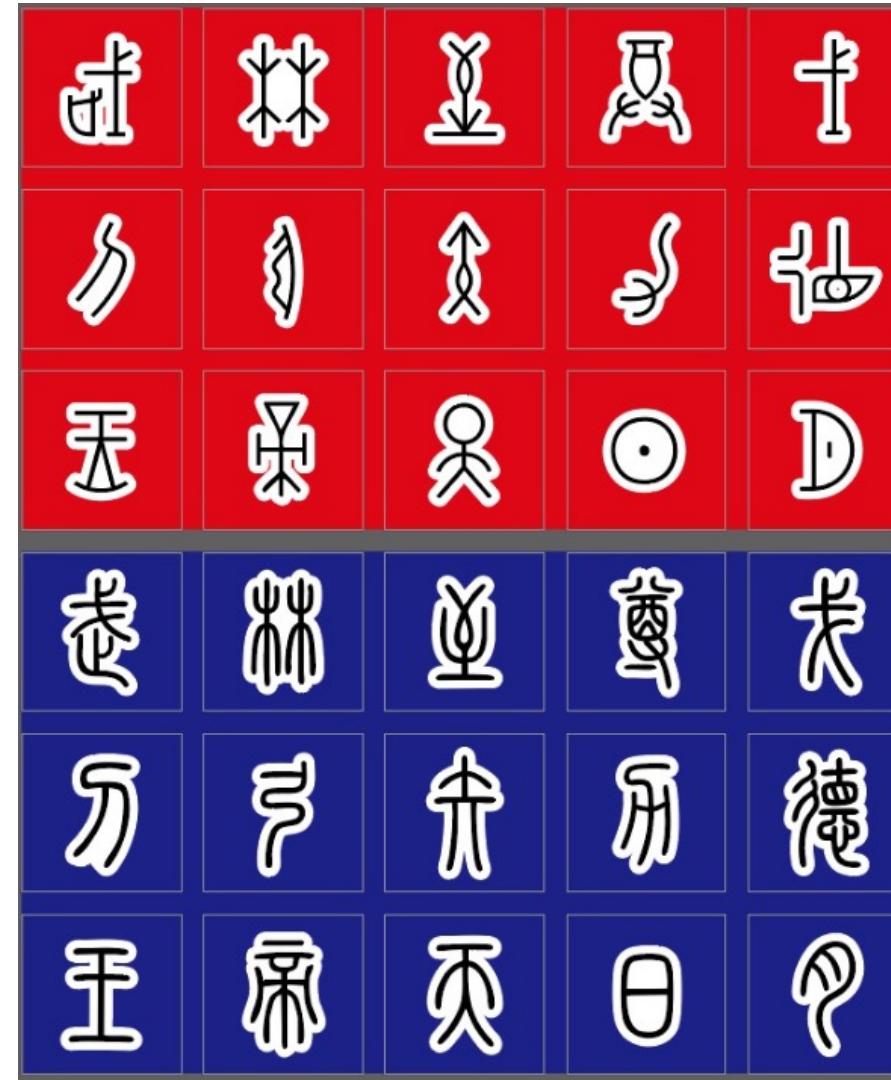
Appendix 4.3 – Kung Fu Scroll
Recognition Patterns



R1 Red



R1 Blue



R2 Real

R2 Fake