

# INTERNATIONAL TENNIS FEDERATION (ITF)



## LAWN TENNIS

#### **4. LAWN TENNIS: (ITF – International Tennis Federation)**

Lawn Tennis is basically an outdoor game. The main factors which need to be considered in the development and use of suitable specifications for a tennis court include:

- (a) Proper court size;
- (b) Orientation of courts;
- (c) Slope and drainage of courts;
- (d) Base and construction materials;
- (e) Type and speed of surface, and
- (f) General information on lighting, fencing, nets, net posts, windscreens, maintenance and resurfacing.

##### **4.1 Rules of Tennis**

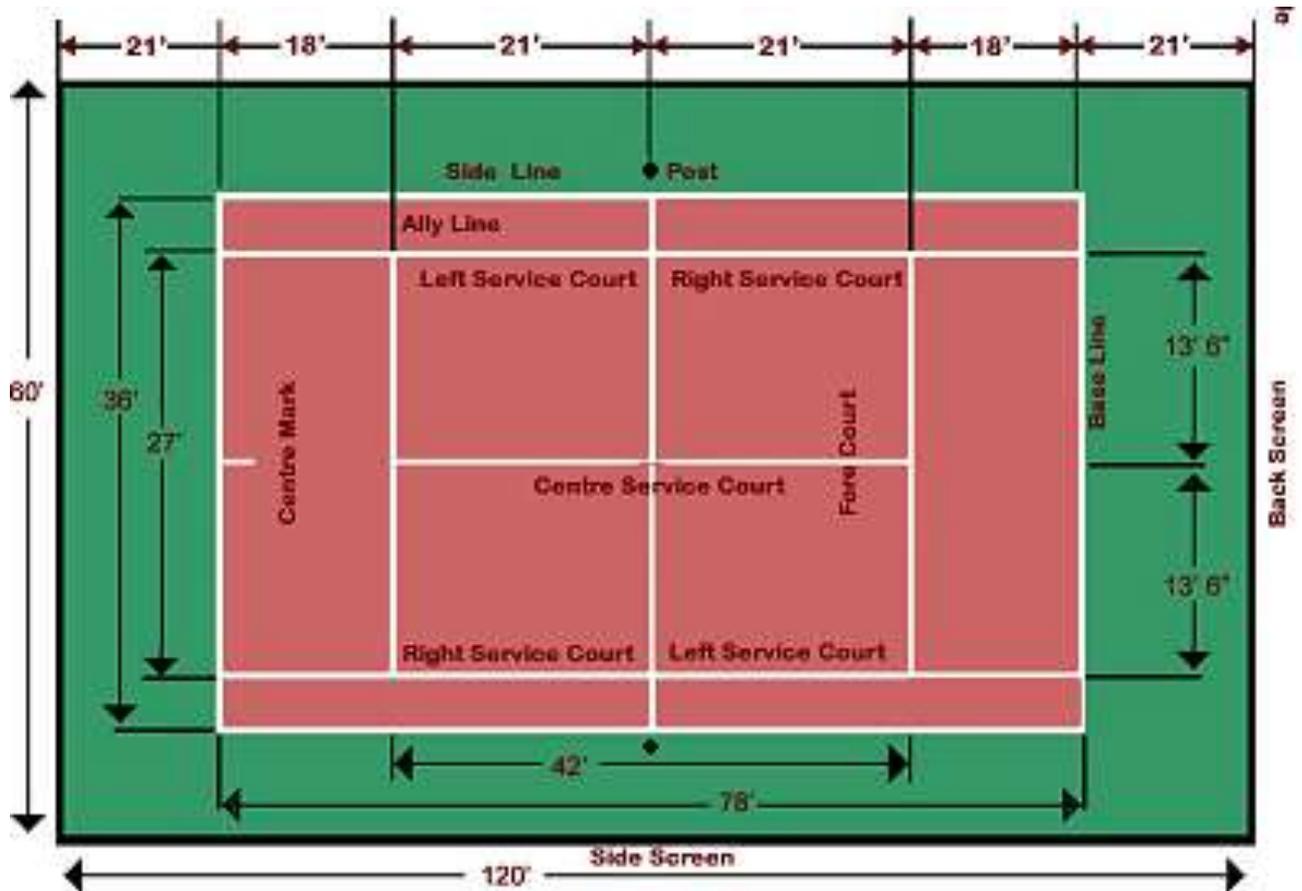
- For singles Game, Court shall be a rectangle 78 feet (23.77 m.) long and 27 feet (8.23 m.) wide.
- For the doubles Game, the court shall be 36 feet (10.97 m.) in width, i.e. 4½ feet (1.37 m.) wider on each side than the Court for the Singles Game, and those portions of the singles sidelines which lie between the two service lines shall be called the service side-lines. In other respects, the Court shall be similar to Singles court. but the portions of the singles side-lines between the base-line and service-line on each side of the net may be omitted if desired
- The Run offs beyond each sideline shall be 12 ft and beyond baseline it shall be 21 ft. The size of the court up to fencing shall be 120 ft. X 60 ft.
- Court shall be divided across the middle by a net suspended from a cord or metal cable of a maximum diameter of one-third of an inch (0.8 cm.), the ends of which shall be attached to, or pass over, the tops of the two posts, which shall be not more than 6 inches (15 cm.) square or 6 inches (15 cm.) in diameter.
- The posts shall not be higher than 1 inch (2.5 cm.) above the top of the net cord. The centers of the post shall be 3 feet (.914 m.) outside the Court on each side and the height of the posts shall be such that the top of the cord or metal cable
- The net shall be extended fully so that it fills completely the space between the two posts and shall be of sufficiently small mesh to prevent the ball passing through.
- The height of the net shall be 3 feet (.914 m.) at the center, where it shall be held down taut by a strap not more than 2 inches (5 cm.) wide and completely white in color.

- The lines bounding the ends and sides of the Court shall respectively be called the base lines and the sidelines.
- On each side of the net, at a distance of 21 feet (6.40 m.) from it and parallel with it, shall be drawn the service lines.
- The space on each side of the net between the service-line and the side-line shall be divided into two equal parts called the service-courts by the center service-line, which must be 2 inches (5 cm.) in width, drawn half-way between, and parallel with the side-line.
- Each base-line shall be bisected by an imaginary continuation of the center service-line to a line 4 inches (10 cm.) in length and 2 inches (5 cm.) in width called "the center mark" drawn inside the Court, at right angles to and in contact with such base-lines.
- All other lines shall be not less than 1 inch (2.5 cm.) nor more than 2 inches (5 cm.) in width, except the base-line which may be not more than 4 inches (10 cm.) in width, and all measurements shall be made to the outside of the lines. All lines shall be of uniform color.
- If advertising or any other material is placed at the back of the Court, it may not contain white, or yellow. A light color may only be used if this does not interfere with the vision of the players.
- At Club or recreational level, the space behind each baseline should be not less than 18 feet (5.5 m.) and at the sides not less than 10 feet (3.05 m.).

### **Tennis Court Orientation.**

- The ideal court orientation is North-South.
- The centre service line and centre mark line must be 50mm wide. All other lines except the baseline may be 25mm-50mm wide. The base line may be 25mm-100mm wide.
- All measurements are to the outside of the lines.

When planning to build a new tennis court then the design and specification of the size and dimensions will be outlined which will change depending on budgets, cost restraints or physically the size restraints onsite. Some projects might only have the space for an 18m x 36m, so although it doesn't meet the championship size it is more than the minimum recommended that is set out by the ITF.



## 4.2 Specification of Surfaces

- Tennis is played on a variety of surfaces and each surface has its own characteristics which affect the playing style of the game.
- The International Tennis Federation (**ITF**) classifies surfaces into one of five pace settings:



- A surface product included on the list of ITF Classified Surfaces is classified purely on the basis of its Court Pace Rating.
- ITF Classification does not imply any form of ITF approval or endorsement
- ITF has classified the installation of the court in two categories for competition purpose : \_\_\_\_\_

### **4.3 DRAINAGE**

The slope of Tennis court is ideally flat, however the court should drain from one side to the other side at about 1% and this water needs to be dealt with or it can soak directly into adjacent soils (and therefore back in under the court) or it can be a source of settlement or erosion. In most cases, a concrete steel reinforced open faced V-ditch drain immediately adjacent to the court can capture this water and then dispose of it a good distance from the court.

### **4.4 TENNIS COURT FENCING**

10' high fencing is perhaps the "standard"; however, in some cases, we might want to consider 12' high fencing if the area beyond the fence is inaccessible for ball retrieval. It is important to have the squares in the fence fabric not greater than 40 mm, or the ball may go through.

As regards fencing between the courts, you can minimize costs by coming down 20 ft from each end with full height fencing and then drop to 3 ft 6 inch fencing for the middle 80 ft with an open 4 ft space. A gate is then not necessary.

### **4.5 HITTING WALLS**

Hitting wall allows players to warm up by themselves and to also practice repetitive strokes. It should be 20 ft wide and at least 7 ft in height to serve as a hitting wall. It is important that the back of the wall be thoroughly waterproofed in order to stop water from soaking through because it will stain the exposed surface. The inside surface should be color coated to match the inner playing surface of your court. Place a 36" high horizontal white line across it to create a net line.

### **4.6 Types of Court Surfaces**

- Natural Grass
- Clay
- Artificial Grass
- Acrylic floor Surface

Grass and clay courts are clearly in the minority, throughout the world, nonetheless, they do hold some appeal. It is important to understand that they are both more expensive and more maintenance intensive than hard courts.

#### **4.6.1 CLAY COURTS**

The clay material for clay courts is not anything like the local clay soils. Although less expensive to construct than other types of tennis courts, the maintenance costs of clay are high as the surface must be rolled to preserve flatness. Another aspect of clay is that it needs to be maintained at a fairly constant moisture level. If it is too wet, it is gooey and if too dry, it is powdery. Overhead sprinklers on a time clock are one solution; however, evaporation and water consumption make it a very costly affair during drought conditions.

The lines on clay courts are actually strips of a canvas-like material which is nailed down. Clay courts need to be "resurfaced" after a certain amount of play to replace clay that has either washed or blown away and this entails removing and then replacing the lines.

A clay court is a labor of love. Playing on a clay court is also quite different from conventional hard-court tennis. The principal difference is the need to literally slide on the clay surface as you get into position to hit shots. This sliding action also creates the great benefit of having a clay court. It reduces the running and pounding action on feet and joints and, therefore, is much easier on your system. One should also be aware that playing tennis on a clay court is very difficult if you are only used to hard courts and, while many people enjoy an occasional match on clay "for the fun of it," they find it very difficult to switch back and forth between the two.

#### **4.6.2 GRASS COURTS**

Just as a clay court plays quite differently from a hard court, a grass court creates a totally different game. The bounce of the ball is as if someone has punctured it. A high lob landing on a hard court might bounce up 10', while the same lob landing on a grass court might bounce just 2'. To add to the confusion, is the fact that the bounce is almost predictably erratic as it is coming off an uneven grassy surface and not the flat surface of a hard court. The other significant difference is that a ball hit towards you tends to skid on the grass, rather than having traction as on a hard court surface. Therefore, it doesn't "come up". So, while you might expect it at 30" to 36" above the playing surface on a hard court, it might only "come up" 10" to 12" above a grass surface.

The construction of a grass court is very much like the technique used in building a putting green on a golf course. It starts with underlying soils preparation, followed by layers of increasingly smaller rock materials, followed by nutrient soils through which

water can flow. The grass actually grows in a granular, sandy and nutritious soil that drains extremely well. A grass court takes a real beating. If you have ever set up a volleyball net on the back lawn you will remember that the 30 minutes of volleyball on the 4th of July left marks that were visible well into August. Constant mowing, regular feeding and protection from disease are major items in the maintenance of a grass court.

Grass courts are particularly easy on the joints, as the grass and soils have a cushioning effect. Playing lines are chalk and are laid down with a small, roller type of chalk feeder, similar to those used to place playing lines on a baseball diamond.

#### **4.6.3 Hard Court**

In Southern California (generally considered the tennis capital of the world) almost all tennis courts are built out of concrete, as opposed to Northern California, where exactly the opposite is true, with most courts being built out of asphalt. Once surfaced and color coated, asphalt and concrete courts look alike, play alike and other than looking at construction related details, no one can tell one from the other. The principal reason for the geographic difference is the concrete in Northern California is significantly more expensive than in Southern California, costing some two to three times what it does in Southern California.

A persistently stated opinion is that an asphalt court is "easier on the feet." Unfortunately, this is pure fiction. For this to be true, an asphalt court would have to "give" (actually depress) when you walk or run on it. Put simply, it doesn't. The materials under both asphalt and concrete courts are compacted to very high densities and levels of compaction, --- normally 90% to 95% and the asphalt itself receives a very high compaction and density when paved with 4 and 5 ton rollers.

What creates the misconception is that if you try to hammer a nail into both a concrete and an asphalt surface, you will find that it can be driven into asphalt and not into the concrete. Thus, most people think of asphalt as being "softer" and, therefore, "easier on the feet". It isn't, it is the same as concrete.

The reaction of a tennis ball striking and leaving a court surface is determined by the finishing materials on the court. Materials used to finish and color coat both asphalt and concrete courts are identical. Thus, they play identically the same.

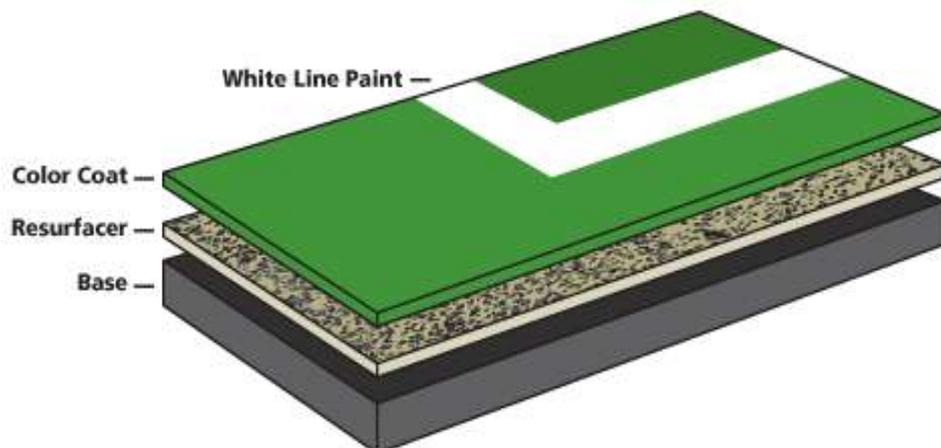
The structural weakness of asphalt (relative to concrete), means that extra care needs to be taken in building the court. The degree of compaction and the nature of the underlying soils are key elements in asphalt court construction, because whatever happens in or to the underlying soils is transmitted up through the asphalt.

An informed decision as to asphalt or concrete should be made in conjunction with data from a soils engineer and by comparative pricing of both types of courts. I

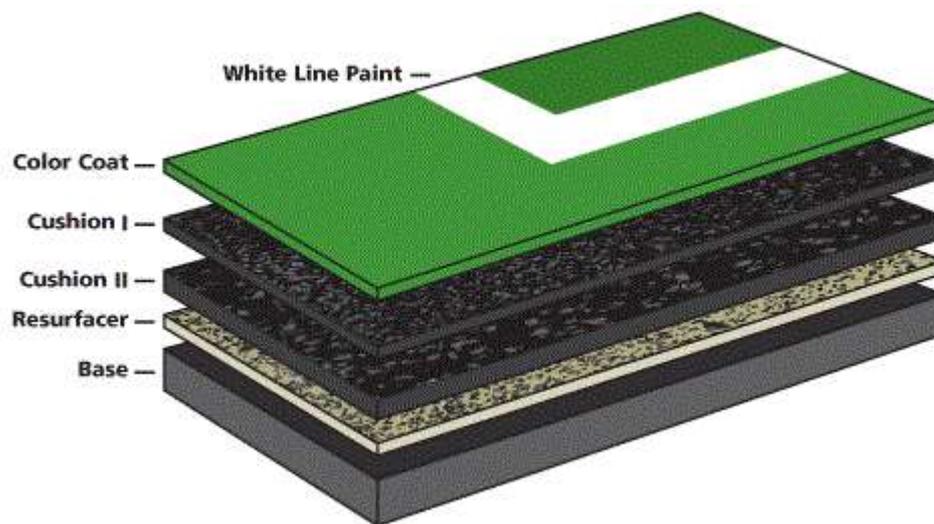
#### 4.6.4 SYNTHETIC ACRYLIC FLOOR SURFACES

Synthetic Acrylic floor surface comes in the category of hard court. In India asphalt base will be cheaper.

- It is extensively used for outdoor sports like Tennis, Basketball, Volleyball, Badminton, Handball etc.
- Synthetic acrylic flooring is preferred to be installed on a bitumen base but can be used on concrete base also.
- Acrylic surface can be provided from 3-Layers to 8-Layers systems as color court and Cushion courts.
- 3 Layer Color Court Systems mainly designed for installations where training is important. On a three layers surface, the ball bounce will be the best, both in respect of average speed and in terms of bounce effects. It has an average life span of 7- 8 years.



**4.6.5 (CUSHION/ CUSHION PLUS) SYSTEM:** In more than 3 layer system additional layers are of cushion consisting of rubber particles, acrylic resin binders and special fiber.



- The no. of cushion layers can be more/less in accordance with the product specification and the court pace rating
- For long hours of training, cushioned layers reduces fatigue on player's legs ankles and feet.

**We should not experiment with any other products like PU, prefabricated plastic modules for outdoor surfaces because these are not used for any international/National competitions**

#### **4.7 Recommended Specifications for SAI Centers**

- SAI Centers may have a mix of all type of courts i.e. Natural Grass, Artificial Grass, Clay, or Acrylic as per approval of DG SAI
- Synthetic Acrylic flooring (Hard court) is preferred due to long life and it is maintenance free. Number of layers may be as approved by the ITF for a particular manufacturer and the court pace raring required, Acrylic flooring product approved by ITF should only be provided

## 4.8

## TENNIS COURT / BASKETBALL COURT (OUTDOOR ACRYLIC)

S. No.	NAME OF MANUFACTURER	BRAND
1	<p align="center"><b>California Sports Surfaces</b>            150 Dascomb Road, Andover,            MA 01810,            USA            T: +1 978 623 9980            E: info@decoturf.com            info@reboundace.com.au</p>	Rebound Ace
2	<p align="center"><b>Balaji Sports Co.</b>            S-282, SF, Greater Kailash, Part - I,            New Delhi - 110048</p>	PACE Court
3	<p align="center"><b>Nova Sports</b>            6 Industrial Road,            Building #2,            Milford,            MA 01757, USA            T: +1 508 473 6540            E: info@novasports.com</p>	Novacushion
4	<p align="center"><b>SportMaster Sports Surfaces</b>            P.O. Box 2277, Sandusky,            Ohio 44870, USA            T: +1 419 626 4375            F: +1 419 626 5477            E: moreinfo@sportmaster.net</p>	Sports Masters
5	<p align="center"><b>Zona Industriale</b>            C.I.A.F., 60015            Castelferretti (AN)            Italy            T: +39 071 916 2095            F: +39 071 916 2098            E: info@casalisport.it</p>	--

**FEDERATION INTERNATIONALE  
DE VOLLEYBALL  
(FIVB)**



**VOLLEYBALL**

## 5. VOLLEYBALL: (FIVB: International Volleyball Federation)

Volleyball is one of the most successful and popular competitive and recreational sports in the world. It is **fast**, it is **exciting** and the action is **explosive**..

### 5.1 FIELD OF PLAY

The playing area includes the playing court and the free zone. It shall be rectangular and symmetrical.

#### 5.1.1 DIMENSIONS

- The playing court is a rectangle measuring 18 x 9 m, surrounded by a free zone which is a minimum of 3 m wide on all sides
- The free playing space is the space above the playing area which is free from any obstructions. The free playing space shall measure a minimum of 7 m in height from the playing surface.
- For FIVB, World and Official Competitions, the free zone shall measure a minimum of 5 m from the side lines and 8 m from the end lines. The free playing space shall measure a minimum of 12.5 m in height from the playing surface

#### 5.1.2 PLAYING SURFACE

- The surface must be flat, horizontal and uniform. It must not present any danger of injury to the players. It is forbidden to play on rough or slippery surface
- **For FIVB, World and Official Competitions, only a wooden or synthetic surface is allowed. Any surface must be previously approved by the FIVB**
- On indoor courts the surface of the playing court must be of a light colour.
- For FIVB, World and Official Competitions, white colours are required for the lines. Other colours, different from each other, are required for the playing court and the free zone
- On outdoor courts a slope of 5 mm per metre is allowed for drainage. Court lines made of solid materials are forbidden

#### 5.1.3 LINES ON THE COURT

- All lines are 5 cm wide. They must be of a light colour which is different from the colour of the floor and from any other lines

- Two side lines and two end lines mark the playing court. Both side lines and end lines are drawn inside the dimensions of the playing court
- The axis of the centre line divides the playing court into two equal courts measuring 9 x 9 m each; however the entire width of the line is considered to belong to both courts equally. This line extends beneath the net from side line to side line.
- On each court, an attack line, whose rear edge is drawn 3 m back from the axis of the centre line, marks the front zone.
- For FIVB, World and Official Competitions, the attack line is extended by the addition of broken lines from the side lines, with five 15 cm short lines 5 cm wide, drawn 20 cm from each other to a total length of 1.75 m.

#### **5.1.4 LIGHTING**

- For FIVB, World and Official Competitions, the lighting on the playing area should be 1000 to 1500 lux measured at 1 m above the surface of the playing area.

#### **5.1.5 NET**

- Net is placed vertically over the centre line. The top of the net is set at the height of 2.43 m for men and 2.24 m for women
- Its height is measured from the centre of the playing court. The net height (over the two side lines) must be exactly the same and must not exceed the official height by more than 2 cm.
- The net is 1 m wide and 9.50 to 10 metres long (with 25 to 50 cm on each side of the side bands), made of 10 cm square black mesh.
- At its top a horizontal band, 7 cm wide, made of two-fold white canvas, is sewn along its full length. Each extreme end of the band has a hole, through which passes a cord, fastening the band to the posts for keeping its top taut.
- Within the band, a flexible cable fastens the net to the posts and keeps its top taut.
- At the bottom of the net there is another horizontal band, 5cm wide, similar to the top band, through which is threaded a rope. This rope fastens the net to the posts and keeps its lower part taut.

#### **5.1.6 POSTS**

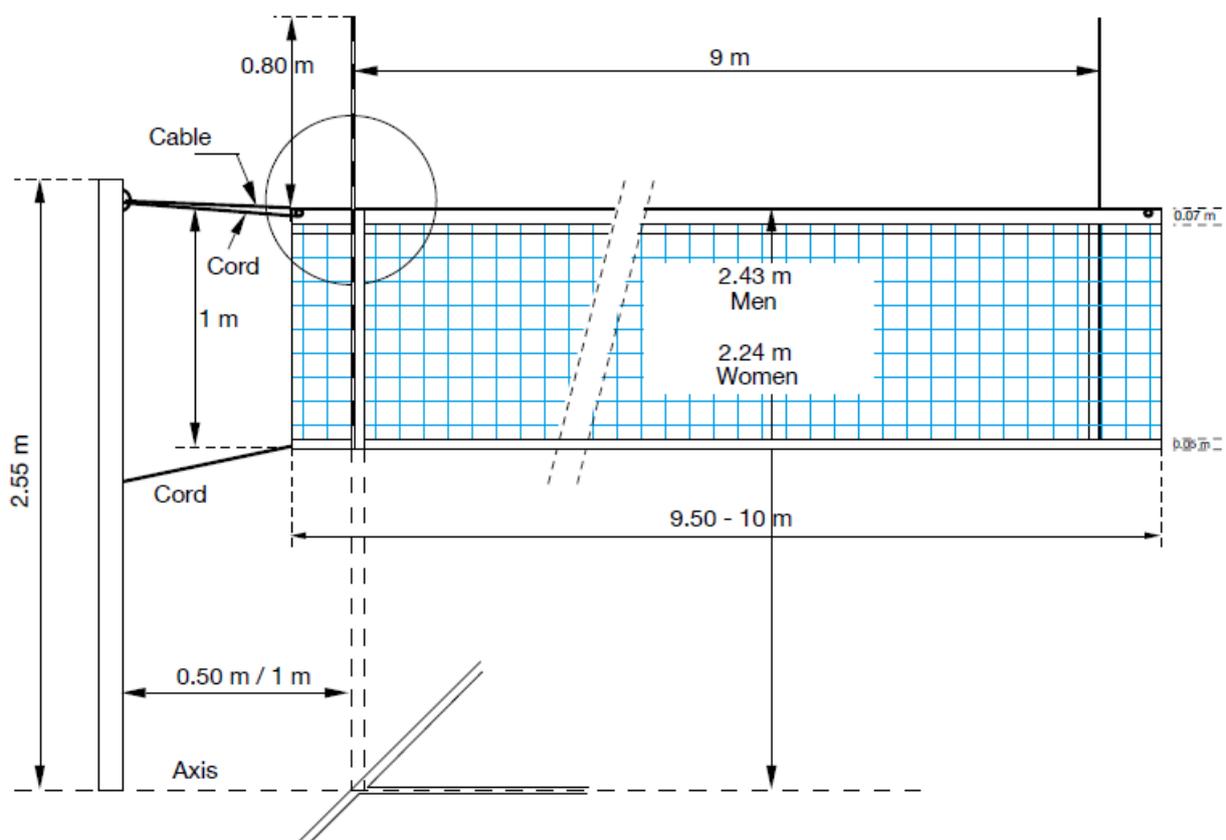
- The posts supporting the net are placed at a distance of 0.50-1.00 m outside the side lines. They are 2.55 m high and preferably adjustable.

For all FIVB, World and Official Competitions, the posts supporting the net are placed at a distance of 1 m outside the side lines.

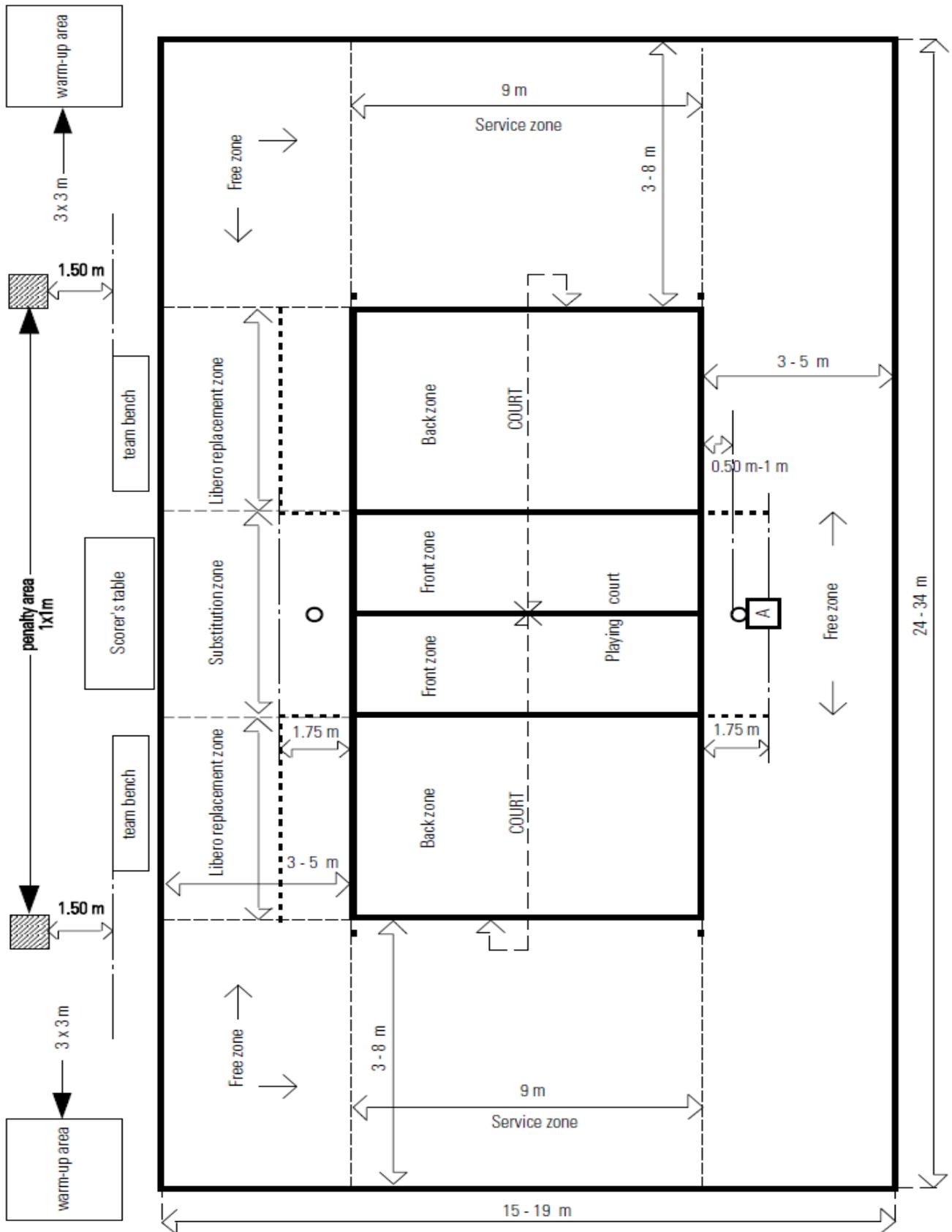
- The posts are rounded and smooth, fixed to the ground without wires. There shall be no dangerous or obstructing devices.

### 5.1.7 ANTENNA

- An antenna is a flexible rod, 1.80 m long and 10 mm in diameter, made of fibreglass or similar material. It is fastened at the outer edge of each side band and placed on opposite sides of the net.
- The top 80 cm of each antenna extends above the net and is marked with 10 cm stripes of contrasting colour, preferably red and white. The antennae are considered as part of the net and laterally delimit the crossing space.







**VOLLEYBALL COURT: PLAYING AREA**

## 5.2 SPECIFICATIONS FOR VOLLEYBALL COURT FOR SAI CENTRES

For FIVB, World and Official Competitions, only a wooden or synthetic surface is allowed.  
**Any surface must be previously approved by the FIVB,**

### 5.2.1 OUTDOOR VOLLEYBALL COURT FLOORING

- Volleyball is officially an indoor game, and there are no FIVB guidelines for outdoor floor surface .
- SAI Centers may have a mix of all type of court flooring i.e. Natural Grass, Clay, or Synthetic Acrylic at the discretion of the SAI Centre in charge
- Synthetic Acrylic flooring is preferred due to long life and it is maintenance free. 8 layers cushioned Synthetic Acrylic color coating over asphaltic or concrete base should be provided, as for long hours of training, cushioned layers reduces fatigue on player's legs ankles and feet and injury.
- Synthetic Acrylic flooring product should be approved by ITF to ensure its quality

### 5.2.2 INDOOR VOLLEYBALL COURT FLOORING

- Regional Centres/Academic Institutions : Maple/Teak wood Flooring with the flooring system and manufacturer approved by FIVB
- At all other locations provided Synthetic Polyurethane flooring with flooring system and manufacturer approved by FIVB

Note: In all areas which are termite infested only Synthetic Polyurethane flooring with flooring system and manufacturer approved by FIVB shall be provided

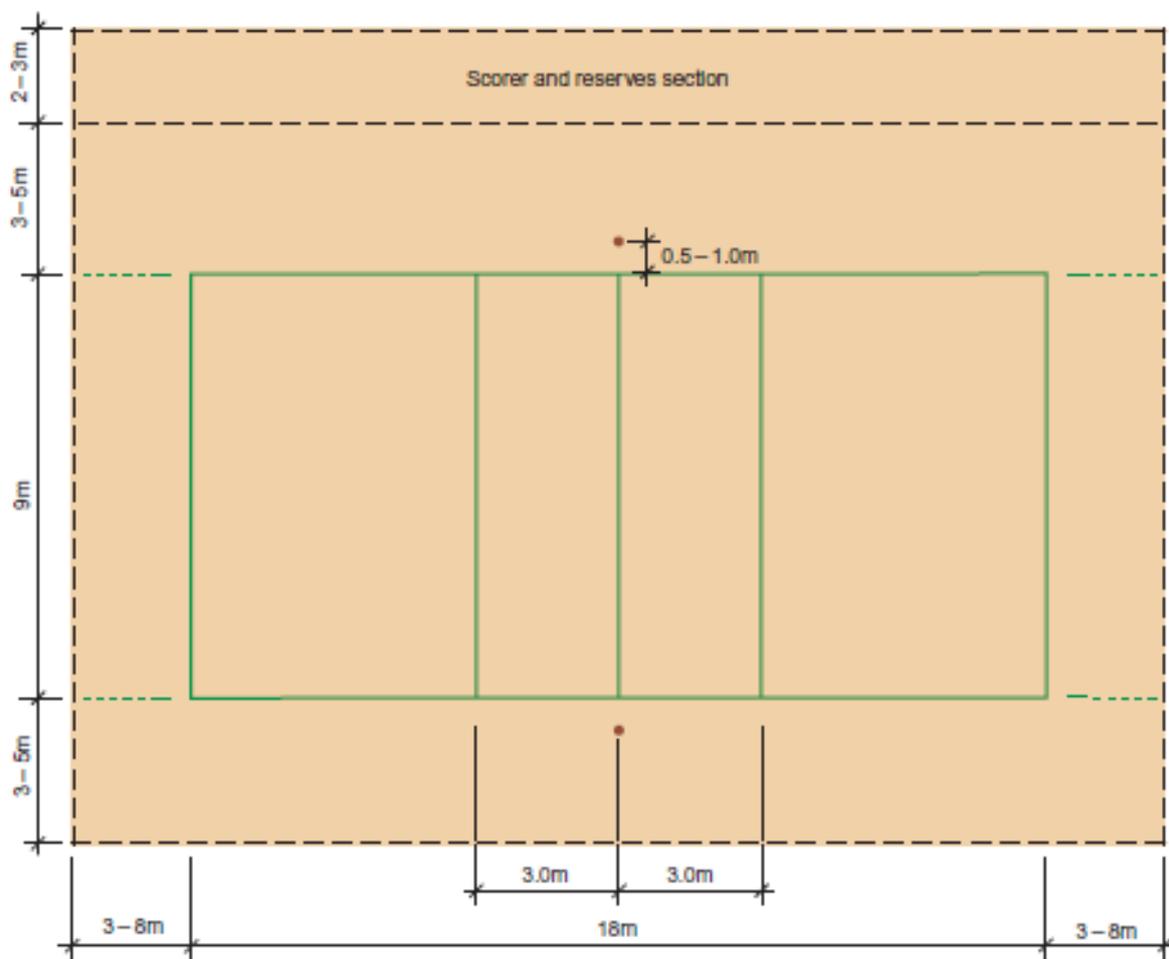
- Clear height of the Volleyball Indoor hall shall be kept minimum 7 mt as specified by FIVB

Note : For FIVB official competition the clear height required is 12.5 mt

- Dimensions

Dimensions/Details as indicated under club/county/Regional in the figure below shall be followed by all Regional Centre /Academic Institution. At all other locations provide dimensions/details indicated under 'Recreational'

Dimensions/Details indicated under National/International category shall be provided only if the court is proposed to hold National/International competition with spectator facilities



Dimensions of a volleyball court.

	Recreational	Club/ County/ Regional	National	International
<b>Playing area</b>				
Length	18.0	18.0	18.0	18.0
Width	9.0	9.0	9.0	9.0
Backline clear space	3.0	3.0	5.0	8.0
Sideline clear space	3.0	3.0 min	3.0 min	5.0
Officials' space (additional on one side)	–	2.0	2.0	3.0
Spectators' margin (additional on the other three sides)	–	–	2.0	3.0
<b>Minimum overall space</b>				
Area	24 x 15	24 x 17	28 x 19	40 x 25
Clear height	7.0	8.0	10.5	12.5

Volleyball space requirements (m).



# INTERNATIONAL HANDBALL FEDERATION (IHF)



# HANDBALL

## 6. HANDBALL: (IHF: International Handball Federation)

### 6.1 TECHNICAL CRITERIA FOR HANDBALL FLOORS

#### The playing court

- a) The playing court (diagram 1) consists of a rectangle which measures 40 x 20m. The width of the goal lines (between the goalposts) is 8cm like the goal posts, all other lines have a width of 5cm. In detail the floor of the sports hall must be a rectangle of 44 x 22 m of which 40 x 20m are taken up by the playing court and the rest used as safety area, for competition officials and the benches for substitutes.
- b) The goal area in front of the goals consists of a 3 x 6m rectangle and two connecting quarter circle sectors each with a radius of 6m the lines and arcs which enclose the goal area are called the goal area line. The outer distance between the points where the two arcs meet the outer goal line in this way will measure 15m.
- c) The broken free-throw line (9m line) is made parallel and concentric to the goal-area line with a 3m larger distance from the goal line. The segments as well as the spaces between them measure 15cm.
- d) The 1m long 7-meter line is drawn directly in front of the goal, parallel to the goal line, at a distance of 7m from the rear edge of the goal line to the front edge of the 7m line
- e) The goalkeeper's restraining line (the 4m line) directly in front of the goal is 15cm long. It is parallel to, and 4m away from, the goal line measured from the rear edge of the goal line to the front edge of the 4m line, which means that the widths of both lines are included in this measure
- f) The playing area should be surrounded by a safety zone of at least 1m along the side lines and 2m behind the outer goal lines.
- g) The goal is placed in the centre of each outer goal line. The goals must be firmly attached to the floor or to the wall behind them. The interior measures are 3m in width and 2m in height. The goal frame must be a rectangle, in one and the same goal the difference must be maximum 0.5cm). The rear side of the goalposts shall be in line with the rear edge of the goal line (and the outer goal line), which means that the front side of the goalposts is placed 3cm in front of the outer goal line.
- h) The depth of the goal net should at the top be 0.9m behind the goal line, and at the bottom 1.1m, both measures with a tolerance of  $\pm 0.1$ m. The size of the meshes should not be more than 10 x 10cm
- j) In the middle of the substitution area at one of the side lines the table for the timekeeper is placed. The table of a length of max. 4m should be placed 30-40cm above the floor of the playing court in order to secure the field of vision.

- k) In contrast to badminton and volleyball handball does not have any special requirements for the height of the hall. In principal the minimum height for a handball hall is 7 m over the entire playing court including the first 50 cm of the safety area, i.e. over 42 x 21 m.

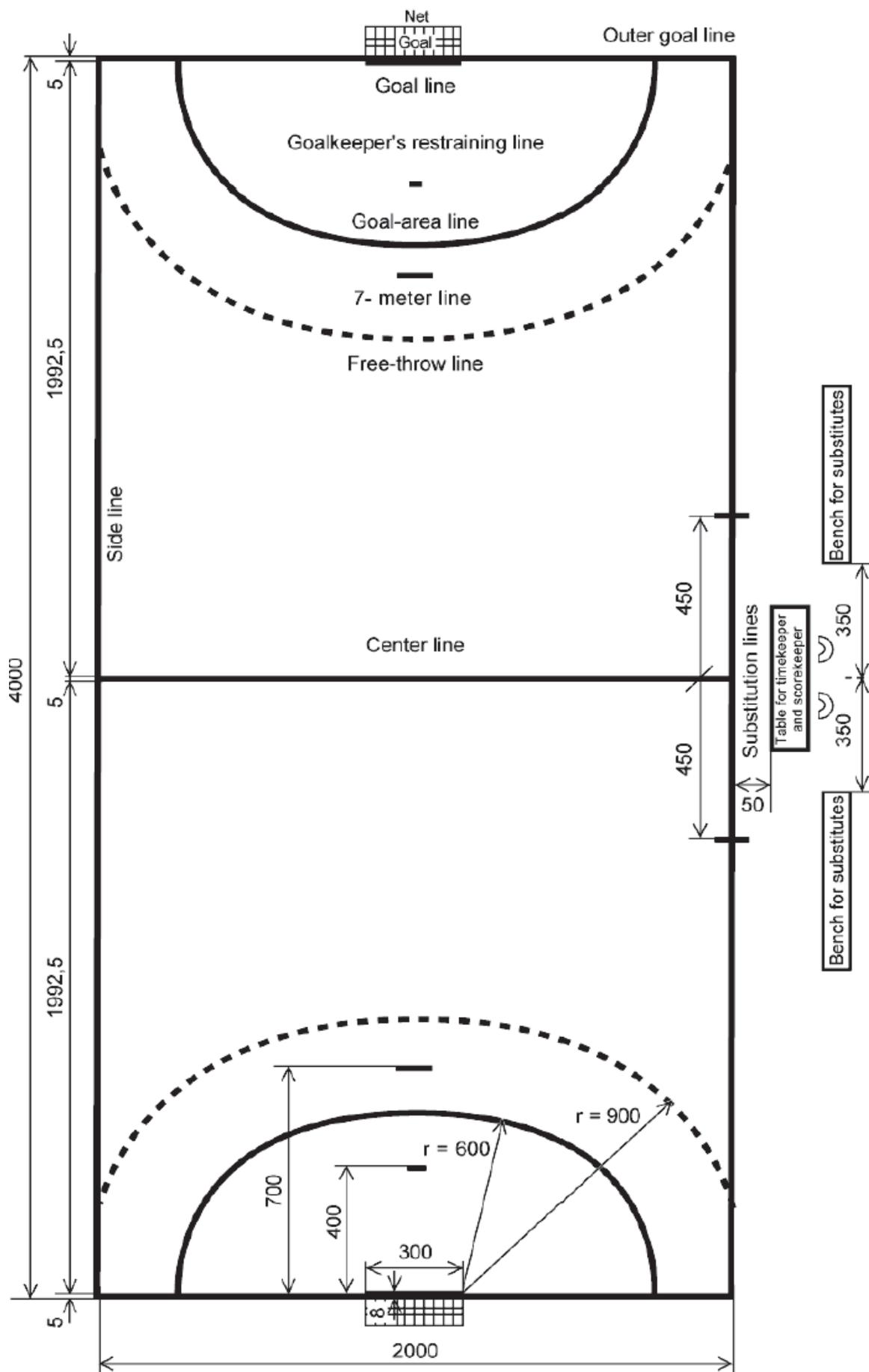
All other technical provisions relating to play are set out in the IHF Rules of the Game (Rule 1).

- **Identification of IHF approved floors** : Outside the court on the outer goal line, IHF approved floors shall be clearly printed, in colour, with the official IHF logo (30cm high) and the designation 'IHF Approved Floor' (max. 80cm high)

IHF Approved Floor



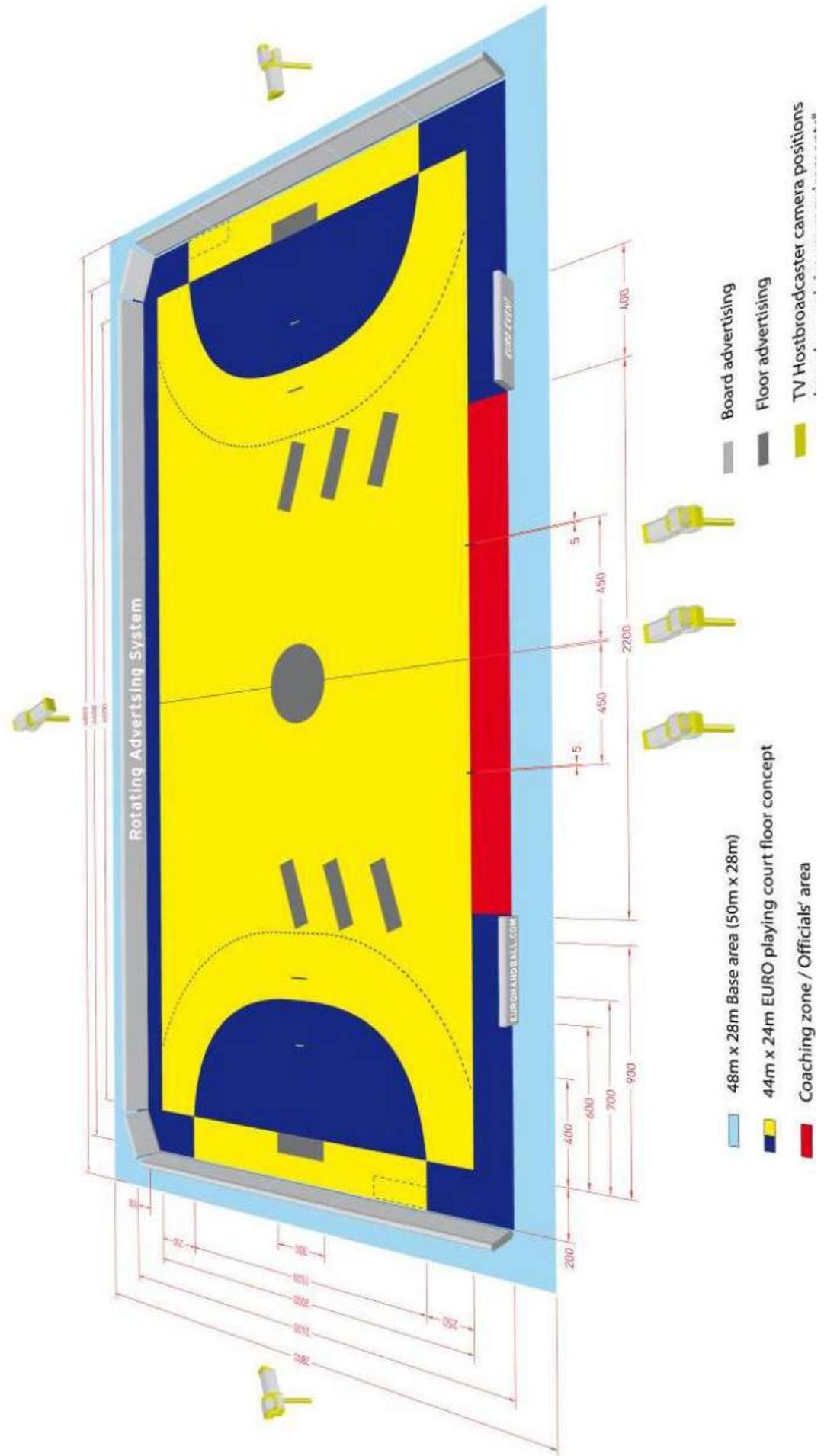
IHF  
Approved  
Floor

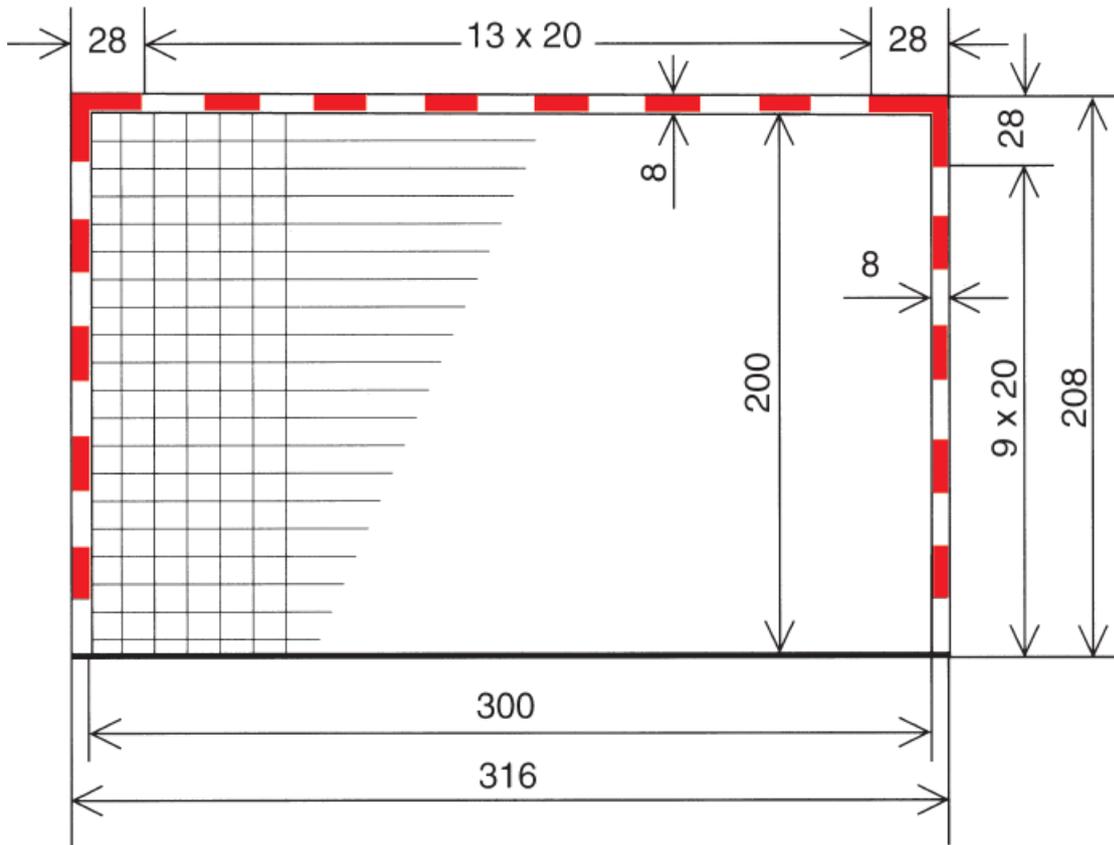


**Diagram 1: The Playing Court**

# EURO Events Playing Court Area

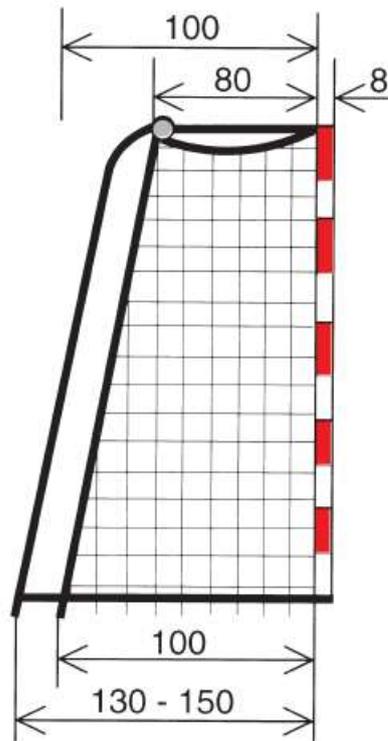
## Standards and Measurements





## GOAL

### The Goal - lateral view



## 6.2 SPECIFICATIONS FOR HANDBALL COURT FOR SAI CENTRES

Handball is basically an indoor game, but can also be played outside.

### Specifications for Handball floor when played outside

- Handball can be played outdoors - either all year round or at certain periods only (depending on weather conditions).
- . Handball is often played on grass, however, a different, firm ground would be more suitable.
- Rain, wind and other weather influences cannot be avoided. As a result of these outdoor effects the use of a synthetic floor is recommended for outdoors.
- Water must not be allowed to collect on the playing field. Therefore it is necessary to incline the playing field by 2.5 cm per 10 m falling from the centre line towards the two goals and resulting in the goals to be 5 cm lower than the centre line.
- On the other hand the effect of the wind could be such that the water will only run off one half of the playing field. If it is mostly raining in this direction it is therefore sensible to consider inclination of the entire playing field in this direction only (instead of from the centre towards the two sidelines or goal lines).
- **The cushioned synthetic Acrylic floor may be laid as approved by IHF**

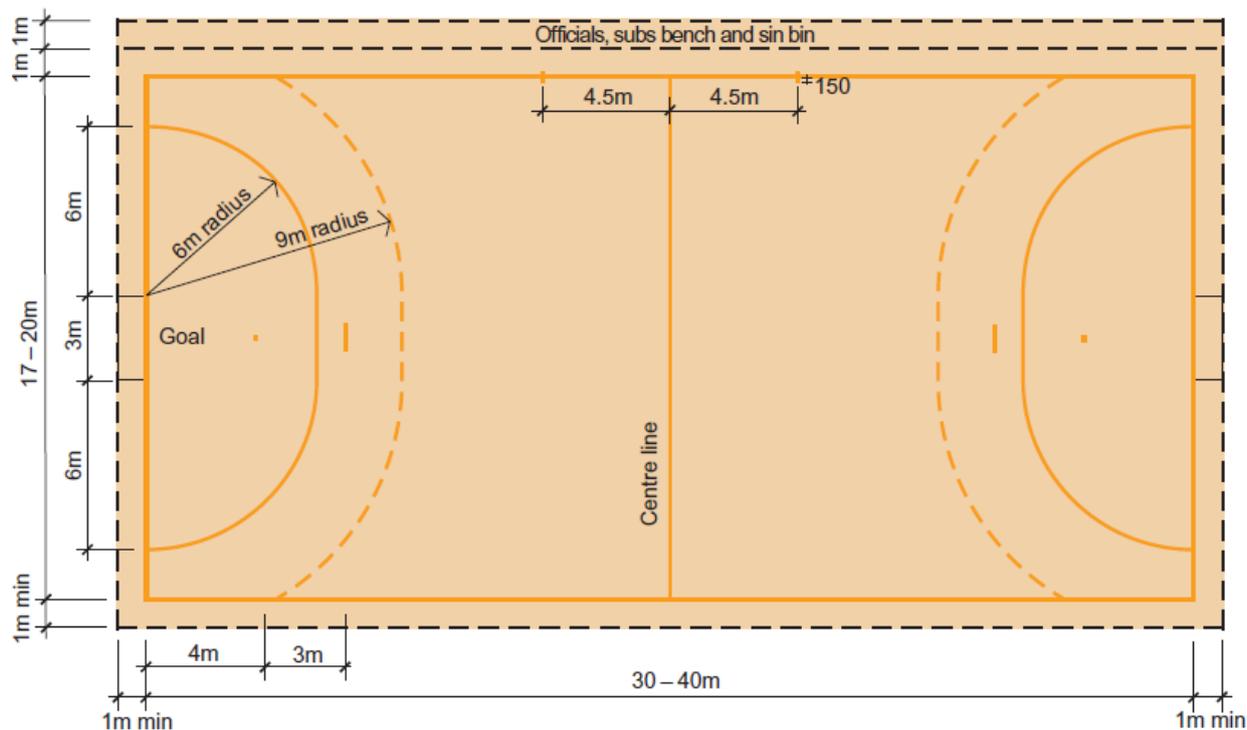
**For IHF, World and Official Competitions, only a wooden or synthetic surface is allowed, as it is officially played indoors Any surface must be previously approved by the IHF,**

- Since in SAI Centres, Handball is played in a Multipurpose hall, mobile sports floor for handball may be used over the wooden/synthetic floor which is approved by FIVB/FIBA/BWF
  - Regional Centres/Academic Institutions : Maple/Teak wood Flooring
  - At all other locations provided Synthetic Polyurethane flooring

Note: In all areas which are termite infested only Synthetic Polyurethane flooring shall be provided

- Clear height of the Handball Indoor hall shall be kept minimum 7 mt
- Dimensions  
Dimensions/Details as indicated under club/county/Regional in the figure below shall be followed by all Regional Centre /Academic Institution. At all other locations provide dimensions/details indicated under 'Recreational'

Dimensions/Details indicated under National/International category shall be provided only if the court is proposed to hold National/International competition with spectator facilities



Dimensions of a handball court.

	Recreational	Club/ County/ Regional	National/ International
<b>Playing area</b>			
Length	30	34.5-40	40 min
Width	17 min	18-20	20
Side margins, min	None	1.0	1.0
Officials/team bench space, additional one side	-	1.0	1.0
End margins, min	-	1.0	1.0
<b>Minimum overall space</b>			
Area	32 x 17	36.5-42 x 21-23	42 x 23
Height	6.7-7.6	7.6-9.0	9.0

Handball space requirements (m).

**INTERNATIONAL BASKETBALL  
FEDERATION  
(FIBA)**



**BASKETBALL**

## **7. BASKETBALL (FIBA: INTERNATIONAL BASKETBALL FEDERATION)**

### **7.1 COURT AND EQUIPMENT**

The Basketball competitions are divided into three (3) levels:

#### **7.1.1 High level competitions (Level 1):**

FIBA official competitions like Olympic Tournaments; World Olympic qualifying Tournaments for Men and Women, World Championships for Men, Women, U-19 and U-17; Zone Championships for Men and Women. All equipment at these competitions must be FIBA approved Level 1 and must display the FIBA logo in the FIBA approved layout.

#### **7.1.2 Medium level competitions (Level 2):**

All other FIBA official competitions and high level competitions of the national federations.

#### **7.1.3 Other competitions (Level 3):**

All other competitions not included in the above, falls under this category

##### **7.1.3.1 Playing court**

The playing court shall have a flat, hard surface free from obstructions, with dimensions of twenty-eight (28) m in length by fifteen (15) m in width measured from the inner edge of the boundary line.

##### **7.1.3.2 Lines**

All lines shall be drawn in white color, 50 mm in width and clearly visible

##### **7.1.3.3 Boundary line**

The playing court shall be limited by the boundary line, consisting of the end lines and the sidelines. These lines are not part of the playing court. Any obstruction including seated team bench personnel shall be at least 2 m from the playing court.

Centre line, centre circle and free-throw semi-circles :

- The centre line shall be marked parallel to the end lines from the mid-points of the sidelines. It shall extend 0.15 m beyond each sideline. The centre line is part of the backcourt.
- The centre circle shall be marked in the centre of the playing court and have a radius of 1.80 m measured to the outer edge of the circumference. If the inside of The centre circle is painted, it must be the same color as the restricted areas.

- The free-throw semi-circles shall be marked on the playing court with a radius of 1.80 m measured to the outer edge of the circumference and with their centers at the mid-points of the free-throw lines.

**Note: For more details refer FIBA Basketball Rules**

The scorer's table, a minimum of 6,000 mm in length and 800 mm in height, must be placed on a platform of a minimum of 200 mm in height.

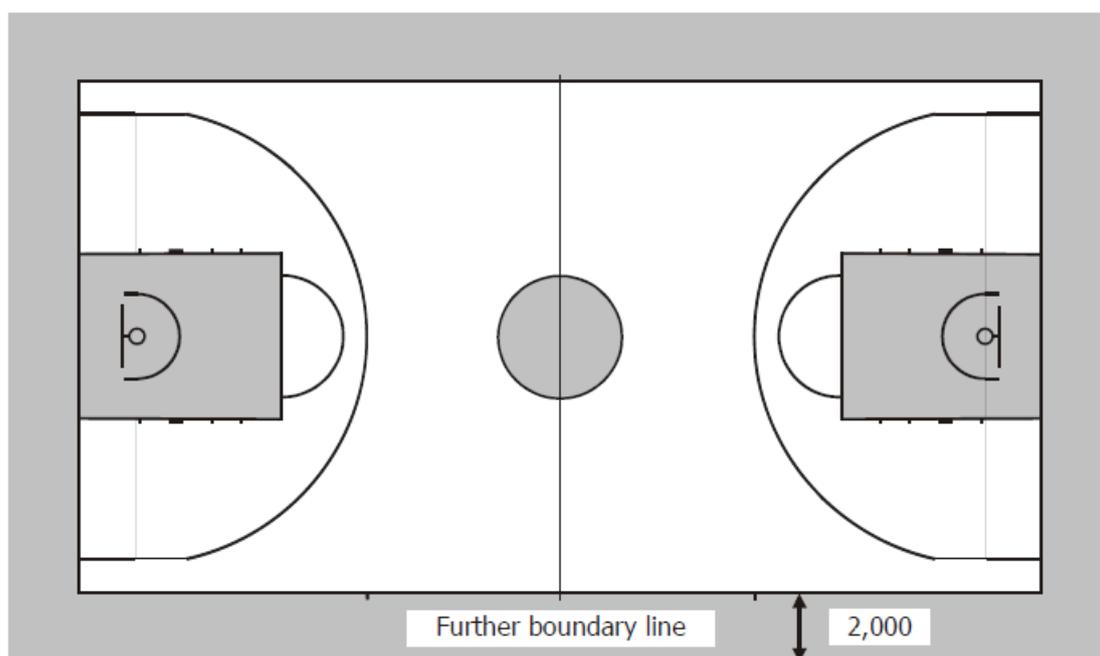
All spectators must be seated at a distance of at least 5,000 mm from the outer edge of the boundary line of the playing court.

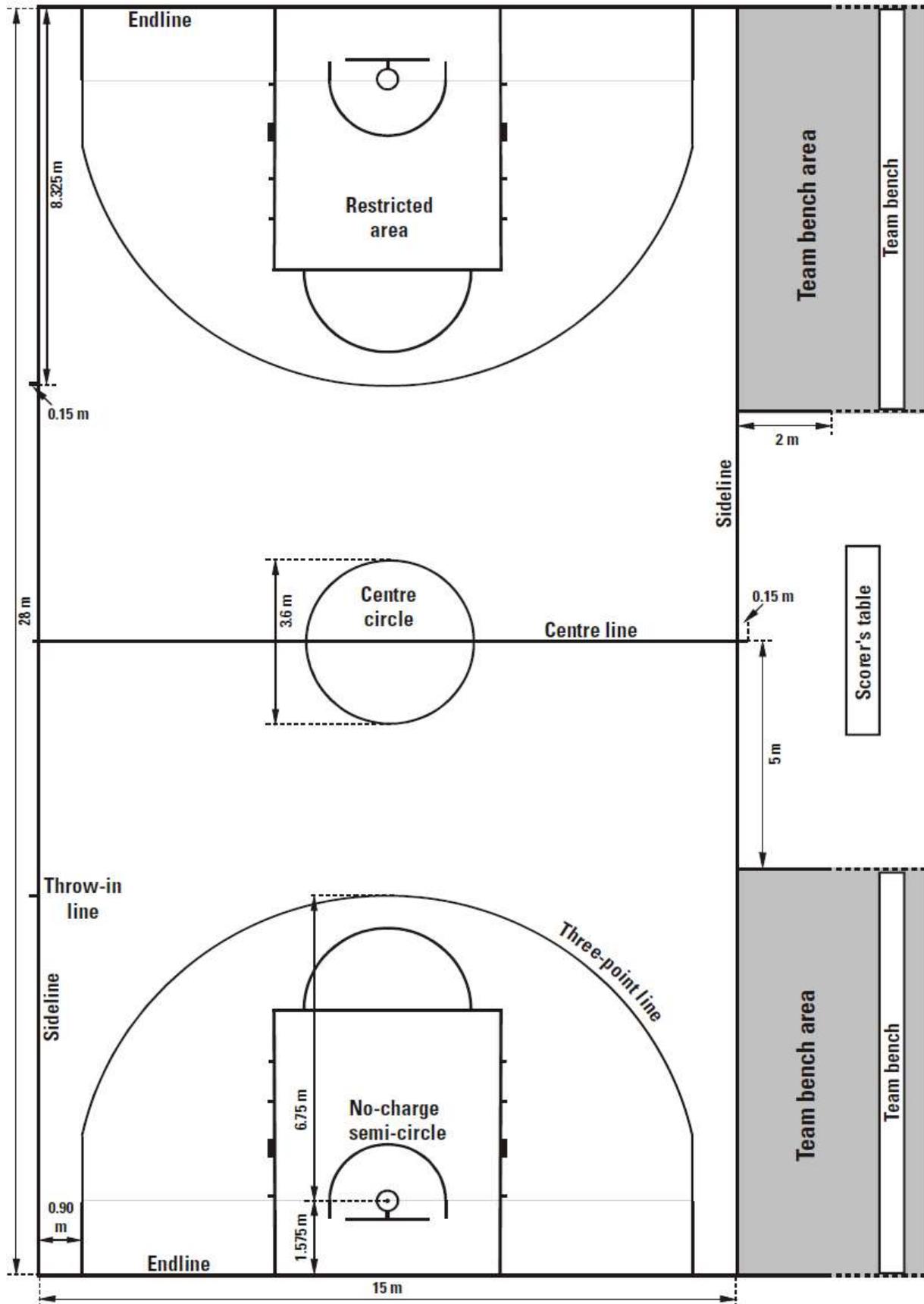
The height of the ceiling or the lowest obstruction above the playing floor shall be a minimum of seven (7) m.

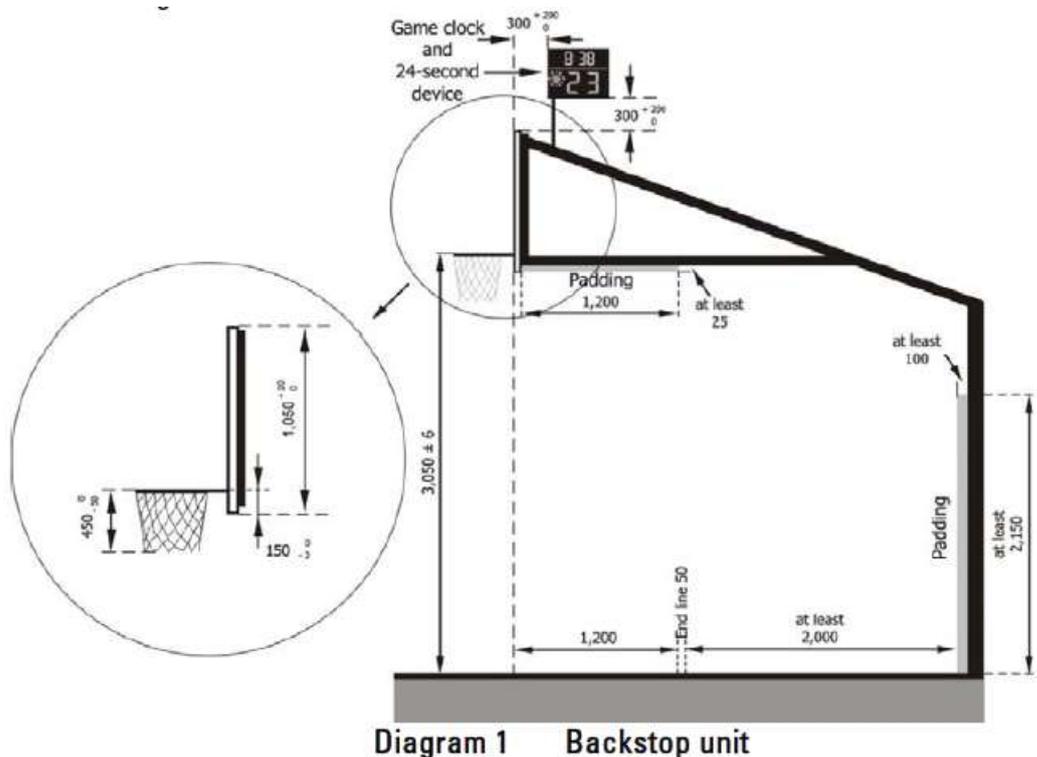
**7.1.3.4 Playing floor**

The playing floor surface shall be of minimum length of 32 m and a minimum width of 19 m and have an antiglare surface. It shall be made of:

- Permanent wooden flooring (Levels 1 and 2).
- Mobile wooden flooring (Levels 1 and 2).
- Permanent synthetic flooring (Levels 2 and 3).
- Mobile synthetic flooring (Levels 2 and 3).




**Diagram 1 Full size playing court**



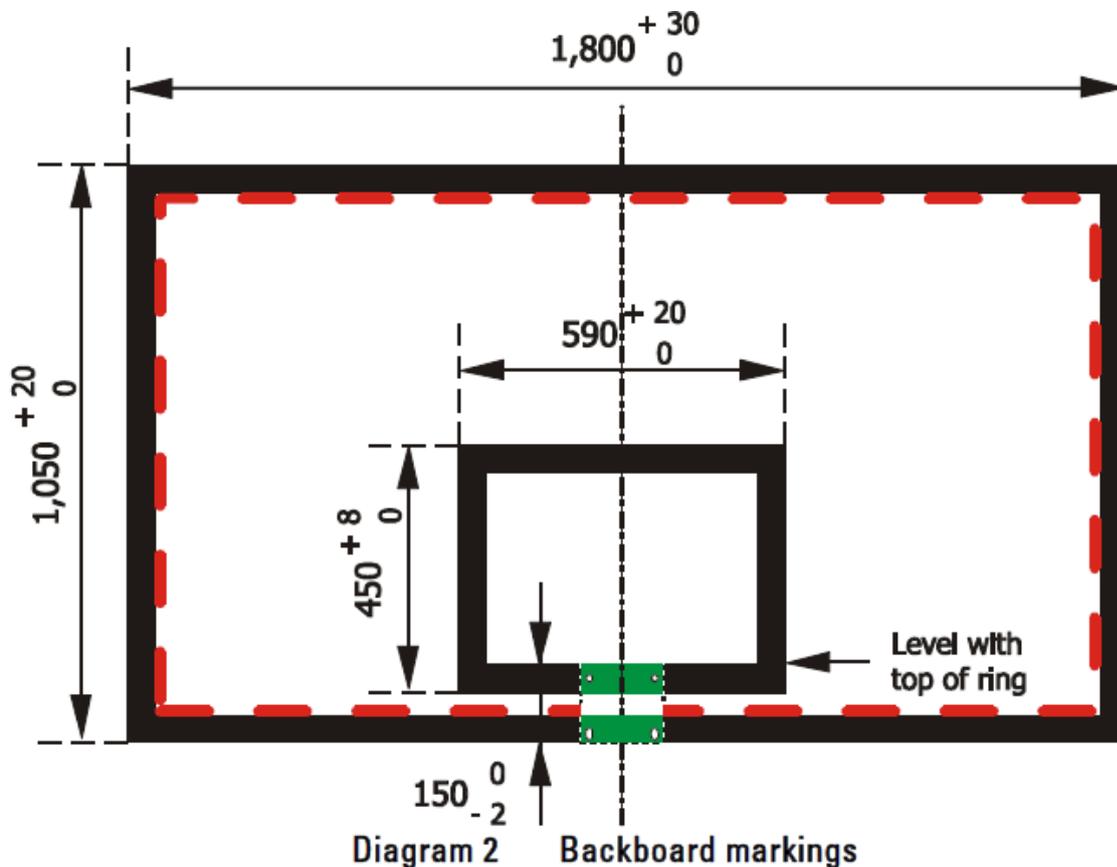
### 7.1.3.5 Backboard

- The backboards shall be made of a suitable transparent material (for Level 1 and 2, of a tempered safety glass), made in one (1) piece, non reflective, with a flat front surface and shall have a protective framework of the backboard support structure around the outer edge. It should be manufactured such that, if broken, the pieces of glass do not split off.
- For Level 3, the backboards may be made of other material(s) painted white, but must meet the other above specifications.
- The backboards shall measure 1,800 mm (+ a maximum of 30 mm) horizontally and 1,050 mm (+ a maximum of 20 mm) vertically.
- All lines on the backboards shall be
  - in white, if the backboards are transparent;
  - In black, if the white painted backboards are non-transparent.
  - 50 mm in width.

The borders of the backboards shall be marked with a boundary line (Diagram 2) and an additional rectangle behind the ring as follows:

- Outside dimensions: 590 mm (+ a maximum of 20 mm) horizontally and 450 mm (+ maximum of 8 mm) vertically.
- The top edge of the base of the rectangle shall be level with the top of the ring and 150 mm (- 2 mm) above the bottom edge of the backboard.

For Levels 1 and 2, each backboard shall be equipped with lighting around its perimeter, mounted on the inside borders of the backboards and which lights up in red only when the game clock signal sounds for the end of a period. The lighting shall be a minimum of 10 mm in width and cover a minimum of 90 % along the edge of the backboard glass area.



### 7.1.3.6 Basket ring

- The rings shall be made of solid steel and shall:

- Have an inside diameter of a minimum of 450 mm and a maximum of 459 mm.
- Be painted orange within the following Natural Colour System (NCS) FIBA approved spectrum
- Have its metal a minimum of 16 mm and a maximum of 20 mm in diameter.

The net shall be attached to each ring in 12 places. The fittings for the attachment shall:

- Not have any sharp edges or gaps,
- Have gaps smaller than 8 mm, to prevent fingers from entering,
- Not be designed as hooks for Level 1 and 2.

## 7.2 SPECIFICATIONS FOR BASKETBALL COURT FOR SAI CENTRES

For FIBA, World and Official Competitions, only a wooden or synthetic surface is allowed.

**Any surface must be previously approved by the FIBA,**

- Basketball is an indoor game, however it is played outdoor also, but specification of outdoor flooring surface has not been officially specified by FIBA. For outdoor surface provide Synthetic Acrylic flooring (5 to 8 layers) approved by ITF
- For Indoor surfaces provide
  - Maple/Teak wood Flooring with the flooring system and manufacturer approved by FIBA in SAI Centres where National camps are held or Elite trainees train
  - At all other locations provided Synthetic Polyurethane flooring with flooring system and manufacturer approved by FIBA

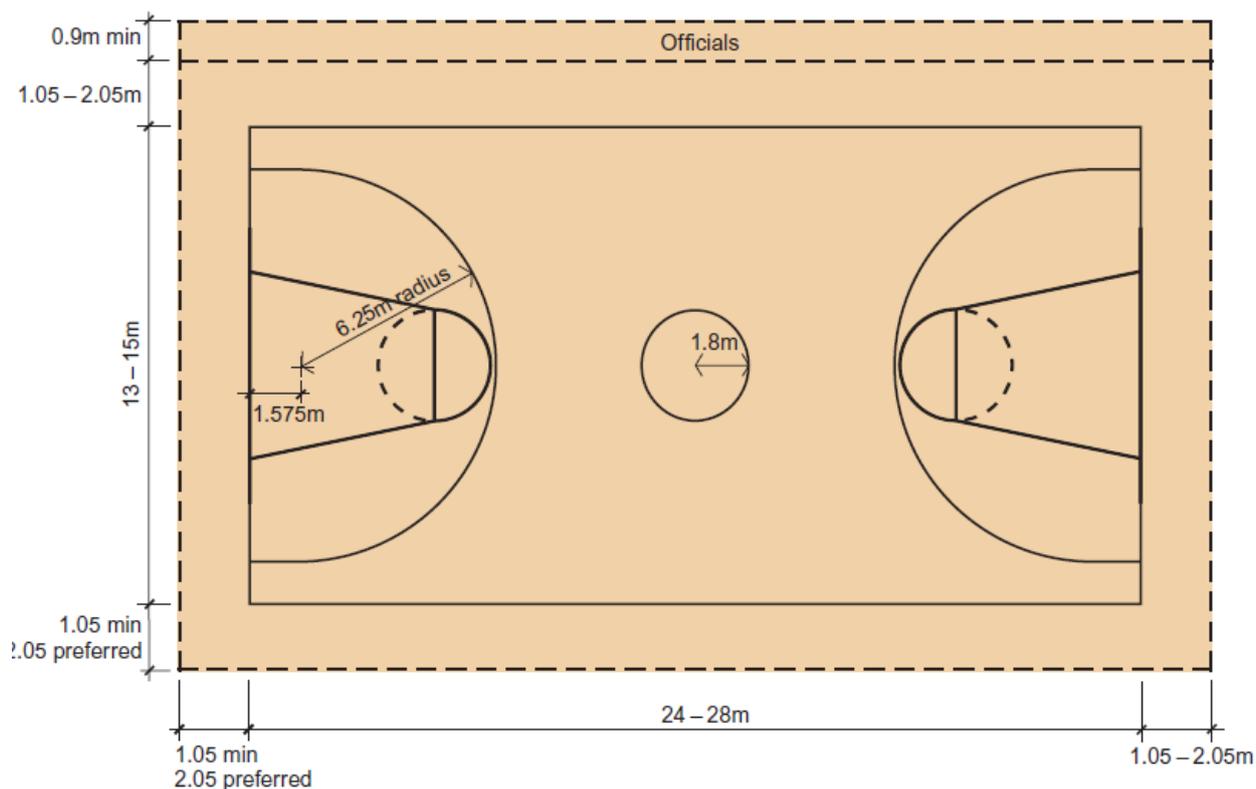
Note: In all areas which are termite infested only Synthetic Polyurethane flooring with flooring system and manufacturer approved by FIBA shall be provided

- Clear height of the Basketball Indoor hall shall be kept minimum 7 mt as specified by FIBA

- **Dimensions**

Dimensions/Details as indicated under club/county/Regional in the figure below shall be followed by all Regional Centre /Academic Institution. At all other locations provide dimensions/details indicated under 'Recreational'

Dimensions/Details indicated under National/International category shall be provided only if the court is proposed to hold National/International competition with spectator facilities



**Dimensions of a basketball court.**

	Recreational/ Club	County/ Regional	National/ International
<b>Playing area</b>			
Length	24-28	24-28	28
Width	13-15	13-15	15
Out-of-bounds surround	1.05 min	2.05	2.05 min
Extra one side for officials and team areas	0.9 min	3.0	3.0
<b>Minimum overall space</b>			
Area	R: 20.1 x 12.1 C: 30.1 x 18 to 26.1 x 16	32.1 x 22.1 to 28.1 x 20.1	32 x 22.1
Height	R: 6.7 C: 7.0	7.0	7.0

Basketball space requirements (m).



**BADMINTON  
WORLD  
FEDERATION  
(BWF)**



**BADMINTON**

## **8. BADMINTON (BWF – Badminton World Federation)**

### **8.1 BADMINTON COURT AND COURT EQUIPMENT**

- The court shall be a rectangle marked out with lines 40 mm wide as shown in Diagram A.
- The lines marking out the court shall be easily distinguishable and preferably be coloured white or yellow.
- All the lines shall form part of the area which they define.
- The posts shall be 1.55 metres in height from the surface of the court and shall remain vertical when the net is strained
- The posts shall be placed on the doubles side lines as in Diagram A irrespective of whether singles or doubles is being played. The posts or its supports shall not extend into the court beyond the side lines.
- The net shall be made of fine cord of dark colour and even thickness with a mesh of not less than 15 mm and not more than 20 mm.
- The net shall be 760 mm in depth and at least 6.1 metres wide.
- The top of the net shall be edged with a 75 mm white tape doubled over a cord or cable running through the tape. This tape shall rest upon the cord or cable.
- The cord or cable shall be stretched firmly, flush with the top of the posts.
- The top of the net from the surface of the court shall be 1.524 metres at the centre of the court and 1.55metres over the side lines for doubles.
- There shall be no gaps between the ends of the net and the posts. If necessary, the full depth of the net at the ends shall be tied to the posts.



- **Air movement.** The field of play must have minimal draughts or other air movement. Where air-conditioning is normally used, special attention must be paid to its effects. Double-door (airlock) entry/exit points must be provided.
- **Warm-up area.** This must be close to the competition hall and accessible under cover. Space for three courts is required. An uninterrupted height above the courts of at least 10 metres must be provided. .
- **Coach videoing.** Physical provision must be made for team coaches to video matches involving their players, as is generally allowed at all BWF events. These videos are for private use and analysis only, and users can, if desired, be required to sign appropriate commitments as to use

### **8.3 SPECIFICATIONS FOR INTERNATIONAL STANDARD FACILITIES**

#### **8.3.1 Major BWF tournaments**

- The minimum height from the floor over the full court for the Olympic Games, the World Championships, the World Senior Championships, shall be 12 meters (39 feet).
- The required height shall be entirely free of girders and other obstructions over the area of the court.

#### **8.3.2 Other BWF and international events**

- The desirable height for all other international play is 12 meters (39 feet), but the minimum height is 9 meters (30 feet).
- The required height shall be entirely free of girders and other obstructions over the area of the court.

#### **8.3.3 Flooring**

- It is desirable to have a wooden sprung floor together with approved non-slip court mats.
- It is recommended that there shall be at least two meters (6½ feet) clear space surrounding all the outer lines of the court, this space also being a minimum requirement between any two courts marked out side by side.

#### **8.3.4 Background and lighting**

- To avoid any difficulty in sighting the shuttle, no part of the background behind the ends of the court should be coloured white. It is desirable that only darker colours are used.

- The minimum recommended lighting level is 1000 Lux to provide even light over the court area. [Note, TV will advise on their lighting requirements and the optimal conditions for still photographers are 1800-2000 Lux].
- Lighting should not be directly over or behind the playing area but be positioned along the sides of the court.
- All sources of daylight or sunlight behind or along the sides of the court, should be eliminated.

### **8.3.5 Air movement**

- Any air movement e.g. draughts from air conditioning must be tightly controlled or eliminated

## **8.4 SPECIFICATIONS OF FLOORING FOR BADMINTON COURT FOR SAI CENTRES**

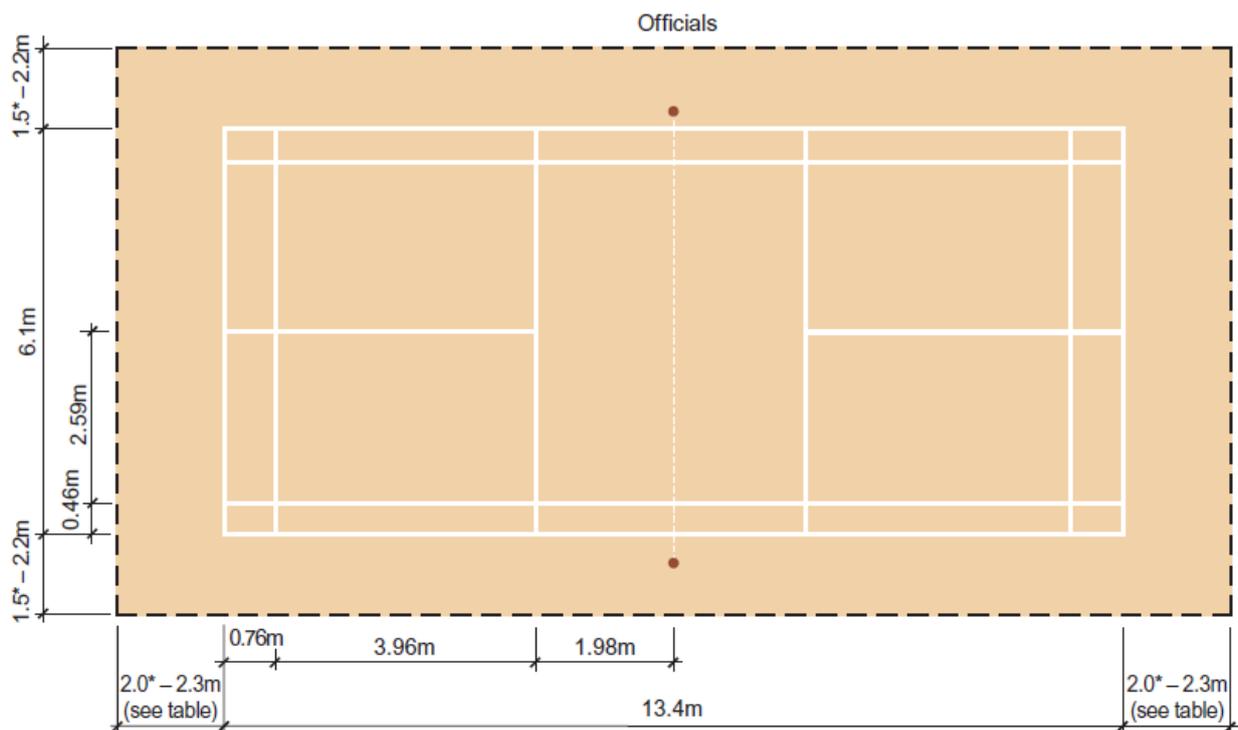
For BWF, World and Official Competitions, only a wooden or synthetic surface is allowed.

**Any surface must be previously approved by the BWF,**

- Badminton is an indoor game. For Indoor surfaces provide
  - Maple/Teak wood Flooring with the flooring system and manufacturer approved by BWF in SAI Centres where National camps are held or Elite trainees train
  - At all other locations provided Synthetic Polyurethane flooring with flooring system and manufacturer approved by BWF

Note: In all areas which are termite infested only Synthetic Polyurethane flooring with flooring system and manufacturer approved by FIBA shall be provided

- Dimensions  
 Dimensions/Details as indicated under club/county/Regional in the figure below shall be followed by all Regional Centre /Academic Institution. At all other locations provide dimensions/details indicated under 'Recreational'  
 Dimensions/Details indicated under National/International category shall be provided only if the court is proposed to hold National/International competition with spectator facilities



**Dimensions of a badminton court.**

	Recreational/ Club	County/ Regional	National/ International
Minimum height over court	7.6	9.1	9.1
<b>Playing area (doubles court)</b>			
Length	13.4	13.4	13.4
Width	6.1	6.1	6.1
Wall from baseline, min	2.0*	2.3	2.3
Wall from sideline	1.5 min	2.2	2.2
Between parallel courts, min	1.5*	2.0	2.0
<b>Minimum overall area</b>			
For a single court	17.4 x 9.1	18 x 10.5	18 x 10.5
For a parallel pair	17.4 x 16.7	18 x 18.6	18 x 18.6
For each additional court	+7.6	+8.1	+8.1
*Baseline to division netting 1.5 min; sideline to division netting 1.2 min			

Badminton space requirements (m).

**FEDERATION INTERNATIONALE  
DE NATATION  
AMATEUR  
(FINA)**



**SWIMMING POOL**

## 9. SWIMMING POOL (FINA: Federation International de National Amateur)

Swimming is an individual and team aquatic sport included in Olympic and other international level competitions. At international level, swimming is governed by the rules of Federation International to National Amateur (FINA).

The FINA Rules are intended to provide the best possible environment for competitive use and training. These Rules are not intended to govern issues related to the general public. It is the responsibility of the owner or controller of a facility to provide supervision for activities undertaken by the general public

All the swimming pools in SAI are not for competitive use and training only but also used for recovery and rehabilitation of Athletes. As such it need not always be governed by FINA rules, it can be constructed specific to the requirement also.

### 9.1 GENERAL

FINA specifies the following category of pools:

- **FINA Olympic Standard Pools.:** All World Championships (except the Masters World Championships) and Olympic Games must be held in pools that comply with Rules FR 3, FR 6, FR 8, and FR 11.PART IX FINA facilities rules 2013 - 2017
- **FINA General Standard Pools .:** Other FINA events should be held in FINA Olympic Standard Pools, but the Bureau may waive certain standards for existing pools if they do not materially interfere with the competitions.
- **FINA Minimum Standard Pools.:** All other events held under FINA Rules should be conducted in pools that comply with all of the minimum standards contained within these Facilities Rules.

### 9.2 SPECIFICATIONS FOR MINIMUM STANDARD SWIMMING POOLS

(Compiled from PART IX FINA Facilities Rules 2013 - 2017)

9 2.1 **Length** shall be 50 metres or 25 metres. When touch panels of Automatic Officiating Equipment are used on the starting end, or additionally on the turning end, the pool must be of such length that ensures the required distance of 50 metres between the two panels.

**Note:** Width has not been specified. It will depend on the no. of lanes. See FR 2.5

9 2.2 **Dimensional Tolerances** : Against the nominal length of 50 metres or 25 metres, a tolerance of plus0.030 metre in each lane minus 0.00 metre on both

end walls at all points from 0.300 metre above to 0.800 metre below the surface of the water is allowed. Tolerances cannot be exceeded when touch panels are installed.

9 2.3 **Depth** : A minimum depth of 1.35 metres, extending from 1.0 metre to at least 6.0 metres from the end wall is required for pools with starting blocks. A minimum depth of 1.0 metre is required elsewhere

#### 9 2.4 **Walls**

- End walls shall be vertical, parallel and form 90 degree right angles to the swimming course and to the surface of the water. They shall be constructed of solid material, with a non-slip surface extending 0.8 metre below the water surface, so as to enable the competitor to touch and push off in turning without hazard.
- Rest ledges along the pool walls are permitted; they must be not less than 1.2 metres below the water surface, and may be 0.1 metre to 0.15 metre wide. Both internal and external ledges are acceptable, however internal ledges are preferred.
- Gutters may be placed on all four walls of the pool. If end wall gutters are installed, they must allow for attachment of touch panels to the required 0.3 metre above the water surface. They must be covered with a suitable grill or screen.

9 2.5 **Lanes** shall be at least 2.5 metres wide, with two spaces of at least 0.2 metre outside of the first and last lanes.

**Note:** No. of lanes is not specified. An 8 lane pool will be 21 mt wide and 6 lane pool will be 16 mt wide with 0.5 mt end spaces

9 2.6 **Lane Rope:** In an 8 lane pool, lane ropes shall extend the full length of the course, secured at each end wall to anchor brackets recessed into the end walls. The anchor shall be positioned so that the floats at each end wall of the pool shall be on the surface of the water.

The colour of the lane ropes should be as follows:

- Two (2) GREEN ropes for lanes 1 and 8
- Four (4) BLUE ropes for lanes 2, 3, 6 and 7
- Three (3) YELLOW ropes for lanes 4 and 5

FINA rules may be referred for more details.

The floats extending for a distance of 5.0 metres from each end of the pool shall be of RED colour. There shall not be more than one lane rope between each lane. The lane ropes shall be firmly stretched. **See Swimming Diagram Fig. 4**

- At the 15-metre mark from each end wall of the pool the floats shall be distinct in colour from the surrounding floats.
- In 50 metre pools the floats shall be distinct to mark 25 metres.

### 9 2.7 **Starting Platforms**

- Starting Platforms shall be firm and give no springing effect.
- The height of the platform above the water surface shall be from 0.5 metre to 0.75 metre.
- The surface area shall be at least 0.5 metre x 0.5 metre and covered with a non -slip material. Maximum slope shall not be more than 10 degrees. The starting platform may have an adjustable setting back plate. An adjustable back stroke starting platform may also be used.
- Handgrips for backstroke starts shall be placed within 0.3 metre to 0.6 metre above the water surface both horizontally and vertically. They shall be parallel to the surface of the end wall and must not protrude beyond the end wall.
- The water depth from a distance of 0.1 metre to 0.6 metres from the end wall must be 1.35metres where starting platforms are installed.

### 9 2.8 **Numbering**

Each starting block must be distinctly numbered on all four sides, clearly visible. Lane number 0 shall be on the right-hand side when facing the course from the starting end with exception of 50m events, which may start from the opposite end. Touch panels maybe numbered on the top part.

### 9 2.9 **Backstroke Turn Indicators**

- Flagged ropes shall be suspended across the pool, 1.8 metres above the water surface, from fixed standards placed 5.0 metres from each end wall.
- Distinctive marks must be placed on both sides of the pool, and where possible on each lane rope, 15.0 metres from each end wall.

9 2.10 **False Start Rope** may be suspended across the pool not less than 1.2metres above the water level from fixed standards placed 15.0 metres in front of the starting end

9 2.11 **Water Temperature** shall be 25° - 28°. During competition the water in the pool must be kept at a constant level, with no appreciable movement.

9.2.12 **Lighting** - Light intensity over starting platforms and turning ends shall not be less than 600 lux.

9 2.13 **Lane Markings** shall be of a dark contrasting colour, placed on the floor of the pool in the centre of each lane.

- Width: minimum 0.2 metre, maximum 0.3 metre.
- Length: 46.0 metres for 50 metre long pools;  
21.0 metres for 25 metre long pools.
- Each lane line shall end 2.0 metres from the end wall of the pool with a distinctive cross line 1.0 metre long and of the same width as the lane line. Target lines shall be placed on the end walls or on the touch panels, in the centre of each lane, of the same width as the lane lines. A cross line 0.5 metre long shall be placed 0.3 metre below the water surface, measured to the centre point of the cross line.
- For 50m pools cross lines 0.5 metre long shall be placed at the 15 metre mark from each end of the pool, measured from the end wall to the centre point of the cross line.

**See Swimming Diagrams 1 & 2. Lane markings Fig 5, 6, 7 & 8.**

### **9.3 SPECIFICATIONS FOR SWIMMING POOLS FOR OLYMPIC GAMES AND WORLD CHAMPIONSHIPS**

(Compiled from PART IX FINA Facilities Rules 2013 - 2017)

**Length:** 50.0 metres between the Automatic Officiating Equipment touch panels, except for the World Swimming Championships (25m), which shall be 25.0 metres between the Automatic Officiating Equipment touch panels at the starting end and the wall or touch panels at the turning end.

**Dimensional Tolerances** as in FR 2.2.

**Width:** 25.0 metres for Olympic Games and World Championships.

**Depth:** 2 Metres (minimum); 3 metres recommended, when using the pool for multi disciplines i.e. synchronised swimming.

**Walls:** as in FR 2.4

**Pools** for Olympic Games and World Championships must be equipped with flush walls (consistently flat) at both ends.

**Number of lanes:** 8, for World Championships and for Olympic Games: 10

**Lanes** shall be 2.5 metres wide with 2 spaces 2.5 metres wide outside of lanes 1 to 8. There must be a lane rope separating these spaces from lanes 1 and 8 for Olympic Games and world championships. If 10 lanes, these must be marked from 0 to 9.

**Lane Ropes:** Lane Ropes shall extend the full length of the course, secured at each end wall to anchor brackets recessed into the end walls. The anchor shall be positioned so that the floats at each end wall of the pool shall be on the surface of the water. Each lane rope will consist of floats placed end-to-end having a minimum diameter of 0.05 metre to a maximum of 0.15 metre.

In a swimming pool the colour of the lane ropes should be as follows:

- Two (2) GREEN ropes for lanes 0 and 9
- Six (6) BLUE ropes for lanes 1, 2, 3, 6, 7 and 8
- Three (3) YELLOW ropes for lanes 4, 5

The floats extending for a distance of 5.0 metres from each end of the pool shall be of RED colour. There shall not be more than one lane rope between each lane. The lane ropes shall be firmly stretched.

**Starting Platforms:** as in FR 2.7. Except the surface area shall be at least 0.5 metres wide X 0.6 metres in length and covered with non-slip material. False start control equipment must be installed.

**Numbering:** as in FR 2.8.

**Backstroke turns indicators:** as in FR 2.9, Flagged ropes must be 1.8 metres above the water surface. Flags must be fixed to the ropes having the following dimensions: 0.20m metres on the rope forming a triangle measuring 0.40 metres on the sides. The distance between each flag must be 0.25metres. If the flags are printed with or support / carry any signage this must be approved in advance by FINA

**False Start Rope:** as in FR 2.10

**Water Temperature:** as in FR 2.11

**Lighting:** Light intensity over the whole pool shall not be less than 1500lux.

**Lane Markings:** as in FR 2.13. The distance between the centre points of each lane shall be 2.5 metres

If the swimming pool and the diving well are in the same area the minimum distance separating the pools shall be 5.0 metres. For pools constructed from 1 January 2014 the minimum distance separating the pool shall be a minimum of 8metres however 10 metres is preferred

**Note:** Distance separating the swimming pool and diving pool has not been specified for minimum standard pool

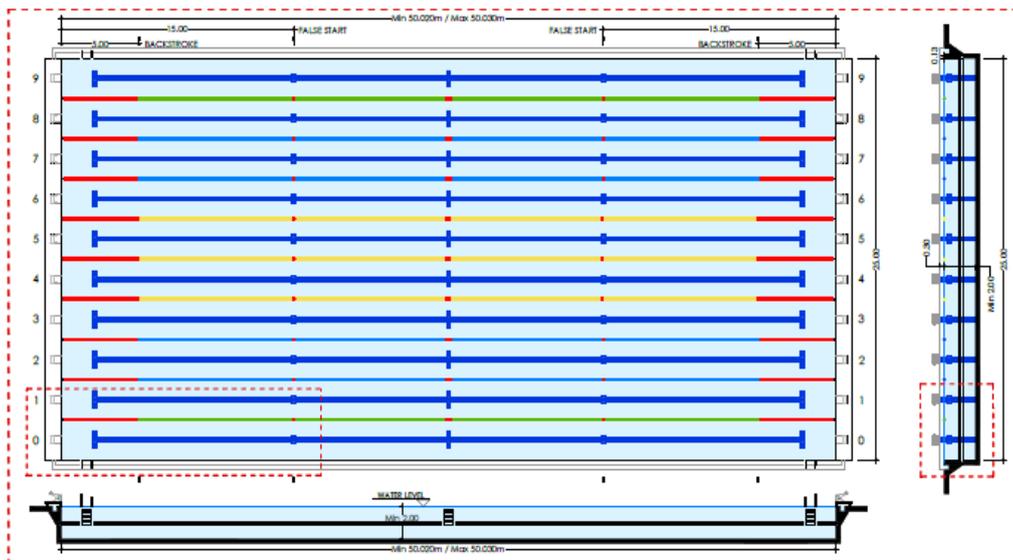


FIG. 1

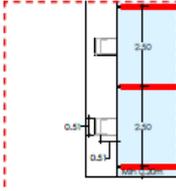


FIG. 3 STARTING PLATFORMS

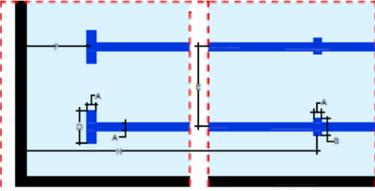


FIG. 6 PLAN LANE MARKINGS

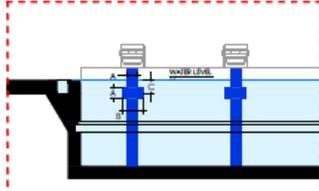


FIG. 7 END WALL LANE MARKINGS

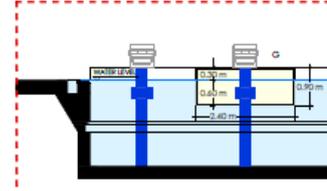


FIG. 8 TOUCH PANEL (2.40m x 0.90m x 0.01m)

FIG. 4

FR 2.9 LANE ROPES
9
8
7
6
5
4
3
2
1
0

FIG. 5

FR 2.14 FINA LANE MARKINGS, END LINES, TARGETS	
WIDTH OF LANE MARKINGS, END LINES, TARGETS	A 0.25m ± 0.02m
LENGTH OF END WALL TARGETS	B 0.50m
DEPTH TO CENTRE OF END WALL TARGETS	C 0.30m
LENGTH OF LANE MARKER CROSS LINE	D 1.00m
WIDTH OF RACING LANES	E 2.50m
DISTANCE FROM END OF LANE LINE TO END WALL	F 2.00m
TOUCH PAD	G 2.40m x 0.90m x 0.01m
DEP. FROM CENTRE OF CROSS LINE TO END WALL	H 15.00m

**50m SWIMMING POOL FOR OLYMPIC GAMES AND  
WORLD CHAMPIONSHIPS  
DIAGRAMS AND LANE MARKINGS**

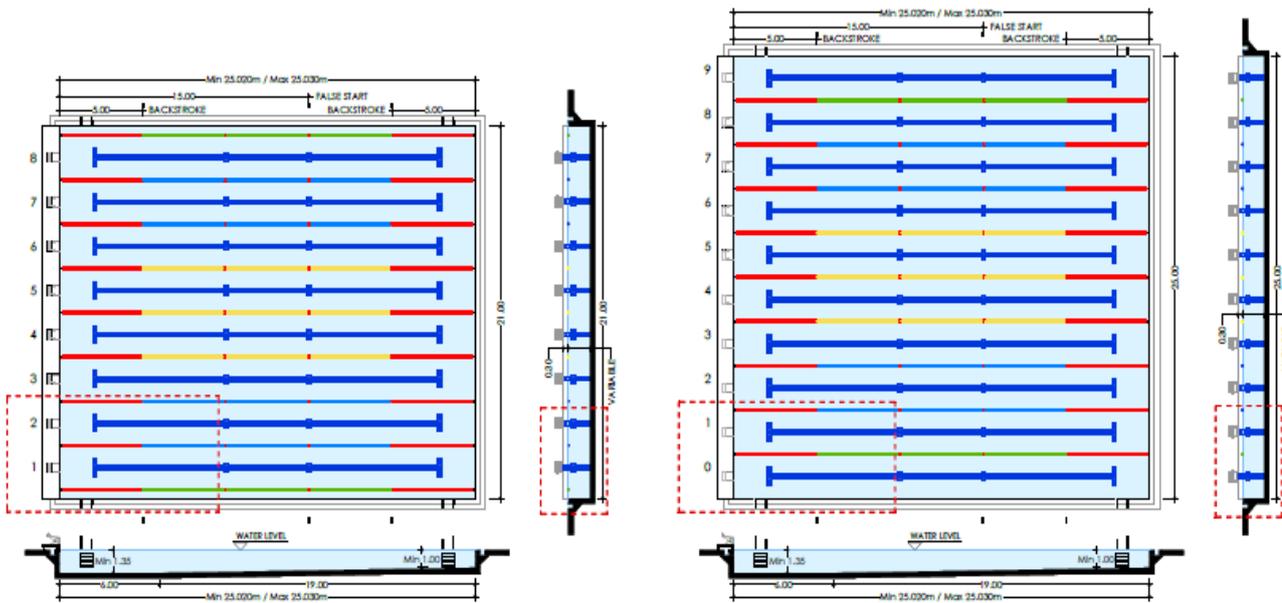


FIG. 2

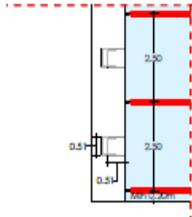


FIG. 3 STARTING PLATFORMS

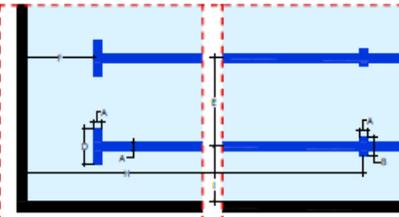


FIG. 4 PLAN LANE MARKINGS

FIG. 4

FR 2.8 LANE ROPES	
9	Blue
8	Blue
7	Blue
6	Blue
5	Blue
4	Blue
3	Blue
2	Blue
1	Blue
0	Blue

FIG. 5

FR 2.14 FINA LANE MARKINGS	
WIDTH OF LANE MARKINGS, END LINES, TARGETS	A 0.25m ± 0.02m
LENGTH OF END WALL TARGETS	B 0.50m
DEPTH TO CENTRE OF END WALL TARGETS	C 0.30m
LENGTH OF LANE MARKER CROSS LINE	D 1.00m
WIDTH OF RACING LANES	E 2.50m
DISTANCE FROM END OF LANE LINE TO END WALL	F 2.00m
TOUCH PAD	G 2.40m x 0.90m x 0.01m
DIST. FROM CENTRE OF CROSS LINE TO END WALL	H 15.00m

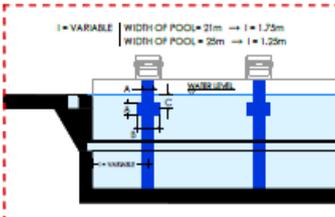


FIG. 7 END WALL LANE MARKINGS

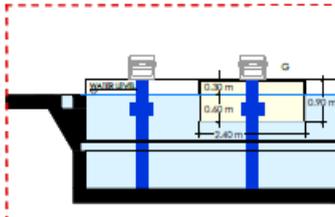
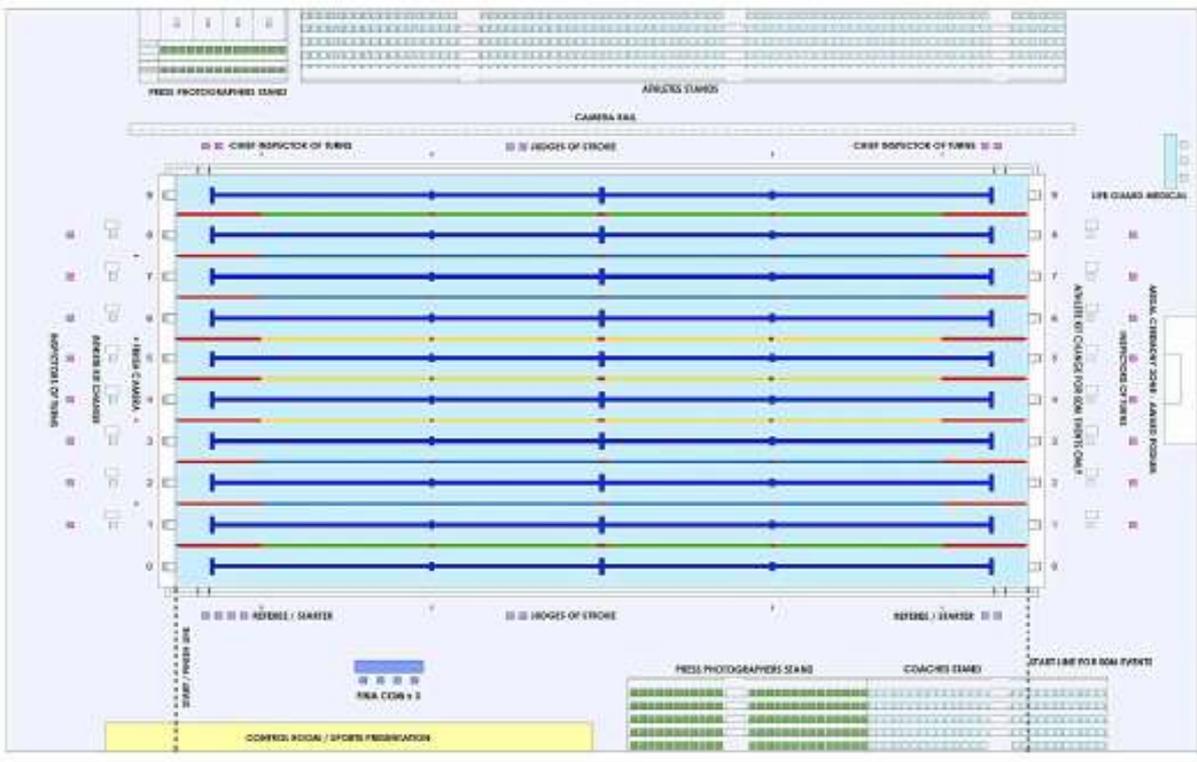


FIG. 8 TOUCH PANEL (2.40m x 0.90m x 0.01m)

**25m SWIMMING POOL  
DIAGRAMS AND LANE MARKINGS**



FINA COM (VERSION) NUMBER	LIFE GUARD MEDICAL
INSPECTION	ATHLETES STAND
JUDGES	COACHES STAND
	PRESS PHOTOGRAPHERS STAND

**FIELD OF PLAY FOR OLYMPIC GAMES AND  
WORLD CHAMPIONSHIPS  
SWIMMING**

## **9.4 DIVING FACILITIES**

(FR 5 from PART IX FINA Facilities Rules 2013 – 2017 may be referred for details)

## **9.5 POOLS FOR WATER POLO**

(Compiled from PART IX FINA Facilities Rules 2013 - 2017)

**9.5.1 General requirements:** Water Polo Dimensions and Equipment as detailed in Field of Play for Olympic Games and World Championships. See Water Polo Diagram below ( Annex 4)

**9.5.2 Field of Play.** The distance between the respective goal lines shall be 30.0metres for games played by men and 25.0 metres for games played by women. The anchor point at the edge of the field of play shall be placed 30cm behind the front of the goal line. The width of the field of play shall be 20.0 metres. The depth of the water shall be consistently not less than 1.8 metres and preferred 2.0m. The overall field of play including the goal area will be 30m x 25m for men and 25m x 20m for women.

FR 7.3 The water temperature shall not be less than 26° plus 1° minus 1°Centigrade.

FR 7.4 The light intensity shall not be less than 600 lux.

FR 7.5 Exception from FR 7.2 may be allowed on the discretion of the federation controlling the match.

**Note:** This rule gives the flexibility of reducing the size of Field of Play

## **FR 8 Water Polo Pools For Olympic Games and World Championships**

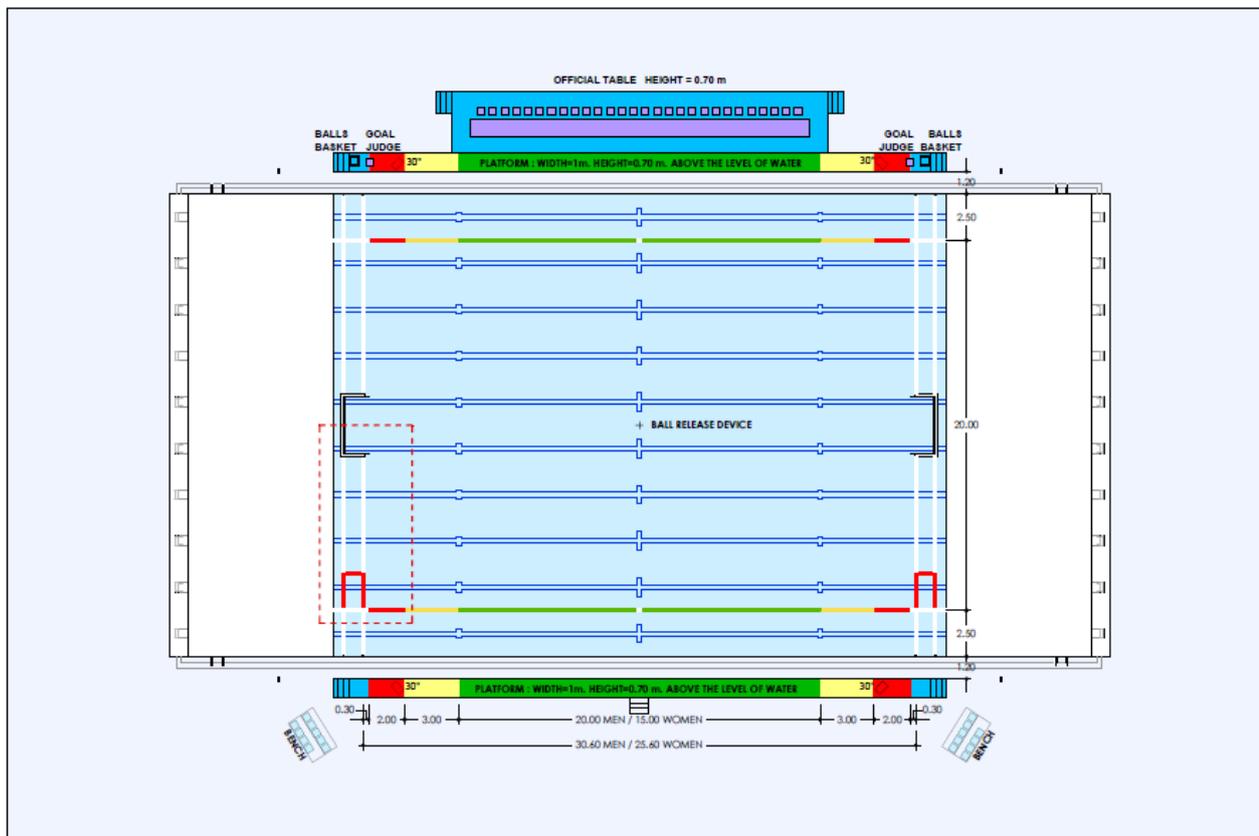
FR 8.1 Exceptions from the requirements in FR 7.2 are not allowed.

FR 8.2 The water temperature shall be as in FR 7.3.

FR 8.3 The light intensity shall not be less than 1500 lux.

FR 8.4 In Olympic Games, World Championships and FINA events fresh water

**Note:** FR-9 from Part IX FINA Facilities Rules 2013 – 2017 may be referred for details of equipment for Water Polo Pools)



**FIELD OF PLAY FOR OLYMPIC GAMES AND  
WORLD CHAMPIONSHIPS  
WATER POLO  
ANNEX 4**



## 9.6 POOLS FOR SYNCHRONISED SWIMMING

(Compiled from PART IX FINA Facilities Rules 2013 - 2017)

**9.6.1 General requirements:** Field of Play for Synchronised Swimming in Olympic Games and World Championships as detailed in: Syncro Diagram, Annex 5.

FR 10.1.1 for the figure section of competition two areas each 10.0 metres long by 3.0 metres wide are to be provided. Each area is to be close to a wall of the pool with the 10.0 metre long side parallel to and not greater than 1.5metres from the pool wall. One of these areas is to be of 3.0 metres minimum depth and the other area is to be of 2.5 metres minimum depth.

FR 10.2 for the routine section of competition a minimum area of 12 meters by 25meters is required, within an area of which 12 meters by 12 meters must have minimum depth of 3.0 meters. The depth of the remaining area shall be 2.0 meters minimum.

FR 10.2.1 Delimit in width and length the field of play in the Solo and the Duet with two lanes (maximum width 16 mt length 25).For the Solo and Duet competition, the field of play may be delimited in width and length.

FR 10.3 Where the water depth is more than 2.0 metres; the depth at the pool wall may be 2.0 metres and then sloped down to reach the general depth at 1.2 metres maximum from the pool wall.

FR 10.4 The areas for figure competition in FR 10.1 can occupy the same area of the pool as that used for routine competition.

FR 10.5 If there is no lane markings as described in FR 2.13, the floor of the pool must be marked with contrasting lines in one direction, following the length of the pool.

FR 10.6 The water must be of sufficient clarity for the bottom of the pool to be visible.

FR 10.7 The water temperature shall not be less than 27° plus 1° minus 1°Centigrade.

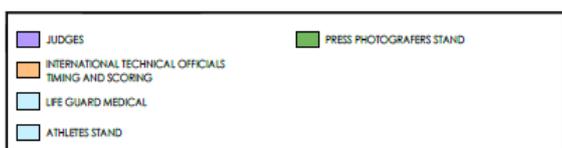
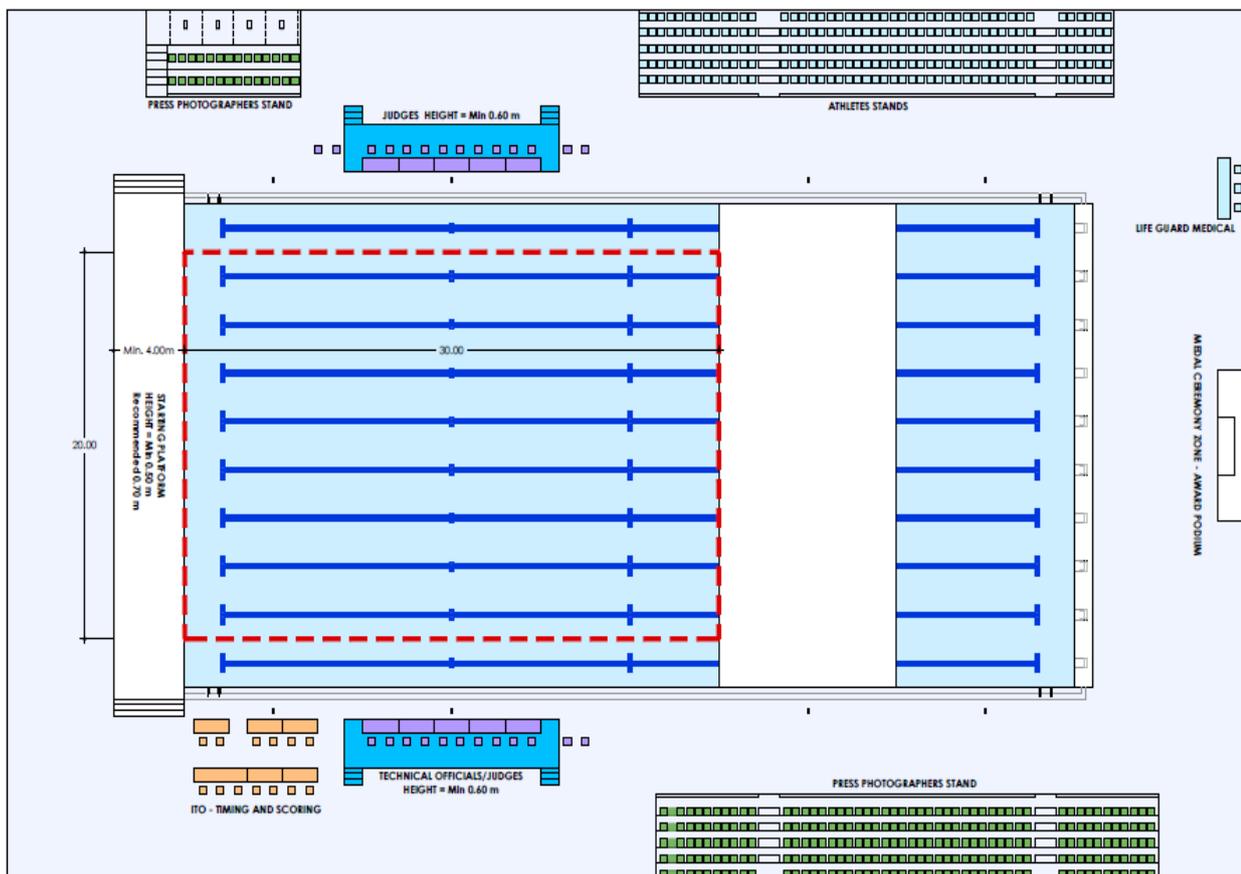
## **9.7 POOLS FOR SYNCHRONISED SWIMMING IN OLYMPIC GAMES AND WORLDCHAMPIONSHIPS**

FR 11.1 The Field of Play for Synchronised Swimming in Olympic Games and World Championships as detailed in Syncro Diagram, Annex 5.

- For the routine section of competition at Olympic Games and World Championships a minimum area of 12.0 metres by 30.0 metres is required, within which an area of 12.0 metres by 12.0 metres must have a minimum depth of 3.0metres. The depth of the remaining area shall be 2.5 metres minimum. The sloped area from 3.0 metres depth to 2.5 metres depth should be over a minimum distance of 8.0 metre.

FR 11.2 The water temperature shall be as in FR 10.7.

FR 11.3 The light intensity shall not be less than 1500 lux.



**FIELD OF PLAY FOR OLYMPIC GAMES  
AND WORLD CHAMPIONSHIPS  
SYNCHRONISED SWIMMING  
ANNEX 5**



## 9.8 Proposed specifications of swimming pool for SAI Centres

**Olympic size: 50 mt X 25 mt X Depth 2 mt (8 Lane)** : To be provided in SAI Centres where international competitions are likely to be held

**Standard size : 50 mt X 21 mt X Depth 2 mt (8 Lane)** : To be provided In SAI Centres where pool shall be used for holding swimming National camps (8 lanes with 0.5m end spaces), National competitions etc

**Minimum Standard size : 50 mt X 21 mt X Depth 1 to 1.35 mt(8 lane)** : To be provided In SAI Regional Centres where pool shall be used for recovery & rehabilitation of Athletes, local swimming competitions and training

**Note:** If budget constraints are there we may provide 6 lane swimming pool of size 50 mt X 16 mt X Depth 1 to 1.35 mt

**Minimum Standard size : 25 mt X 16 mt X Depth 1 to 1.35 mt(6 lane)** To be provided In STCS/SAG Centres where pool shall be used for recovery & rehabilitation of Athletes, training and as additional learners pool where 2 mt depth swimming pools are being provided

## MULTIPURPOSE HALL



## MULTIPURPOSE SPORTS HALL

## **17. MULTIPURPOSE HALL / INDOOR HALL**

In SAI centres, the standard practice is to construct a Multipurpose hall of size 60 m X 40 m with height of 12.5 mt with the aim of using it for any sports discipline at a later date. Such halls are power guzzlers also because of higher lighting and air conditioning load. However considering the budgetary constraints also, it is a very costly proposition as later on these multipurpose halls are generally used for Combat sports and other sports, for which 12.5 mt height and wooden flooring may not be required. Moreover the requirement of 12.5 mt heights is only for few sports disciplines like badminton etc and that too for world level competitions only.

It is also observed that there is wastage of space inside the indoor hall, as the sports discipline it is being used requires lesser space, and the balance space available cannot be utilized by any other sports discipline.

Since the estimated cost of the Indoor Hall is directly linked with the floor area and the height, we end up spending enormous cost on construction of the hall, which otherwise could have been saved by proper planning.

Since the sports discipline for which the multipurpose is constructed is not clear, the placement of light fittings is very arbitrary, which may restrict the use of the hall for a particular game. Several windows and skylights are provided for natural lighting, which is not desirable for many indoor games, especially badminton.

In view of the above certain guidelines have been listed out which the SAI Centres should follow while constructing a Multipurpose Indoor hall.

### **10.1 SIZE**

- a) Multipurpose halls should be designed, planned and constructed specific for sports disciplines it is proposed to be used for optimum utilization of space.
- b) Area and size of indoor halls for specific sports discipline is compiled in this handbook for reference and guidance

### 10.1.1 FLOORING

#### Field of Play

- c) Flooring should generally be seamless synthetic Polyurethane flooring over shock absorbing layer as approved by FIVB / FIBA / BWF for longer life and less maintenance
- d) Maple wood/Teak wood flooring with the flooring system and manufacturer approved by FIVB/FIBA/BWF may be provided where the **Multipurpose Indoor hall is to be used by National campers / Elite trainees of ball games/badminton**
- e) If the area where the multipurpose hall is constructed / being constructed is termite infested, Synthetic Polyurethane flooring approved by FIVB / FIBA / BWF should only be provided. In no case wooden flooring should be provided, in termite infested areas without explicit approval of DG SAI

#### Other than Field of Play

- **Flooring :**

- **Regional Centres/LNCPE/NIS Patiala**

<b>Rooms -</b>	Vitrified Tiles
<b>Corridor-</b>	Vitrified Tiles
<b>Common Areas:</b>	Vitrified Tiles
<b>Store rooms:</b>	Kota Stone
<b>Toilet :</b>	Non skid ceramic tile
<b>Staircase:</b>	Kota stone
<b>Entrance area:</b>	Vitrified Tiles/ Granite

- **STC / SAG Centre:**

<b>Rooms -</b>	Ceramic Tiles
<b>Corridor -</b>	Kota stone
<b>Common Areas :</b>	Kota Stone
<b>Store rooms :</b>	Cement Concrete
<b>Toilet :</b>	Non skid ceramic tile
<b>Staircase :</b>	Kota stone
<b>Entrance area :</b>	Kota stone/Vitrified Tiles

### 10.1.2 HEIGHT:

- f) The clear height of the Indoor hall should be minimum required for the training purpose specific to the sports discipline for which it is intended to be used.

**g)** Clear height for Combat sports should generally not be more 4.5 to 5 mt depending on the floor area of the hall, for ball games/badminton provide minimum clear height as under:

- In case the Indoor hall is likely to hold National/International level completions of ball games, the clear height should be provided as per International federation guidelines
- Clear height for various sports discipline has been compiled for different level of sports discipline in this handbook for reference

### **10.1.3 MISCELLENEOUS**

- h)** False ceiling should not be provided unless the hall is being air conditioned
- i)** No Multipurpose hall will be Air-conditioned unless it is proposed for holding National level competitions.
- j)** Air-conditioning of Indoor hall shall be considered only after approval of DG SAI

### **10.1.4 GENERAL SPECIFICATIONS**

- **Regional Centres/LNCPE/NIS Patiala/STC/SAG Centre**

- **Wall Finish :**

<b>Rooms</b>	-	Oil Bound Distemper
<b>Corridor</b>	-	Oil Bound Distemper
<b>Common Areas</b>	:	Oil Bound Distemper
<b>Store rooms</b>	:	Dry Distemper
<b>Toilet</b>	:	Ceramic tile up to 2.1 mt height.
<b>Entrance area</b>	:	Oil Bound Distemper.

- **Windows :**

- Powder Coated Aluminum window
- In STC/SAG Centre provide Mild steel windows except in locations near sea or in humid weather condition provide Powder coated Aluminum windows only

- **Doors :**

Wooden Flush Door or Powder Coated Aluminum Door

### **Guidance for fixing dimensions of Multipurpose Indoor Hall:**

The space required for most games depends on the standard of play; generally the higher the standard the larger the space. The playing area is usually the same size but increased safety margins and clear height may be required. Foremost competition play an extra zone is required for team benches and an officials' table and a further security zone between teams

and spectators may be required for major events. Adding these margins around the playing area produces the critical overall space – the minimum safe area for each standard of play.

In specialist halls individual requirements, particularly for sports that need a larger pitch such as handball, may overrule the modular method in favour of the key sport’s critical dimensions.

Other factors which may militate against the modular method include:

Dedicated extra space – additional spectator seating where a large hall serves as a regional sports arena to adjust to structural and key building component sizes on-sports events that require increased space where a multi-sports hall is designed for national standard play in one or more sports.

### **Which sports – how many courts?**

Guidance on selecting a hall size to accommodate a range of sports at different levels of play is shown in the table. It covers the sports that require line markings and confirms the number of courts and pitches for each size of hall. The badminton court is the smallest of all games requiring line marking, as such the sizes and layout of Multipurpose hall has been designed in multiples of size of badminton courts. The light fitting should be placed as per the layout of badminton courts, and it is found to fulfill the requirement for other sports played in that MP hall.

The table omits sports that need less space for which all the sizes noted have ample capacity and sufficient clear height. The data in the table has been taken from compilation on sizes and layouts of Sports Halls by an international Organization committed towards promoting sports. The abbreviations used denote:

**R** recreational  
**P** practice  
**C** club

} **May be considered for MP halls for STCs/SAG Centers**

**LD** lower divisions, local league  
**TD** top divisions, local league  
**Cy** county

} **May be considered for MP halls for Regional Centers**

**Rg** regional  
**N** national/international

} **May be considered for MP Halls in Regional Centers / Academic Institutions where National campers train**

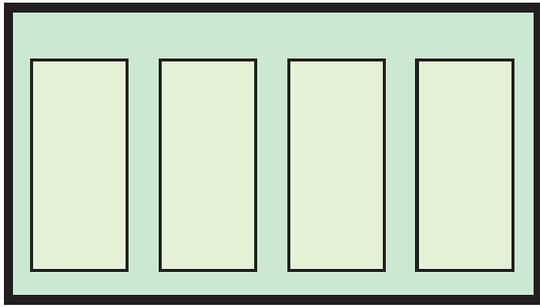
	Four-court hall 33 x 18 x 7.6m 594m <sup>2</sup>			Six-court hall 33/4 x 27 x 7.6m 918m <sup>2</sup>			Eight-court hall 37 x 33/4 x 7.6/9.1m 1221m <sup>2</sup>			Nine-court hall 51 x 27 x 7.6/9.1m 1377m <sup>2</sup>			Twelve-court hall 54 x 33 x 9.1m high 1782m <sup>2</sup>		
Sport	Standard of play			Standard of play			Standard of play			Standard of play			Standard of play		
	C R	Cy	N	C R	Cy	N	C R	Cy	N	C R	Cy	N	C R	Cy	N
Badminton and short tennis	4	-	-	6	3	3	8	3/6*	3/6*	9	6	6	12	6/9*	6
	9.1m ht			9.1m ht			9.1m ht			9.1m ht			9.1m ht		
Basketball	C(LD)	-	-	C(TD)	C(TD)		C(LD)	C(TD)		C(LD)	C(TD)		C(LD)	C(TD)	
	1	-	-	1	1	1	2	1	1	1/2P	1/3P	1	3	1/2*	1/2*
				2P	2P		-	2P							
Gymnastics	P	-	-	P	-	-	1	P	-	2P	1	1	3P	1	1
Five-a-side football	1	P	-	2	1	-	2	1	-	3	1	P	3	3	1
Handball	1	-	-	1	-	-	2	1	-	2	1	1	3	1	1
	Mini						9m ht			9m ht 9m ht					
Netball	P	-	-	P	-	-	2P	1	-	1/2P	1	1	2P	1/2*	1/2*
Volleyball	1	1	-	2	1/2P	-	2	2	1/2	4	2/3*	1/3	4	2/4*	2/3
							10.5m ht			10.5m ht			10.5m ht		

## 10.2 FOUR COURT HALL

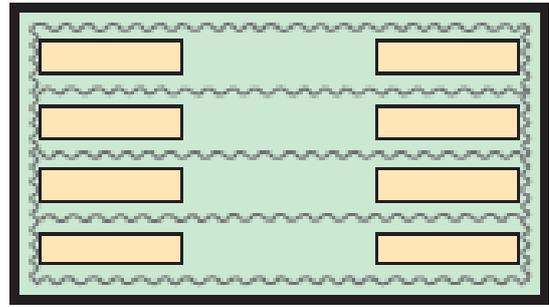
The critical minimum dimensions for this most popular size of sports hall are 33 x 18 x 7.6m. Main structure must always be aligned between the badminton courts to create four bays. Extra width can be considered to provide an extended spectator zone. An extra 1.5m added to the length and 0.25m to the width allows for a full size netball court with side and end margins.

### Notes

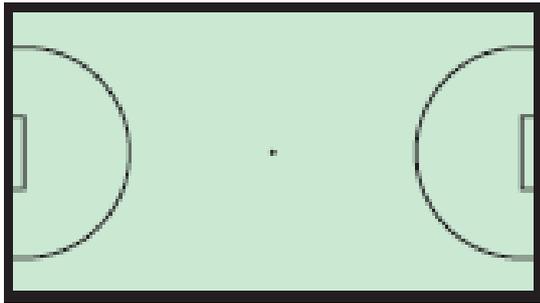
- A minimum height of 7.6m must be provided over the whole badminton court area and 7m minimum for most team games including basketball and volleyball.
- The 33 x 18m dimensions allow four doubles play badminton courts with a central division net.
  - The 18m width is ideal for several of the smaller space sports.



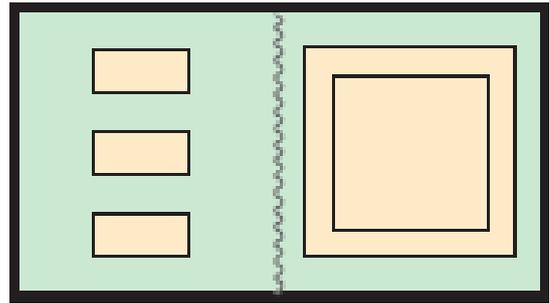
**Badminton**



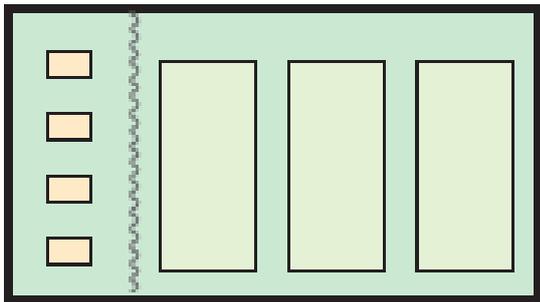
**Cricket nets**



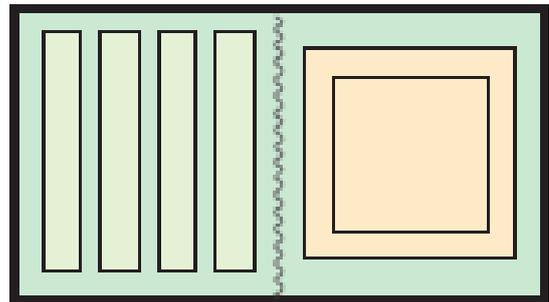
**Team games**



**Trampoline/judo**

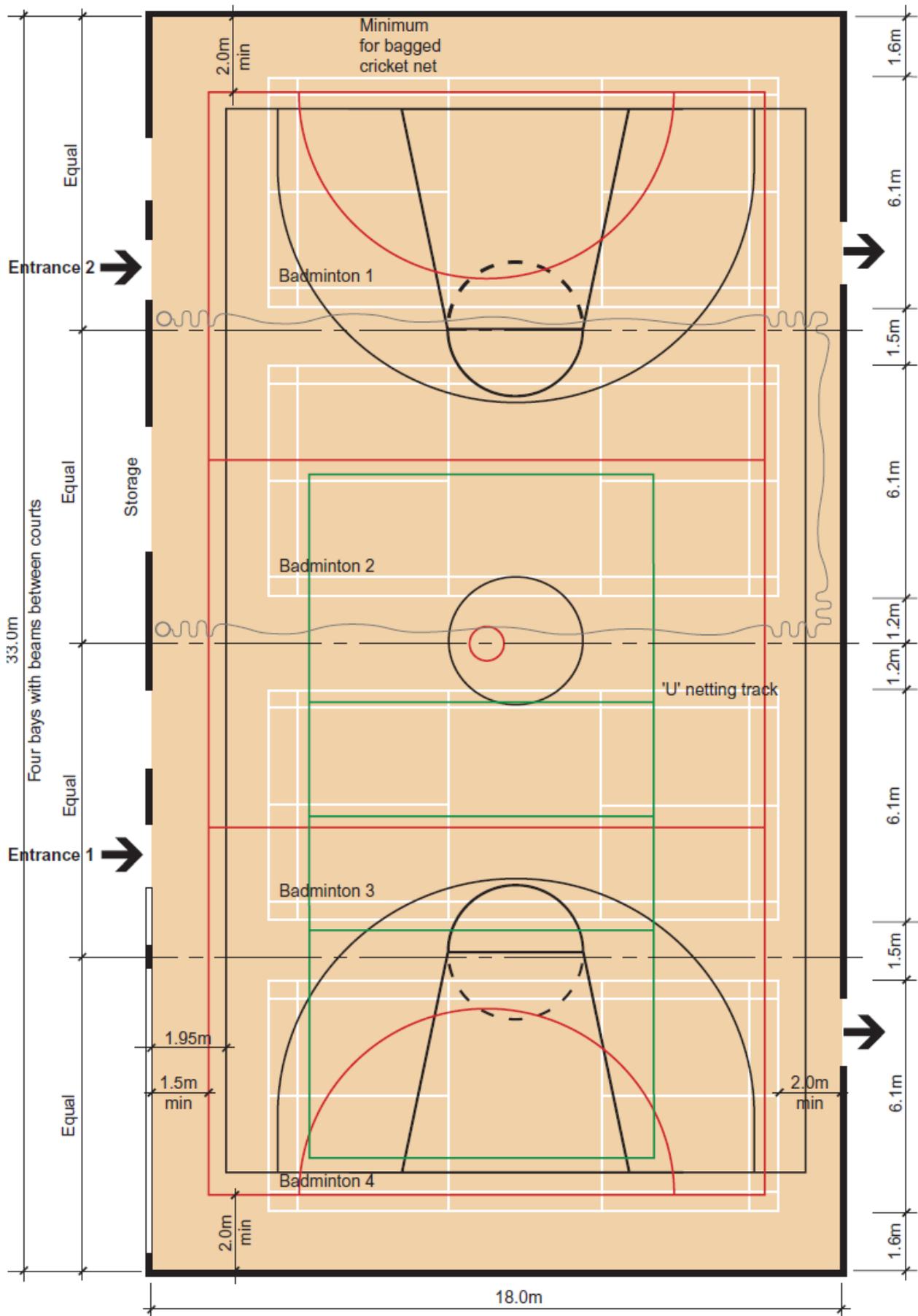


**Table tennis/badminton**



**Short bowls/gymnastics**

**Different uses of a four-court hall.**



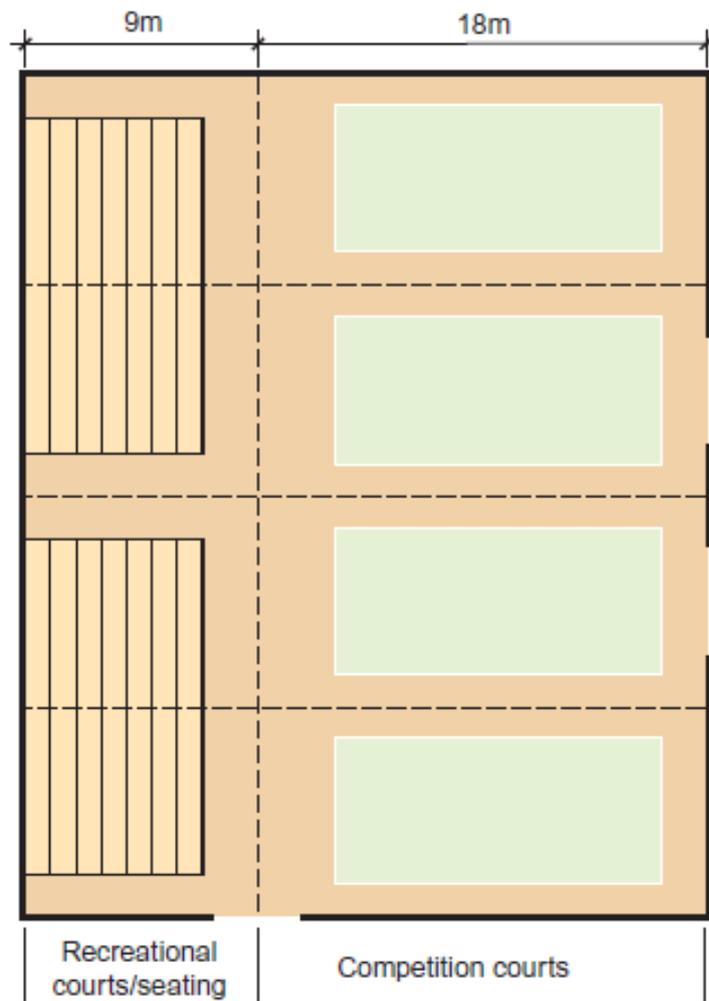
A 33 x 18 x 7.6m four-court hall.

### 10.3 SIX COURT HALL

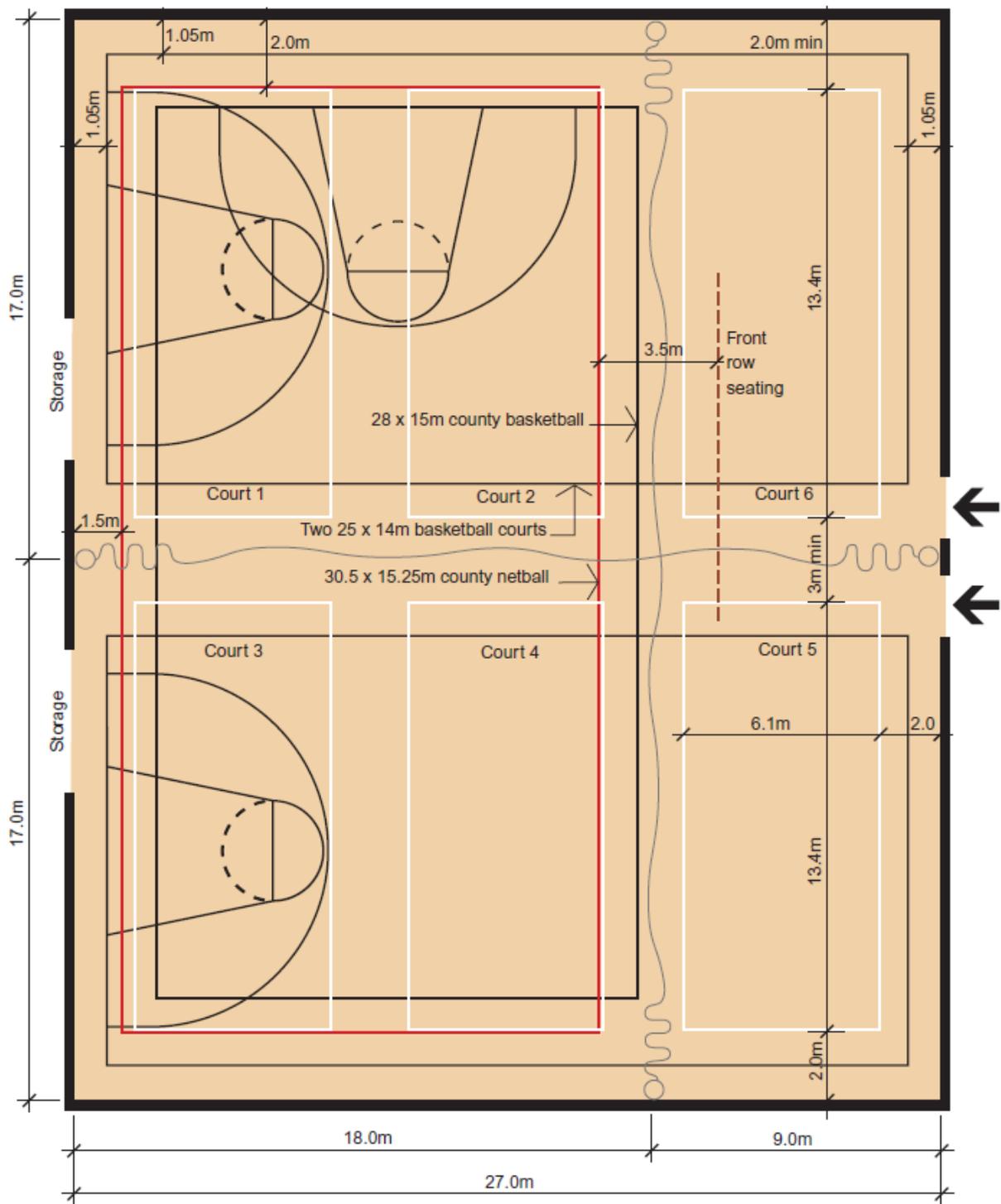
The 33/34 x 27 x 7.6/8.4m hall creates two team sports zones or a competition play area aligned with spectator seating. The 3 + 3 badminton court arrangement is recommended in preference to the 4 + 2 layout originally used in this type of hall. The 34m length provides the required safety margin behind the badminton courts. Further increases in length will be required for county standard play.

#### Notes

- Align structure between badminton courts to provide three full-span bays or introduce a primary beam across the centre of the hall.
- Division netting is hung between the three rows of courts. It can also be considered between two end courts but this zone is usually designated for retractable seating.
- A height of 9.1m and extra length is required for county standard badminton.
- Two standard basketball courts or two reduced five-a-side football courts can be laid across the hall with modified 'D' end markings.
- Wider pitches for recreational handball,
- The 4 + 2 badminton court arrangement requires a four-bay structure to ensure that lighting and transverse netting accord with the four primary courts.
- In the 4 + 2 layout shown there is insufficient length to accommodate the full run-back to end-on courts in the 9m zone.



The traditional 33 x 27m layout gives a longer competition court for team games but structure must run between the four primary badminton courts.



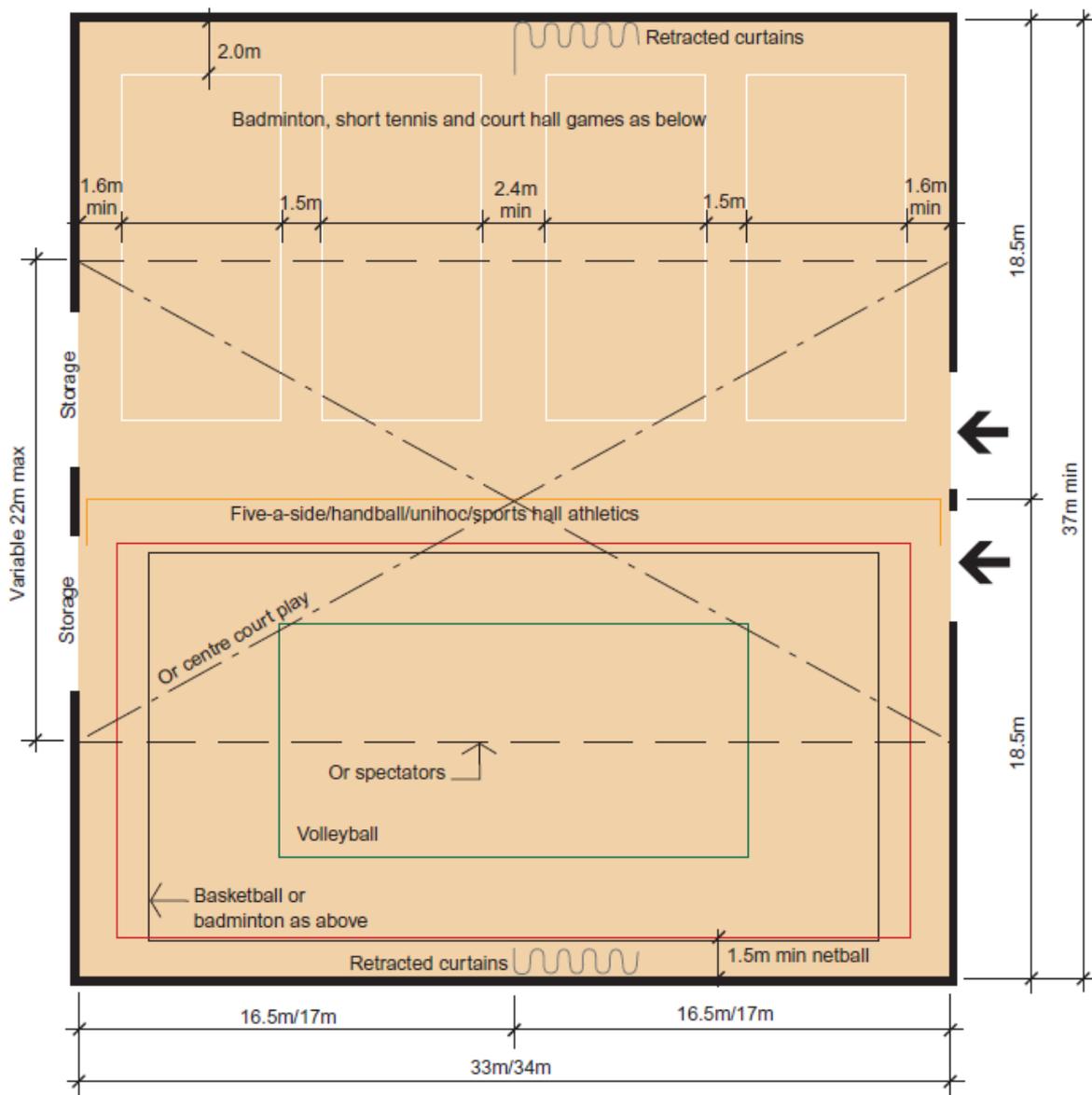
A 33/34 x 27 x 7.6/8.4m six-court hall. The minimum area for six badminton courts and ball games.

### 10.4 EIGHT COURT HALL

The critical dimensions are 37 x 33/4 x 7.6 or 9.1m. This hall can be divided into two full-size play zones for most sports hall team games. Height requirements become more demanding as hall size increases and the environmental impact of extra high halls has to be weighed against more restricted use and possible ball damage in too low a hall.

## Notes

- This size is particularly suitable for top division basketball.
- Align structure between badminton courts to provide four full bays or introduce a central primary beam.
- Four standard badminton courts can be marked out or rolled down and require a clear height of 9.1m.
- To accommodate a minimum size indoor handball length must be increased to 39m.
- These halls can seat upwards of 1,000 spectators for a table tennis final or for other sports with limited space requirements.
- Invariably, eight-court halls can be used for non-sports events and access for users and equipment requires extra consideration.



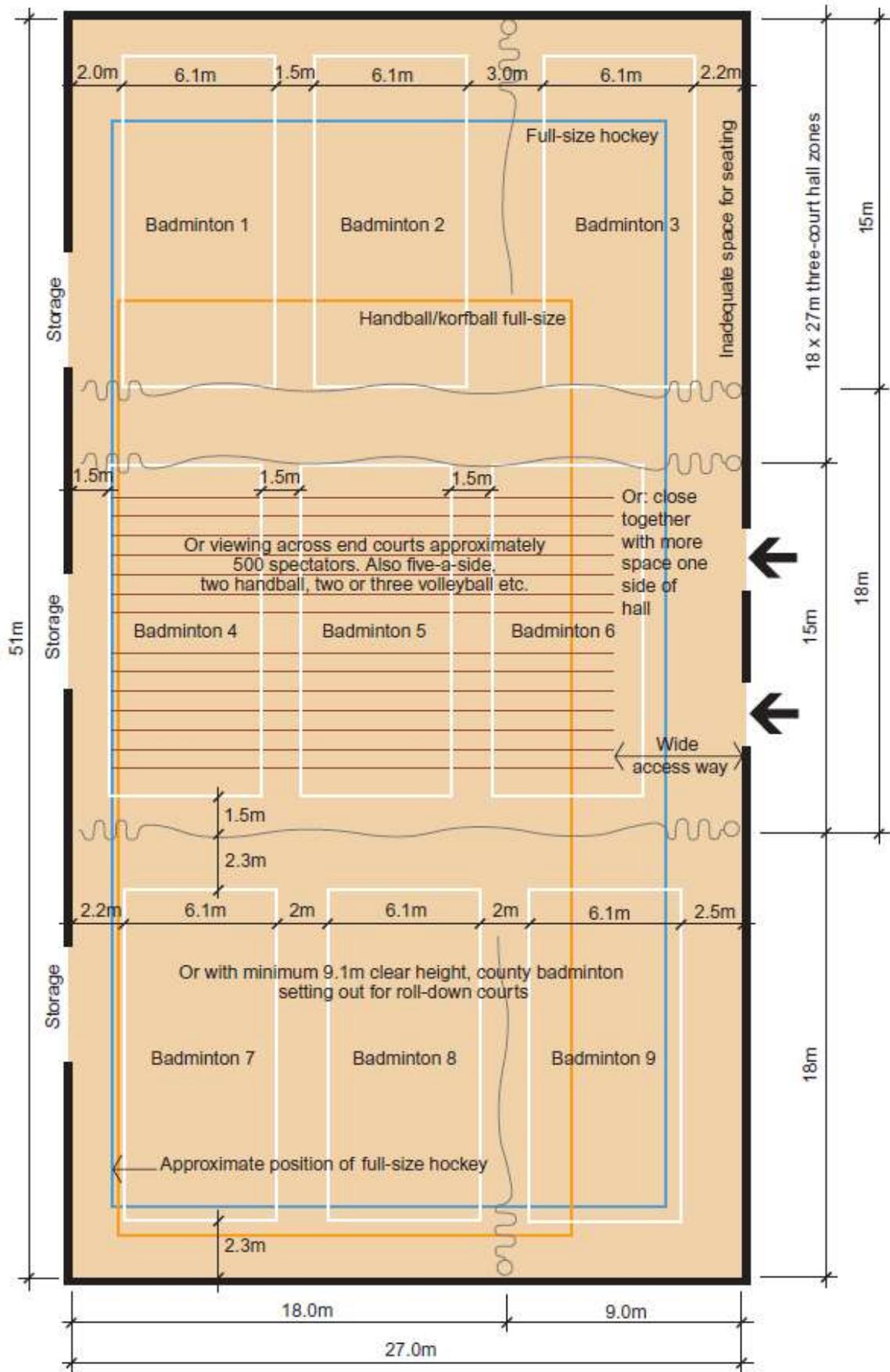
A 37 x 33/34 x 7.6/9.1m eight-court hall. The minimum area for two full zones for ball games. County standard badminton courts would align along the hall length.

## 10.5 NINE COURT HALL

This 51 x 27 x 9.1m high hall is suitable for STC standard handball, Its elongated dimensions also provide more scope for gymnastics.

### Notes

- Hall area is 11% greater than the eightcourt hall but there is greater sports capacity and, essentially, space for the more sports discipline.
- Run main structure to divide the hall into three zones with secondary structure between badminton courts.
- It can provide three to six activity zones with good access from a circulation route down the length of one side of the hall.
- There is space for six standard roll-down badminton courts with seating for approximately 500 spectators in the central zone.



A 51 x 27 x 7.6/9.1m nine-court hall for a full-size indoor hockey pitch and other big pitch sports.

## 10.6 TWELVE COURT HALL

At 54 x 33 x 9.1m this size has the capacity of a small regional arena, a spectator venue for local level competition. It is a larger version of the nine-court layout.

### Notes

- Three modules of the four-court hall can be arranged by dividing the length into 18m (and variable) width zones or two six-court hall zones.
- Primary structure should run between these zones with secondary structure between badminton courts.
- Extra flexibility is provided by lengthwise subdivision.
- Over 700 seats can be aligned along one side of the hall for handball, spectators and more for other sports or entertainment events.
- An increase in width permits banks of seating to each side and possibly also to each end of the competition pitch.

