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General Requirement of Padel Court Safety

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Preface

This standard was drafted in accordance with the rules given in GB / T 1.1-2009. This standard was formulated with reference to relevant standards and relevant industry association regulations as the basis for enterprise production and quality supervision and inspection.

General Requirement of Padel Court Safety

1 Scope

This standard specifies the terms and definitions, requirements, test methods, safety warnings, installation requirements, signs, and instruction manuals for the fence facilities of slab tennis courts (hereinafter referred to as "facilities").

This standard applies to the fence facilities of paddle tennis courts.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest version (including all amendments) applies to this document.

GB / T 1804-2000 General tolerances Tolerances for linear and angular dimensions without tolerances

GB / T 5296.1 Instructions for the use of consumer goods Part 1: General

GB / T 5296.7 Instructions for the use of consumer goods Part 7: Sports equipment

GB 15763.2-2005 safety glass for building-Part 2: Tempered glass

GB / T 20394-2013 Artificial grass for sports

GB 50009-2012 Load Code for Building Structures

JGJ113-2009 Architectural glass application technical regulations

GB / T 5455 Textiles-Burning properties-Determination of vertical damage length, smoldering and afterglow time GB 5725-2009 Safety net

GB 6675.4-2014 Toy Safety Part 4: Migration of Specific Elements

GB / T 22040-2008 Weather resistance requirements and test methods for plastic products along highway facilities

GB 24613-2009 Limits of harmful substances in coatings for toys

GB / T 26941.1-2011 barriers Part 1: General

GB 31187 General requirements for electrical parts of sporting goods

GB 50057 Design Code for Lightning Protection of Buildings

GB 50343 Technical Specifications for Lightning Protection of Building Electronic Information Systems

SN / T 1877.2-2007 Determination of polycyclic aromatic hydrocarbons in plastic raw materials and their products

SN / T 1877.4-2007 Determination of polycyclic aromatic hydrocarbons in rubber and its products

SJ / T 11363-2006 Limit requirements for toxic and hazardous substances in electronic information products

TY / T 1002.1-2005 Sports lighting use requirements and inspection methods Part 1: Outdoor football fields and comprehensive stadiums

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Padel court

Padel court enclosed by a fence and tempered glass, see Figures 1 and 2.

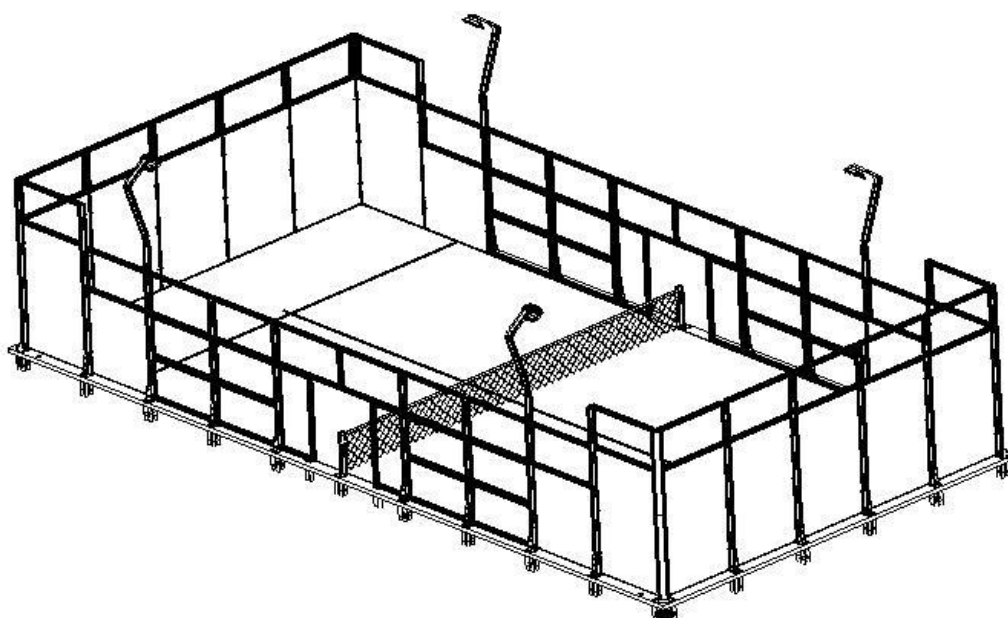


Figure 1 classic padel court

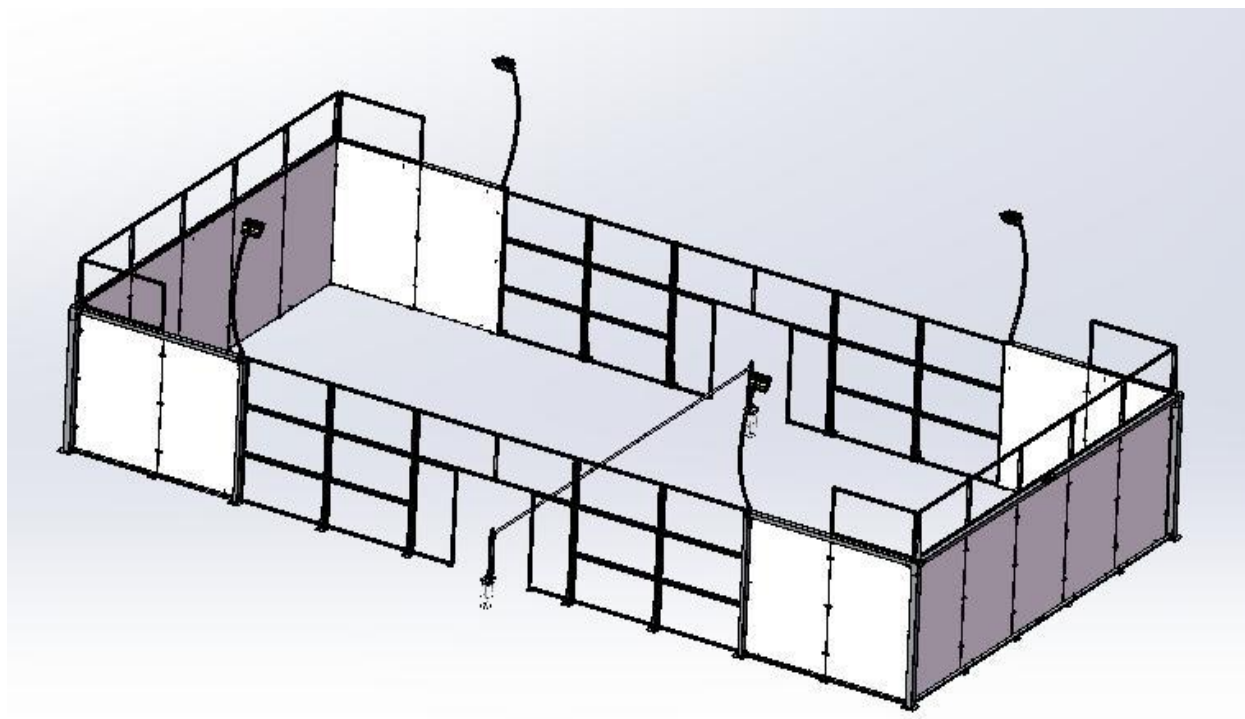


Figure 2 Panoramic padel court

3.2

Fence and steel structure

Column, steel mesh frame, tempered glass, mesh.

3.3

Components

Light post, exits, artificial turf, lighting system.

4 Requirement

4.1 Basic requirement

- 4.1.1 Facilities should be set in accordance with the local climate, natural topography, space shape, building and surrounding environment, etc.
The spatial layout of the environment is combined to make reasonable use of squares, green spaces, gardens and other areas.
- 4.1.2 The facility should be installed in a neat and tidy environment and should not be surrounded by potential dangers that could harm personal safety.
- 4.1.3 The structure, function and foreseeable abnormal use of the facility should not be potentially dangerous.

4.2 Material

4.2.1 General rule

4.2.1.1 The materials should be selected to meet the requirements of 4.2.2 to 4.2.6 and meet the requirements for the safe service life of the facility.

4.2.1.2 The material shall be selected to prevent the aging and failure of the structural parts caused by environmental influences, and shall meet the requirements of No. 8 in the technical requirements of Table 2 in GB / T 22040-2008.

4.2.2 Metal structure

Metal materials that do not have anticorrosive properties should be treated with a surface anticorrosive treatment.

4.2.3 Tempered glass

The thickness of the tempered glass used on the site is 12mm, which shall meet the requirements of GB 15763.2-2005.

4.2.4 Artificial turf

The preferred colors for artificial turf are blue and green. Monofilament turf with a height of 12mm is used. The turf laying on the site shall meet the requirements of GB / T20394-2013.

4.2.5 Fire resistance

4.2.5.1 After the flame retardancy of textile materials is tested in accordance with 5.2.1.1, the continuous and smoldering time in the vertical and horizontal directions shall not exceed 4s.

4.2.5.2 Other materials shall be inspected according to 5.2.1.2. The diameter of the burning plaques left on the surface of the material shall not be greater than 50mm.

4.2.6 Hazardous substance

When the easily accessible materials are inspected in accordance with 5.2.2, the content of harmful substances shall not exceed the requirements in Table 1.

Table 1 Maximum limit of harmful substances

number	substance	value
1	lead content	≤600 mg/kg
2	cadmium content	≤100 mg/kg
3	soluble lead content	≤60 mg/kg
4	Diisooctyl Phthalate (DEHP), Dibutyl Phthalate Total esters (DEP) and butyl phthalate (BBP)	≤0.1%
	Diisononyl phthalate (DINP), didecyl phthalate (DIDP), and dioctyl phthalate (DNOP) combined	≤0.1%
	Benzopyrene	< 1 mg/kg
	Polycyclic aromatic hydrocarbon content (only for rubber and plastic materials)	Sixteen polycyclic aromatic hydrocarbons, naphthalene, pinene, fluorene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo (a) anthracene, quinone, benzo (a) fluoranthene, benzo (k) fluoranthene Sum of benzo (a) pyrene, indeno (1,2,3-cd) pyrene, dibenzo (a, h) anthracene and benzo (g, h, i) pyrene < 10 mg/kg

4.3 Structure requirement

4.3.1 Padel court size

4.3.1.1 The course is rectangular, with internal dimensions of 10m wide and 20m long, with a tolerance of $\pm 0.5\%$.

4.3.1.2 The court is divided into two halves by the net. On both sides of the net, the boundary line is parallel to the net and the distance is 6.95m. The area between the net and the boundary line is separated by a central boundary line, which extends 20 cm outside the boundary line.

4.3.1.3 The layout of the court's plane and boundary lines should be absolutely symmetrical. All border lines are 5 cm wide and the color of the lines is white, which should be in sharp contrast to the color of the turf, see Figure 3.

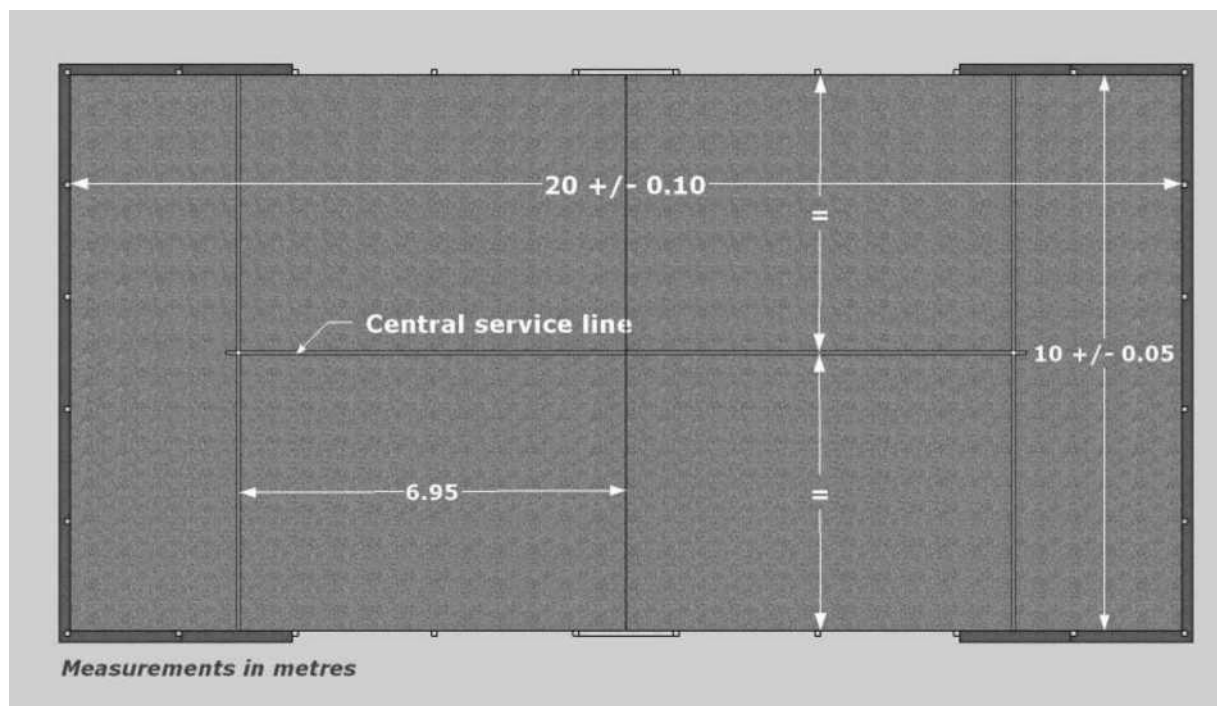


Figure 3 Site Plan Size and Boundary Line Layout

4.3.1.4

The dimensions of the screen frame and tempered glass are shown in Figure 4 and Figure 5. The surface formed by all tempered glass should be flat, and there should be no protrusions to affect the bounce of the tennis ball. The junction of the tempered glass and the net frame should be aligned on a flat surface to avoid bouncing the tennis ball at an abnormal angle.

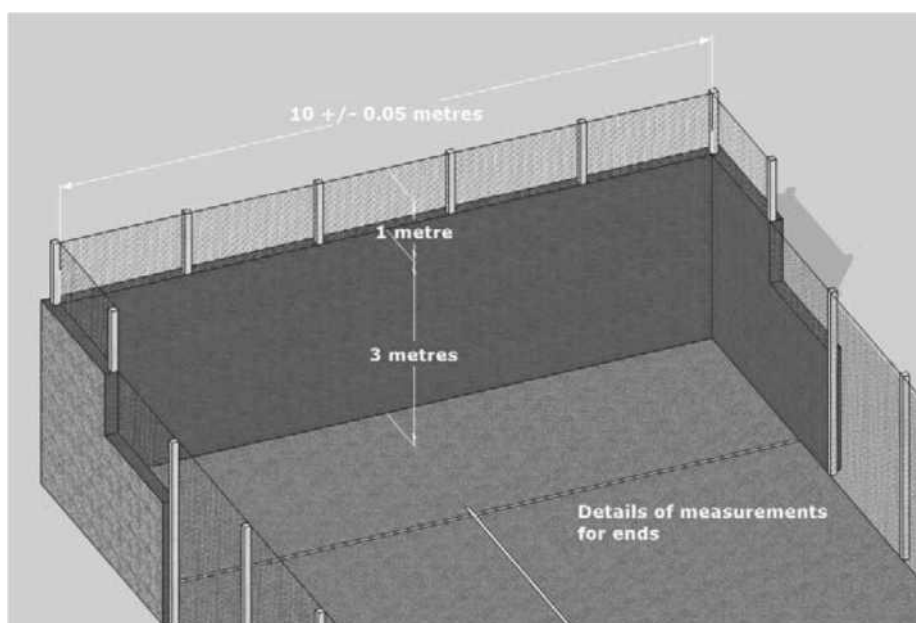


Figure 4 Padel court end size

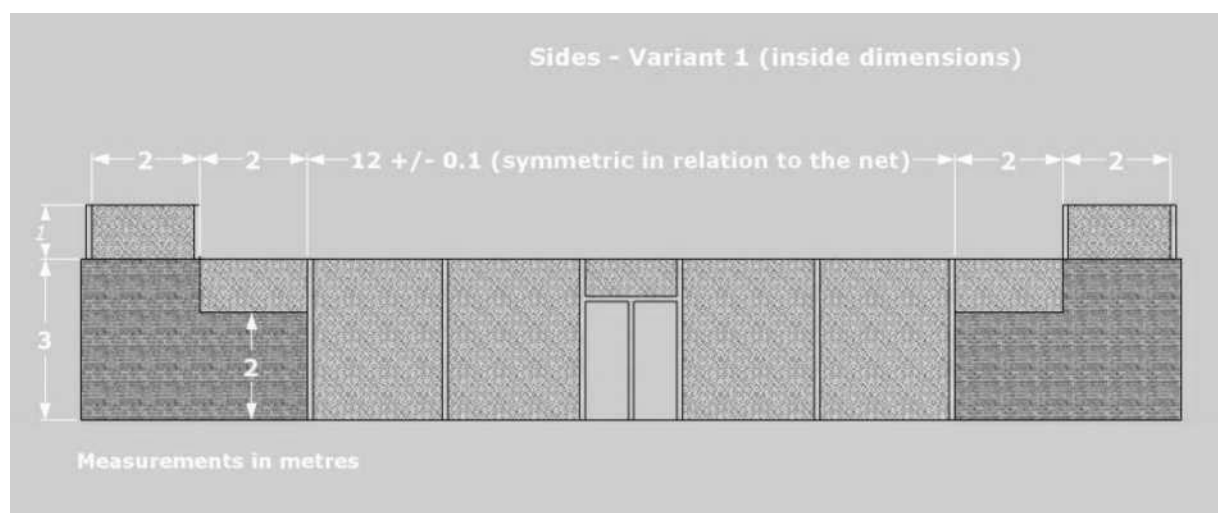


Figure 5 Padel court side size

4.3.2 Padel court height

The minimum height of the course is 6m, and there should be no obstacles to form a block in this height area.



Figure 6 Free height of padel court

4.3.3 Net

4.3.3.1 The length of the net is 10m, the center height is 0.88m, and the height of both ends is 0.92m. The maximum allowable tolerance is ± 5 cm, as shown in Figure 5.

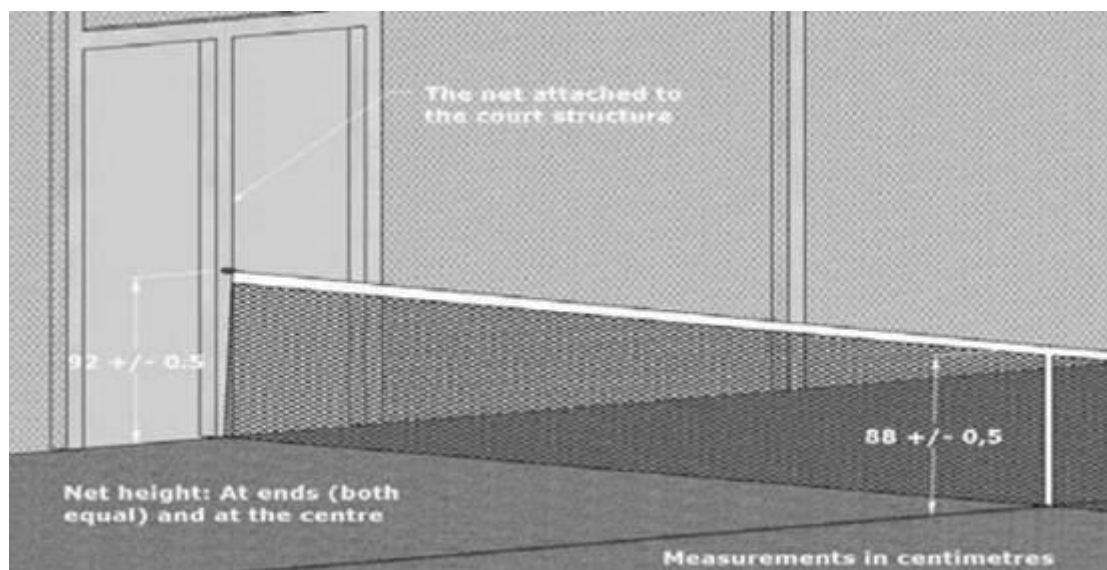


Figure 5 Net height

4.3.3.2 The two ends of the net are connected to two ball posts with a height of 1.05m, and two ends of the net need to be placed with stringing devices to prevent the net from slackening, as shown in Figure 6.

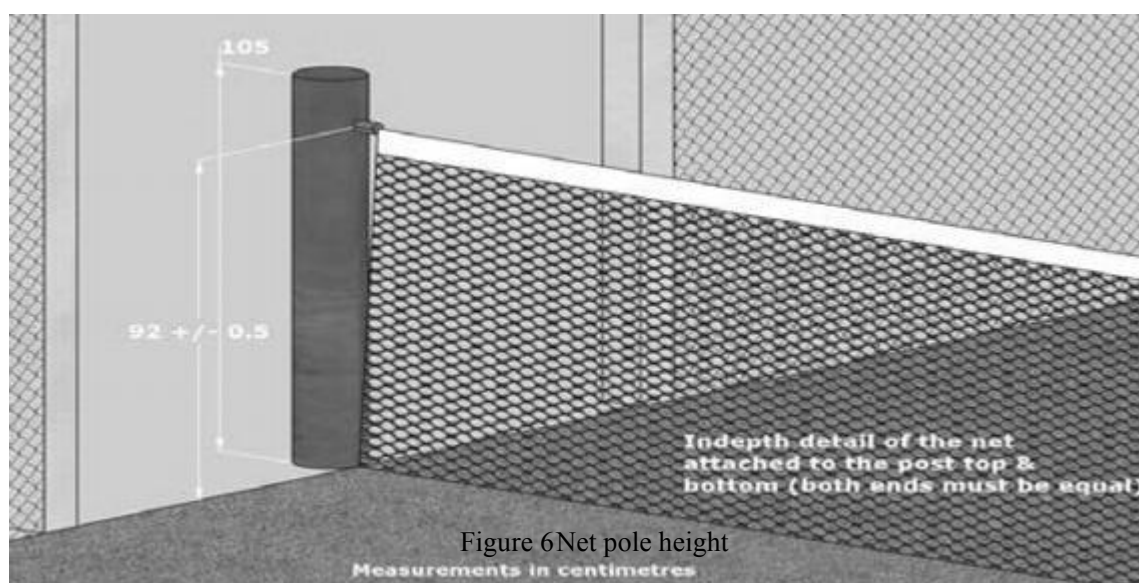


Figure 6 Net pole height

4.3.3.3 The outside edge of the net needs to be covered with a white bar, with a width of 5.0 to 6.3 cm, as shown in Figure 7.

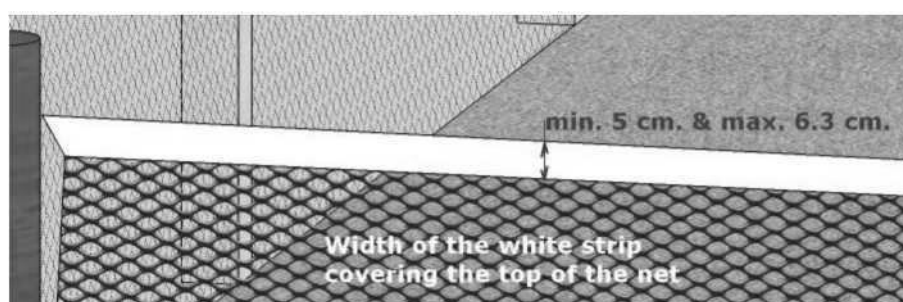


Figure 7 white strip

4.3.4 Mesh frame

4.3.4.1 The mesh frame is made by welding the frame and the mesh. The mesh spacing is 50mm and the diameter of the mesh is 4mm. No sharp protrusions are allowed at the weld, which will cause tennis scratches.

4.3.4.2 The surface of easily accessible parts during the movement shall be flat and free of sharp edges or sharp corners and burrs.

4.3.4.3 The mesh should be flat and without broken wires.

4.3.4.4 The structural parts such as screws and nuts that fix the frame should be fastened reliably, rust-proof and loosened.

4.3.5 Exit

There is an entrance in the middle of both sides of the site. The minimum opening size is 0.72mX2.00m and the maximum size is 1.00mX2.20m.

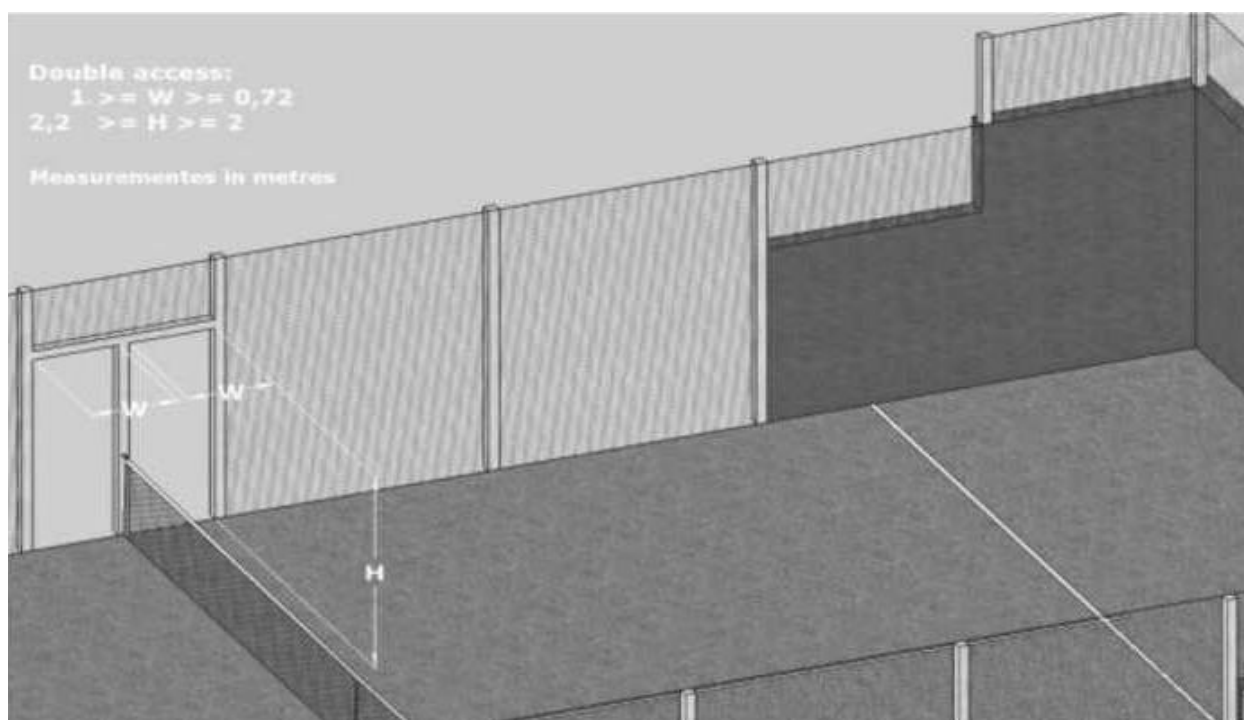


Figure 8 Exit

4.3.6 Light

The minimum vertical distance of the light from the ground is 6m, see Figure 9.

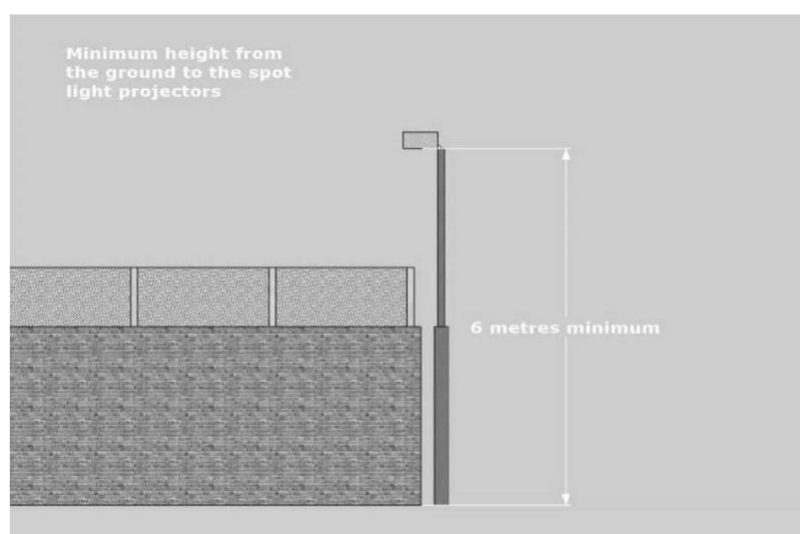


Figure 9 light height

4.4 Performance requirement

4.4.1 Net break force

The maximum breaking force of the net tested in accordance with 5.4.1 shall not be less than 2000N.

4.4.2 Mesh frame and top beam stability

4.4.2.1 Mesh frame

Inspection in accordance with 5.4.2.1, the seine frame shall not have any tilt or obvious permanent deformation in any direction.

4.4.2.2 Top beam

The top beams at both ends of the panoramic slab tennis fence shall be inspected in accordance with 5.4.2.2. The top beams shall be undamaged.

4.4.3 Wind load

Test according to the requirements of 5.4.4, the tempered glass should not be inclined or damaged in any direction, and the frame connected to the tempered glass should not show obvious permanent deformation.

4.4.4 Anticorrosion and aging properties of surface coatings and textile materials

4.4.4.1 Surface coating resistant to salt spray corrosion

After inspection in accordance with 5.4.5.1, no corrosion shall occur.

4.4.4.2 Surface coating aging resistance

After the test according to 5.4.5.2, the plastic coating shall not cause damage such as cracks or breakage.

4.4.4.3 Textile materials

After the aging resistance of textile materials is tested according to the requirements of 5.4.5.3, the breaking force shall meet the requirements of 4.4.1.

4.5 Electrical safety requirements

Should meet the requirements of GB31187.

4.6 Lighting requirements

When setting up lighting facilities, it shall meet the requirements of class II in TY / T1002.1-2005.

4.7 Lightning protection requirements

Should meet the requirements of GB 50057 and GB 50343.

5 Test method

5.1 Test condition

5.1.1 Facility stability performance, fatigue performance and impact resistance test shall be carried out under normal use or simulated use of the facility.

5.1.2 The allowable error of the test load is $\pm 5\%$

5.2 Examination of materials

5.2.1 Inspection of flame retardancy

5.2.1.1 Textile materials

The flame retardancy of textile materials is tested according to the method specified in GB / T 5455.

5.2.1.2 Other materials

The flame retardancy test of other materials is as follows:

Test preparation: Take a 150mmX150mm sample from the test material, a fiber layer disc (such as thin cotton cloth) consisting of overlapping thin fiber fabrics with a diameter of 25mm, a concentration of 96% alcohol, and a 10mL graduated cylinder or 2.5mL pipette.

Test procedure: 0.8g overlapping fiber layer discs are evenly soaked with 2.5mL of alcohol and placed in the middle of the sample, then ignited and allowed to burn naturally. After the combustion flame and afterglow are extinguished, measure on the surface of the sample The diameter of the remaining burning plaque (accurate to 1mm).

The test shall be carried out in an unventilated place.

During the combustion, if the fiber layer is turned over and the size of the burning plaque is affected, the sample should be replaced and tested again.

5.2.2 Hazardous substance inspection

5.2.2.1 The content of lead and chromium shall be inspected according to SJ / T 11363-2006.

5.2.2.2 The soluble lead content is tested in accordance with GB 6675.4-2014.

5.2.2.3 The phthalate content is tested in accordance with GB24613-2009.

5.2.2.4 Polycyclic aromatic hydrocarbons of plastic parts are inspected in accordance with SN / T 1877.2.

5.2.2.5 Polycyclic aromatic hydrocarbons of rubber parts shall be inspected in accordance with SN / T 1877.4.

5.3 Structural inspection

5.3.1 4.3.4 Perform a sensory test.

5.3.2 The dimensional tolerances in 4.3.1, 4.3.2, 4.3.3, 4.3.4.1, 4.3.5, and 4.3.6, except for specific requirements, the remaining undimensioned linear dimensions are in accordance with The inspection shall be carried out in accordance with the Class V regulations.

5.4 Performance examination

5.4.1 Net break force

Take a 400mm to 600mm sample from either end of the sample. Take necessary measures and avoid untwisting of the sample. The sample is clamped to a tensile testing machine, and the sample is stretched at a tensile speed of not more than 250 mm / min, and the reading is taken.

5.4.2 Stability testes

5.4.2.1 Mesh frame

At a height of 2000mm, a horizontal concentrated static load of 1500N was applied to the column, held for 1min, and visually inspected after unloading.

5.4.2.2 Top beam

At the top beams at both ends of the panoramic slab tennis fence, a force of 1500N is applied downward at the midpoint of the top beam and held for 1 min.

5.4.3 Wind load resistance

Formula according to 8.1.1-2 of GB50009-2012 for calculating the wind load standard value of the envelope structure:

$$W_k = \beta_{gz} \mu_{sl} \mu_z W_0$$

W_k ——— Wind load standard value
(kN / m²);

β_{gz} ——— Gust coefficient at height z;

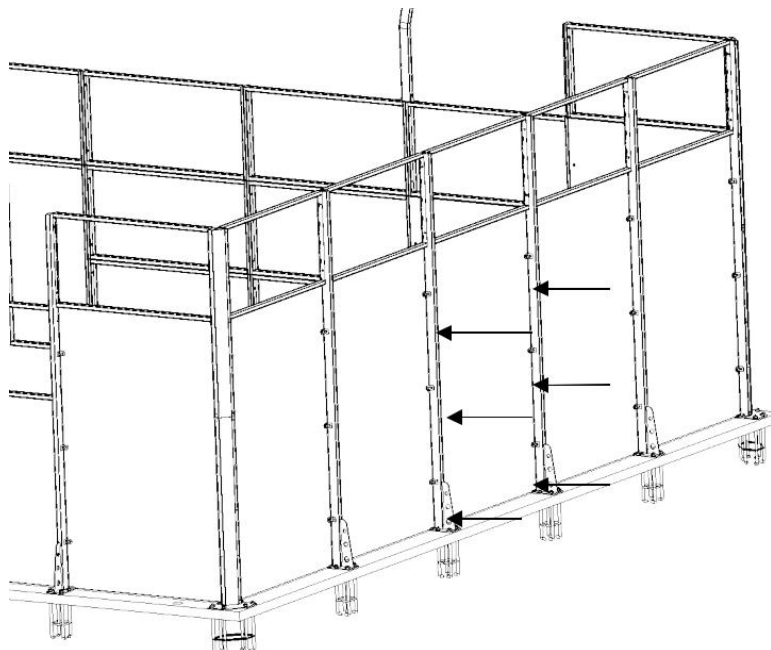
μ_{sl} ——— Local body shape coefficient of wind load;

μ_z ——— Coefficient of change in wind pressure height;

W_0 ——— Basic wind pressure (kN / m²).

Calculate $W_k = 1.7 \times 1.0 \times 1.0 \times 0.4 = 0.68 \text{ kN / m}^2$

The wind load standard value calculated from the above formula is used for wind resistance test. The tempered glass where the plate tennis fence is subjected to the greatest wind load is selected for simulated wind resistance test. The six ear plates connected to the tempered glass are simultaneously subjected to 680N. The horizontal lateral static load force is maintained for 1 minute and visually inspected after unloading (see Figure 12).



12 Schematic diagram of simulated wind load test

5.4.3.1 The max weight per square meter will bear - Portable padel court:
Total weight divides by portable foundation area: $8400\text{kg}/31\text{m}^2=174\text{kg}$

5.4.4 Surface coating and textile material properties

5.4.4.1 The surface coating's resistance to salt spray is tested in accordance with 5.4.2.9 of GB / T26941.1-2011.

5.4.4.2 The aging resistance of the surface coating is subject to the artificial aging test according to 6.9 of GB / T22040-2008.

5.4.4.3 The aging resistance of textile materials is tested in accordance with 6.2.13 of GB / T5725-2009.

5.5 Electrical safety inspection

Inspection shall be conducted in accordance with GB31187.

5.6 Lighting inspection

Carry out inspection in accordance with the provisions of Chapter 8 of TY / T1002.1-2005.

5.7 Lightning protection test

Inspection shall be conducted in accordance with the provisions of GB50057 and GB50343.

6 Installation

6.1 The installation of facilities should ensure that it is stable and reliable, and there should be no loosening of foundation and support components.

6.2 After installation of the facility, the straightness tolerance of the frame's peripheral finishing should not be greater than 50mm, and the verticality tolerance should not be greater than 1/100.

7 Signs and user manuals

It shall meet the relevant regulations in GB / T5296.1 and GB / T5296.7.