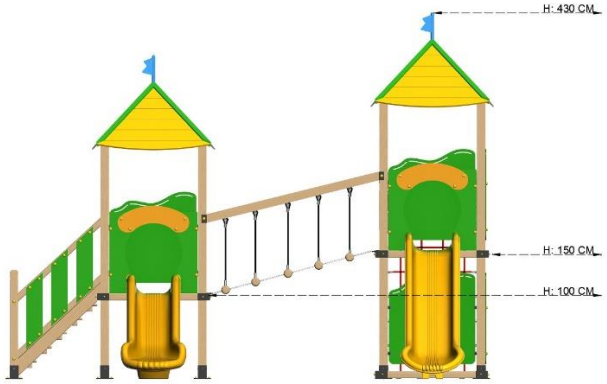
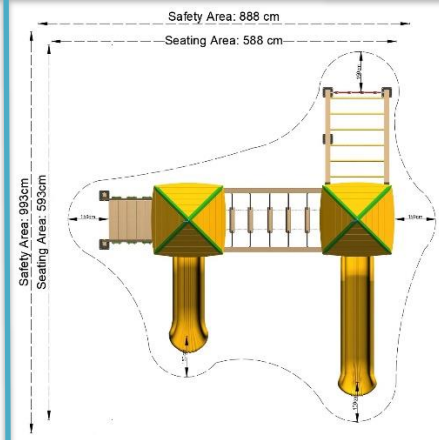
## WOOD/PLASTIC COMBINED PLAYGROUND

**MOG94**

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Merida Park Ekipmanları ve Peyzaj San.ve Tic.Ltd.Şti.

Şabanoğlu Osb Mah.Vali M.Erdoğan Cebeci Bulv.No:21 Tekkeköy / SAMSUN

Tel : 0362 439 33 15
Fax: 0362 439 33 16

info@meridapark.com
meridapark@gmail.com

| | | |
|---|---|---|
| MONKEY BAR | 1 | PCS |

**GENERAL SPECIFICATION**

Documents to be submitted to the Administration by the Relevant Person and/or Company during the Tender/Procurement Phase:

- TS EN 1176-1 / Playground equipment and surfacing – Part 1: General safety requirements and test methods.
- TS EN 1176-3 / Playground Equipment – Part 3: Additional specific safety requirements and test methods for slides.
- TS 13578 (Authorized Services – Rules for swing, seesaw, slide, etc., playground elements - SERVICE STANDARD CERTIFICATE).
- Corrosion report of 1600 hours showing that metal products with electrostatic powder coating are resistant to corrosion in open-air conditions according to the TS EN 9227 standard. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Test report of 800 hours showing that metal products with electrostatic powder coating are resistant to humidity according to the TS EN ISO 6270-1 standard. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Favorable test report of 504 hours showing that metal products subjected to electrostatic powder coating are resistant to color fading according to the TS EN ISO 16474-3 standard. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Test report showing non-flammability of metal products with electrostatic powder coating (for yellow, gray, green, white electrostatic powder paints on metal) according to BS EN 71-2:2011+A1:2014 standards. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Test report showing that metal products with electrostatic powder coating (for yellow, gray, green, white electrostatic powder paints on metal) do not contain substances harmful to children's health according to BS EN 71-3:2019 standards. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Favorable Turkish test report showing the analysis of Phthalates harmful to health in metal products with electrostatic powder coating. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Test report showing the PAH Test (for yellow, gray, green, white electrostatic powder paints on metal) in metal products with electrostatic powder coating in compliance with the AfPS GS 2019:01 norm. The report must be obtained from a test laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Favorable test report showing that Polyethylene products are resistant to color fading according to ISO 105 B02:1994 standards (for Red, Purple, Green, Yellow, Orange, Turquoise, and Blue). The light fastness value must be a minimum of 6. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).

- Favorable test report for 300 hours Xenon Arc Lamp test on Polyethylene products according to ISO 4892-2: 2013+AMD1: 2021. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Favorable Turkish test report for the Non-flammability test on Polyethylene products according to TS EN 71-2+A1 standards.
- Favorable Turkish test report showing that Polyethylene products do not contain substances harmful to children's health according to “TS EN 71-3 +A2:2025-01” standards. The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Favorable Turkish test report showing the analysis of Phthalates harmful to health in Polyethylene products (green, light green, yellow, dark yellow, orange, red, blue, purple, beige, anthracite, dark brown, black). The report must be obtained from a laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Test report showing the PAH Test on Polyethylene products in compliance with the AfPS GS 2019:01 norm. The report must be obtained from a test laboratory accredited by the Turkish Accreditation Agency (TÜRKAK).
- Favorable Turkish test report for the Flammability test according to BS EN 71-2: 2020 Safety of toys – Part 2 on Impregnated wood material.
- Favorable Turkish test report for the Migration of certain elements test according to BS EN 71-3: 2019 Safety of toys – Part 3 on Impregnated wood material.

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**SANDBLASTING AND ELECTROSTATIC POWDER COATING SPECIFICATIONS**

- Sandblasting: Sandblasting is a surface cleaning process that strengthens the paint's adhesion to the metal surface and completely eliminates undesirable defects such as rust, oil, and welding slag on the surface. Before electrostatic painting, the metal material must be subjected to surface cleaning by sandblasting for 4-5 minutes with S-330/390 type steel grids.
- Degreasing and Phosphating Washing Process: Metal products hung in the automatic paint booth system must be cleaned using pressurized liquid chemicals at a temperature of 80 degrees in the "oil" and "phosphate" bath.
- Rinsing Process: The cleaned metal products must be rinsed with high-pressure water using a liquid chemical with a passivation additive.
- Drying Process: The rinsed metal products must be dried with hot air at 100-110 degrees in a drying oven to remove the wetness remaining on the surface after rinsing.
- Painting Process: The dried metal products entering the painting cabin must be coated with polyester-based lead-free powder paint with automatic electrostatic guns to a thickness of 80-110 microns, and any areas with weak paint adhesion must be supported manually. Metal coatings must comply with the "TS EN 1176-1 ARTICLE 4.1.6 HAZARDOUS SUBSTANCES" classification. (Example: The ratios of zinc, sulfur, chromium, lead, carbon, etc., must be less than 1%).

- Baking Process: The painted metal products must be baked in a baking oven at a temperature of 200–220 degrees for a duration of 10 minutes to ensure the paint is properly cured.

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**WOOD MATERIAL GENERAL SPECIFICATIONS**

- The wooden raw material to be used for manufacturing shall be 1st Class Imported Scots Pine (Pinus sylvestris) timber or Larch Pine Timber. This will be asked during order process)
- Wooden cross-sections shall be manufactured with a maximum tolerance of ($\pm$) 5 mm according to the project, and wood lengths with a maximum tolerance of ($\pm$) 20 mm.
- All fastening elements must be galvanized. All fixed connections shall be made with stainless wood screws and/or polymarine adhesive.
- All wooden products shall be subjected to a vacuum impregnation process. When used naturally, wood is easily destroyed due to fungus, insects, and weather conditions, which reduces its service life. Impregnation must be applied to the wood to extend its service life.
- Finished wooden parts shall be subjected to impregnation or exterior wood preservative paint over varnish, according to preference.
- Properties of the Wood Material to be Used in Manufacturing:
- Knots: A maximum of 4 solid knots may be present per meter. The total diameter of the knots shall not exceed 1/4 of the piece's width. Decayed, defective, partially fused, or dropped knots shall not be present.
- Cracks: No ring cracks shall be present. Hairline cracks (1-2 mm) may be present. Head and length cracks suitable for the specifications resulting from the pressurized impregnation environment may be present, but must be within the tolerance limits.
- Resin Pockets: A maximum of 1 pocket may be present per meter, with a length not exceeding 10 cm. Dripping or running resin shall not be present. Inner bark shall not be present. Decayed cavities shall not be present. No insect holes shall be present. Manufacturing defects shall not be present; only deviations within the specified tolerances are acceptable.
- Bowing: Shall not exceed 1/50 of the piece's length. Warpage shall not exceed 1/100 of the piece's width. Twisting shall not exceed 2 mm per linear meter. Edge bending shall be tolerated between 1/50 and 1/100 of the piece's length.
- Sanding: All visible surfaces shall be sanded and cleaned of splinters.
- All fixed connections shall be made using stainless wood screws or galvanized bolts. All metal connections and bolts used in the system shall be installed by countersinking (recessing) them into the surface. The bolts shall be covered with polyethylene caps shaped by injection molding to protect them from external factors.
- The components to be subjected to the impregnation process shall undergo a vacuum impregnation procedure using a solution containing Tanalith-E, which is chromium, copper, and arsenic-free and does not affect human health, by applying approximately 12 atmospheres of hydraulic pressure. As a result of this process, the wood will turn green or brown.

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**IMPREGNATION**

- Unless a specific paint or wood color is requested, all wooden components shall be subjected to a vacuum impregnation process. When used naturally, wood is easily destroyed due to fungus, insects, and weather conditions, which reduces its service life. Impregnation must be applied to the wood to extend its service life. "Impregnation," which is the process of saturating wood with various chemical substances using different methods, makes the wood stronger than concrete and more durable than steel, preventing decay and increasing its lifespan by at least 5 times.
- Tanalith-E, which is chromium, copper, and arsenic-free and does not affect human health, shall be used as the impregnation material. Tanalith-E is a suitable wood preservative for protecting wooden materials that are in constant contact with soil and water. It is applied using the vacuum/pressure method.
- Dried wood material, brought as close as possible to its final usage dimensions, is placed in the vacuum-pressure cylinder. Air inside the cells is evacuated by applying a vacuum. While the system is kept under vacuum, the cylinder is filled with the Tanalith-E solution at the required concentration. Hydraulic pressure of approximately 10 atmospheres is applied to ensure the Tanalith-E solution penetrates the entire sapwood. The cylinder is emptied, and the pressure within the system is reduced by applying a second vacuum.
- When the system is exposed to the atmosphere, the surface solution is absorbed due to the low pressure inside the cells, ensuring the wood surface remains dry. Wood impregnated with Tanalith-E turns green or brown.
- The components to be subjected to the impregnation process shall undergo a vacuum impregnation procedure using a solution containing Tanalith-E, which is chromium, copper, and arsenic-free and does not affect human health, by applying approximately 12 atmospheres of hydraulic pressure. As a result of this process, the wood will turn green or brown.

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**SUPPORTING CONSTRUCTION**

- Supporting uprights (posts) shall be manufactured with a minimum size of 90x90 mm and in lengths compliant with TSE standards.
- The sharp edges of the battens used in the supporting construction shall be softened, and the surfaces shall be subjected to a sanding process to eliminate roughness.
- Furthermore, all the general properties of timber listed in the introductory part of the specification shall be ensured for the supporting construction.

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**FASTENING ELEMENTS**

- Connections for the supporting platform and railings shall be secured with galvanized bolts using minimum 10 mm thick threaded rods (gijon) and turned solid iron.
- The protrusion of all bolts and nuts used in the system shall be a maximum of 3 mm. They shall also be used by countersinking where permitted by the manufacturing process.

- Platform and railing connections must tightly wrap around the threaded rods and pipes forming the supporting construction without leaving any gaps. The protrusion of connections and fittings from the main construction must be a maximum of 16 mm to protect children's health. The protrusion of all bolts and nuts used in the system shall be a maximum of 3 mm. Plastic caps should be used at these points as long as the system and connection method allow.
- The paint materials used for coloring the connection materials and plastic caps made by the injection method must comply with food regulations suitable for children's health.

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- **STAIRS (LADDERS)**
- Stair railings shall consist of plastic railings with 70x40 mm horizontal supporting pine timber and vertical plastic railing pieces with a minimum thickness of 90 mm and a height of 800 mm, with their top and bottom points ovalized as shown in the technical drawing.
- Steps shall have a minimum foot-stepping depth of 140 mm and a maximum of 275 mm, a riser height between 110 mm and a maximum of 230 mm, and a width of at least 610 mm compatible with the connected platform. Stairs shall be created by joining side-by-side battens with a minimum size of 45x90 mm and lengths varying according to the height of the stair to be created. Battens with a minimum size of 45x90 mm shall be fixed underneath these battens for support, with at least 2 pieces according to the stair height and number of steps.
- The stair providing access from the ground to the platform shall have two wooden supports of at least 45x90 mm. The stair construction shall be formed by extending wooden battens of at least 45x90 mm from these two supports to the platform.
- Each step shall be positioned so that there is no gap when viewed from above.
- The steps shall be at equal intervals.
- The height of the handrail (balustrade) shall be at least 600 mm and a maximum of 860 mm from the tread surface.
- Stairs shall be manufactured in groups of a minimum of four and a maximum of eight steps, capable of reaching an elevation difference of a minimum of 800 mm and a maximum of 1200 mm from the ground to the platform and from platform to platform.
- The step height of the stairs shall be a minimum of 110 mm.
- The gaps between the spindles (balusters) of the stair railing from platform to platform shall comply with the general safety rules of TS EN 1176-1.
- According to the detail in the technical drawing, the gaps between the handrails shall be covered with polyamid or solid wood battens, provided they comply with safety rules.

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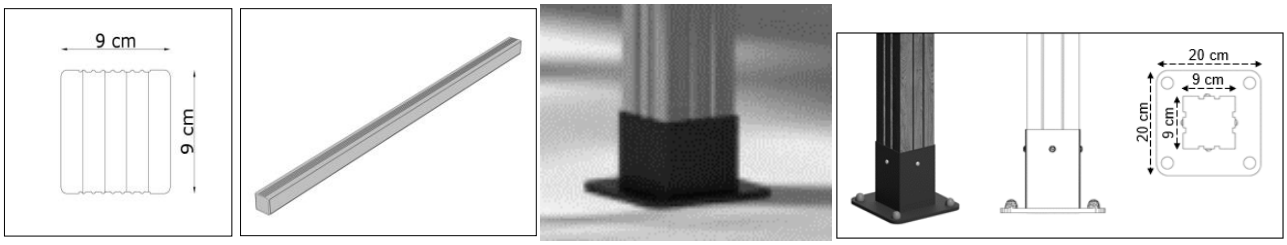
**SUPPORTING CONSTRUCTION**

- Supporting uprights (posts) must be manufactured in minimum dimensions of 90x90 mm and in lengths compliant with TSE standards.
- The sharp corners of the battens used in the supporting construction shall be softened, and the surfaces must be subjected to a sanding process to eliminate roughness.

- Furthermore, all the general properties of timber listed in the introductory part of the specification shall be ensured for the supporting construction.
- 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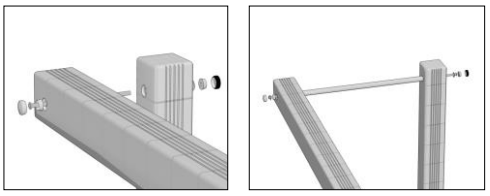
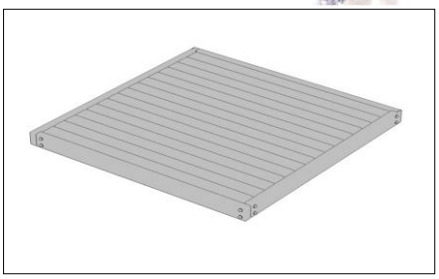
**FASTENING ELEMENTS**

- Connections for the supporting platform and railings shall be secured with galvanized bolts using minimum 10 mm thick threaded rods (gijon) and turned solid iron.
- The protrusion of all bolts and nuts used in the system shall be a maximum of 3 mm. They shall also be used by countersinking where permitted by the manufacturing process.
- Platform and railing connections must tightly wrap around the threaded rods and pipes forming the supporting construction without leaving any gaps. The protrusion of connections and fittings from the main construction must be a maximum of 16 mm to protect children's health. The protrusion of all bolts and nuts used in the system shall be a maximum of 3 mm. Plastic caps should be used at these points as long as the system and connection method allow.
- The colorants used for the connection materials and plastic caps made by the injection method must comply with food regulations suitable for children's health.



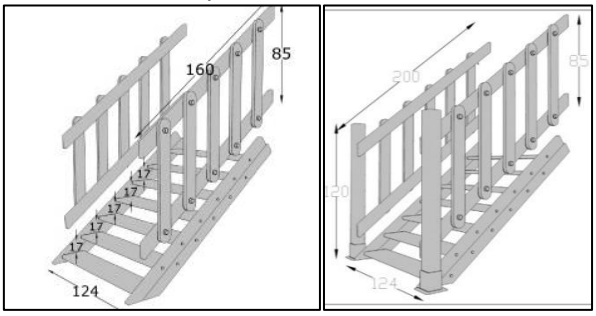
**SQUARE PLATFORM**

- Platforms with a minimum size of 900x1150mm and a minimum size of 40x90mm and the lengths of which vary according to the platform model to be created, platforms will be created by coming together.
- Depending on the platform model, minimum 40x90mm laths will be fixed to these laths as at least 2 laths for support purposes.
- Square platforms will have a minimum area of 1.00 m2.
- Platform connections and shapes will be in accordance with TS EN 1176-1 general safety rules.
- The corners of the platforms will be manufactured in such a way that there is no opening to surround the main carrier construction.



**WOODEN STAIRS**

- Stairs will be formed by juxtaposing laths with a minimum height of 140 mm, a maximum of 275 mm, a pier height of 110 mm and a maximum of 230 mm, with a height of 110 mm and a maximum of 230 mm.
- Depending on the height of the stairs and the number of steps, minimum 45x90mm laths will be fixed to these laths as at least 2 for support purposes.
- There will be two wooden carriers, at least 45x90mm in size, on the ladder that will allow access from the ground to the platform. A staircase construction will be formed by extending wooden laths of at least 45x90mm size from these two carriers to the platform.
- Each step will be in a position where there will be no gaps when viewed from above.
- The digits will be evenly spaced.
- The height of the handrail will be at least 600 mm and at most 860 mm from the printed level.
- Ladders will be manufactured in groups of minimum four and maximum eight steps, so that they can reach a height difference of minimum 800mm and maximum 1200mm from the ground to the platform and from the platform to the platform.
- The step height of the stairs will be a minimum of 110mm.
- The handrails on the stair railings leading from the platform to the platform will be in accordance with the general safety rules of TS EN 1176-1.
- According to the details in the technical drawing, the gaps of the handrails will be closed with polyamide or solid wood latches, provided that the safety rules are followed.




**WOODEN SQUARE ROOF**

- Square roof minimum 1250x1250mm. in size and minimum 500mm. will be in height. Minimum 1000mm between the lower edge of the eaves of the roofs and the platform. there will be clarity.
- The square roof will be made of woods in the form of overlapping mansions or by superimposing the paneling in accordance with the technical drawing.
- A minimum of 40 mm x 90 mm sized main connection pieces and a minimum 30 mm x 40 mm sized yellow pine timber will be used on the edges and connections of the square roof.
- The woods to be used on the square roof will be painted with colored outdoor wood preservatives or vacuum impregnated as indicated in the picture and technical drawing of the playset.

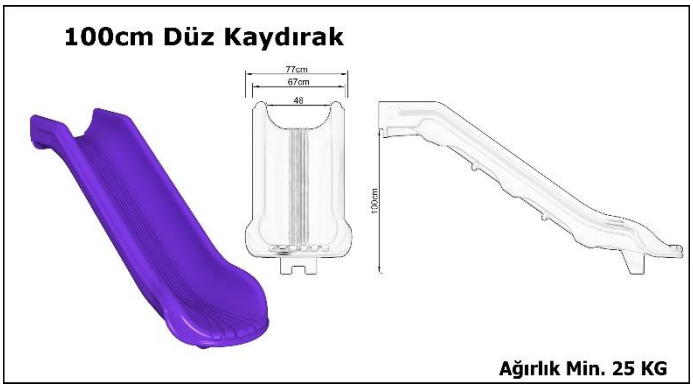
Merida Park Ekipmanları ve Peyzaj San.ve Tic.Ltd.Şti.
Şabanoğlu Osb Mah.Vali M.Erdoğan Cebeci Bulv.No:21 Tekkeköy / SAMSUN
Tel : 0362 439 33 15
Fax: 0362 439 33 16
info@meridapark.com
meridapark@gmail.com

**POLYETHYLENE SLIDES**

- The exit point radius of the slide front shall form a curve with a diameter of **50 mm**.
- The angle the slide makes with the horizontal plane must not exceed **60*** at any point and an average of **40***
- The side protection height of the slide must not be less than **15 cm**.
- The sliding width on the slides must be greater than **950 mm** or less than **700 mm**.
- Slides must be designed to **not retain water** and to **prevent water accumulation**.
- A handrail (slide entry barrier) must be provided at the entrance of the slides, ranging between **600 mm** and **900 mm**.
- For mounting the slide to the ground, an anchor created by bending **5 mm thick sheet metal** must first be fixed to the slide leg and then secured to the ground with an **M12 steel dowel**.

**Straight Slide (h: 100 cm)**

- It must be manufactured as a **double-walled, single piece** to be connected to platforms with a height of **100 cm**.
- The slide must weigh at least **25KG** and be **self-colored**.
- The length of the slide exit point must be at least **30 cm**.
- There should be **no roughness** on the product surface caused by the mold where a hand could get caught.




**POLYETHYLENE SLIDE ENTRANCE BOARDS**

- Polyethylene slide entrance panels should be connected to the main support pipes with plastic clamps.
- The boards should be produced in numbers or in different figured surface shapes and should bring activity to the playgroup.
- The letters, numbers and figures on the polyethylene slide entrance panels should not be gluing afterwards, and should be self-colored.
- The wall thickness of the panels should be 4-6mm thick, and the dimensions and weights specified in the technical drawing.

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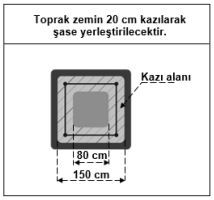
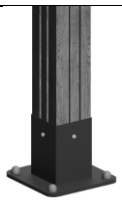
Tel : 0362 439 33 15
Fax: 0362 439 33 16
info@meridapark.com
meridapark@gmail.com

## Playground installation

| Montage type | Montage image |
|---|---|
| **SOIL GROUND**<br>• After planning the area where the playground unit will be installed, the locations for the posts must be excavated to a depth of a minimum of 20 cm and a maximum of 25 cm.<br>• The tower posts should be placed into the excavated areas, ensuring they are level.<br>• The platforms, stairs, and polyethylene components must be connected, the bolt components tightened, and after the tower is leveled, it must be concreted with a mixture of gravel and cement. |  |
| **CONCRETE GROUND**<br>• The area where the playground unit is to be installed must have been poured with C20 quality concrete to ensure it is level.<br>• A square flange, measuring at least 150x150mm and at least 4 mm, must be mounted to the base of the tower posts (the side that contacts the ground) using appropriate wood screws through the mounting holes.<br>• After the playground unit is installed and leveled, the tower posts must be secured to the ground using 4 steel anchors (dowels) through the holes in the flanges attached to the posts. |  |
| ***CONCRETE GROUND INSTALLATION***<br>*For installation on concrete ground,* ***M12 Clip-type Through Anchors (Expansion Anchors)*** *must be used, manufactured from* ***cold-formed carbon steel*** *with a minimum of* ***5 µm zinc coating****.* |  |

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