PADELSPAN / TECHNICAL DOCUMENTATION

Football Cage Foundation Construction Guide: 15 × 25 m

A complete contractor reference for the documented 15 × 25 m football cage arrangement, with original foundation drawings, eight technical tables and the construction-to-handover sequence. Confirm the reference details against the actual ground, wind exposure, equipment and approved order drawing before work starts.

For owners, local engineers and installation contractors

Use this manual with the confirmed equipment layout and the site-specific design. The documented arrangement, construction sequence and reference values are reproduced for coordination; ground, drainage, wind, frost, anchorage and local requirements must be confirmed for the actual project.

PadelSpan Technical Team | English edition | Revision 1.0

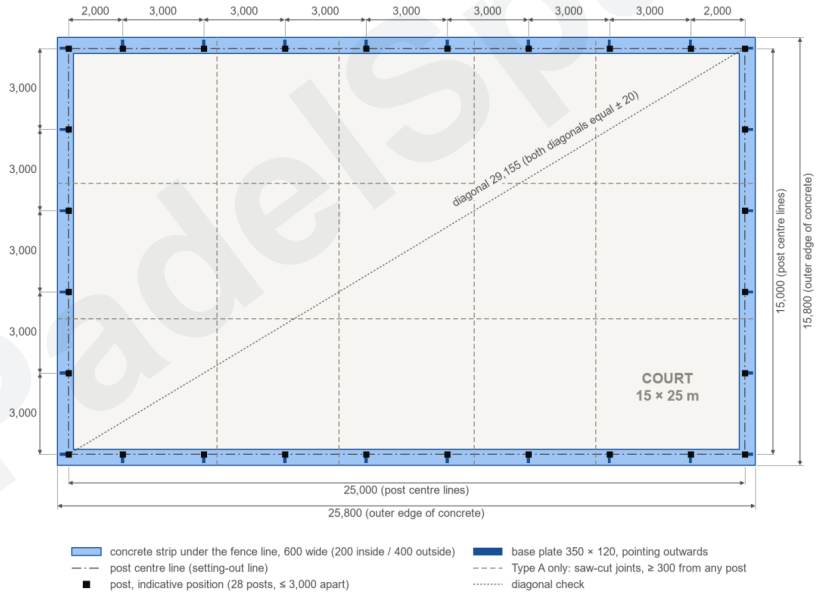


Figure 1. Reference setting-out plan, dimensions in millimetres. The 15 × 25 m dimension is between post centre lines; the order-specific layout drawing controls actual post and opening positions.

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Construction figures use the supplied source images without pixel changes. Tables are typeset from the verified source data for readable text and printing. Edition corrections and project-confirmation points appear with the relevant section.

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The reference arrangement at a glance

The documented arrangement uses a continuous, level concrete strip under the fence line: 600 mm wide, extending 200 mm inside and 400 mm outside the post centre line. It supports the enclosure continuously rather than providing a separate footing for each standard post. The playing area has its own firm, flat surface base.

The reference specifies C30/37 concrete outdoors, with XC4 + XF1 exposure classes, and C25/30 indoors. Its fence-line tolerances are ±5 mm between neighbouring post positions and ±10 mm across the court. Standard posts use four M12 bonded anchors installed after the concrete has reached the required age and strength; the reinforcement-free anchoring zone is detailed below.

- Choose Type 0, A, B or C around the existing floor, cover, surface and drainage conditions.
- Use the order-specific setting-out drawing for actual posts, doors, goals and plate directions.
- Keep the anchor zone clear before casting and obtain the selected anchor's product assessment and installation instructions.
- Complete the twelve-point handover checklist with site photographs and test results before enclosure installation.

1. Scope and responsibilities

This PadelSpan manual presents the foundation and base details for the documented 15 × 25 m football cage reference arrangement. The local engineer must confirm or revise the design for the actual soil, frost, groundwater, site wind and national requirements, including applicable National Annexes. The order-specific setting-out drawing controls the final post and opening positions.

The reference dimensions, reinforcement, loads and tolerances below are not universal values for every football cage. Agree the actual design and responsibilities before procurement; where applicable national requirements are stricter, they govern.

Work package	Responsible party
Survey, soil check, permits	Client / local engineer
Earthworks, drainage, sub-base, concrete, asphalt	Local contractor
Cable ducts and power supply for lighting (if ordered)	Local electrician
Setting-out drawing with the post positions for your order	PadelSpan
Steel court: posts, beams, kick boards, mesh, doors, goals	PadelSpan
Anchors	PadelSpan if listed in the packing list of your order, otherwise the local contractor (Section 8)
Artificial turf (if ordered)	Turf supplier

2. Court arrangement and reference foundation loads

The documented enclosure is 3.0 m high, with 50 × 50 × 2 mm steel posts at intervals no greater than 3.0 m, top beams, 0.9 m high steel kick boards and mesh above. Goals, optional basketball units and optional 6 m lamp posts are attached to the posts. Each standard post has a welded 350 × 120 × 10 mm base plate and a 10 mm stiffener. Plates point outwards in the illustrated arrangement.

The source treats each post as carrying less than 1 kN, approximately 100 kg, of vertical load and concentrates on bending from wind and player contact. Its table records the following design assumptions. These do not establish capacity for every wind condition, ground condition or attachment; the engineer must verify the complete load path, supporting ground, foundation stability and selected fastening for the actual configuration.

Fence wind resistance is a separate site-dependent check in the source, referring to EN 1991-1-4. Identify high wind exposure before ordering. Do not attach banners, wind screens or advertising boards to the mesh without written configuration approval and a revised load review; closing open mesh changes the wind action.

Design value	Reference value	Source basis and project qualification
Post section	50 × 50 × 2 mm steel tube	plastic moment 1.6 kNm (S235) to 2.5 kNm (S355)
Design moment per post at the base, MEd	3.0 kNm	≥ 1.2 × the plastic moment of the post
Design shear per post, VEd	3.0 kN	Source upper-bound assumption for wind and impact; verify the actual site and configuration.
Vertical load per post	< 1 kN	Source treats this load as secondary; include it in the complete project verification.
Design tension per anchor, NEd	10 kN	rigid plate turning about the far anchor row: 3.0 kNm / 0.150 m = 20 kN per row of 2
Design shear per anchor, VEd	1.0 kN	3.0 kN shared by 3-4 anchors
Stability of the 600 × 500 ring beam	2.2 × MEd	self-weight only, 22.5 kN per 3 m between posts, lever 0.30 m
Ground pressure	< 50 kPa	Source assumption about compacted ground; bearing, settlement and frost suitability require site verification.

Source-table note: Original reference load table. The numerical values and stated assumptions belong to this documented arrangement; the accompanying notes require site-specific wind, ground, stability and fastening verification.

3. Choose the foundation type

The four source options share the same fence-line strip width and position, with a level top to suit the fixed beam and kick-board lengths. Open-air Types B and C are designed to drain through their surface build-up and are laid level or with a fall no greater than 0.5% in this reference.

The source proposes Type C for open-air turf courts and describes it as its lowest-cost option; that is not a project quotation. Existing-floor reuse, total cost and drainage suitability depend on site investigations and the selected surface. An uncovered Type A slab requires an agreed drainage detail.

Base option	Use	Build-up (top to bottom)	Notes
0 Existing indoor floor	Indoors, on an existing concrete floor	Existing slab ≥ 150 mm, concrete ≥ C20/25, sound and without wide cracks	Source proposes reuse without new groundworks. Check slab thickness with test holes at 3-4 post positions, condition, anchorage and flatness (Section 10) before accepting reuse.

Base option	Use	Build-up (top to bottom)	Notes
A Concrete slab with thickened edge	New indoor floor; outdoor court under a roof	Slab 150 mm with mesh; thickened edge 600 × 400 under the fence line; sub-base 250 mm	Source describes this as its simplest new-base option. Turf is laid on the slab. An uncovered outdoor slab requires an agreed drainage detail.
B Ring beam + porous asphalt	Outdoors	Porous asphalt 60-70 mm in 2 layers; sub-base 250 mm; ring beam 600 × 500	Firm surface that drains through. Laid level.
C Ring beam + unbound permeable base	Outdoors, with artificial turf (recommended)	Levelling layer 40-50 mm; sub-base 250 mm; ring beam 600 × 500	Source-proposed permeable build-up under turf, described there as lowest-cost; confirm project cost and suitability. The source refers to national rules such as DIN 18035-7 for details.

Source-table note: Original comparison table for Types 0/A/B/C. Its cost and suitability notes describe the source proposal; actual selection follows the project assessment.

4. Setting out and approximate quantities

Set out a post-centre-line rectangle of 25,000 × 15,000 mm. The source diagonal is 29,155 mm and the two measured diagonals may differ by no more than 20 mm. The strip extends 200 mm inside and 400 mm outside the centre line, giving an outer concrete footprint of 25,800 × 15,800 mm.

The plan shows indicative post positions. For goal recesses, wider door bays or inward-pointing plates, follow the actual order drawing and maintain the specified minimum 135 mm anchor edge distance. The continuous strip accommodates later-drilled anchors; it does not remove the need to verify every connection location.

The following quantities reproduce the source estimate for this layout and exclude waste. They are not an order or a final bill of quantities. Recalculate openings, actual geometry, laps, disposal, construction allowances and changes before purchase.

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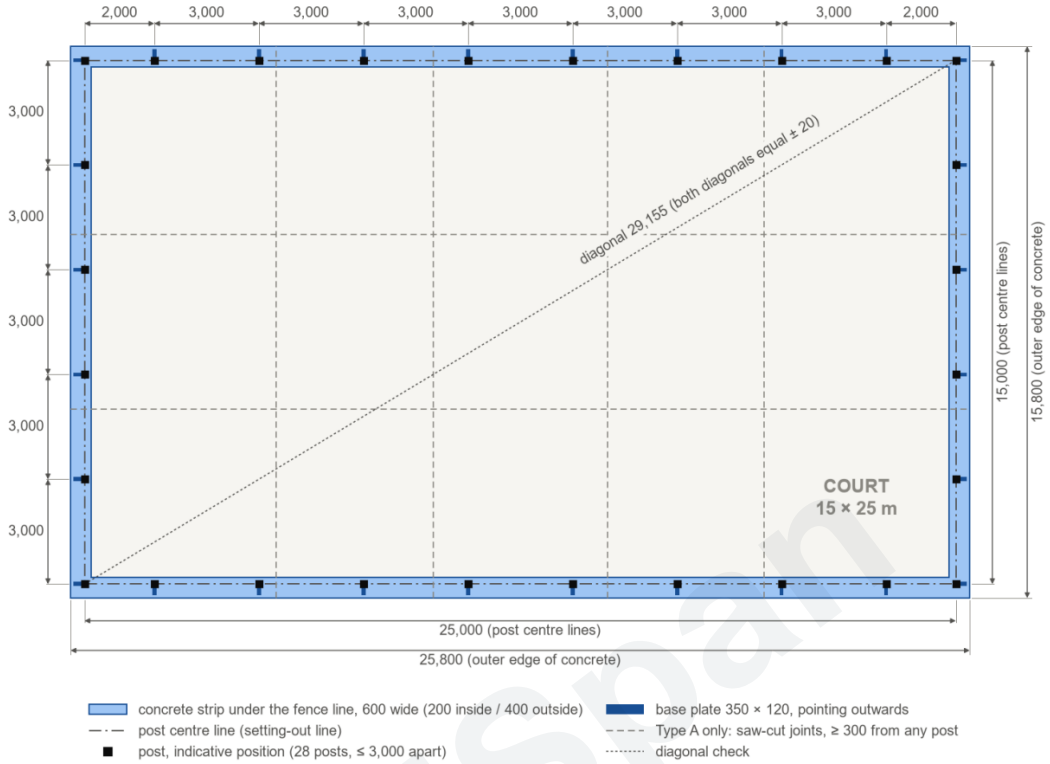


Figure 1. Reference setting-out plan, dimensions in millimetres. The 15 × 25 m dimension is between post centre lines; the order-specific layout drawing controls actual post and opening positions.

Item (approximate, without waste)	Type A	Types B and C
Area inside the post centre lines	375 m²	375 m²
Length of the strip (on its centre line)	80.8 m	80.8 m
Concrete	slab 61 m³ + edge 12 m³ = 73 m³	ring beam 24 m³ + blinding 2.8 m³
Reinforcement	mesh Ø8/150 ≈ 408 m² + 4 Ø12 × 81 m + links	4 Ø12 × 81 m + about 269 U-links Ø8
Crushed-stone sub-base, compacted	≈ 102 m³	≈ 90 m³ (inside the ring)
Levelling layer or porous asphalt	-	≈ 359 m²
Anchors M12	112 + 10 % spare	112 + 10 % spare

Source-table note: Original quantity table, approximate and excluding waste. Confirm the final takeoff against the order-specific layout and project details before purchase.

5. Ground and sub-base

Remove topsoil, roots and soft material across the whole court and 0.5 m beyond it. Proof-roll the subgrade and replace soft spots. The reference acceptance is at least 95% Standard Proctor density, referring to EN 13286-2, or Ev2 ≥45 MPa in a plate-load test. Shape the formation to the drainage arrangement. On clay or silt, include a separation geotextile.

The sub-base is crushed stone 0/32 or 0/45, referring to EN 13285 and aggregates to EN 13242. The compacted thickness is 250 mm, reduced to 150 mm under the Type A thickened edge. Place layers no thicker than 150 mm and compact each to at least 98% Standard Proctor, or Ev2 ≥80 MPa with Ev2/Ev1 ≤2.5.

The source assumes a frost-safe build-up can support the continuous strip without taking a separate footing down to frost depth. The local engineer must verify that assumption against frost-susceptible soil, groundwater, climate and national practice; it is not a general exemption. Do not build on fill, peat or soft clay without the engineer's assessment.

6. Concrete works: section key

The two original sections show the outside of the court on the left. Their hatched zone is reserved for anchor drilling and must stay free of reinforcement in the documented arrangement. Read the numbered layers together with the reinforcement, drainage and anchoring requirements below. Dimensions on the drawings are in millimetres.

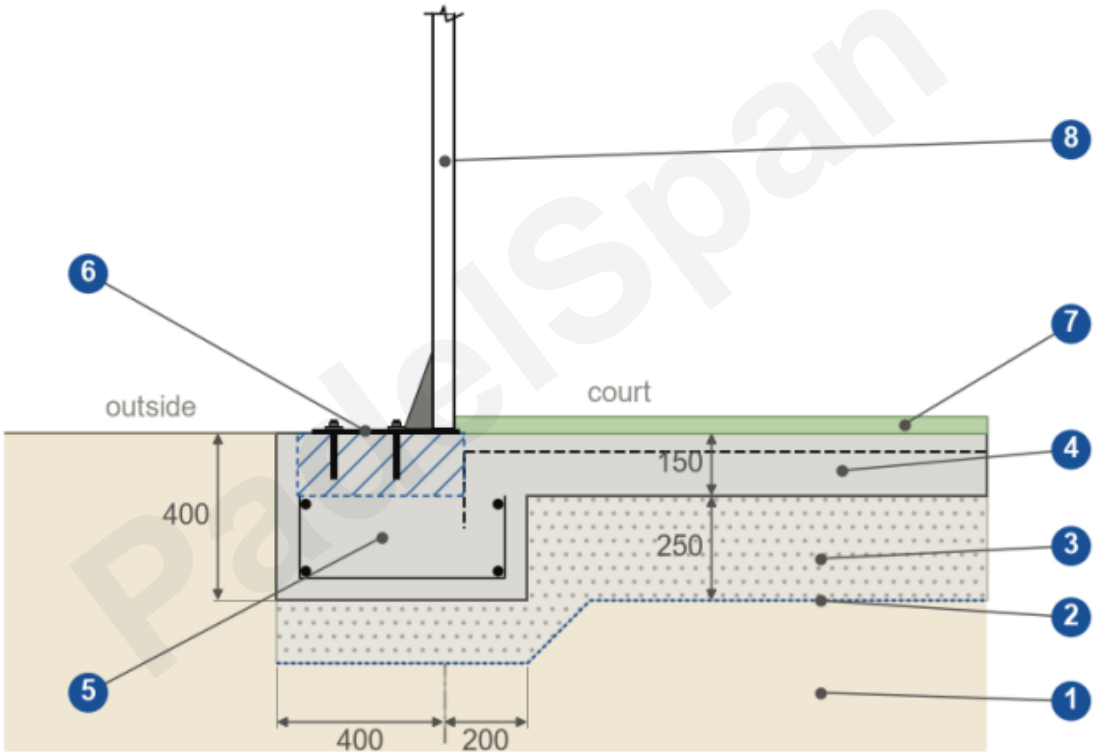


Figure 2a. Type A reference section at a post. Outside is on the left. The numbered layers are identified in the section key; the hatched anchoring zone is kept free of reinforcement.

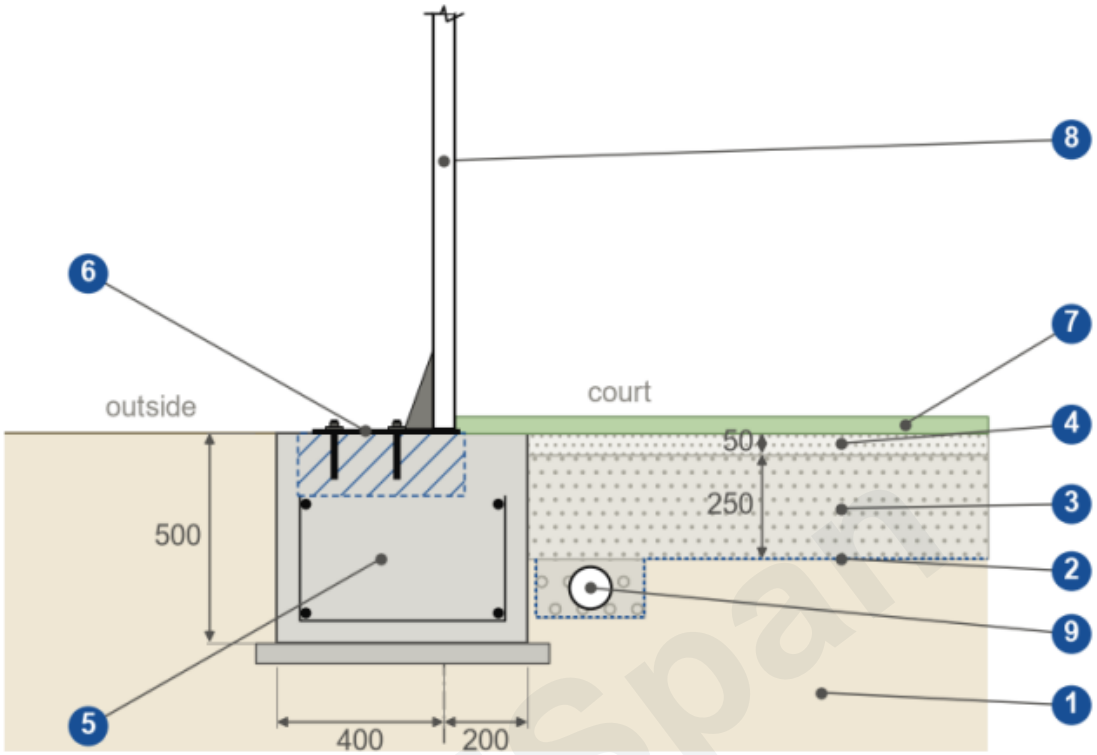


Figure 2b. Types B/C reference section, with Type C shown. The ring beam is 600 × 500 mm in this arrangement; drainage provision remains subject to the site design.

Item number	(a) Type A	(b) Types B / C (Type C shown)
1	Subgrade, ≥ 95 % Proctor or Ev2 ≥ 45 MPa	Same
2	Separation geotextile (on clay or silt)	Same, also around the drain trench
3	Crushed-stone sub-base 0/32-0/45, 250 mm (150 mm under the edge)	Crushed-stone sub-base 0/32-0/45, 250 mm
4	Slab 150 mm C30/37 (indoors C25/30), mesh Ø8/150, 40-50 mm below the top	Type C: levelling layer 0/5-0/8, 40-50 mm. Type B: porous asphalt 60-70 mm
5	Thickened edge 600 × 400, 2 + 2 Ø12, U-links Ø8/300 open at the top	Ring beam 600 × 500 C30/37, 2 + 2 Ø12, U-links Ø8/300 open at the top, on 50 mm blinding
6	Base plate, 4 bonded anchors M12 (Section 8)	Same
7	Artificial turf (and shock pad if specified), by the turf supplier	Same
8	Post 50 × 50 with the 0.9 m kick board (fence line)	Same
9	-	Drain DN 100, perforated, in a gravel trench, only where needed (Section 7)

Source-table note: Original section key for Figures 2a and 2b; dimensions and build-ups are those of the documented reference arrangement.

6.1 Type A: slab with thickened edge

The source slab is 150 mm thick: C30/37 outdoors with XC4 + XF1 exposure classes, or C25/30 indoors. It specifies maximum aggregate size 16-22 mm and consistence S3 or S4. The thickened edge is 600 mm wide and 400 mm deep measured from the top.

Edge reinforcement is two Ø12 B500 bars at 150-170 mm below the top and two Ø12 bars near the bottom, with Ø8 U-links at 300 mm centres, open at the top. The slab mesh is Ø8 at 150 × 150 mm, B500, positioned 40-50 mm below the top and lapped by two mesh squares. Stop the mesh 50 mm inside the post centre line and turn it down into the edge so it stays out of the anchor zone.

For an indoor ground-bearing slab, the source includes a 0.2 mm polyethylene sheet beneath the slab. The surface is power-floated, smooth and closed, and must meet the handover flatness criteria.

The reference contraction joints are saw-cut 3-4 mm wide and 45-50 mm deep, about one third of the slab thickness, within 6-24 hours. It uses approximately 5 × 5 m bays with no bay dimension over 5.5 m. Keep joints at least 300 mm from every post in the actual layout. Fill the joints flush before laying turf; confirm the cutting window and joint plan for actual concrete and site conditions.

6.2 Types B and C: ring beam

The reference ring beam is 600 mm wide by 500 mm deep, cast on 50 mm C12/15 blinding. The beam concrete is C30/37 with XC4 + XF1 exposure classes. Reinforcement comprises two Ø12 bars at 150-170 mm below the top and two Ø12 bars near the bottom, with Ø8 U-links at 300 mm centres open at the top. The source specifies 600 mm laps and L-bars at corners.

Set the ring-beam top level with the top of the levelling layer or asphalt, so turf meets the kick boards without a step. Before casting, install DN110 sleeves through the beam for drainage outlets and cable ducts. Cast continuously where practical; if a construction joint is required, the reference places it halfway between posts, subject to the actual joint design.

6.3 Concrete quality, curing and release

The source refers to EN 206 for concrete specification and supply and EN 13670 for execution. Its reinforcement cover is 50 mm, increasing to 75 mm where concrete is cast directly against soil. Confirm concrete mix, exposure, reinforcement positioning and inspection records before the pour.

Keep the concrete moist or apply an appropriate curing compound for at least seven days in the reference procedure, longer below 10°C. Protect it from frost. Do not cast on frozen ground or below +5°C without cold-weather measures.

Take one set of cubes or cylinders per pour and test compressive strength as specified for the project, with EN 12390-3 referenced in the source. Provide the 28-day results. The reference waits 28 days before installing anchors; earlier installation requires both permission in the selected anchor's ETA and demonstrated concrete strength. Product-specific installation and curing requirements still apply.

7. Playing-surface base and drainage

Type C uses a 40-50 mm levelling layer of fine crushed stone 0/5 to 0/8 over the 250 mm sub-base, laser-graded and compacted. The reference is level or has at most 0.5% fall. Type B uses two layers of porous, open-graded asphalt, 60-70 mm total, over the sub-base and laid level.

The source requires the base to drain faster than the turf. Obtain the chosen turf system's infiltration value; EN 12616 is the referenced test. Check the complete water route, including underlying ground, outlets and any permitted discharge connection, rather than assuming permeability at the surface is sufficient.

For sand or gravel, the source assumes infiltration into the ground; verify actual infiltration and groundwater conditions. For clay or silt it shows DN100 perforated drains in gravel-filled trenches below the sub-base: one along the inside of each long side, plus cross drains about 5 m apart. It specifies at least 0.5% fall to outlets passing through the beam sleeves and then to site drainage or a soakaway.

Types 0 and A assume a level indoor or covered slab without a dedicated drainage network in the source. Confirm that exclusion against cleaning water, rain entry, roof runoff and the actual exposure before adopting it. The turf supplier installs turf after the fence and cuts it around posts and kick boards; the source refers to EN 15330-1.

8. Post fixing and anchors

The fence is set out, assembled and aligned before anchors are drilled through the base-plate holes, so this reference does not use cast-in anchors. The protected drilling zone extends from 50 mm inside to 350 mm outside the post centre line, with the top 150 mm of concrete free of reinforcement. If drilling encounters steel, stop and consult the engineer; do not cut the strip's main reinforcement.

The reference schedule below gives geometry and design actions, not the demonstrated capacity of an unspecified anchor product. Select an actual product with the relevant ETA and verify its resistance for the concrete, embedment, edge distances, spacing and combined loading. EAD references identify assessment families; they are not product approvals. The original figure labels and numerical schedule are retained for coordination.

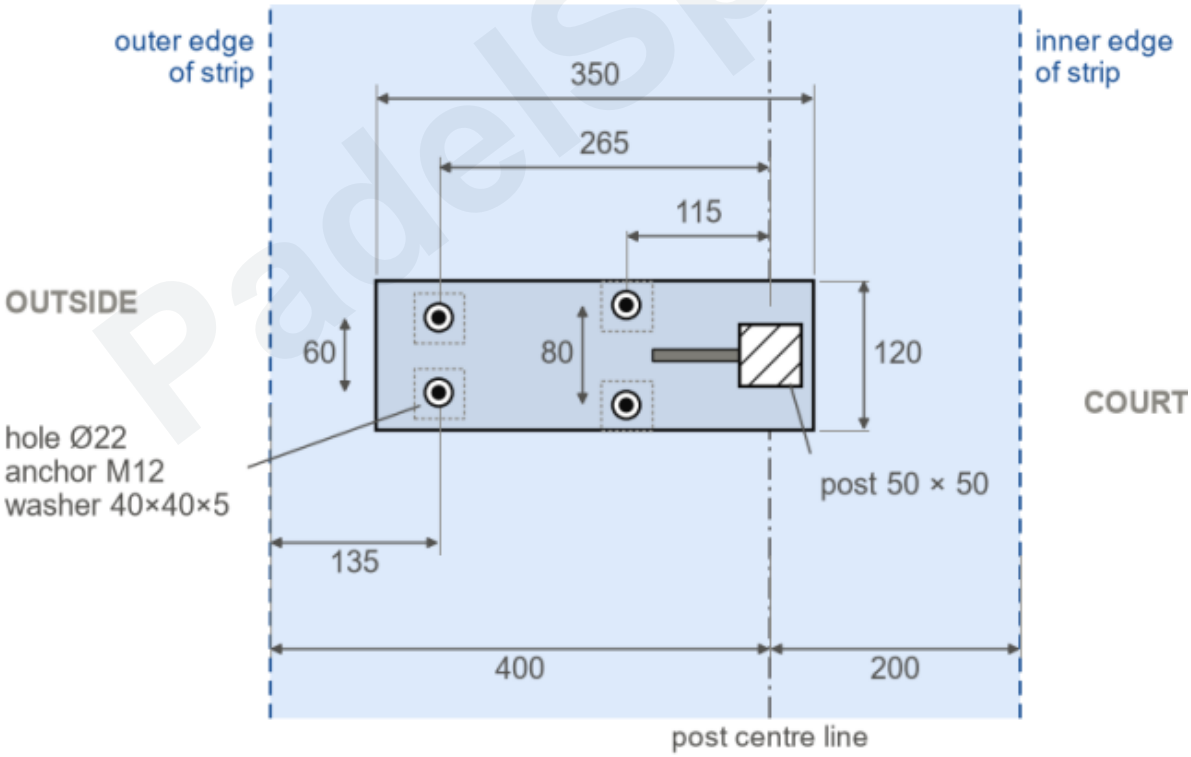


Figure 3a. Reference base-plate plan, dimensions in millimetres. The plate points outwards in this layout. The project drawing and selected anchor assessment govern installation.

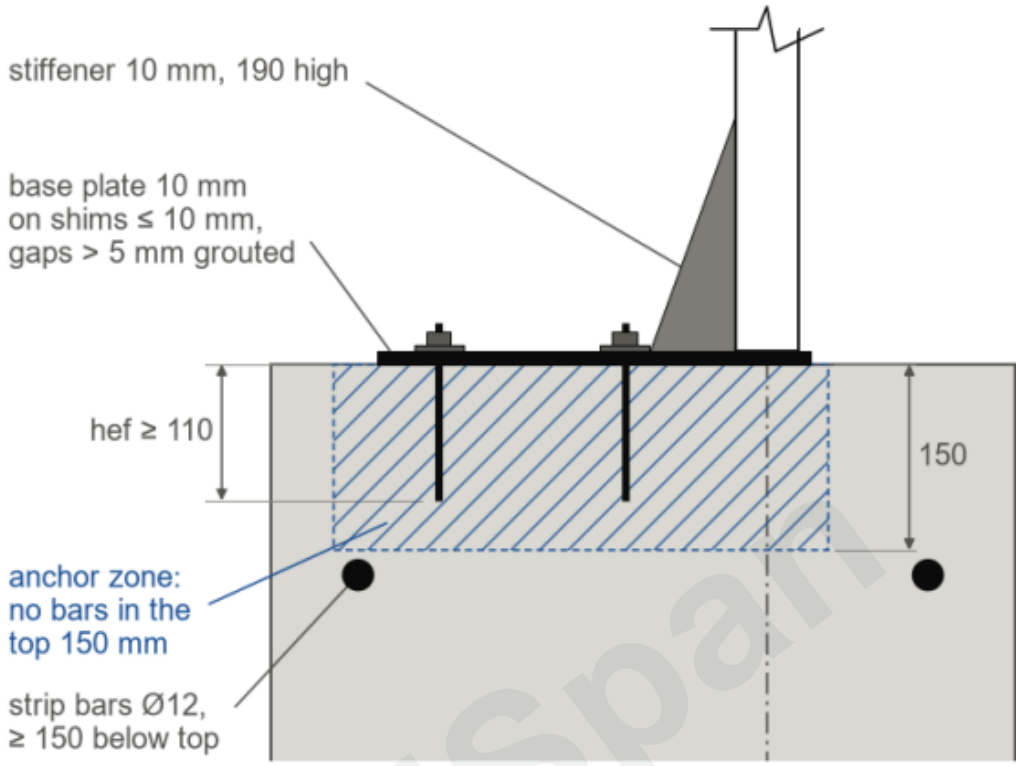


Figure 3b. Reference base-plate section. The source shows a 10 mm plate, 10 mm stiffener with 190 mm height, effective embedment of at least 110 mm and the protected drilling zone.

Item	Requirement
Anchor type	Bonded (injection) anchor with a European Technical Assessment (ETA to EAD 330499) for cracked and non-cracked concrete. A mechanical anchor with an ETA (EAD 330232) is also acceptable if its minimum spacing is 60 mm or less.
Size and number	M12, 4 per post. Threaded rod class 5.8 or 8.8, hot-dip galvanised; stainless steel A4 near the sea or a swimming pool.
Embedment	Effective embedment hef ≥ 110 mm. Some posts beside doors or goals may have plates with only 3 holes (marked on the layout drawing): there the single anchor nearest the post needs hef ≥ 160 mm (concrete at least 200 mm thick; on a thinner existing floor, ask us).
Washer and nut	Square plate washer 40 × 40 × 5 mm (hole 14 mm) over each Ø22 hole, then the nut.
Design values (EN 1992-4)	NEd = 10 kN and VEd = 1.0 kN per anchor (20 kN/ 1.0 kN for the single anchor of a 3-hole plate). Spacing 80 mm (row near the post) and 60 mm (far row); edge distance ≥ 135 mm. Check with the anchor maker's design software.
Installation	Drill, clean, inject, set and cure exactly as the ETA and the maker's instructions say; tighten to the torque given in the ETA.
Levelling	Steel shims of up to 10 mm under the plate, next to the anchors. Fill gaps over 5 mm with non-shrink cement grout. Posts plumb within 5 mm over their height.

Source-table note: Original anchor schedule for the reference plate arrangement. Confirm the actual product ETA, concrete condition, geometry, combined loading and installation instructions for the project.

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9. Lamp posts, cables and goals

Where 6 m lamp posts are included, the source shows a PE duct of Ø50 mm with a draw wire cast into the concrete to every lamp-post location and back to the power supply. Ducts finish beside the base plate on the court side of the post. Their final routes must avoid the anchor zones and match the order drawing.

A local electrician provides lighting circuits, protection and earthing to the applicable wiring requirements; the source refers to IEC 60364 or the national equivalent and requires bonding of the steel fence to earth.

The source proposes the same base plate and anchors for its lamp posts, and bolts goals and basketball units to fence posts without separate footings. Confirm those particular attachments and their reactions in the project design; do not transfer the detail to different columns or equipment without review. Freestanding goals must be secured against tipping using the actual goal manufacturer's approved method. EN 748 and EN 16579 are referenced; ground sockets cast into the base are one source example, not a universal fixing method.

10. Tolerances and handover checklist

Complete this reference checklist before enclosure installation. Record actual measurements, dates, photographs and test reports, identify the checker and resolve departures against the approved project design. Send the completed package to PadelSpan for equipment-interface coordination. Empty boxes do not indicate acceptance or a test already completed.

The values below are the documented arrangement's acceptance criteria and must be reconciled with the actual project specification. A drainage observation after rain or a hose test does not replace hydraulic design or any specified infiltration test.

Item number	Check	Requirement	How	Result
1	Setting out	25,000 × 15,000 ± 10 mm; diagonals 29,155, difference ≤ 20 mm	Tape or total station	To record
2	Level of the concrete under the fence line	± 5 mm between points 3 m apart; ± 10 mm over the whole court	Level at every post position	To record
3	Strip width and position	200 inside / 400 outside the post centre line, -0 / +50 mm	Tape	To record
4	Flatness of the playing-surface base	Gap ≤ 6 mm under a 3 m straightedge, both directions	Straightedge and wedge, EN 13036-7	To record
5	Sub-base compaction	≥ 98 % Standard Proctor, or Ev2 ≥ 80 MPa and Ev2/Ev1 ≤ 2.5	At least 3 tests	To record
6	Concrete strength	C30/37 outdoors, C25/30 indoors, at 28 days	Cubes or cylinders, EN 12390-3	To record
7	Concrete age before anchoring	≥ 28 days (or as the anchor's ETA allows)	Delivery notes	To record
8	Anchor zone	No bars in the top 150 mm (Figure 2)	Photos before casting	To record

Item number	Check	Requirement	How	Result
9	Joints (Type A)	≥ 300 mm from every post on the layout drawing; filled	Tape	To record
10	Drainage (Types B, C)	No standing water 30 minutes after heavy rain or a hose test	Visual	To record
11	Ducts (if lighting)	At every lamp post, ends sealed and marked	Visual	To record
12	Site	Clean, truck access to the court edge, 230 V power for drills	Visual	To record

Source-table note: Original handover checklist. Blank result boxes are to be completed for the actual site; the table is not a record of tests already performed.

11. Sequence of work

Use the sequence after the local design and order layout have been agreed. Record acceptance at each stage before work is concealed or the next trade starts.

- 1. Survey and set out against the order-specific layout drawing.
- 2. Excavate, prepare and test the subgrade; install drainage where required.
- 3. Place and compact the sub-base, then carry out the specified tests.
- 4. Install formwork, reinforcement, sleeves and ducts; keep the anchor zone clear and check levels.
- 5. Pour and cure the concrete for at least seven days under the reference procedure; saw-cut Type A joints within the agreed cutting window.
- 6. Install the levelling layer or porous asphalt for Types B and C.
- 7. Complete the handover checklist and submit the test results and photographs.
- 8. At the reference 28-day stage, subject to demonstrated concrete strength and the selected anchor requirements, set out, assemble and align the fence and install anchors.
- 9. Lay turf and fit the goals and nets, completing the agreed final checks.

12. Standards referenced by the source

The following list reproduces the standards and subjects named in the source document. It does not certify the court or confirm the latest edition, national adoption, applicability or compliance. The appointed professionals must identify the applicable requirements and selected product documentation for the actual project.

This guide and its drawings explain the documented 15 × 25 m arrangement. They do not replace the site-specific design or the order's binding setting-out drawing. Keep the approved revision, inspection records, product instructions and as-built details with the handover package.

Standard	Subject	Used for
EN 1990, EN 1991-1-4	Basis of design; wind actions	Design values, wind on the fence
EN 1992-1-1, EN 1992-4	Concrete structures; fastenings in concrete	Strip, slab, anchor design

Standard	Subject	Used for
EN 1997-1	Geotechnical design	Ground, bearing, frost
EN 206, EN 13670	Concrete: specification; execution	Concrete class, exposure, curing
EN 12390-3	Testing hardened concrete: compressive strength	Strength tests
EN 13242, EN 13285, EN 13286-2	Aggregates and unbound mixtures; Proctor test	Sub-base
EN 13036-7	Unevenness: straightedge test	Flatness
EN 12616, EN 15330-1	Water infiltration; synthetic turf	Drainage, turf
EN 15312	Free-access multi-sports equipment	Public football cages
EN 748, EN 16579	Football goals; goals - safety	Goal fixing
EAD 330499, EAD 330232	Bonded / mechanical fasteners for concrete (ETA)	Anchor approval
IEC 60364	Low-voltage electrical installations	Lighting

Source-table note: Standards cited by the source document. This list is not a certificate, a confirmation of the latest edition, or proof that a project complies with every listed standard.

Further technical references

FIFA: Installing Football Turf - football-technology.fifa.com
Hilti: Base plate anchor design inputs - www.hilti.co.il
Sport England: Outdoor surfaces and facility design guidance (UK context) - www.sportengland.org

Project coordination

Send your site location, equipment layout, ground information and proposed base arrangement to PadelSpan. Confirm the order drawings, construction responsibilities, inspection records and installation release before starting work.

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