PADELSPAN / TECHNICAL DOCUMENTATION

Padel court concrete foundation construction guide

A complete reference for the documented 21 ×11 m slab-and-ring-beam arrangement, with original drawings, material schedules, checked quantities, site procedures and handover records. Confirm the issued design for your site before construction.

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

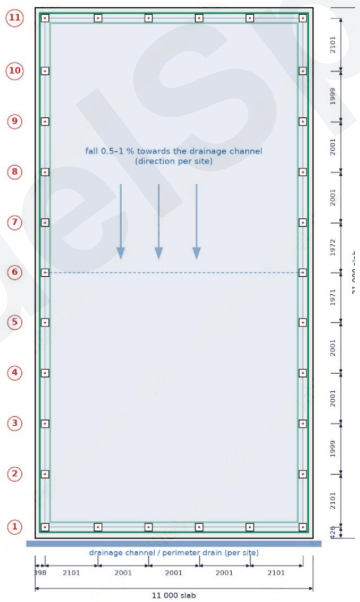


Figure 1. Original plan: 21 ×11 m slab, perimeter beam and 30 post positions. Some peripheral labels are cropped; complete key dimensions are stated above.

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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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How to use this construction guide

This PadelSpan manual presents the documented reference arrangement for a 10 × 20 m padel court: a 21 × 11 m reinforced concrete slab, continuous perimeter ring beam and post-installed anchors. It covers the design inputs, materials, original drawings, quantities, twelve construction stages, tolerances, inspections, safety and handover records.

The arrangement has 30 posts on a 10.205 × 20.147 m centre-line grid. It is not a universal foundation for every court or site. The local designer confirms or adapts the ground treatment, frost protection, wind actions, drainage, reinforcement and anchorage using the current PadelSpan court drawing and site investigation.

Use issued project drawings and selected-product instructions for construction. The source is FND-PADEL-01 Rev. 0, October 2026. This customer edition identifies checked corrections and unresolved design inputs. SI dimensions govern the reference; regional US entries are separate specification targets, not automatic metric/code equivalents.

The reference slab is poured first; posts are precisely set out and drilled after the concrete release. There are no cast-in post bolts or embedded post plates in this arrangement. Other engineered foundation arrangements remain possible.

1. Design basis and referenced standards

The source lists the following reference families. They organise design and inspection responsibilities; one jurisdiction's column cannot replace another's adopted code, National Annex or product approval. Confirm applicable editions and clauses in the project specification.

The original source calls this a code-equivalence table. This edition treats it as a reference register: the entries do not establish equivalence, current legal adoption, institutional certification or an approved design.

Subject	EU - Eurocode / EN	US - ACI / ASTM / ASCE	Chinese reference
Loads	EN 1990, EN 1991-1-1, EN 1991-1-4 (wind)	ASCE/SEI 7-22	GB 50009-2012
Concrete design	EN 1992-1-1	ACI 318-19	GB 50010-2015
Ground-bearing slabs	EN 1992-1-1 + Concrete Society TR 34 (UK), DIN 1045 / DBV guidance (DE)	ACI 360R-10 (slabs on ground), ACI 302.1R (floor construction)	GB 50037 (地面)
Post-installed anchors	EN 1992-4; product ETA (EAD 330232 mechanical / EAD 330499 bonded)	ACI 318-19 Ch. 17; product ICC-ES ESR (AC193 / AC308)	JGJ 145-2013
Geotechnics	EN 1997-1 / EN 1997-2	IBC 2021 Ch. 18	GB 50007-2011
Concrete specification	EN 206 + national annex	ACI 301-20; ASTM C94	GB 50164
Execution and tolerances	EN 13670 (class 1)	ACI 301; ACI 117-10; ASTM E1155 (F_F / F_L)	GB 50204, GB 50666
Earthworks / sub-base	EN 13285 unbound mixtures; UK MOT Type 1 (SHW 803); DIN 18196 / ZTV	ASTM D2940 / AASHTO M147 base; ASTM D1557, D6938	GB 50202
Reinforcement	B500A/B mesh - EN 10080, BS 4483 (A252), DIN 488; bars B500B	ASTM A1064 WWR 6×6-W4.0/W4.0; bars ASTM A615 Gr 60	GB 1499.2 / GB 1499.3

Subject	EU - Eurocode / EN	US - ACI / ASTM / ASCE	Chinese reference
Base plate	S235JR - EN 10025-2	ASTM A36	Q235
Corrosion protection of anchors	HDG EN ISO 1461 or A4 stainless (EN ISO 3506)	HDG ASTM A153 or 316 SS	GB/T 13912
Playing surface (for reference)	FIP Regulations: clear height ≥ 6 m; even surface; drainage	same	-
Site safety	Directive 92/57/EEC + national rules	OSHA 29 CFR 1926 (Subpart P, silica 1926.1153)	JGJ 59

Source-table note: Original page 1 reference register. Use the project's adopted standards and product approvals.

1.1 Documented reference parameters

These values belong to the illustrated arrangement. Keep playing dimensions, post centre lines and outside slab dimensions separate; the current PadelSpan model layout controls post setting out.

The source's wind-class/velocity comparisons are not adopted as a site wind rating. Pressure and post-force values below are only the inputs to Section 4's example arithmetic. Bearing pressure, plate-load stiffness, CBR and Proctor density measure different properties and are not interchangeable acceptance methods.

The documented 0.5-1% fall is a particular slab/drainage arrangement. Coordinate the selected playing surface, formation, collection route and outlet before fixing levels. Frost protection and any proposed 200 mm slab require the local designer's approval.

Parameter	Documented reference value	Original regional notation	Project confirmation
Court	10 × 20 m playing area; post centre lines 10.205 × 20.147 m (supplier grid)	-	The court supplier's layout drawing governs the post grid.
Slab size	21 × 11 m (0.5 m beyond the court on every side)	69 ft × 36 ft	Documented slab size; coordinate enlargement for access, paths and adjacent courts.
Slab thickness	150 mm minimum (our standard), C25/30	Nominal 6 in; US 4,000 psi strength is a separate target, not a conversion of C25/30.	200 mm where heavy maintenance vehicles drive on the slab or the subgrade is weak (engineer).
Ring beam under posts	400 wide × 400 deep (150 slab + 250 below), monolithic	16 × 16 in	Gives 400 mm of concrete under every anchor group, ties all 30 posts together and stiffens the edge.
Ground	Allowable bearing ≥ 100 kPa on compacted formation; E_v2 ≥ 45 MPa / CBR ≥ 5 %	Source also lists ≥2,000 psf and 95% Proctor; pressure and density are separate criteria.	Soft ground (peat, fill, clay with CBR < 3 %): geotechnical report and engineer's design (thicker slab / piles).

Parameter	Documented reference value	Original regional notation	Project confirmation
Illustrative wind input	w_k = 0.572 kN/m² on 6 m² glass; F_w = 3.43 kN at 1.5 m	No wind-speed equivalence adopted	Site wind and real reactions govern; see Section 4.
Fall / drainage	0.5-1 % in one direction (max 1 %), to a channel or soakaway	1/16-1/8 in per ft	Source note: Spanish NIDE limits transverse drainage fall to 1% for non-draining surfaces; confirm the actual slab and playing-surface design.
Flatness	3 mm under a 3 m straightedge; levels ±3 mm from design	Source lists 1/8 in under 10 ft and F_F ≥25 separately; no method equivalence is assumed.	The turf shows every bump; the posts need a flat seat.
Frost	Slab on free-draining sub-base; ring beam to 0.4 m; deepen the beam to frost depth where required	IBC 1809.5 frost protection	Frost-susceptible soils: 300 mm capillary-break sub-base or insulated edge (engineer).

Source-table note: Original page 2 parameter schedule. Reference inputs are separated from unverified equivalence and wind-rating claims in the native table.

2. Materials and product submissions

Obtain the approved concrete specification, reinforcement schedule and selected anchor approval/installation sheet before procurement. C25/30 describes cylinder/cube strength classes; the separately listed US 4,000 psi target is not its exact equivalent.

Reinforcement clarification: A252 is approximately 252 mm²/m, conventionally Ø8 at 200 mm. Ø8 at 150 mm provides approximately 335 mm²/m and must not be labelled A252. The source mixes these descriptions; the approved schedule must choose the actual mesh before ordering.

The original freeze/de-icing exposure labels, cement/water ratios and air ranges below are provisional source entries requiring confirmation by the concrete designer/producer for the actual exposure and adopted specification. A bonded anchor is not automatically twice as strong or automatically suitable in every cracked-concrete or freezing condition.

The optional 0.2 mm membrane and US 10 mil entry have different thicknesses. Steel, reinforcement and anchor regional designations also require separate procurement approval; do not treat the columns as conversion tables.

Item	Documented European reference	Documented US reference	Confirmation and installation notes
Slab and beam concrete	C25/30, source XC4 + XF1; the source XF3/de-icing-salt pairing is incorrect: confirm project exposure classes. Other source values: S3, max w/c 0.50, min cement 300 kg/m³, D_max 20, air 4-5 % in freeze zones - EN 206.	f'c 4 000 psi, exposure F2 (F3 with de-icing), 4.5-6 % air, w/cm ≤ 0.45 in freeze zones, slump 4 ± 1 in - ACI 301 / 318	Ready-mixed; polypropylene micro-fibres 0.9 kg/m³ optional against plastic shrinkage.
Blinding under ring beam	C16/20	2 500 psi	100 mm, trench width.

Item	Documented European reference	Documented US reference	Confirmation and installation notes
Slab mesh	A252 fabric (Ø8 at 200 mm), or the separate Ø8 at 150 mm B500A arrangement; EN 10080 / BS 4483.	WWR 6×6-W4.0/W4.0 (or W5.5) ASTM A1064	Mid-depth on chairs; laps ≥ 300 mm / 2 squares.
Ring beam bars	4 Ø12 B500B + Ø8 ties @ 200	4 #4 Gr 60 + #3 ties @ 8 in	Cover 40 mm; corner L-bars.
Sub-base	Crushed stone 0/32, EN 13285 / MOT Type 1, 150 mm compacted	ASTM D2940 base, 6 in	≥ 98 % Proctor; capillary break in frost zones (300 mm clean stone).
Membrane (optional)	0.2 mm polythene slip / vapour sheet	10 mil, ASTM E1745	Reduces friction cracking; not a damp-proof requirement outdoors.
Anchors - standard	M14 × 150 torque-controlled expansion anchor, ETA option 1 (cracked concrete), HDG or A4; 4 per post	1/2 in or M14 × 6 in wedge anchor with ICC-ES ESR for cracked concrete, HDG or 316 SS	Source nominal h_ef ≈100-115 mm, drill Ø14, spacing 150 mm and edge ≥323 mm; actual approved product/design governs.
Anchors - alternative	Bonded anchor M16 rod cl. 5.8 / A4 in injection mortar, ETA (EAD 330499), h_ef 150	5/8 in rod, adhesive anchor with ESR (AC308), h_ef 6 in	Alternative after product-specific design and environmental/installation verification.
Base plate & ribs	S235JR 300 × 300 × 14, 4 holes Ø16; ribs 300 × 100 × 10	ASTM A36	Supplied with the posts, hot-dip galvanized.
Shims / grout	Steel shims ≤ 5 mm; non-shrink grout EN 1504-6 to pack gaps	Steel shims; ASTM C1107 grout	
Curing compound	EN 14754 / turf-adhesive compatible, or wet curing	ASTM C309	Check compatibility with the turf system (adhesive-free sand-filled turf is the norm).
Joint sealant (if joints)	EN 15651-4 / ISO 11600 F-25-LM	ASTM C920	Only where the engineer requires joints.

Source-table note: Original material table, page 2. The XF3/de-icing-salt mapping and mesh label require the corrections noted above; confirm the project exposure and reinforcement schedules.

3. Slab geometry and post layout

The reference is a 21 × 11 m slab, minimum 150 mm thick, with mesh at mid-depth over 150 mm compacted sub-base. A monolithic 400 mm wide ×400 mm total-depth ring beam follows the 10.205 ×20.147 m post grid. Its extra depth below the slab is 250 mm.

The plan has 30 posts and shows four M14 ×150 anchors per post. The slab and formation follow the stated 0.5-1% fall, retaining the minimum concrete thickness, with runoff to a channel or perimeter drain. Confirm direction, collection and accepted outlet for the actual site.

The source slab drawing uses a 300 ×300 ×14 mm plate and 150 ×150 mm fixing pattern. These are documented model inputs; the current fabrication layout and anchor design determine the issued dimensions.

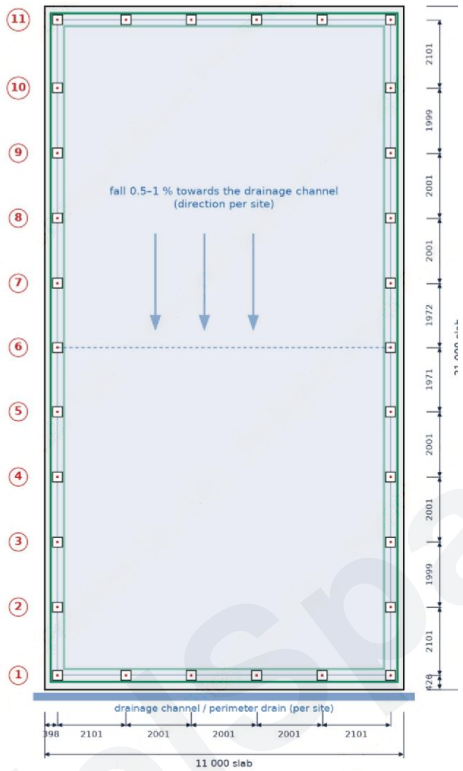


Figure 1. Original plan: 21 ×11 m slab, perimeter beam and 30 post positions. Some peripheral labels are cropped; complete key dimensions are stated above.

3.1 Slab edge, beam and post section

The section shows slab top at the local post datum; underside of slab -0.150 m, sub-base -0.300 m and ring beam -0.400 m, with 100 mm blinding below. The beam is 400 mm wide with four Ø12 longitudinal bars, Ø8 ties at 200 mm and 40 mm cover in the reference.

The original labels Ø8 mesh at 150 mm in both directions as A252. Apply the distinction in Section 2 and use the approved reinforcement schedule. The section also shows nominal Ø14 ×130 mm drilling, four M14 ×150 anchors, the 300 ×300 ×14 mm plate and steel shims up to 5 mm; product-specific requirements govern.

The original granular-layer annotations are 150 mm compacted MOT Type 1 / ASTM D2940 material, ≥98% Proctor and optional polythene. Confirm the specified material, grading, test and layer arrangement before work.

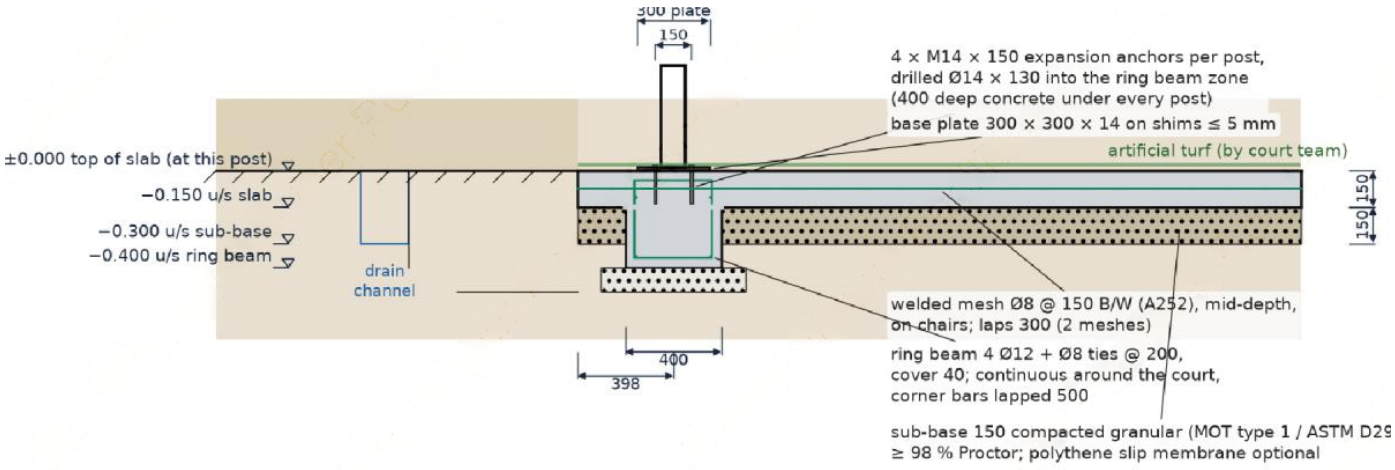


Figure 2. Original typical section. Text repeats key annotations because some labels touch the supplied crop boundary.

3.2 Post-base detail

The supplied Figure 3 asset contains the elevation only: 300 ×300 ×14 mm plate, 300 ×100 ×10 mm ribs, Ø16 holes for the reference M14 anchors, shims ≤5 mm and grout packing. S235JR and ASTM A36 are the original regional material references.

The complete source page additionally labels the four-hole pattern 150 ×150 mm, a 100 ×100 mm post subject to the selected model, nominal Ø14 drilling at least 130 mm deep and approximate 100-115 mm effective embedment. The separate plan/anchor subfigures are absent from the images folder and have not been recreated.

Obtain the actual anchor torque, embedment, hole depth, spacing, edge distance and member-thickness requirements from the approved product and design. The small illustration does not establish an allowable load or torque.

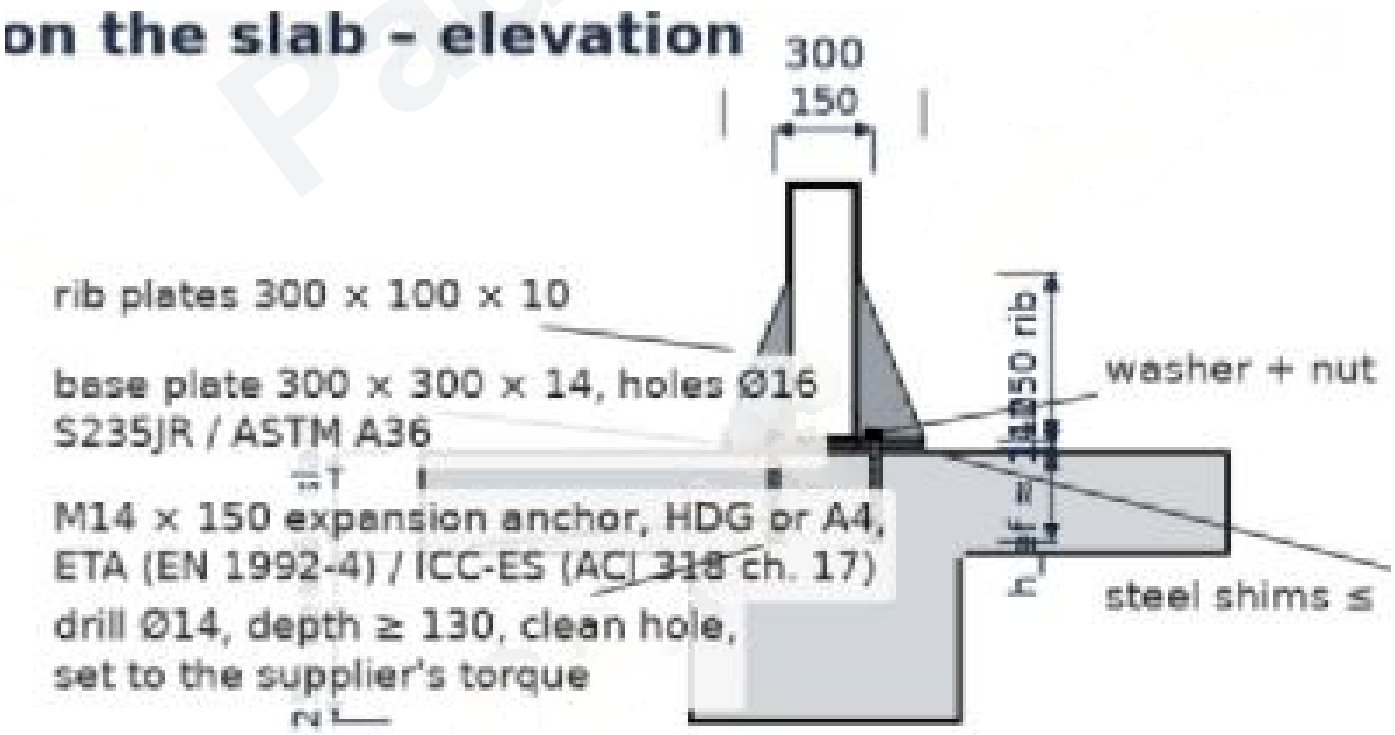


Figure 3. Supplied original post-base elevation crop, 398 ×210 pixels. Its low resolution is preserved; construction uses the issued fabrication and anchor drawings.

3.3 Levels, datum and adjacent courts

The source ±0.000 datum is slab top at the highest post. For its 0.5-1% fall, PadelSpan coordinates the post heights and glass level scheme; it may follow the fall or use the designed geometry. A 5 mm shim allowance cannot absorb the full cross-court slope.

The reference underside levels are -0.150 m slab, -0.300 m sub-base and -0.400 m beam, plus 100 mm blinding. In frost regions, confirm the beam depth, free-draining/capillary-break layer or insulated edge; the source mentions a 300 mm clean-stone option.

The source proposes shared slabs with beams under each post line for adjacent courts. The engineer issues joint locations and crack-control details; a general “no joints through a court” statement does not replace that design.

3.4 Reference quantities with arithmetic checked

The native table checks the explicit source expressions; it is not a final bill of quantities. Net volumes exclude losses unless stated. The original table image provides traceability for corrected values.

The original uses an approximate 62 m beam length. The stated post-grid rectangle gives 2 ×(10.205 +20.147) =60.704 m before detailed beam measurement conventions. Confirm corners, centre lines and trench geometry from the issued drawing; do not silently exchange these bases.

The source mesh weight ≈1,022 kg and bar allowance ≈374 kg remain unverified while the mesh notation and bar schedules are unresolved. Obtain actual reinforcement takeoffs before procurement.

Item	Checked reference quantity	Calculation basis / qualification
Topsoil/formation excavation and stated trench allowance	82.488 m³	21.4 ×11.4 ×0.30 +62 ×0.6 ×0.25; confirm geometry and overlap.
Compacted sub-base	34.65 m³; source mass ≈76 t	21 ×11 ×0.15; confirm trench exclusions, bulk density and compaction allowance.
C16/20 blinding	3.72 m³	62 ×0.6 ×0.1; original states ≈3.6 m³.
C25/30 slab concrete	34.65 m³	21 ×11 ×0.15; net geometry before loss.
Beam concrete below slab	6.20 m³	62 ×0.4 ×0.25; original states 6.1 m³.
Combined concrete using stated 62 m beam allowance	40.85 m³ net; 42.89 m³ with illustrative 5% allowance	34.65 +6.20; verify beam geometry and procurement allowance.
Welded mesh	258.72 m² with the source 12% lap allowance	21 ×11 ×1.12; source ≈1,022 kg weight remains unverified until mesh designation is resolved.
Beam bars and ties	Source allowance ≈374 kg; confirm	Four Ø12 bars along stated 62 m and 310 ties; issued bar shapes, laps and tie lengths required.
Reference anchors	120 installed; 126 including illustrative 5% spares	30 posts ×4; actual product and quantity per approved design.
Edge formwork	64 m perimeter ×150 mm nominal height	2 ×(21 +11); plus separate screed rails and details.

Source-table note: Original page 4 quantity table. The native table corrects explicit arithmetic and separates net quantities, allowances and unresolved weights.

4. Design notes and verification

This table preserves the illustrative load/reinforcement arithmetic. The original “OK” results are not treated as project approval. Confirm soil behaviour, load combinations, actual load sharing, participating slab width and cracked-concrete condition.

The source starts with 3.75 kN/m² slab self-weight and approximately 5 kN/m² including posts, glass and players, against assumed 100 kPa bearing. This simple comparison does not verify settlement, punching, uplift, frost or untested soil.

The minimum-reinforcement expression and one mid-depth layer are not a complete crack-control or face-reinforcement design. The stated Ø8 at 150 area is approximately 335 mm²/m and is distinct from A252.

Reference check	Documented arithmetic or assumption	Required design disposition
Bearing	Slab self-weight 3.75 kN/m² + posts, glass and players ≈ 5 kN/m² << 100 kPa allowable	Illustrative source screening only; verify by project-specific calculation.
Slab minimum reinforcement	EN 1992-1-1 §9.3: A_s,min = 0.26 f_ctm/f_yk b d ≥ 0.0013 b d → 0.0013 × 1000 × 75 ≈ 100 mm²/m per face; Ø8 @ 150 = 335 mm²/m at mid-depth	Illustrative source screening only; verify by project-specific calculation.
Post overturning	F_w 3.43 kN at 1.5 m per post, M = 5.15 kN·m at the plate; resisted by the continuous ring beam and ≥ 2 m of slab each side (≈ 23 kN of concrete per post plus continuity)	Illustrative source screening only; verify by project-specific calculation.
Anchor tension (service)	T ≈ (5.15 / 0.15 - 4) / 2 = 15.2 kN per anchor (pair in tension); design N_Ed ≈ 1.5 × T = 22.7 kN	Illustrative source screening only; verify by project-specific calculation.
Anchor resistance	M14 expansion anchor in C25/30, h_ef ≈ 110, spacing 150, member thickness 400 (beam zone), edge ≥ 323	Actual ETA/ESR resistance governs; generic source capacity ranges are not approved values.
Slab cracking / joints	150 slab with mid-depth mesh, 11 m width, 21 m length, one pour: sawn joints optional; with mesh ≥ 0.2 % and slip membrane, joint-free is usual (TR 34)	Engineer-issued joint/crack-control plan required; no joint-free guarantee.

Source-table note: Original page 5 illustrative checks. Original “OK” conclusions are explicitly replaced by project-verification requirements.

4.1 Anchor demand and alternative selection

The source example uses 3.43 kN at 1.5 m to give 5.15 kN·m. Its expression (5.15 /0.15 -4)/2 gives approximately 15.2 kN per tension anchor; the example factor 1.5 gives 22.7 kN. The 4 kN stabilising term and assumed load sharing require project justification.

Before ordering, verify actual post reactions, site wind, member thickness, concrete condition, edge distances and spacing with the selected ETA/ESR and the appropriate supplier design method. The source names Hilti PROFIS and fischer FiXperience as examples.

The source suggests an M16 bonded rod with 150 mm effective embedment if M14 mechanical anchors do not verify. Its quoted 10-20 kN cracked/15-30 kN uncracked capacity ranges and approximate doubling claim are not approved product values. Neither bonded capacity nor suitability in freezing/cracked conditions is automatic.

The earlier Chinese calculation set is not the design authority for this slab. Its 120 kPa ground input, wind-class label and 4 kN/post input are document history, not verified inputs for a new site.

5. Twelve-stage construction sequence

The sequence is setting out; excavation; formation; beam cage; sub-base; forms/mesh; concrete placement; curing; precise post layout; anchors; plate levelling; and handover. A hold point (H) requires the identified client/engineer release; a witness point (W) requires agreed notification and records.

The reference procedure below retains all twelve stages. Source notation conflicts and unverified product-specific assumptions are explicitly corrected; the released project design and installation instructions govern execution.

5.1 Step 1 - Setting out and levels

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Two permanent control points and a benchmark outside the works, protected; they are used again in Step 9 for the posts.

Set out the reference 21 ×11 m slab edge (±25 mm) and the post grid from the current PadelSpan drawing. The documented grid is 10.205 ×20.147 m; its calculated diagonal is approximately 22.5839 m. The source rounded value 22.58 m must not be used as a millimetre-precision set-out value. Check the issued survey dimensions and the source diagonal-agreement target ±5 mm. Offset profile boards 1.2 m and mark the slab-top level and fall.

Decide the fall direction with the client (towards the existing drainage); mark the high and low edge levels; check that the finished slab clears surrounding ground / paths.

EN 13670 class 1: position ±25 mm; levels ±10 mm.

Survey instruments calibrated (ISO 17123).

ACI 117 §4.1: slab edge ±3/4 in; elevation ±3/4 in.

For US projects, use 811 before excavation; elsewhere, contact the applicable local utility-location service before digging.

Acceptance Slab outline and post grid staked; diagonals within ±5 mm; levels and fall agreed and marked.

Inspection H - setting-out sheet signed before excavation.

5.2 Step 2 - Excavation and ring-beam trench

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Strip topsoil and vegetation over 21.4 × 11.4 m; excavate to the formation 300 mm below the slab top, following the fall (so the slab and sub-base keep constant thickness).

The reference trench is 600 mm wide to datum-0.500 m along the post line, with 100 mm C16/20 blinding placed the same day. Keep it dry. The source shows vertical sides at ≤0.5 m depth, but a competent person must assess ground, water, surcharge and collapse hazards and specify safe excavation protection.

Keep plant off the formation once trimmed; stockpile topsoil separately; protect existing services.

EN 1997-1 §6; national earthworks specs; excavation safety per Directive 92/57/EEC.

EN 13670 §8: formation approved before sub-base.

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Reference: OSHA 1926 Subpart P. No blanket exemption based only on excavation depth is adopted; competent-person assessment and required protective measures govern.

IBC 1804: no undermining of adjacent footings.

Acceptance Formation at design level ±20 mm with the fall; trench 600 × to -0.500; blinding placed.

Inspection W.

5.3 Step 3 - Formation compaction and testing

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Proof-roll the formation with a loaded truck or roller; remove soft spots, roots, rubble and replace with compacted granular fill; no water, no frost.

The reference method uses 4-6 passes and at least 5 test locations at corners and centre. Its criteria are E_v2≥45 MPa, CBR ≥5% or 95% Proctor on fill. These measure different properties; the designer specifies the appropriate test and criterion rather than treating them as interchangeable contractor-selected alternatives.

On weak ground such as source-indicated CBR<3%, peat, uncontrolled fill or high groundwater, stop for geotechnical/design review. The source mentions geotextile, thicker sub-base,200 mm slab or piles as possible design responses, not automatic remedies.

EN 1997-2 §4; DIN 18134 plate load; EN 13286-2 Proctor; TR 34 §4 subgrade (k-value) guidance.

EN 1997-1 §4.5 supervision records.

IBC 1803 / 1804; ASTM D1557 / D698 Proctor; ASTM D6938 field density; ASTM D4429 field CBR.

ACI 360R §4: subgrade uniformity matters more than strength.

Acceptance Formation uniform and tested; results on file.

Inspection H - formation approval before sub-base.

5.4 Step 4 - Ring-beam reinforcement cage

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

The documented cage has four Ø12 B500B longitudinal bars with Ø8 closed ties at 200 mm and 135° hooks. US source references are four#4 bars and#3 ties at 8 in, to be specified separately. The source shows 40 mm cover/spacers, staggered 500 mm laps and 500 +500 mm corner L-bars; its “40 diameters” is approximate. Use the designed lap and anchorage schedule.

Source top bars finish 40 mm below slab top. Coordinate reinforcement with the future anchor zones: the source lists at least 40 mm clearance,130 mm drilling and 150 ×150 mm hole patterns. Mark post centres on the blinding; any bar movement requires designer approval.

The cage is continuous around the court (≈ 62 m) and will be tied to the slab mesh in Step 6.

Reference notes: EN 1992-1-1 §8 and §9.2. The original screening mentions A_s,min 0.13%, four Ø12=452 mm² and ties ≤0.75d; these do not constitute a complete beam design.

EN 13670 §6 placing tolerance -10 / +15 mm.

ACI 318-19 §9.6 minimum flexural steel; §25.7 ties; development §25.4.

ACI 117 §2.2.

Acceptance Bars, ties, laps, cover and clearance to the anchor zones per Figure 2.

Inspection H - beam cage inspection (with mesh in Step 6).

5.5 Step 5 - Sub-base placement

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Place the reference 150 mm compacted 0/32 crushed-stone layer, identified as MOT Type 1 / ASTM D2940 regional references, to the trench edges without moving the cage. The original method states one layer,≥98% Proctor,6-8 roller passes and plate compaction near the trench. The project method determines actual lift thickness, plant and test; pass count alone does not prove density.

Top of sub-base at -0.150 following the fall, ±10 mm; surface closed and even (blind with fines); do not displace the beam cage.

Frost regions: 300 mm clean, free-draining stone as a capillary break instead of 150 mm (engineer).

Reference acceptance restored from the original PDF: thickness, level ±10 mm and required density tests passed. Inspection: W.

Standard notes - EU	Standard notes - US
EN 13285; SHW 800 series (UK) / ZTV SoB (DE); E_v2 ≥ 80 MPa on the sub-base is a common target for slabs.TR 34 §4.	ASTM D2940 / AASHTO M147; ASTM D1557 ≥ 98 %; ASTM D6938 tests 1 per 100 m².ACI 360R §4.3.

Source-table note: Original Step 5 regional notes, including source E_v2≥80 MPa and one density test per 100 m²; the project test regime governs.

5.6 Step 6 - Edge forms, levels and slab mesh

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Edge forms 150 high (steel road forms or 18 mm ply on stakes), top edge = slab top including the fall, set with an instrument ±3 mm; forms straight and tight; release agent.

Optional 0.2 mm polythene slip membrane on the sub-base, laps 300 mm .

Place the approved mesh at mid-depth on proper chairs; the source gives 800 mm chair spacing. Its Ø8 at 150 mm/A252 labelling is inconsistent: Section 2 distinguishes Ø8 at 150 from A252 Ø8 at 200. Its lap description “≥300 mm/two squares” also depends on spacing; use the issued lap length. Tie and connect the mesh to the beam cage as designed and coordinate all anchor zones without cutting or moving reinforcement without approval.

Screed rails / laser-screed reference set to the fall; final check of all levels, mesh cover (75 ± 15 mm from top) and cleanliness before ordering concrete.

Reference notes: EN 13670 §5/§6, EN 1992-1-1 §9.3.1 and TR 34 §6. Mesh plus a slip membrane does not establish a general joint-free slab design.

Chairs: plastic or concrete, not brick.

ACI 302.1R §5 (forms, screeds), §7 (reinforcement support - chairs at ≤ 3 ft); ACI 318 §7.7 cover 40 mm top (exterior).

ACI 117 §4.4 reinforcement placement.

Acceptance: reference form levels ±3 mm; approved mesh at specified depth on chairs, approved laps tied, and reinforcement/anchor interfaces coordinated. Inspection: pre-pour hold point includes forms, mesh, beam cage and levels.

Inspection H - pre-pour inspection (forms, mesh, beam cage, levels).

5.7 Step 7 - Concrete pour, screed and finish

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

For the documented geometry, the stated takeoff expressions give 40.85 m³ net concrete before allowance. The reference method pours beams first using a Ø35-50 mm poker at ≤500 mm centres, then slab strips 3-4 m wide with a vibrating or laser screed. Its maximum drop height is 1.5 m; the approved placing method governs.

C25/30 and US4,000 psi are separate specified strength targets, not exact equivalents. The source placing slump is 100-150 mm (approximately 4-6 in). Check every truck ticket, slump and temperature. The original 90-minute rejection/no-site-water rules must be reconciled with the project concrete specification and producer-authorised procedure; record any approved adjustment.

Finish: bull-float, wait for bleed water to disappear, power-float 2 passes (no steel-trowel 'burnishing' - the surface must stay slightly open for the turf); flatness 3 mm under a 3 m straightedge, levels ±3 mm; power-float the 300 × 300 post seats flat.

Hot weather (> 30 °C / 86 °F): pour early, fog spray, evaporation retarder; cold (< 5 °C / 40 °F): heated mix, insulate, no frost in 48 h.

Do not cast in post bolts or embedded post plates in this reference arrangement; keep the post seats free of edge-form imprints.

Reference notes: EN 13670 §8, EN 206 §5.4, EN 12350-2 slump and EN 12390 specimens. The source European sampling schedule is one set per 50 m³ and per day, with at least 2 sets per court. Agree the project sampling plan and flatness test; source references to TR 34 FM2 and 3 mm/3 m do not establish method equivalence.

EN 13670 §8.5 hot / cold weather.

ACI 301 §5.3; ACI 302.1R §8-9 placing and finishing; ACI 309R; ASTM C94; ASTM C172 / C143 / C31 / C39 - 1 set per 100 yd³ and per day; ACI 117 §4.8 flatness (1/8 in per 10 ft conventional) or ASTM E1155 F_F 25 / F_L 20.

ACI 305R hot weather; ACI 306R cold weather

Acceptance Slump and temperature in range; one pour, no cold joint; flatness and level within tolerance; samples taken.

Inspection W-pour record; flatness survey next day.

The source also lists ASTM E1155 F_F25/F_L20 and a straightedge result. These methods are not interchangeable; the agreed contract must specify the actual survey and acceptance method.

5.8 Step 8 - Curing, joint plan and stripping

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Cure ≥ 7 days: wet hessian + polythene, or a curing compound compatible with the turf system (check with the court team); no foot traffic 24 h, no equipment 3 days, no vehicles 7 days.

The source proposes a joint-free slab and, if the engineer requires joints,40 mm sawcuts within 6-18 hours. For a150 mm slab, one-quarter thickness is 37.5 mm rather than 40 mm. Use the engineer-issued joint position, depth and cutting window;

reinforcement and membrane do not guarantee joint-free performance. Coordinate joints with post zones and seal as specified before turf.

The source targets edge-form removal after 24 hours and polymer-modified mortar repairs within 3 days. Use actual strength/temperature and the approved repair procedure to authorise these operations; protect all edges.

Concrete-release conflict: the source says ≥25 MPa before drilling and separately minimum 7 days/≥20 MPa “for setting”. This edition does not authorise a20 MPa or seven-day release. The engineer must issue one confirmed readiness criterion consistent with the anchor approval, measured strength, age and intended operation; retain the release record.

Acceptance: curing/temperature log and strength evidence before authorised drilling. The source flags plastic/drying cracks>0.2 mm; evaluate and repair under agreed project criteria. Inspection: W.

Record	Original reference or requirement
European references	EN 13670 §8.5 curing class 3; EN 14754 curing compounds; TR 34 §8 joints.EN 1992-4: anchors installed in concrete of the specified class only.
US references	ACI 308R; ACI 301 §5.3.6 (7 days); ACI 302.1R §9.11 sawn joints (early-entry saw 1-4 h); ASTM C309.ACI 318 §17.2 anchors in concrete ≥ 2 500 psi at installation.
Source acceptance	Curing log; no plastic or drying cracks >0.2 mm; strength results before drilling.
Inspection	W.

Source-table note: Original curing notes and acceptance. Concrete-release inconsistency is resolved in the text above.

5.9 Step 9 - Precision layout of the 30 posts

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

From the protected control points, set all 30 post centres with a total station to the reference ±2 mm allowance. Check every spacing and both diagonals against the issued PadelSpan drawing before drilling. The 10.205 ×20.147 m reference rectangle has a calculated diagonal≈22.5839 m; printed 22.58 m is rounded and not a precision survey value.

Mark the 4 anchor positions with the court supplier's drilling template (steel plate, 4 bushes Ø14 at 150 × 150) centred and aligned to the grid; punch-mark each hole centre.

Record the slab level at each post seat; decide the shim thickness per post so that the posts finish per the supplier's level scheme (level glass line or following the fall, as the supplier specifies).

EN 1090-2 Annex D.2.20 anchor groups ±6 mm - this standard ±2 mm (court supplier's glass tolerances).

As-built record of the layout.

Original US reference: AISC Code of Standard Practice §7.5. Confirm the project post-position tolerances stated in this section.

Special inspector informed (IBC Ch. 17, if applicable).

Acceptance All 30 centres within ±2 mm; spacings and diagonals checked; drill points marked; shim schedule prepared.

Inspection H - post layout check before drilling.

5.10 Step 10 - Drilling and anchor installation

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Use the selected anchor's approved bit, drilling mode, hole diameter/depth and dust-control method. The documented M14 example uses a Ø14 carbide/hollow bit and nominal depth ≥130 mm in the 400 mm beam zone. If steel or another obstruction is hit, stop and obtain an engineered repair/relocation. The source "move at least 2 diameters" is not a general approval to re-drill; member geometry and actual anchor approval govern.

The source sequence is blow-brush-blow, twice each. Follow the actual product's tools, cleaning cycles and extraction requirements. Its assertion that a dusty hole halves capacity is not a verified universal factor; inadequate cleaning can invalidate assumed performance.

For the mechanical example, place the approved plate/shims and insert the anchor through the hole as instructed. Tighten with a calibrated wrench to the selected product T_inst. The original 60-80 N·m M14 range is not a universal installation setting. Do not over-tighten or reset a fixing unless the product instructions permit it.

The source bonded alternative shows M16 rod in a nominal Ø18 ×150 mm hole. Confirm actual hole depth, effective embedment and cleaning under the selected product approval. Inject from the bottom, insert as instructed, and respect gel/curing time at site temperature before loading.

Record per post: anchor product and batch, hole depth, cleaning, torque, installer, date.

Region	Original technical references
Europe	EN 1992-4 §4 and the product ETA (installation instructions are part of the approval); trained installers; ISO 6789 torque wrench.Silica dust: Directive 2004/37/EC - extraction / hollow bits.
United States	ACI 318-19 §17.8 / §26.7 installation per MPII; ICC-ES ESR conditions; special inspection of post-installed anchors per IBC 1705.3 / ACI 318 §26.13 where required.OSHA 1926.1153 silica.

Source-table note: Original Step 10 notes. Actual ETA/ESR and product installation instructions govern.

5.10a Anchor records and inspection release

Record all 120 installations in the documented four-anchor/30-post arrangement. The source calls for 10% witnessed; agree any additional required special inspection. Release the next operation only after installation deviations are resolved.

Record	Documented requirement
Acceptance	Depth, cleaning and torque per data sheet for all 120 anchors; record complete.
Inspection	H - anchor record; 10 % witnessed.

Source-table note: Original Step 10 acceptance and inspection record.

5.11 Step 11 - Plate levelling and torque

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

The reference limits steel shims to 5 mm and post plumb to 1/500. Set post heights to the coordinated PadelSpan level scheme with the source ±2 mm target; the drawing's "all plates at one level" is not assumed for a sloping slab. Follow the anchor product's final tightening procedure after plumbing. Source details show at least 2 exposed threads and grout

packing, with cap/paint protection; confirm engagement and protection from the approved product/detail.

Do not bend or heat anchors to correct position; a post out of tolerance is re-set by new holes with the engineer's agreement.

EN 1090-2 §9 base plates; D.1.11 column plumb ≤ h/300 (this standard 1/500).

AISC CoSP §7.13 plumb 1/500; AISC DG1 shims and grout.

Acceptance Posts plumb ≤ 1/500, levels ±2 mm, nuts torqued and recorded.

Inspection W.

5.12 Step 12 - Final survey, drainage and handover

The following procedure and numerical targets describe the documented reference arrangement; the approved project method and inspection plan govern actual work.

Survey all 30 post centres, levels and plumb, plus slab levels on the reference 2 m grid. Check at least 20 locations with a3 m straightedge under the agreed method. The original runoff test target is no ponding deeper than 3 mm after 20 minutes; use it only if agreed for the actual slab/drainage arrangement and record the test conditions.

Hand-over file: setting-out and post surveys, formation and sub-base tests, pre-pour inspection, concrete tickets and strength results, curing log, anchor records, photographs, non-conformance reports.

The court team installs turf, glass and mesh only after the slab and posts have been accepted in writing by the client and the engineer.

EN 13670 §4.3 documentation; EN 1090-2 §12.

ACI 117 acceptance; ASTM E1155 if F-numbers specified; IBC Ch. 17

Record	Documented requirement
Acceptance	Tolerance table (Section 6) met; drainage works; file signed.
Inspection	H - final acceptance.

Source-table note: Original final acceptance strip. Agree the tolerance and drainage criteria before inspection.

6. Reference tolerance schedule

The first value column records the documented arrangement’s targets. The European and US comparison columns are source references, not interchangeable methods or governing tolerances for another contract.

The tolerance table uses ±3 mm at post seats and ±5 mm elsewhere, while the pouring text uses ±3 mm generally. Confirm the intended zones in the project inspection plan. Glazing and post interfaces may require tighter controls than general concrete tolerances.

Item	Documented project target	Original European comparison	Original US comparison
Slab edge position	±25 mm	±25 mm	±3/4 in
Slab top level (design incl. fall)	±3 mm at post seats; ±5 mm elsewhere	±10 mm (class 1)	±3/4 in (conventional) - tightened
Slab thickness	-0 / +15 mm	-5 / +15 mm	-3/8 in

Item	Documented project target	Original European comparison	Original US comparison
Flatness	3 mm under 3 m straightedge	Source cites TR 34 FM2; select the applicable measurement method.	Source lists 1/8 in per 10 ft or F_F ≥25; no method equivalence assumed.
Fall	0.5-1 %, deviation ±0.1 %	-	-
Mesh depth	mid-depth ±15 mm	-10 / +15 mm	±3/8 in
Ring beam position / size	±25 / ±10 mm	±25 / ±10 mm	±1 in / ±3/8 in
Post centre (Step 9)	±2 mm	group ±6 mm	±1/4 in
Anchor within group	±1 mm (template)	±3 mm	±1/4 in
Anchor hole depth	+10 / -0 mm vs data sheet	per ETA	per ESR
Post plumb	≤ 1/500	≤ h/300	1/500
Shim stack	≤ 5 mm	-	-

Source-table note: Original Section 6 table. Specify the selected tolerance, test method and acceptance time in the contract.

7. Inspection and test plan

Use these twelve activities to prepare the project inspection plan. H means a hold/release point; W means agreed witnessing/notification. Assign the inspector, notice and required evidence before work begins.

Test frequencies and quantities are source-reference targets. Confirm designer, product-approval, statutory and special-inspection requirements for the location. A checklist does not replace the underlying report or signed release.

Item number	Activity	Check / test	Standard	Frequency	H / W
1	Setting out	slab edge, post grid, diagonals, levels, fall	EN 13670 / ACI 117	per court	H
2	Excavation	formation level with fall, trench	national / OSHA	per court	W
3	Formation	proof-roll, plate load / DCP / Proctor	EN 1997-2 / ASTM D1557	≥ 5 points	H
4	Ring-beam cage	bars, ties, laps, cover, anchor-zone clearance	EN 1992-1-1 / ACI 318	whole perimeter	H (with 6)
5	Sub-base	thickness, level, density	EN 13285 / ASTM D6938	1 test per 100 m²	W
6	Forms and mesh	form level, mesh depth, laps, chairs	EN 13670 / ACI 302.1R	per court	H

Item number	Activity	Check / test	Standard	Frequency	H / W
7	Concrete	ticket, slump, temperature, samples; flatness next day	EN 206, EN 12390 / ASTM C94, C31, E1155	each truck; ≥ 2 sample sets	W
8	Curing / strength	log; 7 d and 28 d results	EN 13670 / ACI 308	per pour	W
9	Post setting out	±2 mm, spacings, diagonals, shim schedule	court supplier / EN 1090-2	all 30	H
10	Anchors	product, depth, cleaning, torque	EN 1992-4 ETA / ACI 318 Ch. 17 ESR	all 120 recorded, 10 % witnessed	H
11	Plates	plumb, level, torque	EN 1090-2 / AISC	all 30	W
12	Hand-over	as-built, flatness, drainage, file	EN 13670 §4.3 / IBC Ch. 17	once	H

Source-table note: Original twelve-stage inspection and test plan, with hold/witness points and source frequencies.

8. Health, safety and site protection

The source’s0.3-0.5 m excavation requires services locating, barriers and separation of plant and pedestrians. A competent person assesses ground, water, surcharge, collapse risk, safe access and required support; shallow depth alone is not a safety exemption.

Protect skin and eyes from wet concrete and alkaline burns; manage pumps/chutes and collect washout in a controlled container.

Use the required eye, hearing and respiratory protection for drilling. Apply silica extraction/hollow-bit controls under the actual product and applicable local rules. The source references Directive 2004/37/EC and OSHA 1926.1153.

Store adhesive cartridges under their product data sheets. Use specified RCD/GFCI protection, calibrated torque tools, suitable PPE and heat/cold-stress measures. Incorporate these activities into the contractor’s site-specific risk assessment and method.

9. Records to keep

Keep an identifiable project file with model, drawing revisions, dates, responsible people, original readings and approved changes. Keep unresolved work visible until its correction and release have been recorded.

- Setting-out register; precision post layout; final as-built survey; flatness and runoff-test results.
- Formation and sub-base tests; pre-pour release; approved mix, reinforcing-steel/mesh and anchor material submissions.
- Concrete delivery tickets; slump/temperature logs; strength results; curing records and authorised drilling/loading release.
- Anchor records for every post; plate-level/plumb/torque records; stage photographs; non-conformance reports and verified close-out.
- Current PadelSpan layout and base-plate/anchor details, drainage interfaces, designer-issued changes, and client/engineer handover acceptance.

Appendix A. Earlier foundation-set comparison

The source distinguishes this slab from an earlier GB set with 30 isolated pads and cast-in M24 bolts. The comparison retains that document history; it does not endorse or redesign the earlier foundations.

The source describes errors in the earlier calculation set, including a bearing expression, silo wording and an Ø100 bolt notation. Those underlying documents were not supplied with this manual and have not been independently checked. The source retains the earlier concept only for separately designed tent/roof foundations identified as FND-STD-01.

Item number	Topic	Earlier GB set described by source	Documented slab arrangement
1	Foundation type	30 isolated pads 1 000 × 1 000 × 500 with 300 × 300 pedestals	one 21 × 11 m slab 150 thick with a 400 × 400 ring beam under the post line
2	Post fixing	4 × M24 cast-in bolts with template before the pour	4 × M14 × 150 post-installed expansion anchors after curing (M16 bonded as alternative)
3	Reinforcement	pad mesh Ø12 @ 200, pedestal 4 Ø14 + Ø8 @ 150	Source slab mesh Ø8 at 150; A252 label is inconsistent. Beam four Ø12 +Ø8 at 200.
4	Datum	±0.000 top of pedestal; plate at -0.200	±0.000 top of slab at the highest post; fall 0.5-1 %
5	Loads used	f_ak 120 kPa; Beaufort 12 wind; 4 kN per post	Ground, wind and reactions verified per project; earlier assumptions are not a site design.
6	Calculation report	contains arithmetic / template errors (bearing 20.5/4; silo text; Ø100 bolt)	not relied on; see Section 4
7	Use of the GB set	-	retained only as the base for tent (roof) foundations with cast-in bolts - FND-STD-01

Source-table note: Original AppendixA comparison. Earlier foundation sets cannot be substituted for this slab or a new roof design.

Coordinate the reference with your PadelSpan project

Send the location, selected court model, site survey, surface/drainage arrangement and local designer’s questions. PadelSpan aligns the court layout and equipment interfaces with the civil package. Identify responsibility for geotechnical work, engineered foundation, earthworks, concrete, drainage, anchor verification and installation in the agreed scope.

Further technical references

LTA construction guidance — UK site-specific foundation and drainage context - www.ltapadel.org.uk
FIP Rules of Padel 2026 — playing enclosure and surface requirements - www.padelfip.com
ACI — purpose of concrete curing - www.concrete.org
Hilti — base-plate fastening design inputs - www.hilti.co.il
CARES: welded reinforcement mesh - carescertification.com
The Concrete Centre: exposure classes and concrete specification - www.concretecentre.com
CSD NIDE: padel playing-surface requirements - www.csd.gob.es