

Q21 IN SITU CONCRETE ROADS/ PAVINGS/ BASES

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

115 REINFORCED CONCRETE BASE TO EXTERNAL PAVING.

- Drawing reference
- Granular sub-base: As section Q20.
 - Thickness: minimum 100mm.
- Separation membrane: Polyethylene sheet 125 micrometres thick. Lap edges 300 mm.
- Mesh reinforcement: To BS 4483 type A193 free from oil, dirt, loose rust and scale.
 - Concrete cover: 50 mm.
- Concrete:
 - Designated mix: PAV 2 to BS 5328.
 - Nominal maximum size of aggregate: 20 mm.
 - Exposure condition: Mild.
 - Workability: 75 mm slump.
 - Minimum thickness of slab: 100 mm.
- Finish: To take paving slabs, concrete pavers or safety surface.

GENERAL/ PREPARATION

230 REINFORCEMENT QUALITY ASSURANCE

- Steel reinforcement to BS 4449 or BS 4483: Obtain from firms holding a certificate of approval issued under a product certification scheme obtained from a third party certification body with appropriate category 2 accreditation from the United Kingdom Accreditation Service (UKAS).

240 SUB-BASE PREPARATION

- Surface: Sound, free of debris, mud and soft spots, and suitably close textured.
- Levels and falls: Within specified tolerances:
 - Vehicular areas: ± 20 mm.
 - Pedestrian areas: ± 12 mm.
 - Drainage outlets: +0 to -10 mm of required finished level.
- Kerbs and edgings: Complete, adequately bedded and haunched, and to required levels.

250 LAYING MESH REINFORCEMENT

- Flatness: Lay in flat sheets, straight and out of winding.
- Main reinforcement: Parallel to long axis of slab.
- Temporary support: Securely fix and support mesh during construction of slab.
- Lapping at joints:
 - Transversely: 450 mm (minimum).
 - Longitudinally: 300 mm (minimum).
- Extent of mesh: Fully within slab and:
 - 300 \pm 50 mm from slab edges.
 - 300 \pm 50 mm from centre line of transverse joints.
 - 125 \pm 25 mm from centre line of longitudinal joints.
- Alternative placing method: Mesh may be placed on top of first compacted layer of concrete, followed by top layer of concrete, placed within two hours of the first layer.

LAYING CONCRETE

310 TRANSPORTING CONCRETE

- General: Avoid contamination, segregation, loss of ingredients, excessive evaporation and loss of workability. Cover concrete during heavy rain.
- Truck mixers: Add water only under supervision, on site or at the central batching plant. Do not add water in transit.
- Equipment: Clean immediately after use and whenever cement or aggregate is changed.

- Placing: Use suitable walkways and barrow runs for traffic over reinforcement and freshly placed concrete.
- 320 LAYING CONCRETE GENERALLY
- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction. After discharge from the mixer do not add water or retemper.
 - Temperature of concrete at point of delivery:
 - In hot weather (maximum): 30°C.
 - In cold weather (minimum): 5°C.
 - Cold weather:
 - Do not use frozen materials.
 - Do not place concrete against frozen or frost covered surfaces.
 - Do not place concrete when air temperature is below 3°C on a falling thermometer. Do not resume placing until rising air temperature has reached 3°C.
 - Surfaces on which concrete is to be placed: Free from debris and standing water.
 - Placing in final position: Place in one continuous operation up to construction joints.
 - Do not place concrete simultaneously on both sides of movement joints.
 - Spreading: Spread and strike off with surcharge sufficient to obtain required compacted thickness.
 - Adjacent work: Form neat junctions and prevent damage. Keep clean all channels, kerbs, inspection covers, etc.
- 330 COMPACTING
- General: Fully compact concrete to full depth (until air bubbles cease to appear on the surface) especially around reinforcement, cast-in accessories, into corners and at joints.
 - Poker vibrators: Do not use to make concrete flow into position. Do not allow to come into contact with fabric reinforcement.
 - Wet formed joint grooves: Rectify any irregularities by means of a vibrating float.
 - Finish: A dense, even textured surface free from laitance or excessive water.
 - Excess concrete: Remove from top of groove formers.
- 350 LEVELS
- Lines and levels of finished surface: Smooth and even, with regular falls to prevent ponding.
 - Finished surfaces: Within ± 6 mm of required levels (+6 -0 mm adjacent to gullies and manholes).
- 360 SURFACE REGULARITY
- General: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge (with feet) placed anywhere on the surface to be not more than 5 mm.
 - Sudden irregularities: Not permitted.

JOINTS

- 410 JOINTS GENERALLY
- Layout: All joints to be accurately located, straight and well aligned.
 - Construction joints made at end of working day: Form as contraction joints.
 - Modifications to joint design or location: Submit proposals.
 - Temporary support: Prior to concreting, set formwork, dowel bars, tie bars, joint filler boards, sealing groove fillets and the like rigidly in position and support to prevent displacement. Maintain support until concrete has set.
 - Keep clean:
 - Do not allow concrete to enter any gaps or voids in the formwork or to render the movement joints ineffective.
 - Do not allow concrete to impregnate or penetrate any materials used as compressible joint fillers.
- 470 EXPANSION JOINTS
- Joint filler board: Self expanding, resin bound or natural bonded cork.
 - Thickness: 25 mm.

- Joint filler board must extend from underside of sealing groove fillet to full depth of slab to provide complete separation of adjacent slabs.
- Accurately bore or punch holes in filler board to form a sliding fit for dowel bars.
- Completion: Round upper edges of slabs at joints to 5 mm radius. Do not overwork concrete.

CURING/ PROTECTION/ FINISHING

610 CURING

- General: Immediately after completion of surface treatment prevent evaporation from surface and exposed edges of slabs for a minimum period of seven days.
- Early curing:
 - Cover with waterproof sheeting held clear of surface. Seal against draughts at edges and junctions.
 - Do not apply sprayed compounds or sheets in direct contact until surface is in a suitable state and will not be marked.
- Coverings for curing: Contractor's choice of:
 - Impervious sheet material.
 - Resin based aluminized curing compound containing a fugitive dye and with an efficiency index of 90% when tested to BS 7542.
 - Sprayed plastics film.

640 HOT JOINT SEALING

- Sealant: To BS 2499-1, type N1.
- Provide manufacturer's certificate of compliance in accordance with annex B.
- Application: Prepare joints and apply sealant to BS 2499-2.

650 COLD JOINT SEALING

- Sealant: To BS 5212-1, type N.
- Provide manufacturer's certificate of compliance in accordance with annex B.
- Application: Prepare joints and apply sealant in accordance with BS 5212-2.

660 PROTECTION

- Prevent damage to concrete:
 - From rain, indentation, physical damage, dirt, staining, rust marks and other disfiguration.
 - From thermal shock.
 - In cold weather, from freezing expansion of water trapped in pockets, etc.
 - By use as a building platform or for storing, mixing or preparing materials.

REVISIONS