



Concrete Pavements - Design Rules for Joints

The following abbreviated and summarised information is provided to assist with field evaluation of joint designs and to carry out design adjustments due to practical constraints that often arise.

1 Transverse contraction joints

- PCP – 4.3 m max
- JRCP (Dowelled) – 10 – 12 m, with absolute max of 15 m
- CRCP – Not provided, routine transverse cracking is expected
- SFCP – Desirable max 10 m, if >6 m then dowelled
- for slabs <200 mm max spacing 4 m
- for slabs 200 – 250 mm max spacing 4.6 m
- for slabs >250 mm max 5.5 m if dowels are used, otherwise 4.6 m
- for JRCP it is common to use 11.8 m mesh as the slab length

2 Longitudinal joints

- PCP, JRCP & CRCP – 4.6 m max with total tied width ~15 m
- SFCP – normal 5 m max, but may be increased to 10 m in special (structural) circumstances
- in all cases the joint is tied (N12 deformed bars)

3 Isolation joints

- always used when the tied transverse width is >15 m
- eliminates dowels and tiebars
- intersecting transverse joints may be mismatching
- always needs a subgrade beam (200 x 600 mm)
- provides load transfer
- subgrade beam prevents faulting in the subbase
- the principle same as with expansion joints which are dowelled, except the former allows for 3 dimensional movement. There is no reason to make the latter wider
- isolation joints are required around structures eg pits

4 Slab corner angles

- PCP, JRCP & CRCP – 85° or 1 in 10
- SFCP - 60° as absolute minimum

5 Slab shapes

- Slabs with an aspect ratio of greater than 1.5:1 are termed odd shaped slabs

6 All odd shaped slabs are reinforced

- F82 mesh or 75 kg/m³ of fibre in SFRC is mandatory

7 SFCP slabs

- max dimension ~6 m

- no reo
- tiebars in longitudinal joints
- tiebars in transverse construction joints
- mesh also in anchor slabs

8 Tapers

The minimum slab dimension is 1 m, with 0.6 m as absolute minimum.

9 Tiebars

For a 200 mm slab on a subbase with a Coefficient of Friction $\mu=1.5$, if:

- 4 m to free edge – N12 deformed bars at 900 mm cc
- 5 m to free edge – N12 deformed bars at 750 mm cc
- 6 m to free edge – N12 deformed bars at 600 mm cc
- 7 m to free edge – N12 deformed bars at 525 mm cc

10 Dowels

For a 200 – 230 mm thick slab, 33 mm dia x 450 mm long placed at 300 cc
230 – 250 mm thick slab, 36 mm dia x 450 mm long placed at 300 cc