

Concrete Roads in Victoria

Formative Years. Very little use was made of rigid pavements by the CRB in its formative years. However concrete pavements grew in popularity after mechanical concrete mixers became available at the turn of the century and reached a peak in the years following the First World War when concrete was used by Councils as a pavement type. The first major reinforced concrete roads were probably Bridge Road and Swan Street built by J. Noble Anderson when he was the City Engineer of Richmond in the early 1920s. He used a cement-rich mix to produce a 160 mm slab. However, there are also many other older concrete pavement sites around Melbourne, e.g. Bay Street in Port Melbourne, Poath Road in Oakleigh, Lorimer Street in Port Melbourne, etc. Many of the older pavements are now buried under overlays of asphalt.

In 1919, the Board appointed to its staff Mr. T. H. Upton, a highly qualified Engineer in reinforced concrete construction. Mr. Upton was commissioned by the Board to investigate and report upon the existing methods of concrete road and bridge construction. After considering his report, together with more recent literature from America and elsewhere, the conditions of traffic either now or in the near future, would not justify any radical departure from its current position, i.e. **no need to adopt concrete roads.**

First Rigid Pavements. Three concrete pavements constructed by the CRB in the 1960s (there are likely to be others) were:

- **Maroondah Highway** through Ringwood somewhere – The 1960 CRB Annual Report recorded that an 8-inch Undowelled Plain Concrete Pavement with contraction joints to manage cracking without reinforcing steel. Concern was held about disturbing fragile services located beneath the road if heavy compaction plant were to be used. The pavement type was given the acronym JPCP.
- **Victoria Parade**, East Melbourne west of Hoddle Street. The pavement is assumed to be a JPCP and most likely was designed by Keith Moody as the AMRE in 1964.
- **Mount Alexander Road**, Essendon, from Keilor Road to the northern street alignment of Leake Street. Assumed to be a JPCP.

Continuously Reinforced Concrete Pavement (CRCP). In circa 1970, Barry Munce, a Head Office engineer was awarded a Churchill Fellowship to study concrete pavements in the USA, Canada, Switzerland, Germany and the UK. On his return he led the design and construction of 3500 feet in length of CRCP, a first in Australia, in Boundary and Montague Streets, South Melbourne, as an eastern approach to the Lower Yarra Freeway. At the site there were poor subgrade conditions with California Bearing Ratios as low as 1% to 2%, and extensive, relatively shallow public utility assets present.

The design of the pavement evolved from overseas practice and comprised an 8 in. CRCP base course over a 6 in. 5% cement stabilised crushed rock subbase. However, as the standard of riding surface achieved using hand finishing methods would be unsatisfactory for freeway applications and despite the rigid level control on the concrete formwork, a 2 in bituminous concrete overlay was added.

A paper titled “Design, Instrumentation and Construction of a Continuously Reinforced Concrete Road Pavement by Barry Munce and co-authored by R B Russell and Dom Meadley (both from MTD as it was known then) describing the work was presented at The Institution of Engineers, Australia, Symposium on Concrete Research and Development, Sydney, September 1973.

Post 1970s. Notwithstanding VicRoads reluctance to build concrete roads, the concrete industry was persistent in lobbying the organisation to allow such pavements to be built and over the ensuing years, a number were built. The following list gives a brief description of some of the sites:

- **Footscray Road** – circa 1980s. CRCP.
- **Wells Road** – Mordialloc. 1988. First Roller Compacted Concrete pavement in Victoria. 200 mm RCC placed over 4% Cement Treated Class 4 crushed rock over sandy subgrade.
- **Dandenong Road** – Hawthorn Road to Tooronga Road, Caulfield /Malvern. 1989. Undowelled 210 mm JPCP base over 130 mm Lean Mix Concrete subbase.
- **Western Ring Road (M80)** – Plenty Road to Greensborough Highway. 1992. Dowelled 200 mm Plain Concrete base over 150 mm 5% CTCR over 250 mm Capping layer. Dowels - 450 mm long, 33 mm diameter, galvanised at 300 mm centres.
- **Bell/Springvale Highway - Bell Banksia Link:** Studley Road to Linden Street. 210 mm CRCP over 150 mm 6% CTCR with OGA surfacing - built around 1992.
- **Keilor Park Drive** - 1994. The pavement was constructed as a JPCP having a base 190 mm thick on a 100 mm thick lean mix concrete subbase placed on a 435 mm thick select fill capping layer (CBR > 15). Transverse contraction joints were sawn at 4.2m intervals. Refer also to a related report on the Bituminous and Concrete Surfacing Trial at this location in 1994 under “Publication”.