



*BUILDING ASSETS
NOT LIABILITIES*

**CONTINUOUSLY
REINFORCED
CONCRETE
ROAD
PAVEMENTS**

STEEL REINFORCEMENT
INSTITUTE OF AUSTRALIA

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WHAT IS CRCP?

Continuously Reinforced Concrete Pavement (CRCP) is a form of road construction which utilises slip-formed quality concrete. It is reinforced with steel which eliminates the need for joints and helps reduce thickness. It provides a longer lasting, low maintenance, smooth riding road ideally suited to high traffic volume freeways, urban arterials and interstate highways. The House of Representatives Standing Committee report⁽¹⁾ confirms its suitability for these applications.

BENEFITS OF CRCP

Recent research by Decicorp⁽²⁾ conducted for SRIA identified and quantified significant economic, technical and social benefits from specifying and constructing CRCP.

Economic Benefits

- Long Life. Overseas experience shows that CRCP can have a life of 40-60 years.
- Import Replacement. CRCP uses all Australian sourced materials, whereas bitumen can only be sourced from imported crude oil. The replacement of imported crude oil with locally sourced crudes would improve Australian refining efficiencies.
- Employment Multipliers. Use of CRCP on a major project would boost short-term employment by stimulating growth in the concrete and steel industries.
- Maintenance Deferral. CRCP is less sensitive to deterioration if maintenance is deferred through changing fiscal policy.
- Competitive Life Cycle Cost. Reduced maintenance makes CRCP competitive on a “whole of life basis”. Studies commissioned by the asphalt industry⁽³⁾ acknowledge CRCP as very competitive.

Technical Benefits

- Low Maintenance. CRCP is a low maintenance road. There are no joints to maintain. Potholes and rutting are non-existent.
- Low Traffic Disruption. Reduced maintenance results in less disruption to traffic and flow of goods and services.
- Fuel Efficiency. Studies commissioned by World Bank⁽⁴⁾ suggest substantial fuel savings for commercial vehicles on concrete roads.

Community Benefits

- Safety. CRCP pavements are textured to provide a durable, skid-resistant surface. The light coloured surface increases night visibility and can reduce lighting requirements in built-up areas.
- Noise. CRCP can be produced to offer low-noise characteristics which endure for the life of the pavement. Slightly quieter pavements may be available but with much higher maintenance demands.

IMPEDIMENTS TO THE USE OF CRCP

While it is recognised that the initial cost of CRCP may be slightly higher than asphalt, it is more competitive when considered on a life cycle cost basis. However several factors limit CRCP's potential:

- Inconsistent Life Cycle Models. CRCP has a potential life of 40 years or more, asphalt 15-25 years. Road Authorities do not always evaluate alternatives on the longest life, even though this is recommended by AUSTROADS.
- Cost of Disruption Not Considered. Life cycle models do not currently consider the costs caused by maintenance on road users and the community. Decicorp⁽²⁾ has proposed a model allowing these costs to be incorporated in available costing packages.
- Inappropriate Discount Rates. Discount rates which are set too high favour high maintenance solutions and impose an undue burden on future generations. The Allen Consulting Group⁽⁵⁾ recommends evaluation of projects using a discount rate close to the "risk-free" rate determined by the Capital Asset Pricing Model.
- Taxation Policies. For privately funded projects current taxation law favours high maintenance pavements. Repair and maintenance are fully deductible whereas capital investment in the pavement cannot be depreciated. Both Decicorp⁽²⁾ and the Allen Consulting Group⁽⁵⁾ discuss this bias which can distort investment decisions.
- Long-Term Finance. The absence of long-term debt or bond markets in Australia limits high capital involvement, in long term infrastructure projects. This was considered in depth by Cox⁽⁶⁾ in a Business Council of Australia Report.

REQUESTS

Federal and State Governments, through their statutory authorities, have a responsibility to provide value for money in infrastructure development. The use of CRCP on significant selected projects will provide immediate benefits for all Australians and reduce the burden of future generations. The steel and concrete industries request that the following actions be implemented to enable these opportunities to be realised:

- Life Cycle Costing. Road Authorities to evaluate all major projects on a whole-of-life basis using an analysis period corresponding to the longest lasting pavement as recommended by AUSTROADS. Life-cycle costing to incorporate community costs, especially disruption and fuel effects.
- Low-Risk Discount Rate. All authorities adopt a low-risk discount rate of 6%, as proposed by the Allen Consulting Group.
- Neutral Tax Treatment of Investment and Maintenance Expenditure for Privately Funded Roads. Private owners of roads be permitted to depreciate initial pavement investment at 10% pa by diminishing value, to correct bias which allows resurfacing maintenance to be written off as the expense occurs.
- Develop Long-Term Finance Facilities. Investment in infrastructure projects with long life such as CRCP will be encouraged with a coherent government policy which gives confidence to potential investors.

SUPPORTING DOCUMENTS

- (1) "Driving the Roads Dollar Further". Report of House of Representatives Standing Committee on Transport, Communications and Infrastructure, December 1993, paragraphs 6.5 to 6.10
- (2) Decicorp Pty Ltd "An Economic Study of Road Construction using Continuously Reinforced Concrete Pavement", July 1994
- (3) Porter, K.F., Tinni A., Bethune J., "Whole-Of-Life Analysis Concepts Applied to Australian Pavement Options", Proc. 17th ARRB Conference, Part 4, August 1994.
- (4) Zaniewski, Dr John P., "Effect of Pavement Type on Fuel Consumption", Portland Cement Association, Chicago 1989
- (5) Allen Consulting Group "Neutral Evaluation of Infrastructure Projects: Alternative Road Pavements", October 1994
- (6) Cox, John B., "Refocusing Road Reform" prepared for the Business Council of Australia, 1994