



news

ISSUED BY THE COUNTRY ROADS BOARD, 60 DENMARK ST., KEW, VICTORIA, 3101.

No. 30, MAY, 1975

Road Construction Cost Rises Highlight Need for More Funds

Sharp rises in road construction and maintenance costs in the first six months of the current financial year are beginning to restrict the volume of work which can be undertaken by the Board.

The position is not expected to improve in 1975/76 unless increased funds are made available for roading purposes.

During the six months to 31st December 1974, overall road construction prices rose by 10.3 per cent, giving a projected annual rate for 1974/75 of 20.6 per cent. This increase follows the overall increase of 21.6 per cent in the previous 12 months to 30th June 1974.

The continuing steep increases in road construction costs highlight the inadequacy of the present road grants from the Commonwealth Government for the three years to 30th June 1977.

During the current financial year (1974/75), Commonwealth Government grants for roads in Victoria will amount to approximately \$77,090,000 (including a special supplementary grant of \$6,090,000 made available in February last).

The present Commonwealth roading legislation provides for \$76,000,000 to be granted to Victoria next financial year, and \$85,000,000 in 1976/77.

The amounts of the grants are significantly less than those recommended by the Commonwealth Bureau of Roads which based its recommendations on an annual increase in construction costs of only 6 per cent, less than one-third of the actual price increases (as outlined above) being experienced by the Board.

On the basis of actual cost increases, Victoria will require a grant of not less than \$91,000,000 from the Commonwealth Government in the next financial year to maintain the present level of road construction financed from Commonwealth grants.

A total of almost \$110,000,000 would be required in 1976/77, compared with the presently proposed grant of \$85,000,000.

Such increased funds would not permit any increase in real expenditure on roads—the increases would merely make allowance for increases in construction costs to maintain the present volume of work.

The rise in road construction and maintenance costs is not only affecting projects under the direct control and supervision of the Board, but is also severely hampering road works planned by Victorian municipalities.

In recent weeks municipal councils in various regions throughout the State have met to discuss their road funding problems and prepared cases for presentation to the Commonwealth Bureau of Roads and State and Commonwealth Governments.

At a meeting of seventeen municipal councils at Warrnambool in April it was pointed out that labour retrenchments would be inevitable unless increased road funds were made available to meet increased costs. Labour costs were quoted as having risen 80 per cent in the past five years.

The Minister of Transport, the Hon. E. R. Meagher, M.B.E., E.D., M.P., has already made a number of representations to the Commonwealth Government for more funds to meet actual increases in roading costs.

At the recent Conference of Municipal Engineers (sponsored by the Local Government Engineers' Association and the Board) in Melbourne, Mr. Meagher said that the Victorian Government was "most concerned about the situation", and had met with the Commonwealth Minister of Transport with the dual objectives of securing more funds for States' roading, and reducing Commonwealth conditions and controls on the expenditure of these funds.

Mr. Meagher said:

"We have maintained that road construction and maintenance is a

(Continued, back page)

Appointments To Board



Mr T. H. Russell



Mr W. S. Brake

Mr T. H. Russell, formerly Member, was appointed Deputy Chairman of the Country Roads Board earlier this year.

Mr W. S. Brake, previously the Board's Chief Engineer, was appointed Member of the Board.

The two appointments followed the retirement of Mr J. D. Thorpe, Deputy Chairman. **Mr R. E. V. Donaldson** continues as Chairman of the Board, an appointment he has held since 1971.

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Appointments To Board



Mr J. D. Thorpe Retires

Mr J. D. Thorpe retired as Deputy Chairman of the Board on 10th January 1975 after 49 years' service, including a period of secondment as Chairman of the Traffic Commission between 1956 and 1968.

Mr Thorpe joined the Board in 1926 as a junior clerk but transferred to the engineering staff the following year. In 1929 he became an engineering assistant and, after qualifying as an engineer in 1933, was promoted to Assistant Engineer in 1935.

From 1938 to 1941 Mr Thorpe was Assistant Asphalt Engineer, after which time he left to serve as Officer Commanding the 2/1 Flash Spotting Battery. He returned to the Board in 1946 as Assistant Divisional Engineer, Dandenong Division and was appointed Assistant Highways Engineer in 1948, a position he held until seconded to the Traffic Commission.

While Chairman of the Traffic Commission Mr Thorpe took a prominent part in the preparation of the Victorian Road Traffic Regulations, the setting up of the State Accident Record System, the Metropolitan Route Marking System, and the Clearway System.

During his term as Chairman of the Commission he was also Chairman of the Safety Inspection Advisory Committee (vehicle inspection), and the Australian Committee on Road Devices, and a member of the Metropolitan Transportation Committee, the Australian Road Safety Council, the Australian Road Traffic Code Committee, the Australian Motor Vehicle Design Advisory Panel, the Conference of State Traffic Control Engineers and the Human Factors Committee of the Australian Road Research Board. He took a prominent part in the preparation of the National Road Traffic Code.

Mr Thorpe was appointed Member of the C.R.B. in 1968, and served in that capacity until his appointment as Deputy Chairman in 1971.

Mr T. H. Russell, M.Eng.Sc., B.C.E., C.E., M.I.E.Aust. commenced with the Board as a diplomate engineer in January, 1943, and subsequently obtained his Bachelor and Masters Degrees at the University of Melbourne. He was Assistant Divisional Engineer, Traralgon from 1952 to 1959 and in 1959 was appointed Assistant Bridge Engineer. In 1968 he became Deputy Chief Engineer - Bridges.

Mr Russell became Deputy Chief Engineer in 1970 and later that year was appointed Chief Engineer. In 1971 he became Member of the Board.

Mr W. S. Brake, B.C.E., C.E., M.I.E.Aust. joined the Board's Bairnsdale Division in 1949 after completing his civil engineering degree at the University of Melbourne. Between 1953 and 1958 he served in Benalla and Dandenong Divisions.

In 1958 Mr. Brake became Assistant Divisional Engineer in Dandenong Division and served in this capacity until his appointment as Assistant Chief Engineer, Road Design, in 1966. Early in 1970 he became Chief Road Design Engineer and later that year, Deputy Chief Engineer. In 1971 he was appointed Chief Engineer.

Senior Appointments

Dr K. G. E. Moody, B.C.E., M.Eng.Sc., Ph.D., M.I.E.Aust., has been appointed to succeed Mr. Brake with the new title of Engineer in Chief. Dr Moody joined the Board's staff as a diplomate engineer in 1943. Apart from a period of three years as lecturer and senior lecturer at the University of Melbourne, Dr Moody has spent his working life in the Board's service. He previously held the position of Deputy Chief Engineer.

Other senior appointments include:



Dr K. G. E. Moody



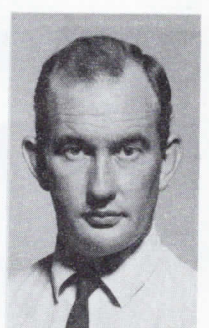
Mr N. S. Guerin



Mr Underwood



Mr A. M. Noble



Mr D. Pritchard

Mr N. S. Guerin, B.C.E.Cert.H.T.- (Yale), M.I.E.Aust., has been appointed Deputy Engineer in Chief. He was previously Chief Planning Engineer.

Mr R. T. Underwood, B.C.E., M.E., Dip.T.&R.P., Cert.H.T.(Yale), M.I.E.-Aust., has been appointed Chief Planning Engineer. He was previously Assistant Chief Road Design Engineer.

Mr D. Pritchard, M.Sc.(Civ.Eng.), Dip.C.E., C.E., M.I.E.Aust., has been appointed Assistant Chief Planning Engineer. He was previously Free-way Planning Engineer.

Mr A. M. Noble, B.C.E., C.E., Dip.T.&R.P., Cert.T.P.&C., M.R.A.P.I., M.I.E.Aust., has been appointed Assistant Chief Road Design Engineer. He was previously Plans and Surveys Engineer.

Burke Road Overpass Open

A new overpass carrying Burke Road, North Kew, across the Eastern Freeway was partially opened to traffic on Thursday, 17th April. The first section of the freeway, running nine kilometres from Collingwood to Bulleen along the Yarra Valley, is currently being constructed and is scheduled for completion in mid-1977.

The Burke Road overpass is one of the major bridge structures spanning the freeway.

It will carry two lanes of traffic each way and has an access ramp to the freeway at the North Kew side. An exit ramp from the freeway will be built to join Burke Road at the Ivanhoe end of the overpass. Initially traffic is using only one side (two lanes) of the new overpass whilst the roadway connections between the next two lanes and Burke Road north are constructed.

The new overpass runs 325 metres (1070 feet) across the Yarra Valley in a gentle S-curve to link Burke Road north and south.

It is elevated some 20 metres (60 feet) above ground level to span the Eastern Freeway, and to cross adjacent areas which form part of a flood plain for the Yarra River.

The overpass consists of seven central spans of 38 metres (125 feet) each and two end spans of 30 metres (97 feet) supported on a series of Y-shaped piers.

The unusual Y-shaped piers were selected for functional and aesthetic reasons, the design taking into consideration such factors as variations in curvature along the overpass, its height above ground, roadway width, and the ultimate landscaping of the area.

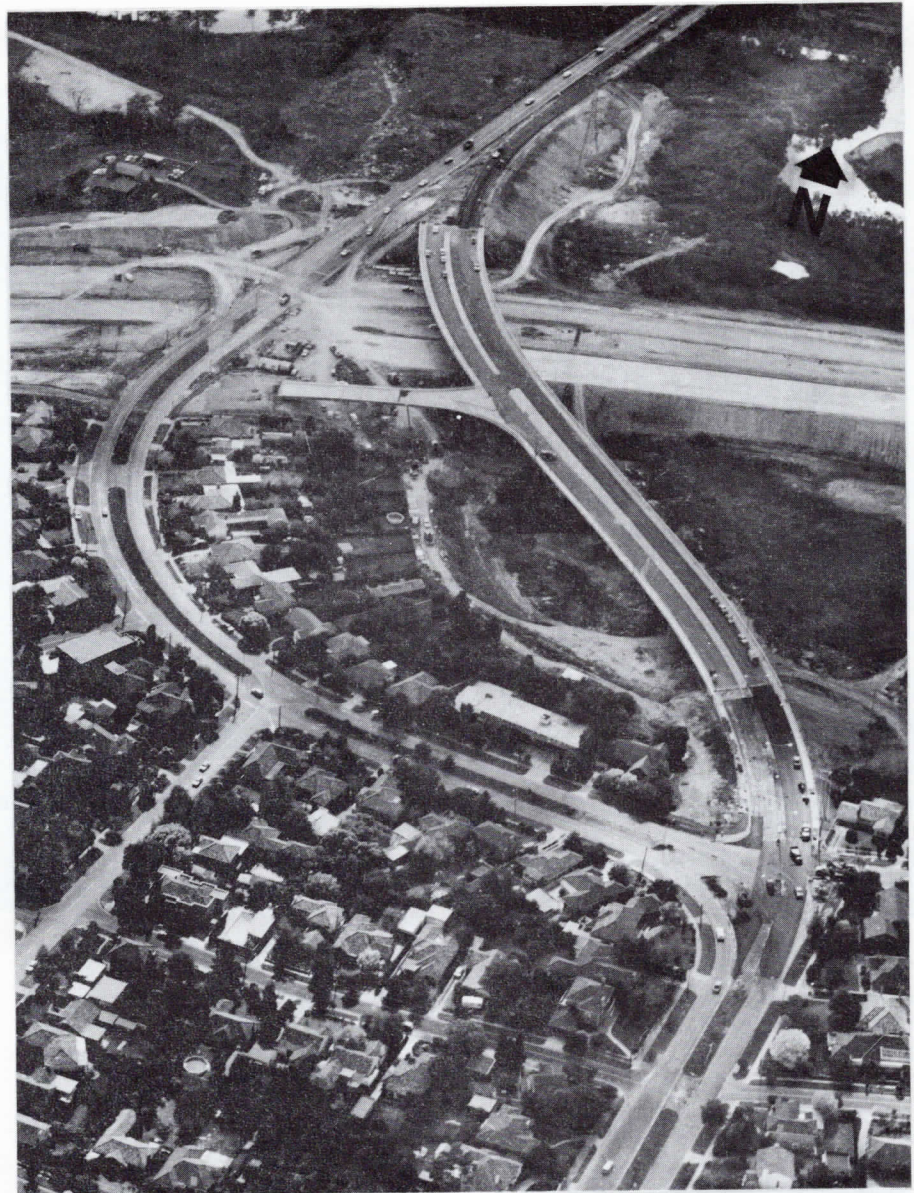
The stems of the Y-piers have been sunk some 4 to 6 metres (15 to 20 feet) below ground level to solid bedrock, leaving the upper parts of the Y's exposed to create an attractive geometric pattern in harmony with the overpass superstructure despite varying ground levels.

A ramp to allow access to the Freeway from Burke Road joins at right angles near the mid-point of the overpass.

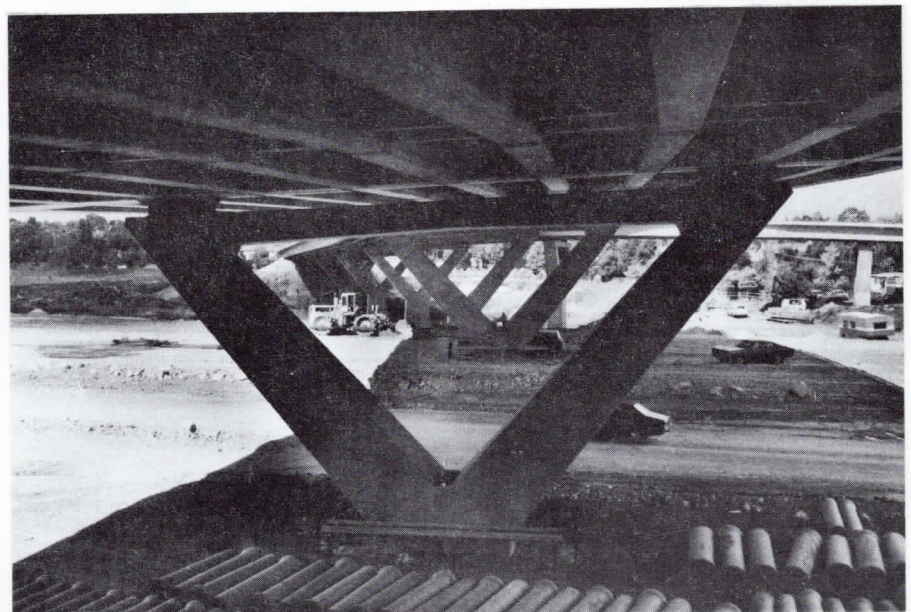
The whole structure has been post-tensioned along its full length to form a continuous superstructure.

The superstructure of the overpass proper and access ramp structure is seated on flexible rubber bearings which enable it to move slightly in accordance with dynamic loadings imposed by passing traffic, wind and temperature variations.

The new overpass, and associated works, will cost more than \$2,500,000.



An aerial view of the new Burke Road overpass (right) across the Eastern Freeway at North Kew. The overpass extends some 325 metres over the Freeway, replacing old Burke Road (left) which has now been closed as construction of the Freeway continues.



Unusual Y-shape piers support the new Burke Road overpass.

New Bridges Across Snowy River

Work has commenced on an all-weather crossing to carry the Princes Highway over the Snowy River and its flood plains at Orbost. The crossing will comprise three new bridges, linked by earth embankments, on the Princes Highway East approach to the township.

The bridges and embankments are being built on a new alignment of the highway from Newmeralla in the west to provide an improved approach to the township of Orbost, and to allow through traffic to bypass the town to the south.

The Board, which designed the bridges, used modern computer techniques for calculation and analysis of design concepts.

The history of bridges at the site has been eventful. The first bridge over the river, a timber structure with a central suspended span of about 30 metres (100 ft.), was constructed late in the nineteenth century.

Cann River Work

Construction has begun of a new 121 metre (400 feet) long bridge carrying the Princes Highway across the Cann River in East Gippsland.

The new bridge will replace an older structure which has been damaged by flood waters in recent years.

The new bridge has been designed by the Board and is being built by E. G. Smith Constructions.

The present bridge, which is being demolished, was damaged in February 1971, when heavy flooding of the Cann River eroded foundations, causing the supporting piers to subside. This damage was repaired; but changes in the position of the river's main channel caused further erosion during smaller floods in November 1973, and June 1974, moving the foundation piles again.



The old road bridge over the Cann River at Cann River is being removed to make way for a new bridge. A temporary bailey bridge has been erected to carry traffic using the Princes Highway East.

After the end of the first World War the Victorian Railways considered an extension of the railhead across the river at Orbost, and in 1922 a new timber and steel girder structure, a joint Country Roads Board-Victorian Railways venture, was built and completed at a cost of £41,000 (the steel girders came from the Flinders Street viaduct reconstruction). Subsequently it was decided not to take the railway across the river, and the bridge has only been used by road traffic.

The bridge has been severely battered by floods during its life. In 1934 two central spans were swept away and were subsequently replaced by a welded steel truss that is still in place. Extensive repairs to piling at the western end of the welded truss span became necessary in 1952 and the Orbost abutment was washed away in February 1971.

In times of heavy floods the highway on both sides of the river has

been cut by floodwater and during the 1971 floods, the highest ever recorded, the river was 1.6 kilometres (1 mile) wide at the crossing. The highway was closed for 11 days.

The highway approaches to the existing bridge are on poor alignments and several serious accidents have occurred at the Orbost end. The new alignment provides a flood plain crossing of 2,024 metres (6,640 ft.) sited just downstream of the existing river bridge and the railway, at the narrowest section of the flood plain.

Commencing at the high ground of the Newmeralla bank, the first bridge will be 598 metres (1,960 ft.) long across a depression known locally as Ashby's Gulch. The second bridge will be 214 metres (700 ft.) long across Watts Gulch and the third 366.4 metres (1,240 ft.) long, will span the Snowy River and a lagoon to high ground at the Orbost end.

All three bridges will be 9.7 metres (33 ft.) between kerbs. The lengths of the earth embankments between the bridges will be 316.9 metres (1,040 ft.) and 518.2 metres (1,700 ft.), matching the lengths of embankment between the railway viaducts.

The river bridge will have five 30.5 metre (100 ft.) and two 27.4 metre (90 ft.) spans over the permanent channel of the river and eight 21.3 metre (70 ft.) spans across the lagoon. The two bridges across the gulches will have a total of thirty-eight 21.3 metre (70 ft.) spans.

U-shaped beams being used will be the first in Australia made from pre-tensioned, prestressed concrete. They are being manufactured at the site of the bridge works. The U-shaped beams will be used instead of I-shaped ones to reduce the risk of snagging by debris and to provide sufficient lateral stiffness to resist the impact forces of large trees brought down by flood waters.

The combined waterway to be provided by the three bridges is designed to cater for a flow of 8,500 cubic metres (300,000 cubic ft.) per second which is about 1,100 cubic metres (40,000 cubic feet) per second more than the recorded flow of the 1971 flood.

The underside of the superstructure of the bridges will be 1.83 metres (6 ft.) above the level of the 1971 flood to ensure clearance for the large trees which are washed down by severe floods.

The new road alignment will involve construction over a distance of 8.4 kilometres (5.2 miles) and is estimated to cost \$2.8 million, while the estimated cost of the bridge-works is \$5.5 million.

The whole project is expected to be completed late in 1977.



The Snowy River flood plain at Orbost, showing the railway bridge (left), and the general alignment of the new road bridges under construction.



Pile driving in progress on the east bank of the Snowy River at Orbost. The water in the foreground is a billabong, which, with the main river channel, will be spanned by a bridge 366 metres long.

Major Works Progress

HUME FREEWAY (WALLAN-BROADFORD SECTION)

Nearly 50 per cent of the route of 34 kilometres (21.3 miles) of the carriageways on the Hume Freeway between Wallan and Broadford has been sealed.

Bridges have been completed at the Wallan East interchange, Glenelgin interchange, Arkells Road overpass, north-eastern rail overpass, Kilmore-Wandong Road interchange, Rigettis access, Mia Mia Road overpass, and Strath Creek interchange. The project is expected to be completed in 1976.

EASTERN FREEWAY (COLLINGWOOD-BULLEEN SECTION)

The Burke Road overpass at North Kew was partially opened to traffic on 17th April 1975. Work has commenced on the twin bridges over the Merri Creek, and the Boulevard bridge over the freeway. Work on the rail underpass at Victoria Park is well advanced. Bridgeworks are proceeding at the Chandler Highway interchange, and contracts for two further bridges will be let later this year. The import of all filling material for all freeway embankments is complete.

MULGRAVE FREEWAY

Work is continuing on the construction of 3.4 kilometres (2.1 miles) of freeway between Springvale Road, Mulgrave and Forster Road, Mount Waverley, and on earthworks along the adjoining 1.3 kilometres (0.8 mile) section to Stanley Avenue, East Oakleigh.

Work on the section between Springvale Road and Blackburn Road has advanced to the stage of paving. The Blackburn Road bridge comprises two separate structures side by side, and construction is well advanced on the western bridge structure. The estimated completion date of this section is early 1977. A bridge carrying Stephenson's Road across the freeway at Mount Waverley will be opened to traffic in June.

SOUTH GIPPSLAND FREEWAY

The two bridges over Hallam Main Drain are well advanced. A contract has been let for paving between the Princes Highway East and the Gippsland railway and for earthworks between the Hallam Main Drain and Pound Road, Hampton Park.

NEPEAN HIGHWAY

Good progress is being made on reconstruction of the two two-lane carriageways between Centre Dandenong Road, Cheltenham and Lower Dandenong Road, Mentone to provide six traffic lanes. The work includes modifications at the Warrigal Road intersection.

BASS HIGHWAY

Work on a new bridge over the Bass River has been commenced and will be completed by March 1976. Approaches to a new bridge at Bourne Creek have been completed and construction of the bridge has commenced. It is expected that this bridge will be open to traffic in August 1975. Reconstruction of the highway west of Dalyston has commenced.

PRINCES HIGHWAY WEST, BROOKLYN

Construction to provide for three lanes in each carriageway between Kororoit Creek and McDonalds Road, Brooklyn has commenced and will be completed in about 12 months.

MELBOURNE ROAD, SPOTSWOOD

Good progress is being made on the construction of a \$1.6 million road-over-rail overpass to eliminate the rail level crossing in Melbourne Road at Spotswood.

MAHONEYS ROAD, CAMPBELLFIELD/THOMASTOWN

Duplication of Mahoneys Road between the Hume Highway and Epping Road is well under way. Roadworks between Epping Road and Callender Street and bridge-works at Edgars Creek are proceeding. Work has also begun on the section between Riviera Court and Phillip Street, and includes a new bridge over Merri Creek.

BANKSIA STREET BRIDGE

Work on the duplication of the Banksia Street Bridge, — a major crossing of the Yarra at Heidelberg linking northern and north-eastern suburbs, is scheduled for completion by the end of June.

FISHER PARADE BRIDGE, ASCOT VALE

Work has commenced on the approaches to a new major bridge over the Maribyrnong River at Fisher Parade in the Cities of Essendon and Footscray. This work is being carried out by the Board on behalf of the councils.

ST KILDA ROAD (HIGH STREET), ST KILDA

Widening St Kilda Road (formerly High Street), between St Kilda junction and Carlisle Street, to provide three traffic lanes in each direction, will be completed in June 1975. Traffic is already using the new lanes.

HODDLE STREET, COLLINGWOOD

Widening Hoddle Street, between Victoria Street and Alexandra Parade, Collingwood, is scheduled for completion by July.

Access to Snow Fields

Access by car to the major skiing resorts in the Victorian Alps will be maintained, weather permitting, by the Board again this winter.

Snow clearing work will be carried out when required on:

- The Mount Buller Road
- The Mount Buffalo Road
- The Alpine Road to Mount Hotham, from both the Omeo and Harrietville approaches
- The Bogong High Plains Road from Mount Beauty to Falls Creek. The Bogong High Plains Road will be closed beyond Falls Creek, towards the Omeo Highway, when snow falls make it impassable.

Swiss built Rolba snow blowers will be used in conjunction with specially equipped graders to clear the roads. Board vehicles and most items of plant at Mt Hotham are fitted with two-way radios. At Mt Buffalo, Mt Buller and Falls Creek supervisors' vehicles are fitted with two-way radios.

Improvements have been made to sections of the main 'snow' roads during the summer months.

The Alpine Road has been widened and sealed between Harrietville and The Meg.

The Bogong High Plains Road has been sealed between Howmans Gap and Turnback Creek, and between Crankie Charlie and Dynamite Creek. It has also been widened between Dynamite Creek and Mt Beauty.

Minor snow clearing work will also be carried out by the Board when necessary to maintain access to other snow resorts such as Mount Donna Buang and Mount Baw Baw.

Median Safety Barrier Wall



Section of the new median barrier safety wall being constructed along 8 kilometres of the Princes Highway (Geelong Road) at Laverton, Victoria.



A \$100,000 automated concrete slip-forming machine was used to build a new median barrier safety wall along 8 kilometres of the Princes Highway (Geelong Road) near Laverton.

A new type of median barrier wall designed to more safely protect traffic from out of control vehicles travelling in the opposite direction has been built by the Board along a section of the Princes Freeway (Geelong Road) near Laverton.

The wall will also reduce the severity of injury to the occupants of out of control vehicles.

The barrier wall, between 80 cm (32 inches) and 150 cm (60 inches) high, is made of solid concrete specially shaped to re-direct vehicles back on to their side of the roadway should they run off course and strike the wall.

The shape is designed so that the tyres of a vehicle running off course strike it initially and are re-directed towards the roadway. Tyres and vehicle suspension thus absorb much of the shock of impact, reducing the severity of damage to the vehicle. Head on collisions, or side swiping across the centre of the roadway, are virtually eliminated by the barrier.

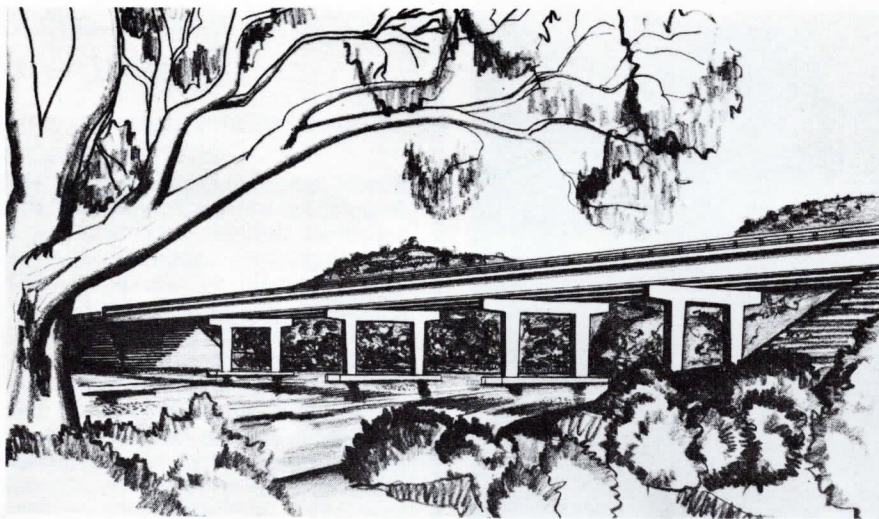
The Board plans to build similar barrier walls on a number of busy highways and major roads where the relatively narrow width of the roadway reservation makes it impossible to provide wider medians. The Board imported a special self-propelled concrete forming machine — the first of its type in Australia — to build the barrier walls efficiently and economically.

The new machine, costing approximately \$100,000, is capable of forming median barrier walls of up to 1.8 metres (70 inches) in height. It can also be used to form concrete bridge parapet rails, kerb and channel and line open drains. Completely automated, it is capable of forming more than 500 metres (550 yards) of median barrier wall 80 cm (32 inches) high per day.

Electronic sensors, following a pre-set line automatically control the elevation of the machine above the ground, and its direction, to produce a barrier wall in the required position and of the required height.

Pre-mixed concrete is fed into a hopper at the front of the machine, and lifted into a slip-form, called a 'mule' mounted under the machine. The concrete is then compacted by vibrators in the mule; as the machine moves forward, the concrete is slip-formed through the mule to form the median barrier wall.

Even after severe impact, damage to the new barrier walls is minimal, reducing maintenance costs, and reducing the period when the road must be partly closed whilst repairs are made.



An artist's impression of the new bridge across the Goulburn River at Trawool.

Goulburn River Bridge

Work will soon begin on construction of a new steel girder bridge over the Goulburn River on the Goulburn Valley Highway at Trawool, 10 km south-east of Sevmour.

The new bridge, two lanes wide, will be of five spans totalling 148 metres (484 feet) in length.

It will replace the old timber bridge at Trawool, which is the last of its

type on the Goulburn Valley Highway.

The new bridge will be located about 8 metres downstream from the existing bridge. Associated with the bridge works, work has commenced on the realignment of the road approaches to the bridge.

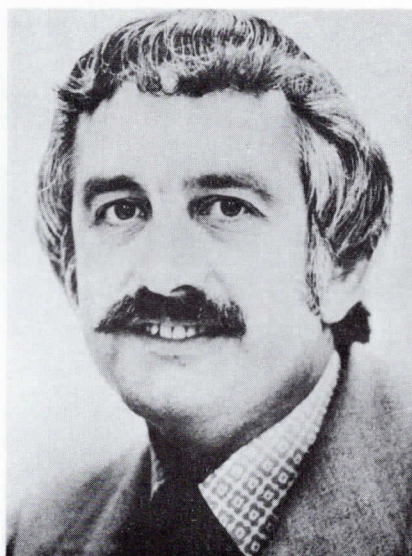
The estimated cost of the bridge and road works is \$800,000.

New A.R.R.B. Director

Dr M. G. Lay has been appointed Director of the Australian Road Research Board. The Australian Road Research Board was established in 1960 by the National Association of Australian State Road Authorities as the centre for scientific research into roads and road traffic.

Dr Lay succeeds Mr D. F. Glynn, who has retired.

Dr Lay graduated from Melbourne University in Civil Engineering in 1958, and completed his M.Eng.Sc. two years later. He obtained his Doctorate of Philosophy at an American University four years later. He was previously Engineering Research Manager of B.H.P. Limited.



Need for More Funds

(Continued from front page)

State responsibility, whilst accepting as essential the uniform development of national routes.

"Although total Commonwealth funds allocated to rural areas are higher than provided by previous legislation, these increases are largely concentrated on national highways—in Victoria the Hume and Western Highways.

"By its emphasis on national highways in the allocation of funds, the Commonwealth Government has made it necessary for funding from State and local government authorities to bear an increased part of the burden of improving roads in other categories, such as rural arterial, rural local and urban arterial.

"There is no doubt about the inadequacy of funds and I emphasise that we have been doing our utmost to obtain additional grants from the Commonwealth.

"The State Government is also deeply concerned about the conditions and controls written into the new Commonwealth legislation.

"Considerable additional costs, delays in programming works and duplication of effort are inevitable. Certainly complete investigations into the social, economic and environmental costs of all major projects are now more than ever necessary, but the States road authorities have the expertise to do this without any rubber-stamping necessary to give every arterial road project the seal of approval."

With revenue from both State and Commonwealth sources, the Board will expend approximately \$170,000,000 on Victoria's roads in the current financial year.

'C.R.B. News' is produced quarterly by the Country Roads Board. Material contained in it may be reprinted without acknowledgement. Further information, and photographs, are available on request from the C.R.B., 60 Denmark Street, Kew, Victoria, 3101. Phone: 86 5321 (Melbourne).