

MITCHELL FREEWAY STAGE 1

The Mitchell Freeway began as part of the Stephenson Metropolitan Region Scheme in the mid 1950s. Stage 1 included the Narrows Interchange, the Central Section between Mount and Murray Streets, and the Hamilton Interchange. Construction commenced in 1966 and was completed in 1973.



The Narrows Interchange circa 1966

Foundation Problems of the Narrows Interchange Site

The most difficult part of Mitchell Freeway Stage 1 to design and construct was the Narrows Interchange. Soon after the Narrows Bridge was completed in 1959 Main Roads WA started planning for the preparation of the interchange site for road and bridge construction. Mountability having been previously been established by the geotechnical investigations carried out by the geotechnical consultant Messrs. J. H. & J. W. Messersmith & Partners, Perth. The investigations which could be used for the rapid consolidation of the mud layers under the future Narrows Interchange site. On his return to Perth he initiated a successful pilot program of sand draining techniques after which, commencing in 1964, Main Roads carried out, over a four year period, an extensive stabilisation of a 37 hectare area of soft mud. The sand drains, which were installed at intervals of approximately 3000 vertical sand drains, about 800 km in length. In addition the mud by forcing water to come to the surface through the sand drains. The scale of this stabilisation process was unique in Australia, and probably in the world, civil engineering construction at the time.



70 Commonwealth Road, Perth 1966
Chief Engineer Main Roads, 1966 to 1968



21 Howard Street, Perth 1969 to 1972
Construction of the Mitchell Freeway, 1966 to 1972

The Central Section

The central section was designed by De Leuw Cather of Chicago, a firm which had specific experience in geometric road design, with selected Main Roads staff as part of the design team. The project scope consisted of bridges over Mikkim, Hay and Murray streets, retaining walls, freeway standard roadway pavements and connections to adjoining streets. A contract to construct the section was let in March 1966 to Coughlin, a joint venture between Perth firm Coughlin Engineering and Kerr Ltd, a UK based company. Work was completed in 1968.



Commemorative Plaque unveiled 1962

On 18 November 1966 the Premier of Western Australia, the Hon David Brand, M.L.A., pulled a lever to begin the first concrete pour on the Central Section. The above plaque is fixed on the north retaining wall of Murray Street Bridge, and was unveiled by Lady Brand, widow of Sir David Brand, on 18 November 1962.

Hamilton Interchange

Connecting to the northern end of the Central Section the Hamilton Interchange consisted of bridges over Wellington, Meise, Ross Street and the Perth to Fremantle railway. It was constructed by P.D.C. Pty Ltd between 1969 and 1972.

The Barracks Arch

The commencement in 1965 of the demolition of buildings west of the Perth CBD to make way for the central section of the freeway caused a public outcry. A concrete was raised whereby the arch gateway was used. The Barracks Arch stands as a symbol of an increased awareness of the value of preserving the built heritage in Western Australia.



Barracks Arch and Malcolm Street bridge over central section of freeway

The Narrows Interchange Bridges

The Narrows Interchange roads and bridges were designed by Main Roads staff. Despite the success of the foundation consolidation by sand draining the interchange was still subject to differential settlement. As a result of the horizontal surface movements in the region of the bridge foundations. As a consequence the bridge are supported on concrete piers contained within larger diameter watertight concrete cylinders (caissons). The caissons were built in stages and sunk to bedrock by excavating the soil within. The bridge support piers were then constructed. The similar space between the piers and adjacent ground was filled with concrete. The Narrows Interchange bridges were constructed by Ultra Australia from 1969 to 1973.



The Narrows Interchange under construction, July 1972
Reproduced by the Central Section of the Mitchell Freeway



The Mitchell Freeway Stage 1 was declared a National Engineering Landmark by Engineering Heritage Australia (the heritage arm of Engineers Australia) at a heritage recognition ceremony held on 18 November 2008.

This award recognises Engineering Heritage Australia's assessment that this work of engineering is of national significance to the people of Australia.



Narrows Interchange 2008

Job #
Client
Size

16233
Engineering Heritage Panel
1,200 x 600

Proof
Artwork
Date

4
Laura R
15 Oct 2010