

## Westgate Bridge, Melbourne VIC Australia



Australia's third longest bridge - The Westgate bridge is a combination cable stay and box girder design that crosses the Yarra River in Melbourne. The bridge carries 8 lanes of traffic and spans a distance of 2582.6 metres (including approach spans).

Construction commenced on 22nd April 1968 and was scheduled to be completed in December 1970, however due to a number of construction issues the bridge was considerably delayed.

The bridge towers 58metres above the Yarra River and was built for the purpose of allowing traffic an easy and fast method of crossing the river near its mouth to Port Philip Bay, therefore not having to detour traffic upstream to cross. Whilst designing this bridge consideration also had to be made to ensure maritime traffic could easily pass under the bridge undisturbed.

The longest span of the bridge is 336m and as is with the entire road deck of the bridge, it is supported by structural steel. The approach spans are supported by reinforced concrete box girders and the pylon height at the highest point of the bridge is 102m.

On the 15th of October 1970 the two half girders between piers 10 and 11 were being installed, it was found that it had a camber of 11.4cm. To fix this the high side was weighted down with 10, 8 tonne concrete blocks. This caused a large amount of buckling to the bridge structure. This buckling was a clear indication that a partial failure of the structure had occurred.

Work began on unbolting splices 4-5 to allow the diaphragm connection. When 16 bolts were removed there was significant slipping of the plate. After 30 bolts had been removed, signs of distress in the bridge, previously only seen in the inner upper panel, spread into the adjacent two outer upper panels. At 11:50am, span 10-11 collapsed and crashed 50m to the ground and river killing 35 men and injuring 18.

The Westgate Bridge was finally completed on 15th November 1978 today remains a reminder of what happens when engineers get it wrong. The bridge is currently heading towards its maximum traffic capacity due to strong growth in suburbs along the route and increased freight into the harbour. Plans have been made to combat this growing issue.



### Technical Details

Design: Combination Cable stay and box girder bridge. Maximum span of 336m and pylon height of 102m.

Cost: \$202 Million

Start/Finish date: 22 April 1968 - 15th November 1978

Location: Yarra River Melbourne, VIC Australia

Length: 2582.6 metres

Clearance for shipping: 58 metres

Width: 37.3 metres, 8 traffic lanes

Deck supports: Structural steel girders

Approach deck supports: Reinforced concrete box girders

Men killed: 35

Men injured: 18

References: [www.westgatebridge.org](http://www.westgatebridge.org)  
[www.melbourneinphotos.com](http://www.melbourneinphotos.com)

### Contact Details

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