

M7-M12 Interchange – Design and Construction of NSW’s Longest Incrementally Launched Bridge

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Abstract: The new M7-M12 interchange is an integral motorway-to-motorway connection to Sydney’s new Western Sydney Airport. The Project provides a grade-separated connection to the new M12 project, allowing free-flowing traffic to and from the M7. The interchange also integrates with the new Elizabeth Drive Connection (EDC) design as well as the mainline M7 Widening through the area.

The structures in this interchange are the centrepiece of the Project, drawing parallels in appearance and scale to the Light Horse Interchange. At the heart of the interchange are the two Incrementally Launched Bridges (ILBs), which reside high above the interchange on separate overlapping planes and form the ‘motor-to-motorway connection’ between M7 and M12. These ramps are constructed from continuous post-tensioned girders, which provide optimal value for money, certainty of delivery, durability, and a structural form that incorporates placemaking initiatives and enhances the urban design outcome.

The contractor (John Holland) and designer (BG&E) have adeptly navigated complex brownfield constraints, building on and around a live motorway and its existing structures, while working and collaborating with many project stakeholders, to provide Sydney with two new landmark bridges.

The objective of the bridge form and construction methodology is to minimise impacts to the public during construction. The incrementally launched construction method has enabled the contractor to erect this new bridge over live traffic, without a single closure of the main M7 motorway.

The Southbound off-ramp to M12 westbound is set to become the longest incrementally launched bridge in NSW at a final length of 660 metres. The launch geometry has pushed the limits of this construction technique, launching on both vertical and horizontal curves.

This paper describes the project constraints, design challenges, and distinctive features of the launched bridges of M7-M12 interchange. At the time of writing, the design is complete, and construction is ongoing.



Figure 1 – General arrangement of the Incrementally Launched Bridges (ILBs) at M7-M12 interchange