





The Western Ring Route - Three Steel Bridges

Auckland

Jasmax has been fortunate enough to provide design services along the Western Ring Route, with the Waterview Connection being the final linkage in this suite of projects. Jasmax has provided design services for the SH20-1 Manukau Extension, the SH20 Manukau Harbour Crossing and the SH16/18 Hobsonville Deviation. Part of the urban design strategy was to provide 'moments' along the journey to provide legibility and place making in partnership with site specific treatments of other elements such as plantings, noise attenuation and retaining walls etc.

Jasmax has been instrumental in bringing colour into NZTA projects through these bridges and others. The choice of steel for the structure and secondary elements of the bridges brings with it the need for protection from corrosion and the opportunity to use brightly coloured coatings performing this function.

These pedestrian and cycle bridges reconnect communities severed by the motorway. That they perform this function in a colourful way helps humanise the motorway itself and provides links to, and markers for, the communities they serve.

Because of the relatively light loading of such bridges (compared with overbridges carrying heavier vehicular loads) a greater degree of structural freedom is possible. In many of the projects making up the Western Ring Route, the footbridges become the feature bridge and punch well above their weight in terms of their cost, often about 1% of the total cost of a typical 5-10km stretch of motorway construction.

The Beachcroft Footbridge in Onehunga was constructed as part of the SH20

Manukau Harbour Crossing project. An existing concrete footbridge could not be modified to span the additional lanes of the widened motorway. The new bridge was designed to current standards, including 3.5 metre width to safely accommodate cyclists and pedestrians, and integrate into the landscape design of the Onehunga foreshore park. The asymmetrical steel cable stayed bridge structure was designed to respond to the site topography and as a counterpoint to the plethora of power pylons in this coastal site.

The Westgate Footbridge was designed to satisfy the pressing need for a safe direct link across the widened SH16 motorway near the Westgate Centre and Hobsonville Road. This 200 metre long bridge comprises of a straight section angling across the motorway and a reverse curving 'roller coaster' section across a stream to Oreil Avenue. The curvilinear route was a solution to the height difference between these two points. This section of the bridge is supported by an underslung triangular truss, while the motorway crossing employs trussed sides which increase in height toward either end.

The Clarks Lane Footbridge reconnects the Clarks Lane across the new SH18 Hobsonville Deviation motorway leading to the Upper Harbour Crossing. Placed on a straight section of the motorway, it acts as a colourful entry marker to West Auckland from the north. Subtle lighting of the structure ensures that the colour is enhanced at night.

Both the Beachcroft and Clarks Lane Footbridges have received NZ Institute of Architects Awards in the Urban Design category.





Contrary to rumour, the Beachcroft Footbridge was not painted blue and white to remind visitors coming from the airport that they were entering Auckland Blues territory. Rather, the proximity to the Manukau Harbour foreshore was an influence in selecting the cable stayed structural solution. White was therefore chosen as the appropriate colour for the tall, raked pylon and stays, with their nautical appearance. The structure is a hybrid in the sense that the main span of the new bridge had to be erected in a few hours of overnight motorway closure. This tubular steel truss element supports its own weight; the cables were added later to support the precast concrete decking and live loads. To celebrate their role in the structure, the main span and the back span were painted **Resene Fun Blue**, also reflecting the nearby harbour.

The Westgate Footbridge's yellow superstructure carries on the use of **Resene Moon Yellow** established on the earlier Clarks Lane Footbridge, a few kilometres away. The reasoning

for this was to link the bridges as they perform similar functions on the same motorway network, despite each bridge having a very different appearance. At Westgate, the yellow is used for all of the superstructure, including the distinctive V-shaped barrier stanchions. However the piers are contrasted in white, to allow the long yellow structure to float above. This bridge also has a stainless steel mesh throw screen fixed between steel supports which are welded to the top chord of the truss, carrying on the line of the diagonals. These were painted grey, **Resene Dune**, in order to not detract from the strong form of the yellow truss.

One of the urban design drivers for the Hobsonville Deviation project was the notion of it as 'The Gallery Route' incorporating public art as well as recognising the early clay industries based in the area. Accordingly, Clarks Lane was designated as the 'Clay Carpet' using site specific artwork both integrated into the bridge itself and as larger works in the approach pathways. Yellow was determined to be the most appropriate

colour to both stand out in the motorway landscape and to symbolise the historic association with clay. Purpose made ceramic tiles border the concrete bridge deck, with the larger works off the bridge still being completed by the ceramic artists. The all-encompassing yellow of the bridge steelwork is set off by a polished stainless steel handrail (as is the case with all three of these bridges) and zinc-aluminium self-finished safety mesh.

These three bridges have opened over the last three years. Introducing colour into the motorway network presents challenges, as the requirements of maintenance, longevity and graffiti protection are important. Grey is seen as an easy default option.

The use of thermal spray zinc epoxy urethanes supplied by Resene Group company, Altex Coatings, has provided an excellent solution to corrosion protection with great colours and a high degree of gloss which affords the level of graffiti protection required by NZTA.

All three bridges provide a major step forward, especially to a public used to galvanised finishes on these structures.







 Resene Submerge



Architectural specifier: Jasmax www.jasmax.com

Bridge engineer - Beachcroft Footbridge: Andrew Dickson & Melanie Regino, Beca www.beca.com

Bridge engineer - Clarks Lane Footbridge: Tom Pang & Ben Ryder, Aurecon www.aurecongroup.com

Bridge engineer - Westgate Footbridge: John McNeil & Oliver de Lautour, Aurecon www.aurecongroup.com

Building contractor - Beachcroft Footbridge: NZTA/Fletcher/Beca/Higgins Alliance www.fletcherconstruction.co.nz

Building contractor - Clarks Lane Footbridge and Westgate Footbridge: HEB Construction www.heb.co.nz

Client: New Zealand Transport Agency (NZTA) www.nzta.co.nz

Colour selection: Jasmax www.jasmax.com

Painting contractor - Beachcroft Footbridge: TBS Coatings Ltd

Painting contractor - Clarks Lane Footbridge: Napier Sandblasting Co Ltd

Painting contractor - Westgate Footbridge: Auckland Abrasive Blasting & Coatings Ltd

