



## CASE STUDY

# Oak Flats

South Coast, NSW Australia

Reinforced Earth Walls  
TerraSet®

Owner: Roads and Traffic Authority

Consultants: Roads and Traffic Authority

Contractor: FRH Group Pty Ltd  
Construction: 2008

### Background

The Princes Highway between Oak Flats and Dunmore was constructed in the 1930s and was no longer suitable for the traffic flows that it was required to carry.

Early planning by the RTA identified a new road corridor, generally following the railway line. This new corridor was reserved in Shellharbour City Council's town plan in 1986.

On 28 February 2007 a contract was awarded to FRH Group Pty Ltd to construct the new section of the Princes Highway between Oak Flats and Dunmore.

The new highway comprised a four-lane divided carriageway, with a grade-separated interchange linked to Shellharbour Road. Shellharbour Road was also upgraded to four lanes, matching the remainder of its link to Wollongong.

The new highway links the Oak Flats Interchange to the North Kiama Bypass providing a high standard four-lane highway from Sydney to south of Kiama.

### Challenge

Residents of the rapidly developing suburbs of Shell Harbour required ready access to the Princess Highway as the current interchange was becoming congested and unsafe. The solution: a new interchange.

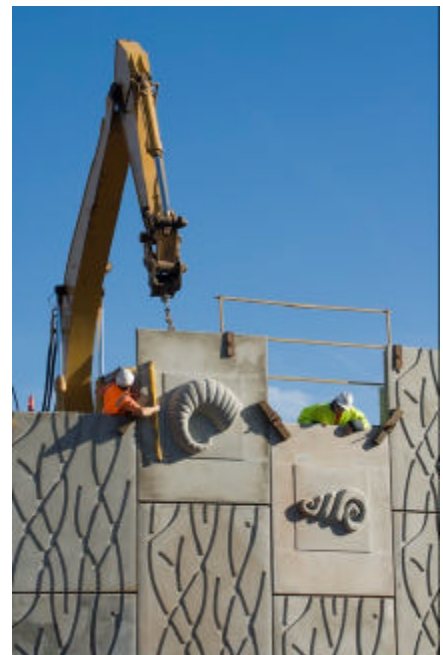
The new interchange, and the lead up to it, has the additional benefit of diverting a portion of the Princes Highway that previously had a number of sharp bends and consequently was a potentially dangerous section of the highway.

The Roads and Traffic Authority (RTA) provided a detailed specification pertaining to the architectural finish on the facing panels for the Reinforced Earth walls required for various structures within the interchange.

A Vine Pattern finish as seen on another project (Carramar) was proposed for the majority of the wall. The challenge lay in developing three different types of additional feature panels – two of which incorporated shell designs and another the Shellharbour Council's emblem itself.

### Solution

The new interchange incorporates four bridge abutments, two of which are used to form a rail overpass and another two for a road overpass. The design of the rail overpass incorporates provision for a future railway station too. The Reinforced Earth Company (RECO) was appointed to design and supply a total of 3141m<sup>2</sup> of Reinforced Earth walls for this project.



Main and Top: Vine Pattern, Shell Pattern and Shell Harbour Council Emblem uniquely detailed TerraSet® panels.

Above: Preparation of panel mould for Vine Pattern Finish.

Transport infrastructure



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Left: Placing of TerraSet® Shell Pattern panel. Note checking of levels, and clamps ensuring correct panel alignment during construction.

Top: Fourth iteration of panel development yields success.

RECO worked closely with project architects and sculptors running through several design iterations during the progressive development of the exact panel finish required by the RTA and Fulton Hogan. The end result was two individual shell patterns and one Shell Harbour Council emblem itself.

**Special features/benefits**

- There are numerous benefits of the new interchange: Significant reduction in traffic congestion; improved traffic flow; improved safety with the elimination of a narrow winding alignment which was completely devoid of overtaking opportunities; the elimination of delays at the Shellharbour Road and Princes Highway junction; a flood free route and reduced delays caused by the train crossing.

- Besides structural, construction efficiency and budgeting benefits, Reinforced Earth structures also offer limitless aesthetic and architectural possibilities. When Reinforced Earth is specified or selected in the earliest phases of a project, specialists from RECO can help owners, their engineers and architects to maximize the design possibilities, allowing architectural treatments to be easily accommodated. At RECO we continue to innovate in collaboration with our clients in order to offer the widest possibilities of architectural expression together with the assurance of Reinforced Earth Quality.

**Project specifications**

|                    |                                |
|--------------------|--------------------------------|
| <b>System</b>      | TerraSet®                      |
| <b>Finish</b>      | Vine Pattern<br>Feature Panels |
| <b>Structure</b>   | Bridge Abutments               |
| <b>Area</b>        | 3141m <sup>2</sup>             |
| <b>Max. Height</b> | 10.77m                         |
| <b>Length</b>      | 620m (total)                   |
| <b>Design load</b> | 25kPa                          |
| <b>Design life</b> | 100 years                      |



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