

BEAM Magazine No. 34

Mizen Head Footbridge - Seamus Doyle

The footbridge across the gorge at Mizen Head providing access to the lighthouse was constructed in 1909, using partly precast and partly reinforced concrete construction. It was the first bridge of this kind to be built in Ireland. The bridge was originally built to provide access to the fog signal station on Cloghane Island. It is now used by Irish Lights for access to the lighthouse and as a cable route for the ESB utility mains cable and telemetry communications cables. It is also used by Mizen Head Signal Station visitor centre as part of their attraction and to provide visitor access to the exhibition in the former Keepers' Quarters.

After nearly 100 years in an exposed marine environment with high salt levels, it has become evident that the bridge is suffering from concrete defects resulting from corrosion of the reinforcement. Corrosion of reinforcing steel results from oxidation (rusting), and results in discolouration and spalling (splintering) of the concrete due to expansion of the steel during oxidation.

In 2004 structural engineering consultants were engaged to carry out an evaluation and to advise on remedial action. Initial indications were that the bridge could be repaired by a combination of reinforcing the hangers with near surface mounted fibre reinforced polymer bars, repairing the concrete defects on the structure, and installing a cathodic protection system on the structure to control future corrosion of the reinforcement.

A specialist corrosion control firm carried out in situ testing of the footbridge in February 2005 to determine the extent of electrical conductivity across all elements of the bridge and to verify that the bridge was suitable for a cathodic protection system as a mechanism for corrosion control. Alarmingly, the report noted that there was a limited amount of continuity within the arch rib and some hangers, and concluded that there was no general continuity of reinforcement steel within the structure, either between structural elements or within individual elements. In some areas no reinforcing steel remains inside the concrete due to anaerobic corrosion of the reinforcement. Normal corrosion due to oxidation results in expansion of the steel and consequent visible spalling and discolouration. Anaerobic corrosion is a rare form of reinforcement corrosion which occurs in an oxygen-deprived atmosphere and which results in loss of the reinforcement within a structure, without the expansion of the steel during rusting. The corrosion exerts less force on the concrete so spalled and cracked concrete is less likely to occur.

It was concluded that many of the concrete elements in the structure were effectively unreinforced. Unreinforced concrete is subject to brittle failure when subjected to tensile loading and it is not permitted as a construction material under current design codes. In the Mizen Head footbridge tensile loads occur in directly loaded members such as the deck hangers and also in members subject to bending from the wind, such as the deck edge beams, trestles and rib braces. As brittle failure can occur without warning, with catastrophic consequences, the bridge was reluctantly closed for all use, including visitors to Mizen Head Signal Station, from 6 May 2005.

On 24 June 2005 a temporary scaffold system and independently supported deck was constructed over the bridge to provide access to the lighthouse and visitor centre for Irish Lights and Mizen Signal Station. The scaffold system is supported from the bridge arches. Construction of the temporary structure was 50% funded by Cork County Council. The temporary system has a life of three to five years and necessitates monthly maintenance inspections of the scaffolding system which are funded by Mizen Tourism.

The search is now on for a permanent solution

News

New Mizen Bridge!

Friday, October 2 2009

Welcome boost for Mizen Head Tourism!

A contract for the construction of a new bridge to the Mizen Head Lighthouse has been signed and work will start right away with the new bridge ready for next summer's tourist season.

Cork County Council has signed contracts with Carillion Irishenco for the construction of new single span footbridge on Ireland's most south westerly point, Mizen Head. The new bridge, costing just under €2 million, will replace the existing arched foot bridge linking the mainland to Mizen Head Lighthouse on Cloghane Island. The old bridge was deemed unsafe in 2005 by the Commissioners for Irish Lights, owners of the famous landmark lighthouse. Temporary works were carried out at the time by Cork County Council costing €100,000 to extend the life of the bridge by a maximum of five years. The provision of a new bridge will save the highly successful community-backed Mizen Head Signal Station Centre from closure. The funding for the new bridge will be provided by Fáilte Ireland, Cork County Council and the Commissioners for Irish Lights. Work is expected to begin on the new structure in September and be completed in time for next summer's tourist season. Mayor

of County Cork, Cllr Derry Canty in welcoming the announcement of funding for the restoration of the historic Mizen Head Bridge said, "Tourism is vital to West Cork and the Mizen Head Visitor Centre is one of the key attractions so the reopening of the bridge to the lighthouse will be a tremendous boost to visitor numbers."