PROJECT PROFILE

Title	**Deterioration of reinforced concrete in a 100-year old bridge**	NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority
Contractor	CIT	
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Start date	Jan-11	
End date	May-11	
Status	On-going	
Type of project	NRA Research Project	
Project reference	NRA04250/MHF	

Description	Mizen Head Footbridge was the first reinforced concrete bridge built in Ireland (1909). It is a through-arch structure spanning 52m and at the time of construction it was the longest spanning structure of its type in Europe. The bridge is an extreme environment. It is located at the South Westerly tip of Ireland. The structure has suffered reinforcement corrosion through chloride ingress and cast-in chlorides. A consulting engineering firm (RPS) have been working on the bridge for the past 10 years starting with inspection and assessment and looking at various repair strategies before finalising a scheme which involves demolition and construction of a replica bridge.  Mizen Head footbridge The contract for the rehabilitation work was awarded in October 2009 and is scheduled for completion at the end of 2010. The photos shows the main temporary works – a truss bridge spanning 50m and delivered to the bridge site by hand and erected by hand as access is by footpath only.This research project was devised following the demolition and reconstruction of Mizen Head footbridge which started in October 2009. As part of this work (commissioned by Fáilte Ireland, Cork County Council and the Commissioner of Irish Lights) a number of samples of the reinforced concrete were taken from various element of the bridge with the intention of carrying out a detailed testing programme to investigate the deterioration present.
Objectives	The purpose of this 2-year MESc project is to study materials samples taken from the bridge, identify the form and extent of deterioration present, and provide information on the management of old concrete structures. The testing programme, being carried out by Cork institute of Technology, project provides a unique opportunity to investigate the deterioration of one of the oldest reinforced concrete structures in Ireland in a severe marine environment.
Benefits	The project provides excellent information to the NRA on the deterioration of old reinforced concrete bridges and how best to manage and maintain these bridges as they approach the end of the service life. This information will be used to enable appropriate decisions to be made in the management of the numerous reinforced concrete bridges present on our National Roads, as well as the much higher number of bridges on the non-national road network. It is particularly relevant to the older bridges neat the cost where significant reinforcement corrosion has been identified.
Outputs	The project outputs will include a report on the form and extent of deterioration present in Mizen Head footbridge, the impact of this level of deterioration on structural strength and serviceability, and implications for the management strategy for this and similar bridges.