

# Australian Industry **OZWELD**

# WINS!

WTIA National Diffusion Networks Project (NDNP) funded by the Federal and State and Territory Governments and industry



**SUCCESS STORY NUMBER RT08:** REPAIR OF HERITAGE BRIDGE CHALLENGES WELDING TECHNOLOGY – *Developing techniques for joining wrought iron and cast iron*

## Heritage Bridge

In 1879 a bridge was built over the Murray River at Murray Bridge, 80 km East of Adelaide SA. After 1886 the railway also used the bridge until a separate rail bridge was opened in 1927. The old bridge, while still in use today for local road traffic, was superseded by the Swanport Bridge, opened in 1979 - the longest in the state.



*Old Murray bridges  
Photo courtesy Adelaide Hills On-Line*

## The Project

The original bridge, a National Trust Classification, is 600 m long. The bridge superstructure consists of wrought iron trusses, bolted to cast iron bearing seats, which in turn sit on roller races at the bridge abutments. The rollers enable the bridge to accommodate thermal expansion and contraction movements.

Over time material from the embankment behind the abutment had washed into the roller races causing one of them to seize. Consequent thermal expansion of the wrought iron trusses caused shearing of the bolts attaching them to one of the bearings.

## The challenge

WTIA's Adelaide based Technology Manager, Greg Terrell, was engaged by the Department for Transport, Energy and Infrastructure (DTEI) (a member of the WTIA's Road Transport Industry Sectoral Project) to advise on the repair of the old bridge. Due to difficulty accessing the damaged sections it was proposed to undertake the repair using welding. The challenge lay in joining the old cast iron and wrought iron components.

The first step was to identify the materials used in the bridge as no material records remained from the original construction. The resources of CSIRO Manufacturing and Infrastructure Technology, a Technology Support Centre within the WTIA's OzWeld Network, were called in. Using a spectrograph the chemical composition of the materials were detailed.

Greg then prepared welding procedures for the repair to be applied by DTEI's tradesmen. Greg will supply support on-site during the repair.

## Common Problem

The issue of repair of old wrought iron bridges has been identified as a common problem among members of the Road Transport ISP Australia wide. These include Main Roads Queensland, Roads and Traffic Authority NSW, VicRoads and Main Roads WA, as well as DTEI.

WTIA is working with the industry to establish shared procedures and possible future research on this topic.