



REPAIR/REPLACEMENT OPTIONS FOR CONCRETE LINED IRRIGATION CHANNELS

CASE STUDY

JOINT REPAIR WITH MOUNTAIN GROUT

DISCLAIMER :-

Important, Please Read:

This case study outlines the details of a repair/replacement method adopted in the field. Included in the case study are description of various proprietary products and repair/replacement methods. Users should understand that the repetition of results by using the products and or methods described in the case study can not be guaranteed. Even in situations identical to those described in the case study, users should not assume that results would be reproduced if the products and or methods were used. Users should make their own enquiries, including obtaining professional technical, legal and financial advice, before relying on any information and form their own views as to whether the information is applicable to their circumstances.

The adoption of any methods and or utilisation of products described in the case study will not necessarily ensure the avoidance of harm, nuisance, loss or damage. LWRRDC and the Department of Natural Resources (Queensland) accept no liability in respect of any loss or damage caused by reliance on the information contained in the case study. Any mention of proprietary products in the case study does not in any way represent an endorsement by LWRRDC and the Department of Natural Resources (Queensland) as to the product's efficacy or suitability or the exclusion of alternative products.



Case Study – Mountain Grout

1 Background

This case study is based on a method employed in the Mareeba Dimbulah Irrigation Area (MDIA) for the repair of concrete lined channel. The MDIA has about 400 km of channels and pipeline, of which about 59 km is concrete lined trapezoidal channel and 29 km is box flume channel.

The repair option described in this case study was used on a flush jointed concrete standpipe (see figures 1 and 2) and has not yet been trialed on concrete box flume, although the principles are similar. The product used was Mountain Grout by Epirez which was installed by Epirez technical staff. This repair option is mainly suitable for joint repair where there is a failure of the internal joints of precast box flumes although there may be other possible applications.

2 The Problem

The standpipe discussed in this case study was first highlighted as leaking by local maintenance staff. Leaks in these standpipes are normally quite easy to find as there is often water running down the outside of the pipe.

The main reasons for this type of joint failure is joint deterioration from aging and/or weathering. The repair option employed with this type of deterioration requires careful consideration.

3 Solution

The material used in this case study is in the form of an injectable liquid which, when in contact with water, expands to form a watertight seal. The theory behind this material is that when it is injected into a joint in its flowable state it will migrate outwards, filling all cavities and voids in the joint. As the material comes into contact with water it begins to react and further expand until it reaches a location where it can escape. Multiple injection locations are required in any given structure to ensure adequate joint coverage.

The following steps were carried out for this repair method:

Step 1.

Several 16mm drill holes were bored at an angle of approximately 45° (Figure 1 and 2) through the leaking joint.

FIGURE 1



FIGURE 2



Step 2.

Once the holes were located in the correct position a disposable packer is inserted into the hole and secured using a self-sealing mechanism. The packer provides a seal against the inside of the hole each side of the joint and allows the mountain grout to be injected into the joint. In some cases the packers may be able to be reused once.

Step 3.

The material was then injected into the joint via a conventional pumping apparatus (grease gun) with an adaptor suitable to match the packer. The pump to be used to inject the material must be able to produce pressures in excess of 1750 kPa in order to bypass the in-built check valve in the packer.

Conclusions:

- Great care was taken at all stages of the application to minimise the products exposure to water as it's reaction is quite aggressive and will make handling difficult.
- Due to the aggressive way in which this material reacts with water it has quite strict preparation/application and clean-up procedures that to the uninitiated may prove complicated. It is envisaged that as familiarity with the product improves so will the installers ability to handle some of these difficulties.



4 References/Acknowledgments:

Epirez Construction Products, Wetherill Park, NSW Australia

Dennis Ashman, Manager, Epirez, North Queensland

Further Information

Further information on this document can be obtained by contacting the author, Mr Scott Walton of Department of Natural Resources, Engineering Services (Queensland) on (07) 4783 0555.