

TECHNICAL USER MANUAL

for

SHAFT LINER PLATES

Standard Detail and Design Drawings

Summary

The purpose of this document is to provide background information, design guidance and typical construction methodologies for the application of Shaft Liner Plates as part of the suite of Network Rail Standard Tunnel Repair Details.

Issue record

This technical user manual will be updated when necessary by distribution of a complete replacement. A vertical black line in the margin will mark amended or additional parts of revised pages.

Revision	Date	Comments
A	July 2010	First Issue

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Supply

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Comments

The applicability and content of this standard will be reviewed on a regular basis. Written comments on the accuracy and utility of this standard will be taken into account when assessing the need for a new issue of the standard; such comments should be sent to the Principal Policy and Standards Engineer (Civil Engineering) at 40 Melton Street, London NW1 2EE.

CONTENTS

Section	Description	Page
I	INTRODUCTION	I
2	RENEWAL DETAIL DESCRIPTION	I
3	LIMITATIONS OF USE	I
4	DEFECTS TO BE REMEDIED	2
5	DESIGN PHILOSOPHY	3
6	INVESTIGATION AND TESTING	4
7	HEALTH AND SAFETY	5
8	FURTHER GUIDANCE	6
ANNEXE I	SCHEDULE OF STANDARD DRAWINGS	7
ANNEXE II	LIST OF REFERENCES	8

I INTRODUCTION

- 1.1 The purpose of this document is to provide background information, design guidance and typical construction methodologies for the application of Shaft Liner Plates as part of the suite of Network Rail Standard Tunnel Repair Details as specified in the Standard Detail Drawings NR/CIV/SD/560 to NR/CIV/SD/563 (herein referred to as SD Drawings).

2 RENEWAL DETAIL DESCRIPTION

- 2.1 This repair has been developed as an alternative to standard brickwork repairs for areas of very poor brickwork within a shaft lining which do not require removal or complete replacement. The repair comprises installing GRP liner plates and filling the void behind the plates and the existing brick lining with grout. The liner plates are supported at their bottom edge either on a concrete corbel or on a steel angle, depending on the extent of the repair. The void between the shaft lining and the brickwork must be grouted to ensure that a positive contact is achieved between the lining and the brickwork.

3 LIMITATIONS OF USE

- 3.1 This repair is not designed to strengthen the existing shaft lining and must not be used if the existing shaft lining exhibits any undue deformation due to loading from the surrounding ground.
- 3.2 The minimum economic area of repair by liner plates is considered to be approximately 30m² (3m height of shaft). This is to be determined on a site specific basis.
- 3.3 This repair method is considered to have a design life of 60 years.
- 3.4 The maximum existing shaft internal diameter which can be repaired by this method is 3.0m
- 3.5 When installed in open tunnels, Liner Plates must be installed above a Shaft Energy Absorption Deck (or similar protection for tunnel users) and at least 5 metres above the tunnel crown intrados level at the shaft eye. Areas of poor brickwork in the bottom 5 metres of the shaft must be repaired by traditional methods.