Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/560 Rev A

Additional Content Access

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CAD Drawing

- CIV/SD/560

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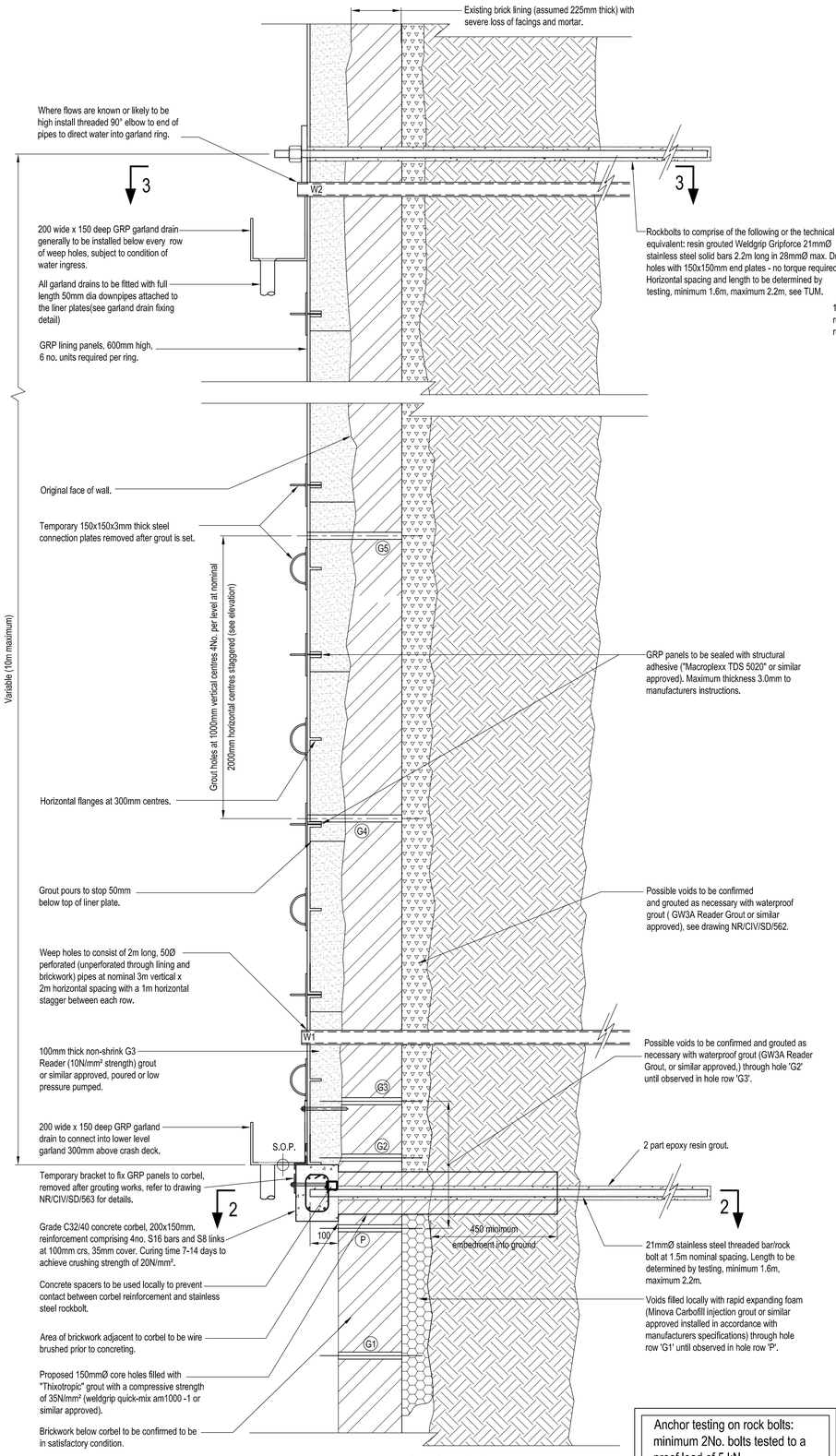
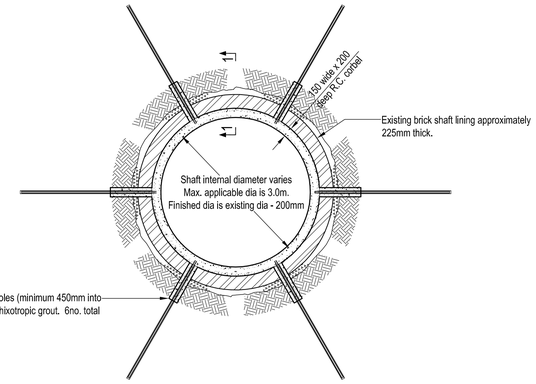
DRAWING No. NR/CIV/SD/560



Section 1-1

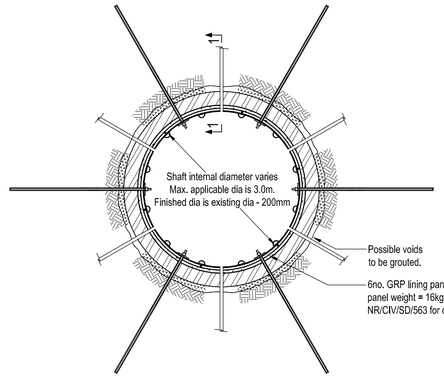
Scale 1:10

Anchor testing on rock bolts: minimum 2No. bolts tested to a proof load of 5 kN



Section 2-2 - Plan View Through Support Corbel

Scale 1:50
GRP garland drain shown on Section
1-1 omitted for clarity



Section 3-3 - Plan View Through Lining at Rock Bolt / Weephole Level

Scale 1:50
GRP garland drain shown on Section
1-1 omitted for clarity

SAFETY, HEALTH AND ENVIRONMENT RISK ASSESSMENT

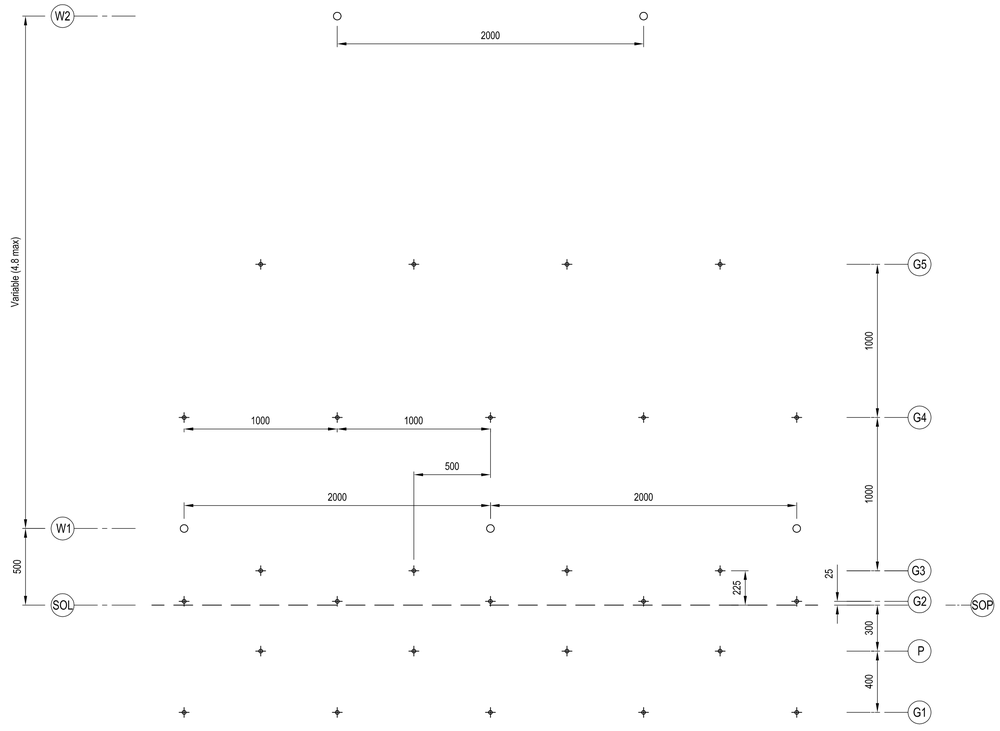
Designer's note - Construction (Design and Management) Regulations 2007

The following are significant hazards/risks associated with the works outlined in this set of drawings. A site specific risk assessment shall always be undertaken prior to commencing any of the works described on site.

It is assumed that a competent contractor is aware of the risks associated with general construction activities undertaken in the railway environment.

RISK	STAGE	MITIGATING MEASURES
Water ingress through coreholes drilled for the purpose of grouting and drainage installations	C	CONTRACTOR • Condition of shaft to be ascertained (i.e. wet or dry) prior to drilling core holes. Ground water to be ducted clear of works during construction
Fixing reinforcement	C	CONTRACTOR • Steel reinforcement bars to be pre-cut to minimise handling

NOTE: C = CONSTRUCTION, O = OPERATION, D = DEMOLITION



Grout holes
Weep holes

Elevation on Weep Holes & Grout Holes

Scale 1:20
G1, G2 etc denotes row of grout holes
W1, W2 denotes row of weep holes
SOL denotes Setting Out Level, defined by bottom of first row of GRP liner plates / top of corbel / top of steel angle support
P denotes Pressure Relief and Observation Hole

Spacing of holes for grouting and weep holes are nominal requirements and to be varied to suit site conditions.

NOTES

1. All dimensions are in millimetres unless stated otherwise.
2. All levels are in metres unless stated otherwise.
3. All concrete to be grade C32/40 in accordance with BS 8500 unless stated otherwise.
4. Reinforcement bars to be high yield grade B500B deformed type 2 conforming to BS 4449:2005.
5. Cover to reinforcement to be 35mm, unless otherwise stated.
6. Maximum size of aggregate to be 10mnm.
7. All works in accordance with Network Rail model clauses for specifying civil engineering works.
8. All proprietary products are to be installed in accordance with manufacturers recommendations.
9. Infill grouts to be mixed in accordance with manufacturers instructions. Flow characteristics to be confirmed as suitable for pouring from top of each ring of GRP panels, or whether low pressure pumping is required.
10. Typically for Reader grout G3 and GW3A the water to solids ratio should be 0.4.
11. This drawing to be read in conjunction with the latest revisions of other drawings as follows:
    NR/CIV/SD/560
    NR/CIV/SD/561
    NR/CIV/SD/563
    and NR/CIV/SD/500+501 for garland drain details

Designer to ensure existing brick lining consists of brickwork with minimum 20N/mm² compressive strength and minimum class (iv) mortar directly below corbel.

Ground water to be ducted clear of works during construction.

Rev	Date	Description of revision	Design'd	C'kd
A	JUL-10	FIRST ISSUE	MM	PH

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Approved	P. Clark	Senior Prog. Engineering Manager	PC	JUL-10
	Name	Position	Signature	Date

Master copy with original signatures held by Network Rail HQ
CIVIL ENGINEERING STANDARD DESIGN

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STANDARD TUNNEL DETAILS

SHAFT LINER PLATES HEIGHT OF REPAIR 5.0m OR GREATER GENERAL ARRANGEMENT

Scale	AS SHOWN	
Drawing Number	NR/CIV/SD/560	REV. A

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