Supplementary Information

The following information is associated with Network Rail Standard:
**NR CIV/SD/555** Rev A

## Additional Content Access

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### CAD Drawing

- CIV/SD/555

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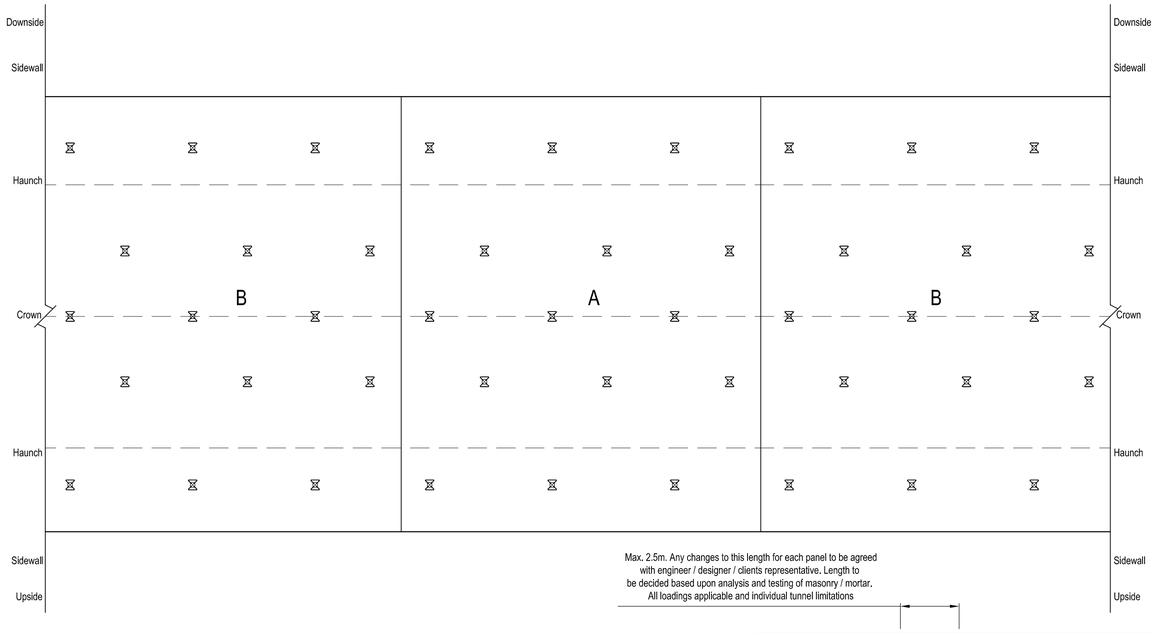
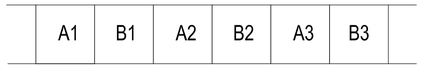


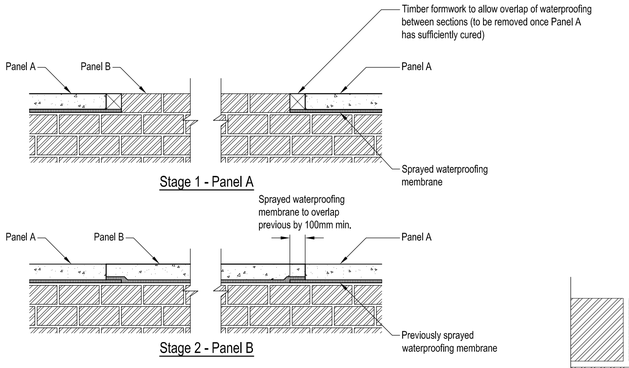

## DEVELOPED VIEW
1:100



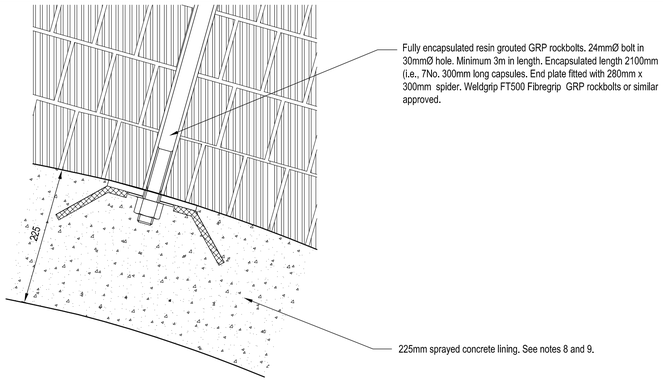

## HIT AND MISS SEQUENCE
For further information refer to the technical user manual NR/CIV/SD/TUM/550

HIT AND MISS SEQUENCE

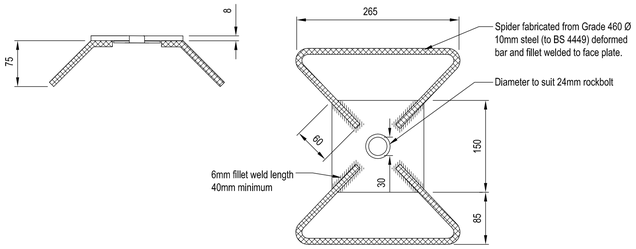
1. Breakout panels A1, A2 etc
2. Fix drainage if required.
3. Apply 25mm regulating layer if required
4. Apply waterproofing membrane if required.
5. Apply sprayed concrete lining if required.
6. Sufficient curing time should be allowed for all stages.
7. Break out and spray B panel as above.
8. It will be necessary to overlap drainage layer to ensure a water tight seal.



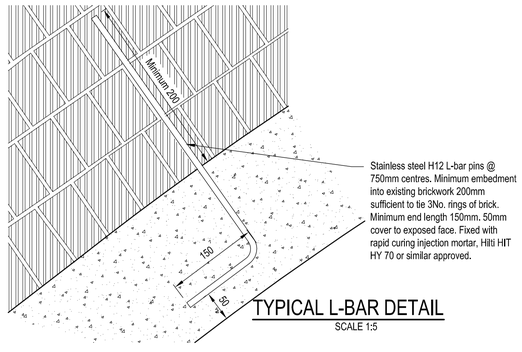

## BAY JOINT SEQUENCE DETAILS
NTS



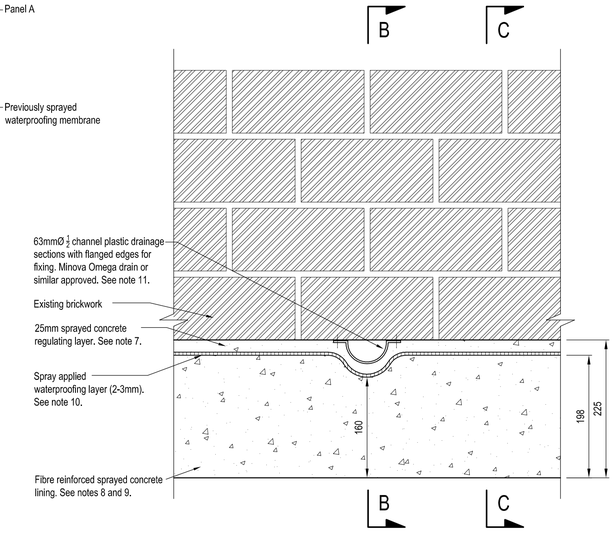

## TYPICAL ROCKBOLT DETAIL
1:5




## TYPICAL SPIDER PLATE DETAIL
1:5

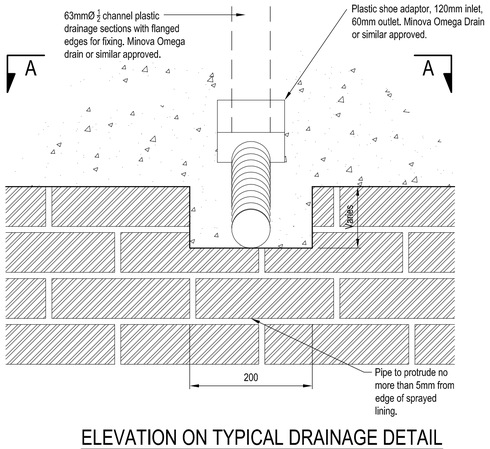



## TYPICAL L-BAR DETAIL
SCALE 1:5




## SECTION THROUGH TYPICAL DRAINAGE DETAIL
SCALE 1:5

PERMANENT DRAINAGE AT TYPICAL 5m CENTRES ALONG TUNNEL




## ELEVATION ON TYPICAL DRAINAGE DETAIL
SCALE 1:5

### 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 |
|---|---|---|
| Injury from sprayed concrete steel reinforcing fibres | C/O/D | Protruding steel fibres present safety risk to staff. Where sprayed concrete lining is below a height of 2.5m above rail level, 20mm thick flash coat to be used to cover protruding fibres. |
| Injury from loose/falling brickwork | C | Areas of loose and deteriorating brickwork are to be stitched and grouted in accordance with the Network Rail Standard Detail drawing NR/CIV/SD/525 prior to breaking out of brickwork. |
| Collapse of existing lining | C | To ensure stability of the existing lining, where brickwork is being broken out and replaced with fibre reinforced sprayed concrete, recommendations are to limit removal of brickwork panels to no greater than 2.5m. Panel construction to employ "hit and miss technique". See TUM for further details. |

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

**DRAWING No. NR/CIV/SD/555**

**NOTES**

1. All dimensions are in millimetres unless stated otherwise.
2. All levels are in metres unless stated otherwise.
3. S&T troughs, ballast & track to be protected during the works.
4. Works to be carried out in accordance with Network Rail Model Clauses for Civil Engineering Works.
5. Tunnel profile based on typical tunnel profile adopted from Simms Practical Tunneling.
6. All proprietary products are to be used in accordance with manufacturers instructions.
7. Sprayed concrete regulating layer to be 25mm thick using maximum 6mm aggregate and no steel fibres. See note 10 also.
8. Main sprayed concrete lining to be C32/40 with a maximum 10mm aggregate and maximum 40kg/m³ dosage reinforcing fibres. Concrete to obtain a minimum strength of 5N/mm² at 6 hours if used in a possession.
9. Reinforcing fibres to be 35mm long, 0.55mm diameter steel with hooked ends and an aspect (l/d) ratio of 64. Tensile yield strength 1100 N/mm². 40kg/m³ dosage to give an Re3 value of 72. Bakaert Dramix RC-65/33-BN or similar approved. See also TUM for further details.
10. For details of spray applied waterproofing material see TUM. Alternatively the regulating layer and sprayed waterproofing layer can be replaced with a waterproofing additive in the sprayed concrete lining. See TUM for further details.
11. Drainage channels to be at typical 5m centres. Additional drainage may be required in very wet areas. Refer to TUM for further details.

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

Network Rail

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

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# STANDARD TUNNEL DETAILS

# MASONRY TUNNEL RENEWAL SPRAYED CONCRETE MISCELLANEOUS DETAILS

| Scale | AS SHOWN | |
|---|---|---|
| Drawing Number | NR/CIV/SD/555 | REV. A |

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