Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/104 Rev A

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CAD Drawing

- CIV/SD/104

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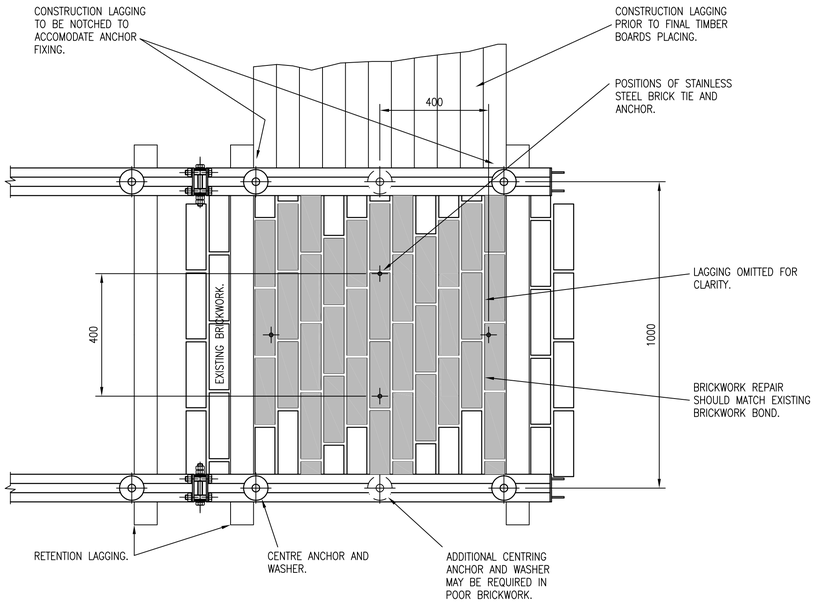
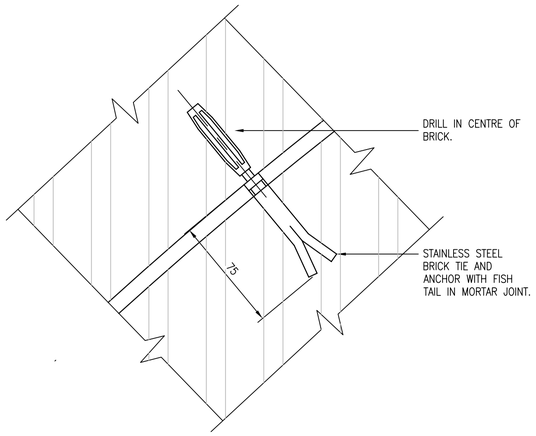
DO NOT SCALE THIS DRAWING

DRAWING No. NR/CIV/SD/104



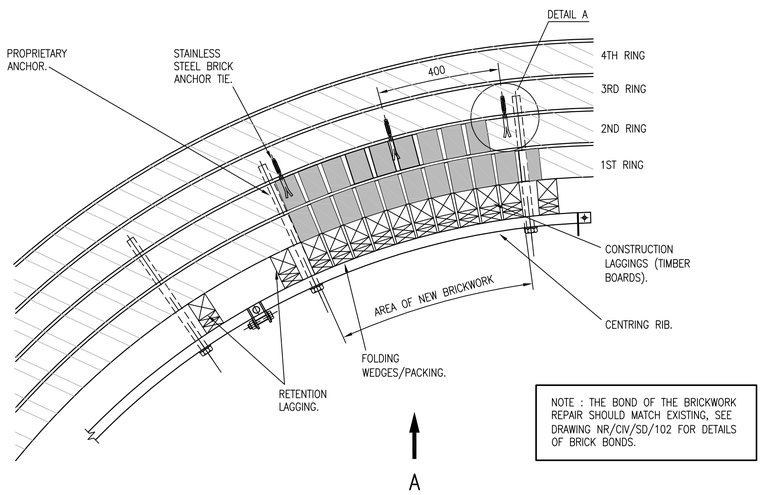
VIEW ON A – BRICK TIES

SCALE 1 : 10



DETAIL A

SCALE 1 : 2

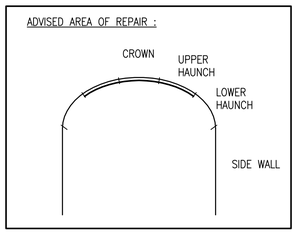


NOTE : THE BOND OF THE BRICKWORK REPAIR SHOULD MATCH EXISTING, SEE DRAWING NR/CIV/SD/102 FOR DETAILS OF BRICK BONDS.

PART SECTION THROUGH ARCH – (4 RING SHOWN)

SCALE 1 : 10

ADVISED AREA OF REPAIR :



AREA APPROPRIATE FOR DETAILED REPAIR IS SHOWN BY HEAVY LINE.

DESIGN ASSUMPTIONS

NONE

RISK ASSESSMENT

REFER TO DRAWING NR/CIV/SD/101

INSTALLATION GUIDANCE

a) IN THE CASE OF UNDERBRIDGES BRICKWORK RE–CASING MUST NOT BE CARRIED OUT UNDER LIVE LOAD CONDITIONS. LIVE LOADING SHOULD ONLY COMMENCE AFTER A MINIMUM 10 HOURS HAS ELAPSED AFTER THE REPAIRS HAVE BEEN COMPLETED AND WITH THE TEMPORARY WORKS STILL IN PLACE. FOR TEMPORARY WORK ARRANGEMENTS SEE DRAWING NR/CIV/SD/112. IN CIRCUMSTANCES REQUIRING RECASING TO BE COMPLETED UNDER "LIVE LOAD" CONDITIONS A PROJECT SPECIFIC FORM A/B SUBMISSION IS REQUIRED. NO SUCH RESTRICTIONS NEED APPLY TO TUNNELS.

b) POSITION & ERECT CENTRING (RIBS & LAGGINGS) TO THE PROFILE OF ARCH TO OFFER COVER AND SUPPORT TO THE AREA OF DEFECTIVE BRICKWORK TO BE REMOVED. THIS WILL MINIMISE DISTURBANCE TO THE SURROUNDING BRICKWORK AND ESTABLISH THE PROFILE FOR RE–CASING. MAXIMUM HORIZONTAL DISTANCE BETWEEN CENTRING SHOULD NOT EXCEED 1000mm.

c) SACRIFICIAL ANCHORS USED FOR SECURING CENTRING RIBS, TO BE STAINLESS STEEL AND CAPABLE OF RESISTING A PULL OUT LOAD OF 10kN (MIN.)

d) CAREFULLY BREAK OUT DEFECTIVE BRICKWORK AND TOOTH THE SIDES OF THE OPENING ON FIRST ARCH RING ONLY. THIS MUST BE CARRIED OUT WITH MINIMAL DISTURBANCE TO ADJOINING BRICKWORK OR MASONRY.

e) INSPECT SECOND ARCH–RING TO DETERMINE ITS CONDITION AND ASCERTAIN WHETHER FURTHER REMEDIAL WORK SHOULD BE CARRIED OUT TO EITHER THE SECOND OR SUBSEQUENT RINGS. IT MAY BE NECESSARY TO GROUT, STITCH OR RE–CASE THE SECOND OR SUBSEQUENT RINGS. IF HOWEVER ONLY ONE RING IS TO BE RE–CASED REFER TO DRAWING NR/CIV/SD/105.
UNDER NO CIRCUMSTANCES ARE HALF BRICK ("SNAP HEADERS") TO BE USED. ALL HEADER COURSES ARE TO BE FULLY CUT OUT, OTHERWISE THE SECOND RING SHALL ALSO BE REMOVED, UNLESS INSTRUCTED BY THE EMPLOYERS REPRESENTATIVE.
IF BUILD–UP OF CALCIUM DEPOSITS ARE FOUND BETWEEN THE RINGS, THESE SHOULD BE CLEANED OFF.

f) WHERE NEW BRICKWORK IS TO BE BONDED TO EXISTING, THE SURFACE OF THE EXISTING BRICKWORK BACKING SHALL BE WETTED TO CONTROL THE SUCTION RATE AS FAR AS REASONABLY PRACTICABLE.

g) BRICKWORK RE–CASING SHOULD BE BUILT TO THE EXISTING ARCH PROFILE. ALL TIMBER LAGGINGS TO BE FIRMLY POSITIONED AND WEDGED INTO PLACE. BRICKS MUST BE "BEDDED" ON MORTAR KEYED INTO THE BACKING AND BED COURSE. MORTAR JOINTS TO BE STRUCK FLUSH.

h) INSTALLING THE FINAL COURSE CAN BE ACHIEVED BY CLOSING FROM BOTH SIDES OF THE OPENING USING 2 LAGGINGS TO SLIDE TOGETHER. ONCE CLOSED WITHDRAW ONE OF THE LAGGINGS AND FOLLOW THROUGH WITH THE OTHER.

i) WHILE THE RE–CASING PANEL IS STILL GREEN THE FIRST AND BOTTOM TIMBER LAGGING CAN BE TEMPORARILY REMOVED TO EXPOSE THE FACE OF RE–CASING. THIS CAN NOW BE BRUSHED CLEAN AND STRUCK. REPLACE THE FIRST LAGGING BEFORE THE SECOND IS REMOVED AND THE PROCESS REPEATED.

j) AFTER ONE WEEK, CAREFULLY DISMANTLE WEDGES, LAGGINGS AND CENTRING AND MAKE GOOD ANY ATTACHMENT HOLES.

N.B.

k) IF MORE BRICKWORK HAS BEEN CUT OUT THAN CAN BE REPLACED IN THE POSSESSION, THE OPENING MUST BE SEALED BY DRY LAGGING USING TIMBER LAGGINGS WEDGED INTO PLACE.

l) THE CONTRACTOR IS AT LIBERTY TO PROPOSE ALTERNATIVE METHODS AND/OR MATERIALS FOR CARRYING OUT THE WORKS IN A PROJECT SPECIFIC FORM A/B SUBMISSION.

NOTES

GENERAL

1. MAXIMUM AREA OF BRICKWORK TO BE REMOVED IN ANY ONE REPAIR IS DEPENDENT ON – TOTAL THICKNESS OF TUNNEL LINING, CONDITION OF BRICKWORK, LENGTH OF POSSESSION ETC.

2. THE VERTICAL EXTENT OF REPAIR BEING LIMITED TO SITE CONDITIONS AND POSSESSION TIMES.

3. SHOULD THE CONDITION OF THE BACKING COURSE REVEALED BE UNSTABLE THEN IT SHOULD BE BROUGHT TO THE URGENT ATTENTION OF THE EMPLOYERS REPRESENTATIVE.

4. CONSIDERATION MUST BE GIVEN AT ALL TIMES FOR TRACKSIDE STRUCTURES TO ENSURE THAT WHEN ERECTING TEMPORARY FORMWORK THE GAUGING CLEARANCE IS MAINTAINED THROUGHOUT THE WORKS. ADVICE SHOULD BE SOUGHT FROM THE TERRITORY GAUGING ENGINEER VIA THE EMPLOYERS REPRESENTATIVE.

SPECIFICATION

5. THE WIDTH OF REPAIR BETWEEN THE CENTRING RIBS SHALL NOT EXCEED A MAXIMUM 5 STRETCHER BRICKS, THE RIBS BEING PLACED 1000mm APART.

6. IN BOTH TUNNELS AND ARCHES WHERE HEADER COURSES ARE EVIDENT, THE HEADER MUST BE FULLY REMOVED.

7. THE BOND OF THE BRICK REPAIR SHALL MATCH EXISTING. SEE DRAWING NR/CIV/SD/102 FOR TYPES OF BRICK BOND.

8. OBSTRUCTIONS, SUCH AS CABLE TRAY BRACKETS AND DOWN PIPES SHOULD ONLY BE REMOVED PRIOR TO THE REPAIR WITH THE AGREEMENT OF THE EMPLOYERS REPRESENTATIVE. OLE BRACKETS SHOULD NOT BE REMOVED AND CARE MUST BE TAKEN NOT TO DISTURB THE BRICKWORK ADJACENT TO THESE BRACKETS.

9. TEMPORARY WORKS DETAILS AND NOTES ON THIS AND
RELATED DRAWINGS ARE INDICATIVE ONLY AND ARE MEANT FOR GUIDANCE. FOR EACH PARTICULAR PROJECT, THE CONTRACTOR MUST SATISFY HIMSELF AND THE EMPLOYERS REPRESENTATIVE THAT ALL TEMPORARY WORKS ARE CORRECTLY DESIGNED FOR THE EXPECTED LOADING CONDITIONS AND THAT GAUGING REQUIREMENTS ARE FULLY SATISFIED WHENEVER TRACK IS OPEN TO TRAFFIC WITH TEMPORARY WORKS IN PLACE. THE TEMPORARY WORKS DESIGN, DRAWINGS AND FORM C ARE TO BE PRODUCED IN ACCORDANCE WITH NETWORK RAIL COMPANY STANDARD NR/SP/CIV/003.

ALL RECASING WORK WHICH REQUIRES TEMPORARY WORKS TO BE CONSTRUCTED MUST NOT BE CARRIED OUT UNDER LIVE LOAD CRITERIA. FURTHERMORE, THE LOCATION OF THE TEMPORARY WORKS MUST BE CHECKED TO ENSURE GAUGING CLEARANCES ARE NOT COMPROMISED. EXCEPTIONALLY WHERE CLEARANCES ARE TIGHT AND LOADS NEGLIGIBLE (E.G. SELF WEIGHT OF NEW BRICKWORK ONLY) THEN PLYWOOD WITH APPROPRIATE ANCHORS MAY BE USED. THE CONTRACTOR SHALL INCLUDE DETAILS OF THEIR PROPOSALS IN THEIR METHOD STATEMENTS.

Rev	Date	Description of revision	Design'd	C'kd
A	22.06.06	FIRST ISSUE –NR APPROVED	RMA	NGAY
P3	17.03.06	REVISED FORM B.	RMA	NGAY
P2	31.01.06	FORM B ISSUE.	RMA	NGAY
P1	13.01.06	PRELIMINARY DRAFT	RMA	NGAY

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

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BRICK AND MASONRY REPAIR STANDARD DRAWINGS

RE–CASING OF DEFECTIVE BRICKWORK IN ARCHES AND TUNNEL LININGS UP TO 4 RINGS

Scale	AS SHOWN	
Drawing Number	NR/CIV/SD/104	REV. A

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