Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/650 Rev A

Additional Content Access

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CAD Drawing

- CIV/SD/650

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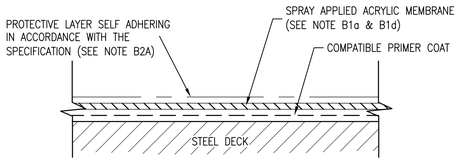
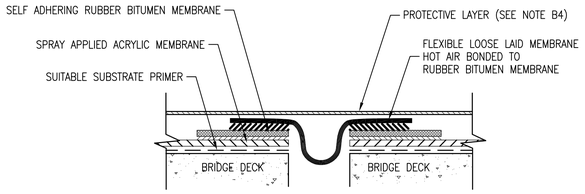


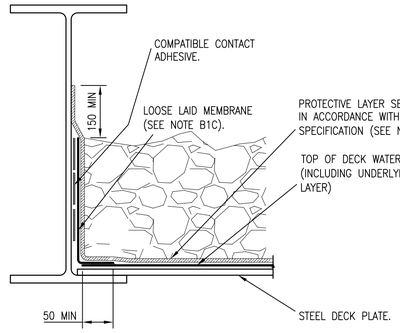
TYPICAL DETAIL FOR SPRAY APPLIED MEMBRANE TO STEEL SUBSTRATE

SCALE N.T.S



LOOSE LAID MEMBRANE SEALING OVER MOVEMENT JOINT

SCALE N.T.S



TYPICAL WATERPROOFING DETAIL FOR VERTICAL TERMINATION ON STEEL SUBSTRATE

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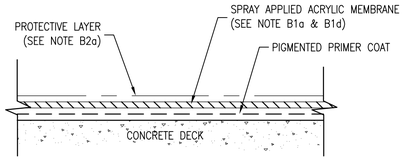

TYPICAL DETAIL FOR SPRAY APPLIED MEMBRANE TO CONCRETE SUBSTRATE

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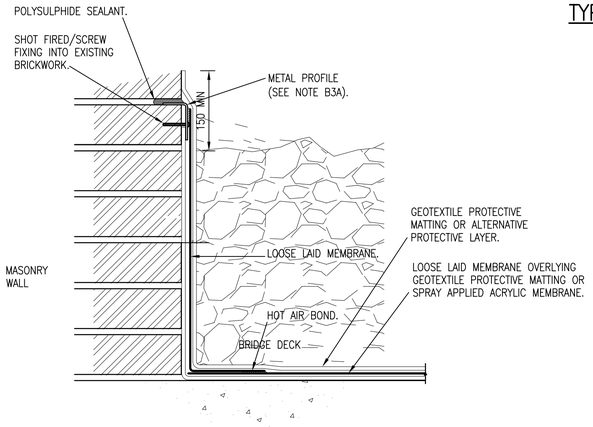
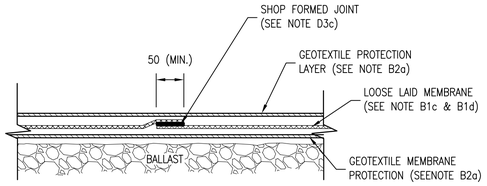


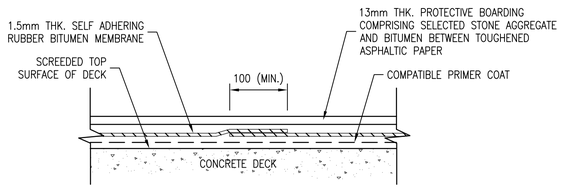
METAL PROFILE TO PROVIDE CONTINUOUS VERTICAL TERMINATION ON MASONRY UPSTAND

SCALE N.T.S



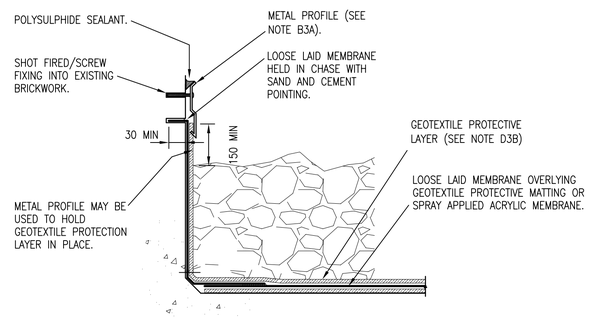
TYPICAL DETAIL FOR LOOSE LAID MEMBRANE

SCALE N.T.S



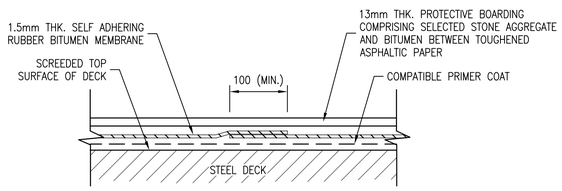
TYPICAL DETAIL FOR BONDED MEMBRANE TO CONCRETE DECK

SCALE N.T.S



LOOSE LAID MEMBRANE DRESSED INTO CHASE AND PROTECTED WITH COVER FLASHING

SCALE N.T.S



TYPICAL DETAIL FOR BONDED MEMBRANE TO STEEL DECK

SCALE N.T.S

D NSTALLATION GUIDANCE

D1 WATERPROOFING SYSTEMS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

D2 ALL SURFACES TO RECEIVE WATERPROOFING SHALL BE PREPARED IN ACCORDANCE WITH THE RELEVANT SECTION OF THE SPECIFICATION AS DETAILED IN NOTES B1A – B1C. THE MINIMUM REQUIREMENTS SHALL INCLUDE: –

- THE REMOVAL OF ALL LARGE AND SHARP SURFACE DEBRIS
- SEPARATE PROTECTION OF SHARP STEEL AND CONCRETE CORNERS
- INSTALLATION/APPLICATION OF MANUFACTURER SPECIFIED TREATMENTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

D3 LOOSE LAID MEMBRANES

D3A IT IS RECOMMENDED THAT WELDING OPERATIONS TO CREATE WIDE LOOSE LAID MEMBRANES FROM SMALLER ROLL WIDTHS SHOULD BE COMPLETED OFF SITE WHERE POSSIBLE TO MINIMISE THE ONSITE WELD REQUIREMENT AND INSTALLATION TIME.

D3C WATERPROOFING MEMBRANES SHALL BE LAID ON A POLYESTER GEOTEXTILE MEMBRANE (MIN WEIGHT 1000g/m^2) SAND BLANKET OR MANUFACTURER SPECIFIED ALTERNATIVE TO PREVENT IT FROM DAMAGE.

D3B JOINTS BETWEEN ADJACENT MEMBRANE SHEETS SHALL BE HOT OR COLD WELDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS OVER A MINIMUM 50mm OVERLAP. ALL ADHESIVES AND SEALANTS USED TO BOND THE MEMBRANE SHALL BE SUPPLIED OR RECOMMENDED FOR THAT PURPOSE BY THE MANUFACTURER.

D4 BONDED MEMBRANES

D4A SUCCESSIVE ROLLS SHALL BE LAID WITH MINIMUM 100mm OVERLAPS. OVERLAPS SHALL BE STAGGERED TO AVOID MORE THAN THREE LAYERS AT ANY ONE POINT

D4B THE MEMBRANE SHALL BE CAREFULLY ROLLED TO EXCLUDE ALL AIR AND TO BOND TOGETHER THE OVERLAPS TO ENSURE COMPLETE CONTINUITY. PERMANENT EDGES SHALL BE TUCKED INTO A GROOVE OR CHASE AND SEALED WITH BITUMEN MASTIC. WHERE NO GROOVE OR CHASE CAN BE PROVIDED, SUCH AS AGAINST STEEL SURFACES, THE EDGE OF THE MEMBRANE SHALL BE WELL ROLLED AND SEALED WITH BITUMEN MASTIC.

D4C DAY JOINTS AND TEMPORARY STOP–ENDS IN THE MEMBRANE SHALL BE CAREFULLY ROLLED, DRESSED AND SEALED WITH A BITUMEN MASTIC AND PROTECTED FROM DAMAGE.

D5 LIQUID SPRAY APPLIED ACRYLIC MEMBRANES

D5A THE RATE OF APPLICATION FOR SPRAYED MEMBRANES SHALL BE SPECIFIED ALONG WITH A MIN. THICKNESS AT ANY POINT IN ACCORDANCE WITH THE SPECIFICATION BY THE SCHEME DESIGNER IN A PROJECT SPECIFIC FORM A.

F RISK ASSESSMENT

E1 REFER TO TABLE 1 ON THIS DRAWING.

DRAWING No. NR/SD/CIV/650

NOTES

A GENERAL NOTES

A1 THIS DRAWING SHOWS THE SCHEMATIC DETAILS AND A SPECIFICATION FOR THE WATERPROOFING OF NEW OR EXISTING BRIDGES ON NETWORK RAIL'S INFRASTRUCTURE.

A2 ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

A3 WATERPROOFING WORKS ARE TO BE IN ACCORDANCE WITH NR/GN/CIV/001 WATERPROOFING OF UNDERLINE BRIDGE DECKS AND NETWORK RAIL COMPANY SPECIFICATION NR/GN/CIV/008, SECTION 110–115.

A4 WATERPROOFING MEMBRANES SHALL ONLY BE LAID BY OPERATIVES CERTIFIED AS COMPETENT BY THE MANUFACTURER.

B SPECIFICATION

B1 WATERPROOFING MATERIALS

B1A LIQUID SPRAY APPLIED WATERPROOFING MEMBRANES SHALL BE IN ACCORDANCE WITH NR/GN/CIV/008, SECTION 111 REPLACING ALL REFERENCES TO RT95 WITH NR/SP/CIV/039 (REFERRED TO AS RT98) SPECIFICATION R.T.98 – PROTECTIVE TREATMENTS FOR RAILTRACK INFRASTRUCTURE.

B1B BONDED WATERPROOFING MEMBRANES SHALL BE IN ACCORDANCE WITH NR/GN/CIV/008, SECTION 112 REPLACING ALL REFERENCES TO RT95 WITH NR/SP/CIV/039 (REFERRED TO AS RT98).

B1C LOOSE LAID WATERPROOFING MEMBRANES SHALL BE IN ACCORDANCE WITH NR/GN/CIV/008, SECTION 113 REPLACING ALL REFERENCES TO RT95 WITH NR/SP/CIV/039 (REFERRED TO AS RT98).

B1D WATERPROOFING MEMBRANE THICKNESS IS DEPENDENT ON BALLAST DEPTH REQUIREMENT AND SHALL BE SPECIFIED BY THE SCHEME DESIGNER IN A SITE SPECIFIC FORM A. IT SHALL NOT BE LESS BE 1.5mm IN ACCORDANCE WITH THE SPECIFICATION.

B1E ALL PROPRIETARY WATERPROOFING SYSTEMS MUST BE COMPLIANT WITH NR/SP/CIV/041 WATERPROOFING OF UNDERLINE BRIDGE DECKS AND REGISTERED IN THE PARTS AND DRAWINGS DATABASE (PADS)

B2 PROTECTIVE LAYERS

B2A REQUIRED UNDERLYING AND OVERLYING PROTECTIVE LAYERS SHALL BE SPECIFIED BY A SCHEME DESIGNER IN A PROJECT SPECIFIC FORM A AND SHALL BE IN ACCORDANCE WITH THE RELEVANT SECTION OF THE SPECIFICATION AS DETAILED IN B1A – B1C.

PROTECTIVE LAYERS ON VERTICAL FACES TO EXYEND A INIMUM 150MM ABOVE FINISHED BALLAST LEVEL.

B3 PROFILES

B3A PROFILES USED TO SECURE AND PROTECT MEMBRANES AT THEIR EDGES OR ELSEWHERE SHALL BE PLASTIC COATED METAL OR EXTRUDED UPVC SUPPLIED BY THE MEMBRANE MANUFACTURER FOR THAT PURPOSE.

C DESIGN ASSUMPTIONS

C1 THE SCHEME DESIGNER SHALL BE RESPONSIBLE FOR THE SELECTION OF THE MOST APPROPRIATE WATERPROOFING SYSTEM FOR AN APPLICATION AND SHALL PROVIDE RELEVANT DETAILS IN A PROJECT SPECIFIC FORM A.

SAFETY, HEALTH & ENVIRONMENT RISK ASSESSMENT

DESIGNER'S NOTE – CDM REG. 13(2)(b)

THE FOLLOWING ARE SIGNIFICANT HAZARDS WHICH MIGHT AFFECT THE HEALTH AND SAFETY OF THOSE UNDERTAKING THE WORKS OUTLINED IN THIS SET OF DRAWINGS ON RAILWAY STRUCTURES OR THOSE AFFECTED BY THESE ACTIVITIES. 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
DAMAGE TO WATERPROOFING MEMBRANE PRIOR TO AND DURING INSTALLATION	C	THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT DAMAGE FROM TOOLS, INAPPROPRIATE STORAGE METHODS AND VEHICLE/PLANT MOVEMENTS
HARMFUL VAPOURS RELEASES FROM PRIMERS, JOINT SEALANTS ETC	C	THE CONTRACTOR SHALL SELECT MATERIALS THAT DO NOT RELEASE HARMFUL VAPOURS WHERE POSSIBLE. IF THIS IS UNAVOIDABLE APPROPRIATE PPE SHALL BE PROVIDED TO OPERATIVES COMPLETING ANY SUCH OPERATIONS. THIS SHOULD INCLUDE RATED RESPIRATORY MASKS.
CONFINED SPACES	C	REMOVAL AND REPAINTING MAY BE NECESSARY IN CONFINED SPACES. STANDARD CONFINED SPACE PRECAUTIONS MAY NEED TO BE ENHANCED DUE TO SURFACE PREPARATION REQUIREMENTS.
DEBRIS AND LEPTOSPIROSIS	D/C	STRUCTURES TO BE REPAINTED MAY CONTAIN DEBRIS SUCH AS ANIMAL WASTE ETC. SURVEY IS REQUIRED BEFORE PREPARING METHOD STATEMENT.
POOR JOINT QUALITY AT WELDS BETWEEN ADJACENT ROLLS	D/C	WELDING OPERATIONS SHOULD BE COMPLETED OFF SITE WHEREVER POSSIBLE TO MINIMISE THE EXTENT OF ONSITE WELD OPERATION. THE ENGINEER SHALL CHECK AND RECORD THE QUALITY OF ALL WELDED JOINTS.
INCLEMENT WEATHER	D/C	WATERPROOFING SHALL NOT BE LAID IN WET CONDITIONS OR WHEN AMBIENT TEMPS. < 5 DEGREES.

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

Rev	Date	Description of revision	Design'd	C'kd
A	04/04/08	FIRST ISSUE	GPR	NGAY
P3	25/03/08	FORM B APPROVAL	GPR	NGAY
P2	05/05/06	FORM A APPROVAL	GPR	NGAY
P1	13/04/06	FORM A APPROVAL	GPR	NGAY

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

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MISCELLANEOUS & ANCILLARY STRUCTURES

TYPICAL DECK WATERPROOFING DETAILS

Scale	AS SHOWN
Drawing Number	NR/SD/CIV/650 A

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