Supplementary Information

The following information is associated with Network Rail Standard:
NR CIV/SD/1901 Rev B

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CAD Drawing

- CIV/SD/1901

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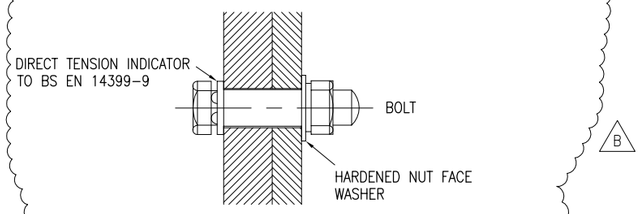
GENERAL:

THE STANDARD WALKWAY DRAWINGS GIVE A NUMBER OF SUGGESTED OPTIONS FOR WALKWAYS TO BE ATTACHED TO STANDARD NETWORK RAIL UNDERBRIDGES. THE DESIGNER SHALL DETERMINE THE MOST APPROPRIATE OPTIONS FOR THE SCHEME AND USE THE STANDARD WALKWAY DRAWINGS TO OBTAIN THE RELEVANT DETAILS. WHERE STANDARD WALKWAY COMPONENTS HAVE BEEN DESIGNED, THE COMPONENTS ARE LISTED ON DRAWING NR/CIV/SD/1902.

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. THESE GENERAL NOTES ARE TO BE READ IN CONJUNCTION WITH THE STANDARD DETAIL DRAWINGS LISTED ON NR/CIV/SD/1900.
3. THE STANDARD WALKWAY DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE STANDARD UNDERBRIDGE STEELWORK ASSEMBLY DRAWINGS. THE STEELWORK CONTRACTOR MUST ADHERE TO THE INFORMATION SHOWN ON THE STANDARD DRAWINGS LISTED ON NR/CIV/SD/1900 UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE STANDARD UNDERBRIDGE STEELWORK ASSEMBLY DRAWINGS.
4. THE STANDARD WALKWAY DRAWINGS DO NOT TAKE INTO ACCOUNT THE THICKER INTERMEDIATE STIFFENER THAT MAY BE REQUIRED FOR LIFTING THE DECK. THE CONTRACTOR MUST CONSIDER THIS EFFECT AND DISCUSS WITH THE ENGINEER WHEN DETERMINING THE WALKWAY BRACKET LOCATION AND PARAPET RAIL LENGTHS.

STANDARD DETAILS:

5. ALL WELDS SHALL BE 3mm CONTINUOUS LEG FILLET WELDS UNLESS SHOWN. OTHERWISE SEALING WELDS ON MATING SURFACES WHERE NECESSARY. NO INTERMITTENT WELDS ALLOWED. ALL WELDS SYMBOLS ARE IN ACCORDANCE WITH BS EN 22553:1995.
6. ALL WALKWAY BRACKET BOLTS SHALL BE BOLTS CLASS HR 8.8 AND NUTS CLASS HR8 TO BS EN 14399–3 UNLESS SHOWN OTHERWISE. BOLT LENGTHS TO BE CALCULATED BY THE CONTRACTOR. HR BOLTS SHALL BE ARRANGED THUS:



B

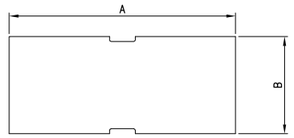
ALTERNATIVELY, TENSION CONTROL BOLTS WITH STRENGTH AT LEAST EQUAL TO HR 8.8 BOLTS MAY BE USED AND THE LOAD INDICATING WASHER OMITTED.

7. ALL BOLTS FOR DECK PLATES AND SERVICE TROUGH SUPPORTS TO BE M16 BLACK BOLTS WITH FLAT ROUND WASHERS AND SELF–LOCKING NUTS, UNLESS OTHERWISE STATED
8. THE DESIGNER IS ENCOURAGED TO SPECIFY ALTERNATIVE WALKWAY DECK DETAILS AND SERVICE TROUGH SUPPORT DETAILS WHERE WEIGHT CAN BE REDUCED AND LONG TERM PERFORMANCE IMPROVED; MATERIALS INCLUDING G.R.P. MAY BE CONSIDERED ALONG WITH OPEN MESH DETAILS.
9. THE STANDARD DETAILS INCLUDE A THREE RAIL PARAPET; OTHER PARAPET DETAILS MAY BE CONSIDERED AND ATTACHED TO THE WALKWAY. SEE NOTES ON DESIGN.
10. ALL STEEL SHALL BE GRADE S275JO TO BS EN 10025–2: 2004 OR S275JOH TO BS EN 10210–1:2006.
11. ALL STEEL SHALL RECEIVE AN N1 RT98 APPROVED PROTECTIVE TREATMENT IN ACCORDANCE WITH NR/CIV/SD/039, THE COLOUR SHALL BE SPECIFIED BY THE DESIGNER.

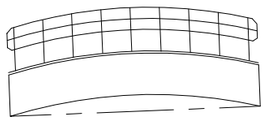
APPLICATION:

12. THE STANDARD WALKWAY DETAILS CAN BE USED FOR SPEEDS UP TO 125mph (200kph). THE STANDARD DESIGNS WILL ACCOMMODATE WALKWAYS UP TO A MAXIMUM OF 1740mm WIDE, MEASURED FROM THE INSIDE FACE OF THE PARAPET POST TO THE OUTER EDGE OF THE MAIN GIRDER, BOX OR CONCRETE UPSTAND, ASSUMING MINIMUM 300 WIDE FLANGE OR UPSTAND.
13. THE ABSOLUTE MINIMUM WALKWAY WIDTH IS 700mm.
14. THE DESIGNER SHALL ENSURE THAT THE CORRECT WALKWAY WIDTH IS SHOWN ON THE CONTRACT DRAWINGS AND IS SUITABLE FOR THE SPECIFIC DECK LOCATION.
15. THE WALKWAY SHALL REMAIN HORIZONTAL ACROSS ITS WIDTH AND WHERE POSSIBLE, BE AT THE LEVEL OF THE TOP DOUBLER PLATE, UPSTAND OR TOP FLANGE (SEE NOTE 23).
16. SERVICE TROUGH DECKPLATES ARE TO BE REMOVABLE TO ALLOW ACCESS TO THE SERVICES THEREIN. THE MAXIMUM WEIGHT IS LIMITED THEREFORE TO 20kg. WHERE 10mm THICK PROFILED STEEL PLATE IS USED AS TROUGH DECKING THE PLAN DIMENSIONS ARE MAXIMISED IN THE TABLE BELOW:

REMOVEABLE SERVICE TROUGH DECKING		
TYPE	A (mm)	B (mm)
1	590	450
2	<790	300



17. THE DESIGNER SHALL ENSURE EFFECTS OF CANT CONSIDERED IN DETERMINING WALKWAY WIDTHS. REFER TO TECHNICAL USER MANUAL.
18. ALL PARAPETS SHALL BE COMPLETELY TRIAL ERECTED AND MATCH MARKED.
19. THE PARAPETS SHALL BE MANUFACTURED TO SUIT THE CAMBER OF THE BRIDGE.
THE PARAPET POSTS AND THE INFILL SHALL BE SET AT RIGHT ANGLES TO THE CHORD JOINING THE BEARING PLATES VIS:

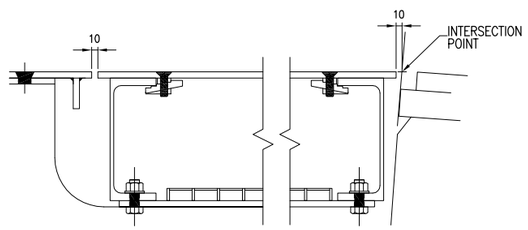


20. SEE NETWORK RAIL CONTRACT SPECIFICATION FOR PLATING OF NUTS AND WASHERS.
21. FOLLOWING THE TRIAL ERECTION OF THE MAIN GIRDERS, WHERE REQUIRED THE END WALKWAY BRACKETS SHALL BE BOLTED TO THE BEARING STIFFENER AND THE INTERMEDIATE WALKWAY BRACKETS SHALL BE OFFERED UP TO THE STIFFENERS AND ALL SET TO A GOOD HORIZONTAL AND VERTICAL ALIGNMENT (MAIN GIRDER INCLINED IF NECESSARY). THE 26mm DIA. HOLES SHALL THEN BE MARKED OFF AND DRILLED TO SUIT AND THE BEARING FLAT SHALL BE POSITIONED SO THAT IT BEARS AGAINST THE STIFFENER EDGE.

NOTE THAT THE STANDARD UNDERBRIDGE DRAWINGS REQUIRE THE WALKWAY BRACKET CONNECTION TO BE ATTACHED TO THE BEARING STIFFENERS AND THE BOLT HEADS CAST INTO CONCRETE.

FABRICATION:

22. THE DESIGNER SHALL ENSURE SUITABLE TOLERANCES ARE INCLUDED IN THE CONTRACT DRAWINGS.
23. THE STANDARD WALKWAY SHALL BE SET OUT AS SHOWN IN THE FIGURE BELOW. IT IS ASSUMED THAT THE WEB STIFFENER ALIGNS WITH THE TOP FLANGE. INFILL PLATES ARE REQUIRED WHERE ANY TOP FLANGE DOUBLER PLATE IS PRESENT AND BALLAST COULD FALL THROUGH THE GAP BETWEEN THE GIRDER AND THE WALKWAY.



DESIGN:

24. DESIGN ASSUMES THE FOLLOWING LOAD CASES AND CONDITIONS IN ACCORDANCE WITH NR/L2/CIV/020 (DRAFT 12) DESIGN OF BRIDGES AND CULVERTS.

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WALKWAY:

VERTICAL LOAD OF 5kN/m² ON WALKWAY DECK PLUS A POINT LOAD OF 2kN.

VERTICAL LOAD OF 1kN/m FOR SERVICES. PERMANENT LOAD OF STEEL WALKWAY AND DECK USED IN DETERMINING DETAILS.

PARAPET:

THE STANDARD THREE RAIL PARAPET INCLUDED IN THIS SERIES OF DRAWINGS HAS BEEN DESIGNED FOR 0.74kN/m PLUS A POINT LOAD OF 0.5kN APPLIED AT THE TOP PARAPET RAIL LEVEL, ASSUMED AT A MAXIMUM OF 1250mm ABOVE WALKWAY DECK LEVEL, AND WIND LOADING.

THE STANDARD WALKWAY BRACKET DETAIL HAS BEEN DESIGNED TO ACCOMMODATE ANY PARAPET (SOLID OR OPEN) UPTO 1500mm ABOVE WALKWAY LEVEL. PARAPET LOADS ARE AS ABOVE (AT 1500mm) AND THE APPLIED WIND (ASSUMING 1500mm SOLID PARAPET) FOR ANY LOCATION IN UK CALCULATED AS 4.44kN/m. HORIZONTAL AND VERTICAL EFFECTS OF WIND LOAD ARE CONSIDERED.

COMBINATIONS:

IN ACCORDANCE WITH BS EN 1990:A1 NOTING THAT THE VERTICAL WALKWAY LOAD IS ONLY APPLICABLE WHEN THE COEXISTENT, FUNDAMENTAL VALUE OF THE BASIC WIND VELOCITY, $V_{b,0}$, DOES NOT EXCEED 35m/s.

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WALKWAY NOTES:

25. A NON–SLIP WALKWAY SURFACE NOT LESS THAN 700mm WIDE SHALL BE PROVIDED.
26. ALL PARAPET HEIGHTS TO BE MINIMUM 1250mm AND 1500mm MAXIMUM. ONLY THE 1250mm THREE RAIL PARAPET IS A STANDARD DETAIL ALTHOUGH THE WALKWAY BRACKET HAS BEEN DESIGNED TO ACCOMMODATE ALTERNATIVES INCLUDING A SOLID PARAPET UPTO 1500mm HIGH.
27. CESS WALKWAY TO BE MINIMUM 700mm CLEAR WIDTH IN ACCORDANCE WITH NR/SP/OHS/069. CLEAR DISTANCE TO CESS WALKWAY 1300mm (TO 100mph) OR 2100mm (TO 125mph) IN ACCORDANCE WITH NR/SP/OHS/069.

SAFETY, HEALTH & ENVIRONMENT RISK ASSESSMENT

DESIGNERS' NOTE – CDM REG. 13(2)(b)

THE FOLLOWING ARE SIGNIFICANT HAZARDS WHICH MIGHT AFFECT THE HEALTH & 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 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 LIFTING COVERS	0	MINIMISE WEIGHT OF REMOVABLE COVERS OVER SERVICES TO 20kg
SECURITY	0	REMOVABLE COVERS OVER PANELS TO BE SECURELY FASTENED TO AVOID BEING MOVED BY TRAINS OR TRESPASSERS
NOTE: C=CONSTRUCTION, D=DESIGN, O=OPERATION		

NOTE: DUE TO THE VARIATION IN ARRANGEMENT OF THE STANDARD COMPONENTS, IT HAS NOT BEEN POSSIBLE TO STATE THE WEIGHT OF THE STANDARD WALKWAY COMPONENTS.

DRAWING No. NR/CIV/SD/1901

NOTES

Rev	Date	Description of revision	Design'd	C'kd
B	MAY 10	EUROCODE ISSUE	AGW	SF
A	APR 09	FIRST ISSUE	AGW	SF
P2	16.02.09	AMENDED WHERE SHOWN	IP	MK
P1	15.10.08	INDEPENDANT CHECK	IP	MK

Network Rail

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Approved	Paul Clark	Snr. Proj. Eng. Manager Infrastructure Investment Building and Civils	P.C.	MAY 10
	Name	Position	Signature	Date

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

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UNDERBRIDGE WALKWAYS STANDARD DRAWINGS

GENERAL NOTES AND HEALTH & SAFETY RISK REGISTER

Scale: AS SHOWN

Drawing Number: NR/CIV/SD/1901 B

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