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MODEL CLAUSES FOR CIVIL ENGINEERING WORKS

SECTION 126 TEMPORARY BRIDGES

Contents		Page
	GENERAL REQUIREMENTS FOR TEMPORARY BRIDGES	
126.001	Method statement to be submitted with the Tender	2
126.002	Detailed method statement	3
126.003	Design generally	4
126.004	Bonding of temporary bridges on a.c. electrified lines	4
126.005	Trial erection	4
	TEMPORARY BRIDGES CARRYING RAILWAY TRAFFIC	
126.006	Railway loading	4
126.007	Collision loads on superstructures	5
126.008	Deformations	6
126.009	Horizontal and vertical curvature of the track	6
126.010	Settlement and loss of track ballast	6
126.011	Derailment	6
126.012	Fatigue	6
126.013	Staging, temporary parapets and walkways to temporary rail bridges	7
126.014	Marking of temporary bridge spans	8
	TEMPORARY BRIDGES CARRYING ROAD TRAFFIC	
126.015	Highway loading	9
126.016	Details to be agreed with the Highway or Road Authority	9
126.017	Parapets and footpaths to temporary road bridges	9
	SUPPORTS FOR TEMPORARY BRIDGES	
126.018	Form of supports	10
126.019	Collision loading	10
126.020	Use of military trestling	12
References	British Standards	13
	Railway Group Standards	13
	Network Rail standards	13
	Other publications	13
	Model Clauses	14

Ref	NR/L3/CIV/140/126C
Issue	3
Date	1 st June 2008
Compliance Date	1 st September 2008

SECTION 126

GENERAL REQUIREMENTS FOR TEMPORARY BRIDGES

Method statement to be submitted with the Tender

126.001

Further to NR/SP/CPR/008, an outline method statement for the bridge installation shall be submitted with the Tender. The outline method statement shall include the following:

Items (i) to (iv) apply to temporary railway bridges only.

- (i) the proposed type of temporary railway bridge including the span and support arrangement, ballast walls, ballasted deck or otherwise, the method of fixing the track to the temporary bridge, and the arrangement of walkways and handrailing,

If it is proposed to use existing bridging materials from the Contractor's stock, the Tender shall include full details of such bridging materials including design loading, design and design check certificate, and history of past use,

- (ii) proposals for the design of the temporary railway bridge, including any loads arising from the Contractor's method of working,
- (iii) trackwork to be carried out in connection with the installation and removal of the temporary railway bridge and the absolute possessions and temporary speed restrictions considered necessary, where these are not specified in Section 227: Permanent Way Particular Specification for Bridgeworks,
- (iv) proposals for the maintenance of the track and monitoring track settlement, including proposals for actions to be taken to limit the track settlement to the specified values,

Items (v) and (vi) apply to temporary road bridges only.

- (v) the proposed type of temporary road bridge including the support arrangement, deck, pavements, parapets and road or footpath layout. If it is proposed to use existing bridging materials from the Contractor's stock, the Tender shall include full details of such bridging materials including design loading, design and design check certificate, and history of past use.

Ref	NR/L3/CIV/140/126C
Issue	3
Date	1 st June 2008
Compliance Date	1 st September 2008

- (vi) proposals for the design of the temporary bridge including highway and parapet loading as applicable, and any loads arising from the Contractor's method of working,

Items (vii) to (ix) apply to both temporary railway and road bridges.

- (vii) clearances to the tracks,
- (viii) details of the organisations proposed to be used to carry out the design and design check of the temporary bridge and supports,
- (ix) the proposed method of installation and subsequent removal of the temporary bridge including foundations and supports.

Detailed method statement 126.002

Further to Clause 126.001, a detailed method statement for the bridge installation shall be submitted to the Employer's Representative for acceptance not less than six weeks before the programmed start of the relevant work. The detailed method statement shall include, but not be limited to, further details of the information submitted in accordance with Clause 126.001 as necessary, and the following additional information:

- (i) calculations, drawings, design and design check certification, and fitness for purpose in accordance with NR/SP/CIV/003, for all elements of the temporary bridge(s) including the supports, and any other associated Temporary Works,
- (ii) a detailed programme for the installation and removal of the temporary bridge(s),
- (iii) the plant to be used - such as cranes, jacks and other lifting equipment, including crane capacity and associated lifting radii, crane positions, and details of outrigger supports,
- (iv) proof of the competency of Contractor's personnel proposed to carry out track inspections and maintenance,
- (v) where bridging materials from the Contractor's stock are to be used, proposals for fatigue inspection of such materials, prior to installation and during use,

Ref	NR/L3/CIV/140/126C
Issue	3
Date	1 st June 2008
Compliance Date	1 st September 2008

- (vi) proposals for inspection and maintenance of the structure (including procedures and frequencies) and evidence of the competency of Contractor's personnel carrying out such inspections and maintenance.

The design calculations submitted for a temporary railway bridge under (i) shall demonstrate that the anticipated settlement of the temporary support foundations will not exceed the limits for geometrical track irregularities specified in Section 221: Permanent Way for Bridgeworks.

The installation of the temporary bridge(s) shall not commence until the detailed method statement has been accepted by the Employer's Representative.

Design generally 126.003

Temporary bridges shall be designed in accordance with BS 5400: Parts 3 to 8 inclusive as applicable to the form of construction.

Bearings for temporary bridges need not comply with BS 5400: Parts 9.1 and 9.2 provided that the bearings are otherwise suitable for their function.

Bonding of temporary bridges on a.c. electrified lines 126.004

All temporary overline and underline bridges on tracks electrified by a.c. electrification overhead line equipment shall be bonded in accordance with the requirements of Clause 10.052 of Section 10: General.

Trial erection 126.005

A full trial erection of the temporary bridge shall be undertaken (with supports at the correct relative levels and spacing) at the Contractor's works before being brought to Site. All joints shall be pulled up tight with temporary bolts and critical dimensions and levels checked.

TEMPORARY BRIDGES CARRYING RAILWAY TRAFFIC

Railway loading 126.006

Temporary bridges carrying railway traffic shall be designed to carry the railway loading specified in Appendix 126/1.

Any loading on the temporary bridge due to the Contractor's proposed method of working shall be taken into account in the design of the temporary bridge.

Ref	NR/L3/CIV/140/126C
Issue	3
Date	1 st June 2008
Compliance Date	1 st September 2008

Collision loads on super-structures

126.007

Temporary railway bridges across roadways with a headroom less than 5.7 metres shall be designed to resist the collision loads from highway traffic on bridge superstructures together with their direction of application as specified in Table 126/1.

Table 126/1		
Load normal to carriageway below (kN)	Load parallel to carriageway below (kN)	Point of application on bridge superstructure
250	500	On the soffit in any inclination between the horizontal and the (upward) vertical

The load normal to the carriageway shall be considered separately from the load parallel to the carriageway. The loads shall be considered to act as point loads on the bridge superstructure in any direction between the horizontal and the vertical, and shall be applied to the bridge soffit thus precluding downward vertical application. The load shall have an outward or inward application as applicable for the worst case.

Temporary bridges required to cross navigable waterways shall be designed for the loads given in Appendix 126/2.

Primary live loads shall not be considered to be applied on the bridge coexistent with collision loads. Collision loads need not be taken as coexistent with other secondary loads.

For all elements the effects of collision loads on the superstructure need only be considered for the ultimate limit state, with the load factor γ_{fL} taking a value of 1.5. The design load shall be applicable for global effects only, and local effects at point of impact shall be ignored.

In applying the above requirements the following three criteria shall be checked:

- (i) the temporary bridge deck must not lift or slide off its bearings,
- (ii) for a temporary bridge with a number of load-carrying members, the structure as a whole shall not collapse when any one of the members is assumed to have failed,
- (iii) for a temporary bridge with a single load carrying member, local failure or damage of elements is permitted, but the structure as a whole shall not collapse.