GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

(RAILWAY BOARD)

2017/37/CE-III/BR/BSC/85/Seminar **New Delhi, dt.09.10.2019**

General Manager (Const.), N.F.Railway, Guwahati.
Principal Chief Engineer, All Indian Railways
CAO/Const., All Indian Railways.
FA & CAO, All Indian Railways.

Director General, RDSO/Alambagh, Lucknow
General Manager (Engg)- ICF/Chennai, RCF/Kapurthala, DLW/Varanasi, CLW/Chittranjan, W&AP/Yelahanka, Bangalore & DMW/Patiala
Chief Commissioner of Railway Safety, Lucknow.

Chairman & Managing Director, Konkan Railway Corporation Ltd, Navi Mumbai.
Chairman & Managing Director, IRCON, New Delhi.
Chairman & Managing Director, RITES, New Delhi.
Managing Director, DMRC, Metro Bhawan, Barakhamba Road, New Delhi
Managing Director, CONCOR, New Delhi.
Chairman & Managing Director, RVNL, New Delhi.
Managing Director, DFCCIL, New Delhi.
Managing Director, Pipavav rail corporation ltd, New Delhi.
Managing Director, MRVC, Mumbai
Vice Chairman, RLDA, New Delhi

Director, IRICEN, Pune.
Director, IRIEEN, Nasik.
Director, IRISET, Secunderabad.
Director, IRIMEE, Jamalpur.
Director, IRITM, Manak Nagar, Lucknow.
Director General, National Academy of Indian Railways, Vadodara.

Genl. Secy., AIRF, NFIR, IRPOF, FROA, AIRPFA, DAI (Railways) Rail Bhawan, New Delhi.

Sub: *Advance Correction Slip* ***No.37 to*** *Indian Railways Bridge Manual.*

Ministry of Railways (Railway Board) have decided that correction/addition/modification as indicated in the enclosed Advance Correction Slip No.37 dated 09.10.2019 to relevant paras of the IRBM be made.

Receipt of this letter may please be acknowledged.

9.10.19

DA: As above

(A.K.Singhal)
Executive Director Civil Engg.(B&S)
Railway Board

2017/37/CE-III/BR/BSC/85/Seminar

New Delhi, dt. 09 .10.2019

Copy to: CRB, ME, ML, MS, MM, MT, FC, Secretary

AM/CE, AM(W), AM(Budget), AM(Elect.), AM(Fin.), AM(Sig.), AM(Plg.), AM(RS), AM(Mech.), AM(PU), AM(Tele.), AM(Traffic), Adv.(Vig.), Adv.(L&A), Adv (Bridges), Adv(Safety)

EDCE(P), ED(Works), ED(PM), EDV(E), EDTK(M), EDTK(MC), EDCE(G), ED(L&A), ED(L&A-II), ED(L&A-III), EDCE(B&S), ED(WP), ED(PSU), EDF(X), EDFX-II & OSD/ME,

EDTK(P) for incorporating in BMS through CRIS.

DTK(MC), DTK(M), Dir(Works) I & II, Dir.(L&A), DVE-I & DVE-II, DCE(P), DTK(P), DSDE, DCE(B&S-II), Dir(MTP), DCE(G), Dir (PSU), Dir(PPP)

Computer Cell / Railway Board for uploading on webiste

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GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

INDIAN RAILWAY BRIDGE MANUAL

EDITION – 1998

ADVANCE CORRECTION SLIP NO. 37 Dated 09.10.2019

1. **Existing Clause 1102.2(iv) to be replaced as under:-**

"PSC Bridge / Composite Girder Bridges Inspection Register (Annexure 11/2a)

2. **Insert "11/2a Performa for Inspection of PSC Bridge / Composite Girder Bridges 1102.2" in the list of Annexures at Page xiii.**

3. **Existing Clause 1107(15) (b) (i) and 1107 (15) (b) (ii) modified and renamed as 1107 (15) (b) as under:-**

" The camber of prestressed concrete girder should be checked by BRI within one year of installation and once in 5 years afterwards by any reliable method and recorded in Annexure 11/2a. One method which can be adopted for spans upto 30 meters is indicated in Annexure 11/14. Alternatively the camber can be recorded by using a leveling instrument or theodolite. The points where the camber is measured should be clearly marked on the underside of the girders so that the readings taken on different years are comparable. While recording camber, temperature should also be recorded and successive readings should be recorded at about the same temperature. Progressive loss of camber is an important indication of deterioration in the condition of bridge."

4. New Annexure 11/2a is inserted as below:-

(ANNEXURE-11/2a)
Para 1102.2

PROFORMA FOR INSPECTION OF PSC BRIDGE / COMPOSITE GIRDERS

Bridge No. .....chainage..... Block Section..... In Section..... UP/DN/SL/No. of Multiple Line..... Sub Division.....Division.....Name of Stream/River..... Completion Drawing Nos:.....

(All relevant Completion Drawing of Girder, Bearings & Expansion Joints are to be attached at the beginning of PSC Inspection Register and Inspection of Steel Work in Composite Girder Bridges to be continued as per Annexure 11/1 & 11/2

(A) GENERAL DETAILS

1.	Type of Bridge	
2.	Details of Spans a) Number of Spans b) Clear Spans c) Effective Spans	
3.	Overall Length of Girders	
4.	Skew Angle, if any	
5.	Gradient on bridge, if any	
6.	Curve on bridge , if any	
7.	Super elevation on bridge a) In rail b) In bed block	
8.	a) Details of Track b) Eccentricity of track w.r.t. girders i. End of Girder ii. Centre of Girder	
9.	Details of Bearings alongwith Drawings	
10.	Details of Bed Block	
11.	Details of Seismic Restraint Arrangement, if any	
12.	Details of Corrosion Protection Measures taken, if any i. Details of Reinforcement Steel Coating if any ii. Details of Structural Steel Coating if any iii. Details of Concrete Coating if any	
13.	Loading Standard of Design	
14.	Details of Drainage Arrangement of (Girder / Slab)	
15.	a. Catchment Area b. Design Discharge c. Any RAW/RAT up to 50 km on u/s d. Rail Level e. Top of Bed Block Level f. Danger Level g. Design HFL h. Vertical Clearance i. Free board j. Design Scour Level k. Top Of Foundation Level l. Bottom of Foundation Level	

16.	Details of jacking points of Girders			
17.	Girder Weight (per Span and total)			
18	Original Camber in mm for each type of Span			
	Section / Camber	L/4	L/2	3L/4
	Span Type-I			
	Span Type-II			
	Span Type-III			
19.	Details of a. Trolley refuges b. Safety refuges c. Foot Path d. Railing e. Sand Bins			
20.	Permanent / Temporary Speed restriction, if any and reasons of imposition			
21.	Additions and alterations to original design, if any			
22.	Year of Construction			
23.	Expansion Joints/Arrangements			
24.	Wearing Coat, type and thickness etc.			
25.	Additional details in case of ROB/RUB like Kerb, Crash Barrier etc.			
26.	History of Bridge Repairs etc.			

(B) INSPECTION DETAILS

SPAN No.----------

1. **General Inspection (i.e. Crack, Bulging, Spalling, Disintegration, Scaling, Rust Streak, Crushing, Dampness, Leaching, Exposure of Reinforcement etc.)**

(Suitable Arrangement to facilitate proper inspection of all the parts of Girder shall be made/arranged)

(a) For PSC Girder:

Item \ Date of Inspection						
Deck						
Sides/Webs						
Bottom						
Ends/Anchorage Zones						
Anchorage Zones of Cross Prestressing if any						
Inside/Openings if any						
Diaphragms/Cross Girders						
Lifting Arrangements						
Bearings						
Expansion Arrangement/Joints						
Seismic Restrainers						

(b) For Composite Girder:

Item	Date of Inspection			
Deck Slab	Sign of stagnation of water on Deck Slab, if any			
	Details of Crack, Concrete disintegration,crushing,spalling, exposure of reinforcement etc. with sketch, if any			
Condition of Steel Components	Details of Distortion in Steel members with sketch, if any			
	Details of Cracks in Steel members with sketch, if any			
	Details of Corrosion in Steel members with sketch, if any			
	Condition of Weld/Bolts/Rivets in Steel Part			
Junction of Steel part with Deck Slab	Any sign of separation of Deck Slab with Steel Girder			
	Details of Separation of Deck Slab from Steel Girder with Sketch, if any			

2. **Deflection/Camber Readings (Applicable in case of PSC Girders)**

Item \ Section	L/4	L/2	3L/4
Date			
Measured Camber in mm			
Temperature			

NOTE: Camber to be measured at the Centre of Girder (L/2) only. However, if the length of girder is more than 20 m, camber to be measured at 3 locations.

3. **Condition of Expansion Joints & Expansion Gaps**
Pier No.----------

Item \ Date of Inspection						
i. Cracks if any						
ii. Bulging of Polymers if any						
iii. Whether Gap is free and Clear of Dust etc.						
iv. Any other item as prescribed by Manufacturer						

4. **Condition of Bearing with Date of Cleaning and Defects, if any**
Pier/Abutment No.----------Bearing No.----------

Item \ Date of Inspection						
i. Condition of Stoppers						
ii. Flattening of Elastomers						
iii. Separation of Layers of Elastomer						
iv. Splitting of Layers of Elastomer						
v. Tearing of Layers of Elastomer						
vi. Bulging of Elastomer						
vii. Tilt in Elastomeric Bearing						
viii. Height of Elastomeric Bearing						
ix. Any Corner Lifting						
x. Condition of Holding Down Bolts						

Deep

xi. Condition of Seals in POT PTFE						
xii. Bulging out of Elastomer from POT PTFE						
xiii. Minimum gap between upper & lower partsof POT PTFE to be not less than 5 mm						
xiv. Whether Entirely supported on Bed Block						
xv. Cracks in any component of POT-PTFE						
xvi. Bending of any Component of POT PTFE						
xvii. Longitudinal Displacement w.r.t mean position						
xviii. Transverse Displacement w.r.t mean position						
xix. Rotation in Longitudinal Direction						
xx. Rotation in Transvers Direction						

5. Condition of Bed Block and Defects if any

Pier/Abutment No.---------- Bearing No.----------

Item \ Date of Inspection						
i. Whether Surroundings of Bed Block is clean.						
ii. Cracks in Bed Block if any						
iii. Whether Bed Block is Shaken						

6. Condition of Surface Protection

Item \ Date of Inspection						
i. Year of painting of Steel						
ii. Type of paint of Steel						
iii. Defects like fading /discoloration/Scaling etc in Steel Painting if any						
iv. Year of Coating of Concrete						

v. Type of Coating of Concrete						
vi. Defects like fading /discoloration/Scaling etc in Concrete Coating if any						

7. Condition of Drainage Arrangements & Defects if any

Date of Inspection / Item						
Whether Drainage is Clear or Chocked						

8. Condition of Seismic Restrainers if any

Date of Inspection / Item						
Any Cracks, Spalling etc in Seismic Restrainers						

9. Condition of ladders, railings, inspection arrangements etc.

Date of Inspection / Item						
i. Signs of Corrosion						
ii. Condition of Repairs if any						
iii. Condition of Connections						

10. Condition of Cracks & Tell tales if any

Date of Inspection / Item						
i. Location						
ii. Crack Pattern (Sketch to be attached)						
iii. Crack Width						
iv. Crack Length						
v. Crack Depth etc.						
vi. Whether Cracks require Grouting						
vii. Condition of previous repairs if any						

11. Gap between Girders

Item \ Date of Inspection						
i.Gap between Girders						
ii.Gap at End of Girders						

12. Details of experimental and trial observations if any

13. Defects Noted & Actions Taken

S.No.,	Date of Inspection	Brief Description of Defect	Details of action taken on previous years orders with date and details of repairs	Remarks on condition of defect

14. Name and Signature of Inspecting Officials/BRI

15. Remarks of AEN (Bridges) with Name and Signature

16. Orders of XEN (Bridges) with Name and Signature

17. Orders of Dy. CE (Bridges) with Name and Signature

18. Orders of CBE with Name and Signature

NEW DELHI
Dated09 .10.2019

(A.K.Singhal)
Executive Director Civil Engg.(B&S)
Railway Board