Northern Railway

Headquarters Office
Baroda House
New Delhi.

No: 33-W/O/Genl. Corres./W.Br. Pt-I

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Sr.D.E.N./C
Northern Railway
Delhi, Ambala, Moradabad, Lucknow & Ferozpur.

Sub: Maintenance of Bridge Registers for Important, Major, Minor bridges, ROB and Tunnel & cutting registers.

The IRBM vide para 1103(2) stipulates that separate bridge registers should be maintained as indicated below:

i) One register for each Important bridge as per proforma given in Annex 11/8 & 11/9 of IRBM
ii) Major Bridges as per Proforma given in Annex 11/8 & 11/9 of IRBM
iii) Minor Bridges as per Proforma given in Annex 11/10 & 11/11 of IRBM
iv) ROBs as per annexed Proforma (to separate ROBs from Railway Bridges)

2.0 Further, IRBM vide para 1003 stipulates that tunnels inspection registers should be maintained as per Proforma given in Annex 10/1 of IRBM.

3.0 Besides that all vulnerable cutting are also required to be inspected in accordance with para 1011 of IRBM as per Proforma given in Annex 10/2.

4.0 The above instructions should be implemented with immediate effect. Divisions should procure separate registers as per Proforma indicated above so that next cycle of bridge inspection, which commences immediately after the monsoon, is carried out as per above instructions.

Sinha 20.8.13

(N.K.Sinha)
Chief Bridge Engineer

Copy : i) CAO/C/I, II & USBRL : For information and implementation on new line/doubling projects being executed by construction organization.
ii) All HODs of engineering department in Baroda House for information.
iii) DyCE/Br.W.Shop/JRC & LKO, DyCE/BrL/TKJ, DyCE/TMC/Line
iv) All DyCEs in Hd.Qtr.

PROFORMA FOR ROADOVER BRIDGES

1. General

Division_____ Sub Division _____ Section _____
Location_____ Rly. km_____
Year of const._____ Road (Type & Name) _____
Road authority (NHAI, CPWD, PWD, BRO, Municipal corp., other)_____
Rail level _____ m Road level _____m
Skew Angle _____ Bottom of girder/slab or crown of arch _____ m

Span details _____ Type of girder _____
Road width _____ m Footpath width _____m
Load class _____ Initial camber (PSC & Comp. Spans) _____mm
Bearing type _____ Expansion joint (no, type & gap) _____
Stairs provided for footpath_____Thickness of Wearing Coat for Road _____mm
Completion Plan No. _____

Abutment : Material (Masonry(brick/stone), MC, RCC, Steel,_____) & Type
Earth retaining arrangements (Wing wall/return wall/RE wall etc.)
Pier : Material (Masonry(brick/stone), MC, RCC, Steel,_____) & Type

2. Foundation details

Pier/ Abutment	Type of fndn-wells/ piles/open	B.F.	T.F.	Ground level	Formation level	Top of pier/ abut cap	Seismic arrestors
1	2	3	4	5	6	7	8

3. Description of protective works

Item	Left	Right
i) Anti crash barrier		
ii) Railing		
iii) Protection screen (electrified territory)		
iv) Road drainage arrangement		

4. Kay plan & elevation of the bridge

PROFORMA FOR INSPECTION OF ROADOVER BRIDGES
CONDITION OF THE BRIDGE AT THE TIME OF INSPECTION

Date of inspection	Foundtion & protection works - condition	Masonry/ MCC/ RCC condition, extent of defect in substructure	Bed blocks, Pier/ abutment cap - Cracks, tendency to move	Girder Bearings	Steel work in the case of steel/composite girder bridge - structural codntion, camber and stage of painting
1	2	3	4	5	6

PSC/RCC girder in superstructure - Condition of girders/ beams, camber any cracks or defects noticed, condition of deck slab	Wearing coat - condition & thickness	Expansion joint - condition	ACB, railing, protection screen - condition	Drainage arrangements for road - channelisation of water away from track	Footpath - condition, services on it
7	8	9	10	11	12

Stairs for footpath - condition of stairs and railing	Vertical clearance (over each track)	Horizontal clearance (for each pier/abutment close to track)	Action taken on last year's notes	Initial of inspecting official	Initials of higher officials with remarks
13	14	15	16	17	18

Guidelines for filing up the inspection Proforma for ROB.

1.0 General:

Location: the location of the ROB should be indicated by name of the place wherever exists. Some ROBs have been build in lieu of level crossings, which should also be indicated in such cases.

Railway KM: chainage of ROB in terms of Railway kms to be mentioned.

Year of Construction: The year in which the superstructure was constructed. If this is not available then year in which structure is commissioned should be given.

Road type & Name: In road type classification, e.g., NH, SH, MDR etc. should be given. In the name, specific name of the road, if any, should be indicated along with major cities connected through it.

Road Authority: Under this head, the authority maintaining the road should be mentioned.

Rail Level: rail level of highest track below each span should be mentioned span wise.

Road Level: the level of road at the centre in case of roads without central verge and adjacent to central verge incase of roads with central verge within the railway land should be mentioned.

Skew angle: angle of skew should be mentioned, in case of bridges in square, "no skew" should be mentioned. In case of variable skew due to non parallel track or ROB in curve, the range of skew should be mentined.

Bottom of girder/slab or crown of arch: the level of lowest point of girder/slab should be mentioned. Level of crown should be mentioned in case of arches.

Span details: Opening of all the spans within the Railway land should be mentioned.

Type of girder: complete nomenclature of superstructure, e.g. PSC- I girder, composite I-girder, RCC slab etc. should be mentioned.

Road width: width of all carriage ways on the bridge should be mentioned alongwith number of lanes e.g. 9.5m wide 2 lane (without central verge) , 7.5m + 7.5m wide 4 lane (with central verge).

Footpath width: the width of footpath on either side of road to be mentioned separately. In case no footpath is provided, " No footpath" should be mentioned.

Load class: Loading standard as per IRC-6 for which the bridge has been designed. This detail is normally available in the completion plan of the bridge.

Initial Camber: The camber at the time of completion of construction should be mentioned.

Bearing type: Type of bearing (POT-PTFE, elastomeric, metallic guided, roller rocker etc.) to be mentioned. If no bearing is used, then "Not provided" should be mentioned.

Expansion joints: No of joints, type of joints (modular, strip seal etc.) alongwith design gap to be mentioned for each joint.

Stairs provided for footpath: At many locations footpath is provided only over the railway spans and stairs are provided to connect the footpath on both side of railway land. The same should be mentioned as Yes or No or Not applicable (through footpath).

Thickness of wearing coats: the thickness as per completion plan should be mentioned. In case thickness in completion is not available, existing thicknss should be measured and mentioned with remarks "As existing on xx.xx.xx".

Completion plan no. : The registered no of completion plan should be mentioned. In case where completion is no available, an as build drawing should be prepared as completion plan and sent to headquarter and the number of the same should be recorded.

Abutment type: type of abutment e.g. wall type, counter fort type, semi through/spill through etc. may be mentioned if he last railway span is resting on abutment. If ti is on common pier then "not applicable" may be mentioned.

Earth retaining arrangement: If abutment is defined as above, earth retaining arrangement for the approach bank may be enumerated.

Pier: material and type of all piers within railway land should be given.

2.0 Foundation details:

Foundation details for all railway spans should be given in the specified format. B.F.- bottom of foundation (bottom of pile in case of pile foundation) , T.F.- top of foundation. Seismic arrestors – in zone 4 & 5 , there are required to be provided and can be seen as isolated concrete/steel pedestals (other than bearing pedestals) on the pier/abutment cap.

3.0 Descriptions of protective works:

Anti crash bearer: Height and type of anti crash bearer to be mentioned.

Railing: Height and type of railing to be mentioned.

Protection screen: Height of protection screen to be mentioned in electrified territory. In non electrified sections, " non electrified – not applicable" should be mentioned.

Road drainage arrangement; arrangement provided to drain of the road water over the railway land should be given e.g. "through drainage spouts and channelized through pipes to discharge near pier base:.

4.0 **Key plan** : plan of the ROB showing location of railway boundary, track, piers/abutment, footprint of superstructure marking railing/ crash barrier/central verge/footpath/carriage way with width, drainage system etc. Any other feature as available.

Elevation : Elevation of the ROB showing NGL, formation, rail level, piers/abutment , super structure with road level and level of bottom of girder, drainage arrangement etc.
Proforma for inspection of road over bridges- condition of the bridge at the time of inspection:

5.0 **Inspection Proforma**

Foundation & protection works: Exposed part of foundation and protection works should be inspected and their condition recorded.

PSC/RCC girders : The instruction for inspection of these girders issued vide letter no. DOB/Misc./2013 dated 11.7.13 shall be followed.

Wearing coat: The thickness of wearing coat should be measured and recorded. The condition of road surface for pot holes, cracks etc. should be noted and recorded. Any required repair should be advised to concerned road authority.

Expansion joints: The condition of expansion joints should be assessed for any structural damage, proper connection with deck slabs, gap measurement and any obstruction to free movement of girder ends.

ACB & Railing condition: The condition of crash barrier, railing, protection screen etc. should be assessed for any damage and recorded.

Drainage arrangement: Drainage arrangement of road on ROB should be such that water is collected, channelized away from track and taken down along piers/abutment to ground and safely discharge. The condition of the same should be checked.

Footpath : Footpath should be clear. It may be checked that services, e.g., water pipes, cables etc are not carried over footpath as it adds load to structure besides permission issues.

Stairs : Footpath is normally connected to staircase on either side of railway boundary. The condition of staircase and its railings should be assessed and recorded.

Vertical clearance : Vertical clearance should be measured over each track separately up to lowest part of girder and recorded. Reasons for major deviation from previous record should be mentioned.

Horizontal clearance : Horizontal clearance of each pier/abutment should be checked from nearest track. Reasons for major deviation from previous record should be mentioned.