



SOUTH CENTRAL RAILWAY

Headquarters Office,
Works Branch,
Rail Nilayam, 5th Floor
Secunderabad-500025

No. W.71/BR/Bridge Policy

Dated: 30-03-2021

Sr.DENs/Co-ord/SC, BZA, GTL, HYB, GNT & NED
SrDEN/Br.lines/BZA & SC, DEN/Bridges/SC, HYB, BZA & GTL

Sub: Pre-inspection checks of Bridges and submission of Reports for statutory inspection of new sections by CRS – Reg.

Ref: 1. CRS/SC letter no. R.11011/1/2009 SWR&SR/291 dated 07-06-2021
2. This office letter of even no. dated 22-06-2021.

Vide letter under reference (2), it was advised to do detailed inspection of all bridges in new sections being offered for CRS inspection and to submit details of inspection in prescribed formats so as to send a consolidated Appreciation Report from CBE office. In the formats attached with the aforesaid letter, the items to be checked and details to be recorded are clearly mentioned for guidance of inspecting officials. However, from the inspection reports received from divisions, it is observed that the quality of inspections and quality of filling up of data in the prescribed formats is not up to the mark. It is noted that the details against each of the inspection items are being filled up casually without commenting on the qualitative aspects of inspected item. Further, it is noted that the sectional DEN/SrDEN is not getting associated with the inspection of bridges in few cases.

Hence, all concerned are advised to strictly adhere to the instructions given earlier on this subject duly focusing on the quality aspects of bridge construction while filling up the details of inspection in the specified formats. The formats mentioning the details to be filled in are enclosed herewith once again for information.

Encl: Formats for inspection of Bridges & Formats for RAT/RAW details

Chief Bridge Engineer

Format for inspection of Minor Bridges

Bridge no:		Block Section & Km:	
Span configuration:			Structure type:
Bridge usage type:		GAD no:	
Loading Standard:	Alignment:		Grade:
Rail Level:	Formation level:		Bed level:
Exg. Bridge Span & Type:			Completion date:
Concrete grade used in Substructure:		in Superstructure:	

Bridge Inspection details

Sno	Item	Observations / Details of inspection
1	CRS sanction details:	<i>(details of CRS sanction to be recorded if applicable)</i>
2	Standard drawings references & approval of non-std. drawings:	<i>(details of std. drawings used for substructure & superstructure to be recorded. For non-std. drawings, it should be mentioned whether details of approval by competent authority are available or not)</i>
3	Vertical clearance provided:	<i>(VC provided to be recorded duly commenting on its adequacy as per extant instructions and conformity with approved GAD)</i>
4	Free Board provided:	<i>(FB provided to be recorded duly commenting on its adequacy as per extant instructions and conformity with approved GAD)</i>
5	Completion drawing:	<i>(Observations on completion drawing to be recorded reg. deviations, soil strata, certification by field officials reg. non-erodible strata for BOX etc.)</i>
6	Deviations from GAD:	<i>(all deviations from approved GAD to be recorded here along with details of approval for deviations)</i>
7	Protective works (Flooring, pitching, curtain wall, drop wall, toe wall etc.	<i>(Provision and Condition of all protective works i.e., flooring, pitching, curtain/drop walls, toe walls etc., to be recorded)</i>
8	Eccentricity of track	<i>(eccentricity of track over slab bridges to be recorded)</i>
9	Damages to exg. Bridge during construction	<i>(any damages caused to exg. Bridge during construction of new bridge to be recorded along with rectification done)</i>
10	Lateral restraint to ballast retainers	<i>(Provision of lateral restraint over piers for slabs bridges to be recorded)</i>
11	Defects in concrete surface (substructure & superstructure)	<i>(all defects in concrete surface like honeycombing, cracks, spalling, chipping of edges, plastering, shuttering defects etc. to be recorded along with the rectification done)</i>
12	NDT observations of concrete (substructure & superstructure)	<i>(NDT observations with rebound hammer at few sample locations on substructure & superstructure for various grades of concrete used in construction to be recorded)</i>
13	Marking of HFL, DL	<i>(HFL & DL marked or not and marked correctly or not)</i>
14	Any other deficiencies or observations on quality of construction.	<i>(any other defects / deficiencies noticed during inspection of the bridge to be recorded including waterway clearance)</i>
15	Rectification / Attention	<i>(all items requiring attention / rectification to be recorded)</i>

Format for inspection of ROBs

Bridge no:	Block Section & Km:	
Span configuration:	Structure type:	
GAD no:	Loading standard:	
Skew angle:	Approach Road grades:	
Rail Level:	Level of girder bottom:	
No. of tracks under ROB:	Completion date:	
Concrete grade used in Substructure:	in Superstructure:	

Bridge Inspection details

Sno	Item	Observations / Details of inspection
1	CRS sanction details:	<i>(details of CRS sanction to be recorded if applicable)</i>
2	Standard drawings references & approval of non-std. drawings:	<i>(details of std. drawings used for substructure & superstructure to be recorded. For non-std. drawings, it should be mentioned whether details of approval by competent authority are available or not)</i>
3	Vertical clearance provided:	<i>(VC provided above RL up to bottom of girders to be recorded)</i>
4	Lateral clearances provided:	<i>(Lateral clearances from CL of track to abutments to be recorded)</i>
5	Completion drawing:	<i>(Observations on completion drawing to be recorded regarding deviations, soil strata etc.)</i>
6	Deviations from GAD:	<i>(all deviations from approved GAD to be recorded along with details of approval for deviations)</i>
7	Protective works (pitching, toe wall etc.)	<i>(Condition of all protective works i.e., pitching, toe walls etc., to be recorded)</i>
8	Road protection works	<i>(Condition of crash barriers, hand railing etc., to be recorded)</i>
9	Quality Control	<i>(QC on material testing, cube / steel testing, permeability test, painting, workmanship etc., to be recorded)</i>
10	Foundations:	<i>(Depth of foundation, SBC, Pile load test details – static / dynamic / integrity to be recorded)</i>
11	Bearings	<i>(Type and condition of bearings provided, testing details, eccentricity in laying etc., to be recorded)</i>
12	Defects in concrete surface (substructure & superstructure)	<i>(all defects in concrete surface like honeycombing, cracks, spalling, chipping of edges, plastering, shuttering defects etc. to be recorded along with the rectification done)</i>
13	NDT observations on concrete (substructure & superstructure)	<i>(NDT observations with rebound hammer at few sample locations on substructure & superstructure for various grades of concrete used in construction to be recorded)</i>
14	PSC / Steel girders	<i>(Fabrication inspection details for steel girders by RDSO/Rly/3rd party & Stressing details for PSC girders to be recorded)</i>
15	Load test & Camber:	<i>(Details of Load test carried out, camber details of PSC girders to be recorded)</i>
16	Any other deficiencies or observations on quality of construction.	<i>(any other defects / deficiencies noticed during inspection of the bridge to be recorded)</i>
17	Rectification / Attention	<i>(all items requiring attention / rectification to be recorded)</i>

Format for inspection of Important & Major Bridges

Bridge no:	Block Section & Km:	
Span configuration:	Structure type:	
Bridge usage type:	GAD no:	
Loading Standard:	Alignment:	Grade:
Rail Level:	Formation level:	Bed level:
Exg. Bridge Span & Type:	Completion date:	
Concrete grade used in Substructure:	in Superstructure:	

Bridge Inspection details

Sno	Item	Observations / Details of inspection
1	CRS sanction details:	<i>(details of CRS sanction to be recorded if applicable)</i>
2	Standard drawings references & approval of non-std. drawings:	<i>(details of std. drawings used for substructure & superstructure to be recorded. For non-std. drawings, it should be mentioned whether details of approval by competent authority are available or not)</i>
3	Vertical clearance provided:	<i>(VC provided to be recorded duly commenting on its adequacy as per extant instructions and conformity with approved GAD)</i>
4	Free Board provided:	<i>(FB provided to be recorded duly commenting on its adequacy as per extant instructions and conformity with approved GAD)</i>
5	Completion drawing:	<i>(Observations on completion drawing to be recorded reg. deviations, soil strata, certification by field officials reg. non-erodible strata for BOX etc.)</i>
6	Deviations from GAD:	<i>(all deviations from approved GAD to be recorded along with details of approval for deviations)</i>
7	Protective works (Flooring, pitching, curtain wall, drop wall, toe wall etc.	<i>(Provision and Condition of all protective works i.e., flooring, pitching, curtain/drop walls, toe walls etc., to be recorded)</i>
8	Track	<i>(eccentricity of track in ballasted deck bridges, ballast cushion, Sleeper spacing in steel girder bridges, condition of fittings etc., to be recorded)</i>
9	Damages to exg. Bridge during construction	<i>(any damages caused to exg. Bridge during construction of new bridge to be recorded along with rectification done)</i>
10	Lateral restraint to ballast retainers	<i>(Provision of lateral restraint over piers for slabs bridges to be recorded)</i>
11	Quality Control	<i>(QC on material testing, cube / steel testing, permeability test, painting, workmanship etc., to be recorded)</i>
12	Foundations:	<i>(Depth of foundation, SBC, Pile load test details – static / dynamic / integrity to be recorded)</i>
13	Bearings	<i>(Type and condition of bearings provided, testing details, eccentricity in laying etc., to be recorded)</i>
14	Defects in concrete surface (substructure & superstructure)	<i>(all defects in concrete surface like honeycombing, cracks, spalling, chipping of edges, plastering, shuttering defects etc. to be recorded along with the rectification done)</i>
15	NDT observations of concrete (substructure & superstructure)	<i>(NDT observations with rebound hammer at few sample locations on substructure & superstructure for various grades of concrete used in construction to be recorded)</i>

16	PSC / Steel girders	<i>(Fabrication inspection details for steel girders by RDSO/Rly/3rd party & Stressing details for PSC girders to be recorded)</i>
17	Load test & Camber:	<i>(Details of Load test carried out, camber details of OWG/PSC girders to be recorded)</i>
18	Marking of HFL, DL, Foundation details	<i>(Details of HFL, DL, Foundation details marked or not)</i>
19	Bridge appurtenances:	<i>(Details of bridge appurtenances provided such as Name boards, Trolley/Man refuges, Pathways, Inspection ladders/ platforms etc. to be recorded)</i>
20	Any other deficiencies or observations on quality of construction.	<i>(any other defects / deficiencies noticed during inspection of the bridge to be recorded)</i>
21	Rectification / Attention	<i>(all items requiring attention / rectification to be recorded)</i>

I. Format for Railway Affecting Tanks

A. General			
Name of Railway Affecting Tank:			
RAT ID:		Latitude:	Longitude:
State:	District:	Mandal:	Village:
Rly.Divn:	Sub Div:	PWI section:	
Distance from Rly Bridge to RAT (along the course of Nallah) :			
Affected Railway Bridge No:		Location:	
Railway Section:		Block section:	
Km of Railway Bridge/Location from-to:			
Span configuration of Bridge:		Bridge Structure Type:	
B. Physical Features of Railway Affecting Tank			
Catchment Area (Sq.Km):		Capacity of Tank (Million Cum):	
Lowest Bed level (m):		Full Tank Level (m):	
Maximum Water level (m):		Danger Level (m):	
Submerged FTL (m):		Submerged MWL (m):	
Level of top of dam /barrage/weir/Regulator (m):			
Maximum height of Dam/ Barrage/Weir/Regulator (m):			
Length of dam /barrage/weir/Regulator (m):			
Top width of bund (m):		Top bund level (m):	
Bund slope Upstream:		Bund slope Downstream:	
Are there any Tanks in the catchment of this tank? (Yes/no)			
Are these tanks classified as RATs:			
Name and details of these tanks (Tank /RAT ID Nos):			
Number of surplus weirs:			
Type and Details of Surplus weirs:			
Design discharge of these weirs (Cumeecs):			
Details of sluices / penstocks and its locations:			
Design discharge of sluices / penstocks working at a time (Cumeecs):			
Final combined discharge at Rly Bridge site excluding losses from weir / sluices (Cumeecs):			
Additional details if any:			
Remarks if any:			

II. Format for Railway Affecting Work: Canal Crossing with / without head works & Approach Banks

A. General			
Name of Railway Affecting Work:			
RAW ID:		Latitude:	Longitude:
State:	District:	Mandal:	Village:
Rly.Divn:	Sub Div:	PWI section:	
Distance from Rly Bridge to RAW (along the course of Nallah) :			
Affected Railway Bridge No:		Location:	
Railway Section:		Block section:	
Km of Railway Bridge/Location from-to:			
Span configuration of Bridge:		Bridge Structure Type:	
A. Physical Features of Railway Affecting work :			
Name of Canal Crossing:			
Reason for considering Railway affecting:			
Discharge (Cumeecs):			
Bed level of Canal (m):			
Danger level (m):			
Top level of canal bund on U/S side (m):			
Ground level (m):			
Type of overflow weir:			
Length of overflow weir (m):			
Design discharge of overflow weir (Cumeecs):			
Additional details if any:			
Remarks if any:			

III. Format for Railway Affecting Work : Canals running parallel to Rly track

A. <u>General</u>			
Name of Railway Affecting Work:			
RAW ID:	Latitude:	Longitude:	
State:	District:	Mandal:	Village:
Rly.Divn:	Sub Div:	PWI section:	
Distance from Rly Bridge to RAW (along the course of Nallah) :			
Affected Railway Bridge No:		Location:	
Railway Section:		Block section:	
Km of Railway Bridge/Location from-to:			
Span configuration of Bridge:		Bridge Structure Type:	
B. <u>Physical Features of Railway Affecting work:</u>			
Name of Canal running parallel or oblique:			
Reason for considering Railway affecting:			
Distance from Rly track to nearest location of Canal and corresponding Rly Km:			
Distance from Rly track to farthest location of Canal and corresponding Rly Km:			
Discharge (Cumeecs):			
Bed level of Canal (m):			
Danger level (m):			
Top level of canal bund on U/S side (m):			
Ground level (m):			
Type of overflow weir:			
Length of overflow weir (m):			
Design discharge of overflow weir (Cumeecs):			
Additional details if any:			
Remarks if any:			

IV. Format for Railway Affecting Work : Road Bridges (including causeways and culverts)

A. <u>General</u>			
Name of Railway Affecting Tank:			
RAW ID:		Latitude:	Longitude:
State:	District:	Mandal:	Village:
Rly.Divn:	Sub Div:	PWI section:	
Distance from Rly Bridge to RAW (along the course of Nallah) :			
Affected Railway Bridge No:		Location:	
Railway Section:		Block section:	
Km of Railway Bridge/Location from-to:			
Span configuration of Bridge:		Bridge Structure Type:	
B. <u>Physical Features of Railway Affecting work</u>			
Name of Road Bridge:		Name of River:	
Road Bridge No:		Road Km:	
Reason for considering Railway affecting:			
Distance from Rly track in 'm' & corresponding Rly Km:			
Type and Class of road Bridge:			
Lowest Bed level (m):			
Span configuration of Road Bridge:			
Total water way of bridge in meters:			
<u>Hydraulic features of Road Bridge</u>			
Catchment area (Sq.Km):			
Maximum flood Level (m):		Year of occurrence:	
Maximum scour observed (extent and location):			
General remarks on behavior of river:			
Additional details if any:			
Remarks if any:			