

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

No. 2014/Proj./INSPECTION/40/5

New Delhi, date 20.08.2014

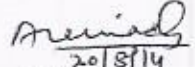
Principal Chief Engineer,
SWR, SR, NWR, ER, CR, WR

Sub: Joint Inspection of Metro Over Bridges (MOB) and underground structures in the Railway premises.

Enclosed please find herewith a copy of proforma as implemented by Northern Railway, for Inspection of Metro Over Bridges (MOB) and underground metro structures with a request that annual inspection of MOB and other underground structures be carried out jointly with Metro Railways to ensure safety and proper maintenance of the assets.

Confirmation in this regard kindly be submitted.

DA: As above


20/8/14
(Avinash)

Deputy Director/Project
Railway Board
☎ 011-23097061

Copy to:- Principal Chief Engineer, Northern Railway, Baroda House, New Delhi for information.



मुख्य पुल इंजीनियर
उत्तर रेलवे
बड़ौदा हाउस, नई दिल्ली
CHIEF BRIDGE ENGINEER
NORTHERN RAILWAY
BARODA HOUSE
NEW DELHI

No.33-W/O/Metro/W.Br.

Dated: 18.7.14

21

The Managing Director,
Delhi Metro Rail Corporation,
Metro Bhawan, Barakhamba Road
New Delhi: 110001

Divisional Railway Manager,
Northern Railway,
DRM's office,
Delhi, Lucknow, Moradabad, Ambala & Ferozpur

Sub: Joint Inspection of Metro Over Bridges (MOB) in the Railway premises

All Metro Over Bridges as well as under ground construction in the Railway premises are required to be inspected and maintained as per the Railway codal provisions to ensure safety. The Railway bridges including ROB are inspected before the onset of monsoon by the Sectional Engineers and after the monsoon by the concerned Assistant Engineer annually. Referred cases are inspected by higher officials as per requirement.

Proposed MOU between Railways and Metro Rail specifies joint annual inspection by the two Organisations, however, it is observed that this has not been implemented earnestly as yet in the field. MOUs are also yet to be signed for already constructed and commissioned crossings. MOU also stipulates that required maintenance should be carried out by Metro Organisation.

To strengthen the system of joint inspection, it has been decided that annual inspection of Metro Over Bridges (MOB) and other under ground structures (as and when required) should be carried out jointly by the Railways and Metro Railway after the monsoon. A proforma for inspection with full details is enclosed. In case of underground crossing of railway premises, the settlement and other tell-tale symptoms of distress to be observed and recorded regularly for prompt remedial action.

It is requested that the joint inspection is immediately implemented in the field to ensure safety and proper maintenance of the assets.

As above

✓ Dly.

The proforma may be circulated
to other PCEs also where metro
are constructed or under construction

21/7/14

(N.K. Sinha)

Chief Bridge Engineer
For General Manager/Engg

Copy to

1. AM/CE, Rly. Bd. for kind information
2. Pr CE for kind information please
3. CE/MRTS for information and necessary action
4. Sr DEN/C/DLI for immediate implementation
5. Sr DEN/C/LKO, MB, FZR & UMS for information.

Letter No.

20/7/14

21/7/14

646
21/7/14

PROFORMA FOR INSPECTION OF METRO OVER BRIDGES(MOB)

1. General

Division _____ Sub Division _____ Section _____
 Location _____ Railway km _____
 Year of const. _____
 Rail level(in metre) _____ Metro Rail level(in metre) _____
 Skew Angle _____ Bottom of girder/
 slab or crown of arch(in metre) _____
 Span details _____ Type of girder _____
 Width of Metro Bridge(in metre) _____
 Initial camber at the time of completion (PSC & Comp. Spans) _____ mm
 Bearing type _____ Expansion joint (no, type & gap) _____
 Abutment : Material (brick,stone, MC, RCC, Steel etc.) and Abutment type: _____
 Earth retaining arrangements (Wing wall/return wall etc.) _____
 Pier : Material (brick,stone, MC, RCC, Steel etc.) and Pier type _____

2. Foundation details

Pier/ Abutment	Type of fndn- wells/ piles/open	Bottom of Foundation	Top of Foundation	Ground level	Formation level	Top of pier/ abutment cap	Seismic arrestors
1	2	3	4	5	6	7	8

3. Description of protective works

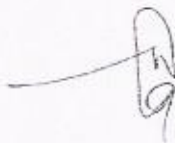
Item	Left side	Right side
i) Derailment Protection Arrangement		
ii) Railing		
iii) Protection screen (electrified territory)		
iv) Drainage arrangement		



4. Key plan & elevation of the Metro Over Bridge

PROFORMA FOR INSPECTION OF METRO OVER BRIDGES(MOB)

1	2	3	4	5	6
Date of inspection	Foundation & protection works	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 condition, camber and stage of painting
7	8	9	10	11	12
PSC/RCC girder in superstructure - Condition of girders/ beams, camber any cracks or defects noticed, condition of deck slab	Expansion joint - condition	Derailment protection work, railing, protection screen	Drainage arrangements (functional/ adequate)	Vertical clearance (over each track)	Horizontal clearance (for each pier/abutment close to track)
13	14	15	16		
Action taken on last year's notes	Initial of inspecting Railway official	Initial of inspecting Metro official	Initials of higher officials with remarks		



Guidelines for filing up the inspection Proforma for Metro Over Bridge(MOB)

1.0 General:

- i) Location: The location of the MOB should be indicated by name of the place wherever exists.
- ii) Railway KM: chainage of MOB in terms of Railway kms to be mentioned.
- iii) 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.
- iv) Rail Level: Rail level of highest track below each span should be mentioned span wise.
- v) Metro Rail Level with respect to rail level of highest track.
- vi) 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 MOB in curve, the range of skew should be mentined.
- vii) Bottom of girder/slab : The level of lowest point of girder/slab should be mentioned.
- viii) Span details: Opening of all the spans within the Railway land should be mentioned.
- ix) Type of girder: Complete nomenclature of superstructure, e.g. PSC box girder, composite girder, RCC slab etc. should be mentioned.
- x) Initial Camber: The camber at the time of completion of construction should be mentioned.
- xi) 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.
- xii) Expansion joints: No of joints, type of joints (modular, strip seal etc.) alongwith design gap to be mentioned for each joint.
- xiii) Abutment type: type of abutment e.g. wall type, counter fort type, semi through/spill through etc. may be mentioned .
- xiv) Earth retaining arrangement: Earth retaining arrangement, if applicable, for the approach bank may be mentioned.
- xv) Pier: Material and type of all piers within railway land should be indicated.

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: Protection against derailment may 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.

Drainage arrangement: arrangement provided to drain water from the Metro Over Bridge should be mentioned.

4.0 Key plan : Plan of the MOB showing location of railway boundary, railway track, piers/abutment, Metro superstructure etc.

Elevation : Elevation of the MOB showing NGL(Natural Ground Level), formation, rail level, piers/abutment, Metro superstructure with Metro rail level and level of bottom of girder, drainage arrangement etc.

5.0 Inspection Proforma

- i) Foundation & protection works: Exposed part of foundation and protection works should be inspected and their condition recorded.
- ii) PSC/RCC girders : The extant instruction for inspection of these girders to be followed.
- iii) 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.
- iv) Protection against derailment & Railing condition: The condition of derailment protection work, railing, protection screen etc. should be assessed for any damage and recorded.
- v) Drainage arrangement: Drainage arrangement of MOB 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.
- vi) 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.
- vii) Horizontal clearance : Horizontal clearance of each pier/abutment should be checked from nearest track. Reasons for major deviation from previous record should be mentioned.