

**ANNEXURE VII – 6
RAILWAY CROSSING
AND
SPECIAL SPAN DESIGN PHASE**

Annexure-5

RAILWAY CROSSING AND SPECIAL SPAN DESIGN PHASE

Circulars and Guidelines of Railways

1. Railway Board Circular No. 2011/Proj./SCR./9/8 dated 13.08.2013 with subject "Uniform Policy for Metro Rail Crossing across Existing Railway Tracks".
2. Central Railway's Guidelines for getting the Design Drawings on Bridges developed from Design Consultants issued vide letter no. W.294.BR.Proof Checking dated. 27.08.2018.
3. Central Railway's letter no. W.641./BR/Policy dated.10.10.2018 with subject "Safety and Reliability of new ROB/Overhead crossing over Railway System".
4. Central Railway's letter no. W.293.BR.Circular dated 22.05.2018 with subject "Fabrication and erection of steel structures for bridges (including FOBs and ROB)".

**Government of India (Bharat Sarkar)
Ministry of Railways (Rail Mantralaya)
Railway Board**

No. – 2011/Proj./SCR./9/8

13 August, 2013.

To
The General Managers,
All Zonal Railways.

Sub: Uniform Policy for Metro Rail Crossing across Existing Railway Tracks.

Ref: This office letter no. 2011/Proj./SCR./9/8, dated 22.03.2012.

In supersession to the instructions issued vide letter under reference, policy for metro railway crossings has been reviewed and revised as under:

1. Metro Railways are highly capital intensive projects and there is very little flexibility in altering alignments. Hence if a crossing across railway line is proposed by metros, it should be generally agreed to, if it is technically feasible.
2. CBE of the Railways needs to be satisfied with respect to adequacy of design for portion across Railway track. The Railway, if deems capable, may check the design in house. In cases, where Zonal Railway is not in a position to check the design in house, the design, duly accepted by consultant of the Metro Railway administration, needs to be proof checked by a third party, distinct from the designer and the consultant, mutually agreed between Metro Railway and Zonal Railways. The software used for such checking should be different from the one used while designing the structure. The consultant should interact with Zonal Railway during proof checking work. Zonal Railways to advise list of such approved third party consultants to Metro Railways. Launching scheme, wherever required, should invariably form part of the design scheme. Design basis report approved by Rly. Board should form basis for all such designs.
3. Safety at work site during execution, quality of work and its execution as per approved drawings is the prime responsibility of concerned Metro Railway administrations. However, for any crossing over/under Railway Track, concerned Zonal Railway is also duty bound to keep a vigil on activities of Metro Railway over railway land with respect to safety. This can be ensured by deputing Railway staff for inspection depending on the type of work. 100% inspection by Railways may not be desirable since Metro Railways normally have third party inspection and certification agencies in place for quality assurance. It is however for the Railway administration to decide on the extent of inspection depending upon the quality assurance plan of the Metro Railways. Detailed supervision procedure may be finalized by Zonal Railways.
4. Railways should ensure that there are no supporting pillars between the tracks.
5. Following charges should be levied from Metro Railway Administration towards Railway crossings (other than land lease/licensing charges):
 - a. Supervision charges @ 6.25 percent are to be levied for metro railway crossings in line with works of ROBT/RUB executed by other agencies on

Uniform crossing metro policy 05.02.2013

Railway land. However, these charges will reduce to 3.125% if RITES is engaged as supervising agency by the Metro Administration.

- b. Centage charges are to be levied @ 2%. However, if Railway administration considers it appropriate that detailed drawings and designs should be checked by Metro administration through a mutually agreed consultant, these charges may be reduced to 1%.
- c. For works undertaken by Engg. Deptt., Departmental charges @ 12.5 % are levied in terms of para 1137 of Engg. Code. However, if work is not taken up by Engineering Deptt. but by the concerned Metro Railway on their own, applicability of these charges is not warranted.
- d. Maintenance of metro crossing structures is responsibility of Metro Railways hence no charges are to be levied for the same. An MoU should be entered into between Zonal Railway and Metro administration. An annual joint inspection with Metro Railway officials should be carried out to ascertain any abnormality in the structure. However, if any abnormality is found in the structure or otherwise, Metro Railway will quickly chalk out an action plan in consultation with concerned railway. In such cases, the charges as per Engineering Code Para 732 and 733 shall be levied for repairs.

This issues with the concurrence of Finance Directorate of Ministry of Railways.

Mohit Lila
(Mohit Lila)
Joint Dir./Works Plg.
011-23097061

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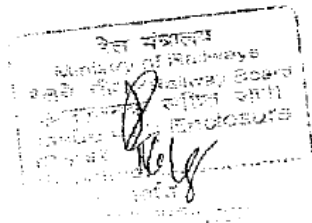
- (i) FA & CAO, All Zonal Railways.
- (ii) Principal Director of Audit, All Zonal Railways.
- (iii) Dy. Controller and Auditor General of India (Railways), Room No. 224, Rail Bhawan, New Delhi.

Bhavana
- For Financial Commissioner/Railways

Copy also to:

1. Secretary, MoUD, Nirman Bhawan, New Delhi for information and necessary action.
2. Principal Chief Engineers All Zonal Railways.
3. Managing Director, DMRC, BMRCL, KMRCL, CMRL, HMRL, MMRDA, JMRC, KMRL.

PT. Issue



Joint Dir./Works Plg.





मध्य रेल
CENTRAL RAILWAY

No.W.641/BR/Policy



भारत सरकार/Govt. of India
रेल मंत्रालय/Ministry of Railways

C-183

प्रमुख मुख्य इंजीनियर कार्यालय,
छत्रपति शिवाजी टर्मिनस,
मुम्बई - 400 001

PRINCIPAL CHIEF ENGINEER'S OFFICE
CHHATRAPATI SHIVAJI TERMINUS,
MUMBAI-400 001.

Date 10.10.2018

1. Principal Secretary (Transport),
Govt. of Maharashtra,
Room No.29, Mantralaya,
Mumbai - 400 032.
2. Principal Secretary,
Urban Development (I),
Mantralaya, Room No.424,
Govt. of Maharashtra,
Mumbai - 400 032.

**Sub : Safety and reliability of new ROBs/overhead crossings over
Railway system.**

It has been observed that number of overhead track crossings are being proposed by various organizations for carrying the municipal roads, Metro Lines, Mono Rail, Highways or other utilities. New innovative types of designs are proposed to bridge the long spans for which no experience of maintenance is available with the engineers. In many cases, crossings are in skew which makes the designs more complex and it becomes difficult to understand the stress distribution. The inspection and maintenance manual is not prepared by the designers as their responsibilities are often limited only upto the execution. Thus, the inspection and maintenance issues cannot be taken care of adequately. Besides it, proper arrangements are required to be made at the design and construction stage itself to inspect, repair or strengthen the structure during service.

It is therefore necessary to fix norms for consultants /Executing agencies for ensuring long service life and reliability of the structures being constructed. The maintenance needs and the frequency of Inspection of vital connections/components can only be specified by design consultants with appropriate procedures for repairs/strengthening. Accordingly, their responsibilities at different stages of Design and execution for ensuring safety and subsequent needs of inspection and maintenance are required to be defined which are briefly described in Annexure-I.

It is requested that the terms of reference for the design consultants/proof consultants/executing agencies are to be prepared keeping in view the long term durability and maintenance needs. This will help to develop a robust design requiring least maintenance, with appropriate safeguards for ensuring safety and reliability which is so vital for a structure over the railway track carrying passenger traffic.

(Signature)
(R.K. Goel)

Chief Bridge Engineer

DA : As above.

C/- EDCE(B&S), Railway Board, New Delhi for information.

....Contd. on Page No.2

-2-

- C/- Metropolitan Commissioner, MMRDA, Bandra-Kurla Complex, MMRDA office Building, C-14 & 15, E Block, Bandra (E), Mumbai - 400 051.
- C/- Vice Chairman & Managing Director, MSRDC, Nepean Sea Road, Priyadarshini Park, Mumbai - 400 036.
- C/- Municipal Commissioner, MCGM, 2nd Floor, Annex Building, Mahapalika Marg, CST, Mumbai - 400 001.
- C/- Commissioner, TMC, Almeida Road, Panch Pakhadi, Near Nitin Colony, Chandanwadi, Thane (W), Thane - 400 602.
- C/- Commissioner, KDMC, Beside Dena Bank, Shankarrao Chowk & Shivaji Chowk, Kalyan City, Thane - 421 301.
- C/- Commissioner, NMMC, Head office Plot No. 1, New Killegaathan, Palm Beach Junction, Sector 15A, CBD Belapur, Navi Mumbai - 400 614.
- C/- Chairman, CIDCO, CIDCO Bhavan, Sion-Panvel Road, CBD Belapur, Opposite Kokan Bhavan, Navi Mumbai - 400 614.
- C/- Chief General Manager (Tech) & Regional Officer, NHAI, 4th Floor, Plot No.22, Sector- 1, Opposite Belapur Station, CBD Belapur, Navi Mumbai - 400 0614.
- C/- CMD, MRVC, Station Building, 2nd Floor, Maharshi Karve Road, Mumbai - 400 020.
- C/- CPM, DFCCIL, 7th Floor, C.Rly.'s New Administrative Building, D.N. Road, Mumbai - 400 001.
- C/- CMD, Maharashtra Metro Rail Corporation Ltd., Metro House, 28/2, C.K. Naidu Marg, Anand Nagar, Civil Lines, Nagpur - 440 001.
- C/- MD, MRIDL, 2nd Floor, Hoechst House, NCPA Road, Nariman Point, Mumbai - 400 021.
- C/- Chief Engineer, MSRDC, Nepean Sea Road, Priyadarshini Park, Mumbai - 400 036.

Annexure-I
File No. W.641/BR/Policy
SAFETY & RELIABILITY PLAN FOR NEW ROBS & OTHER CROSSINGS OVER RAILWAY SYSTEM

SN	Activity & Responsibility	Record/Reference	Remarks
1	DESIGN 1) Overall Responsibility Design Cell of Metro Railway or Road Authority 2) Secondary Responsibility Consultant/Proof Consultant	1) Design Basis Note 2) Design Documents 3) Drawings having certificates 4) Reports of Proof Consultants 5) Certificates on adequacy of sections/detailing on the Design Drawings 6) Procedure of Design Approval	1) Design Basis Note will outline the complete philosophy of design, applicable codes, durability, construction methodology, maintenance issues including strengthening and de-launching. 2) The Designs/Drawings are to be accepted and issued for execution by Authorized Engineer of Design Cell of Metro Railway/Road Authority. 3) The Design consultants shall remain associated during the execution of project and maintenance for which an Inspections & maintenance manual will be developed and given.
2	EXECUTION METHODOLOGY 1) Overall Responsibility Design Cell of Metro Railway or Road Authority 2) Secondary Responsibility Consultant/Proof Consultant	Method statements, Quality plans, safety plans, Hazard Identification and Risk Analysis (HIRA) Reports, Safety Responsibility Matrix.	1) It shall detail the list of resources such as Man, Material & Machinery required for proper execution. 2) Competency of men to be jointly certified by Authorized Safety Officer and other competent engineer. 3) Quality Plan shall detail the processes to be controlled for safe and reliable structure, with procedures, checks and records of testing/verification.
3	EXECUTION AT SITE 1) Overall Responsibility Construction Agency, MD/CEO & Project Manager 2) Secondary Responsibility Design Consultants & Authorized Safety Officer	1) Method statements for the particular work. 2) Record of instructions given at site and its compliance reports. 3) Safety Responsibility Matrix.	The Authorized Safety Officer shall be well conversant with the hazards associated with the construction activity and shall be duly equipped to deal with it.
4	INSPECTION & MAINTENANCE 1) Overall Responsibility Metro Railway or Road Authority 2) Secondary Responsibility Design Consultants & Authorized Agency for maintenance	1) Inspection & maintenance Manual. 2) Agreements for maintenance. 3) Inspection & compliance reports. 4) List of authorized persons for undertaking maintenance. 5) Procedures for various maintenance activities.	1) The Inspection manual shall also give requirement of different categories of manpower and supervisors for various maintenance activities besides tools and plants and other equipments. 2) Inspection & Maintenance manual will be approved by Design Consultants. 3) Metro Railway/Road Authority will ensure that competent personnel are employed and adequate resources as per the maintenance needs are arranged before commissioning the operations. The original design shall be done such that the strengthening measures can be taken safely without asking for long traffic blocks.
5	STRENGTHENING MEASURES DURING SERVICE 1) Overall Responsibility Design Cell of Metro Railway/Road Authority 2) Secondary Responsibility Consultants/Proof Consultants	1) Strengthening Drawings 2) Design documents 3) Execution Methodology 4) Hazards & risk mitigation	
6	DISMANTLING & DE-LAUNCHING 1) Overall Responsibility Design Cell of Metro Railway Road Authority 2) Secondary Responsibility Consultants/Proof Consultants	1) Dismantling plan 2) Method statement 3) Requirement of crane, machinery & traffic block etc.	Specialized Agencies capable & undertaking the dismantling work to be listed.

CENTRAL RAILWAY



HEADQUARTERS OFFICE,
ENGINEERING BRANCH,
MUMBAI C.S.M.T

No. W.293.BR.Circular

Date :- 22.05.2018

Sr. DEN (Co) BB, BSL, NGP, PA & SUR,

Sub : **Fabrication and erection of steel structures for Bridges
(including FOBs & ROBs).**

Ref: 1. Joint Procedure Order No.W.294/BR/Circulars dt. 26.2.2014.(copy
attached)
2. CRS's L No. C-21(5)/2018/88 dated 31.01.2018(copy attached)

Please refer Joint Procedure Order issued on 26.2.2014 (Ref.1) with the approval of CAO/C & PCE to address the serious problems observed at site during the construction of FOB & ROBs. Even though guide lines have been issued, it is seen that quality issues are still coming up at work sites. CRS, vide L.No. C-21(5)/2018/88 dated 31.01.2018 (Ref. 2), has also raised his concern regarding quality of fabrication of FOBs.

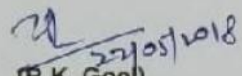
In order to improve the quality of fabrication, it is reiterated that fabrication work should be done as per IRS B-1. The following instructions are further issued to ensure quality of fabrication:

1. **Quality Assurance plan (QAP) and Fabrication Drawings:-** These should be prepared before taking up fabrication and assembly & got approved by the Competent Authority i.e. Dy.CE(C) and Sr.DEN(Co) for ROBs & FOBs being constructed by them respectively. For ROBs being constructed by other bodies such as NHAI, State Govts, Municipal Corporations etc., the QAP shall be approved by Dy.CE/Bridge Line. No deviation from approved drawing or approved QAP should be permitted. Changes if unavoidable should be made with the approval of competent authority.
2. **Procurement of materials:-** Structural steel shall be procured from primary manufacturers only, like SAIL, TISCO, RINL, JSPL. Welding consumables shall be of RDSO approved Brands.
3. **Workshops for fabrication:-**
 - a) **ROBs:-** Fabrication of steel girders for ROBs should be done invariably at RDSO approved Workshops. Girders must be inspected & certified by SSE(Br.) / ABE before dispatch to site.
 - b) **FOBs/COPs and other sheds:-** Fabrication should be done at workshops which are either approved by RDSO or approved by Sr. DEN or Dy.CE / Const. The steel work shall be inspected at Workshop by ADEN/AXEN(C) before painting.
4. **Competency of people employed:-** Execution of specialized work like welding and bolting connections including HSFG bolts must be done by the authorized vendor/agency having valid competency certificate issued by the concerned authority. The contractor doing the work shall give a certificate from the authorized vendor that the work has been done by the competent persons duly indicating their names & competency details.

5. **Welding:-** WPSS i.e Welding Procedure Specification Sheet and WPQR i.e Welding Procedure Qualification Record should be approved before taking up the welding work. Welding in the girders should be done by Submerged Arc Welding only. Inspecting official, while inspecting the fabricated material in Workshop, shall ensure that the welding has been done in complete length as specified in the drawing.
6. **HSFG Bolts:-** Work shall be done as per RDSO's Guidelines- BS-111(Rev. 5 or latest). DTI washers shall invariably be used. Mating surfaces of the connections shall be metalized for getting the designed slip factor.
7. **Splicing:-** Splicing shall be provided as per the approved fabrication drawing. No splicing other than the approved splicing in the fabrication drawing shall be allowed.
8. **Metalizing & Painting:-** All the steel work of ROB's and components of FOB's shall be metalized.

It issues with the approval of PCE.

D.A - As above.


(R.K. Goel)
Chief Bridge Engineer

- C/-
- (1) CAO/C, CSMT for kind information.
 - (2) Director/Projects, MRVC, for information & ensuring compliance for the Works being undertaken by MRVC.
 - (3) CPM/RVNL, CSMT for information & necessary action.
 - (4) CPM/DFCCIL, CSMT for information & necessary action.