



BRIDGE INSPECTION & BMS DATA ENTRY



BMS Data Entry – Important Bridge Parameters

1. Usage Type
2. Bridge Category
3. Structure Type
4. Span Configuration
5. ORN Category

Usage Type

1. Waterway
2. RUB – Height 5m or more
3. LHS – Height < 5m
4. ROR – Rail over Rail
5. ROB
6. FOB
7. Others (Metro, Belt conveyor etc.)

Bridge Category

Waterway

1. Minor ($< 12\text{m}$ span OR Total waterway $< 18\text{m}$)
2. Major ($\geq 12\text{m}$ span OR Total waterway $\geq 18\text{m}$)
3. Important (waterway $> 300\text{m}$ or 500 Sqm)

RUB (Minor or Major based on spans) – Height 5m

LHS (Minor or Major based on spans) – Height $< 5\text{m}$

ROR (Minor or Major based on spans)

4. Not Applicable

ROB

FOB

Structure Type

1. BOX (RCC)
2. Slab (RCC / PSC / Stone / T-beam)
3. Pipe (Steel / RCC)
4. Arch (Stone / RCC)
5. RCC/PSC Girder (I or BOX type girders having bearings)
6. Steel Girder (PG / RH / OWG)
7. Composite Girder (Steel and RCC)
8. Mixed (Combination of more than one structure type)
9. Other (Rail cluster, Timber top etc.)

Span Configuration

Desirable Format:

No of spans X Clear span in m Structure type

eg: (if length of all spans is same in the bridge)

2 x 0.61m Stone Slab

4 x 6.1m PSC Slab

4 x 18.3m PSC I Girder

1 x 3m RCC T-beam

2 x 1.2m RCC Pipe

2 x 4.5m BOX

eg: (Different span lengths or Mixed type)

1x12.2m + 4x18.3m + 1x12.2m Steel PG

4x6.1m PSC Slab + 10x24.4m PSC BOX Girder

1x3m + 2x4m + 2x3m BOX

ORN - Category

ORN-0: Not Inspected

ORN-1: Rehabilitation / Rebuilding Immediately

- * Replacement of girders / slabs / substructure
- * Replacement of bridge as a whole

ORN-2: Rehabilitation / Rebuilding on Programmed basis

- * Replacement of girders / slabs / substructure
- * Replacement of bridge as a whole

ORN-3: Major / Special Repairs

- * Epoxy grouting - Major Spalling, Reinforcement exposure,
- * Reconstruction of wing walls, returns
- * TBTR, Replacement of corroded steel members etc.

ORN-4: Routine Maintenance

- * Painting, renewal/tightening of fittings, Casual renewal of channel sleepers / steel members
- * Attention to flooring, protection works, scour, ballast retaining walls, joints, minor cracks
- * Attention to trolley / man refuges, pointing, plastering, de-silting, etc.

ORN-5: Sound Condition

Bridge Annual Inspection – Important Points

- SrDEN/DEN to inspect
 - All Important bridges.
 - Bridges referred by ADEN.
 - ORN-1,2,3 category bridges
- Defects: Causes to be analyzed. Remedies to be suggested (Refer IRBM for various remedial actions recommended for problems)
- Bridges marked as ORN-2 & 3 without adequate justification.
- Photos of major defects to be attached in BMS.
- Post monsoon Bridge Inspection Schedule
 - ADENs – SW monsoon: 30th Nov. NE monsoon: 28th Feb.
 - DENs – SW monsoon: 31st Dec. NE monsoon: 31st Mar.
- IRBM, ESO 82 & 83: Pre & Post monsoon inspection instructions.
- Inspection of Tunnels & Deep cuttings as per Chapter-X of IRBM.
- Prompt action to rectify the defects / deficiencies. Inaction will lead to further deterioration.

BMS - Discrepancies

- Incorrect Usage type (Waterway bridge shown under RUB / others)
- Incorrect Bridge category (Minor shown as Major and vice versa)
- Incorrect span configuration. (12.1m, 3, 2.5x3.5)
- Span configuration not recorded at all
- Incorrect bridge structure type
 - Slab shown as RCC/PSC girder
 - PSC slab shown as RCC slab
 - PSC girder shown as BOX
- Clear / Effective span recorded in mm instead of m / not recorded
- Details not recorded under condition of abutments and piers.
- Condition of bed blocks and bearings not recorded.
- Details not recorded under condition of protective works.
- Span wise details not recorded under condition of superstructure
- Compliance to previous inspection remarks not recorded or previous notes not attended.

BMS - Discrepancies

- All details under channel sleepers not recorded for steel girders.
- CRN not furnished for individual components of bridge.
- Track parameters not recorded for Major/Important bridges
- Eccentricity not recorded for ballasted decks
- ORN-2,3 bridges: Analysis & Reasons for defects and Remedial action not recorded.
- ORN-4: No remarks about maintenance required
- Photos of major defects not enclosed.
- Repairs being proposed under PWP instead of revenue.
- Important bridges & ORN 1, 2, 3 – not inspected by SrDEN.
- No remarks by SrDENs on bridges referred to them by ADENs.
- Duplicate records of inspection for the same bridge.
- Inspection schedule for ORN-1,2 bridges not followed (ESO-83).
- Early action not taken to prevent deterioration.



THANK YOU