

## CE's Circular No. 115

### **Sub: Marking of levels at Bridges and Maintenance of Flood records.**

**1.0 PREAMBLE:-** Maintenance of proper flood records is very important for the Engineers to study & monitor the changing patterns of rivers etc. and to timely plan bridge / river protection & training works, increase of waterway etc. Also every bridge must have the danger level fixed and marked properly on the abutment / piers to forewarn all concerned and to take measures for safe passage of traffic over the Bridge. Specific attention is drawn towards following provisions of Indian Railways Bridge Manual:

#### **2.0 FIXING AND MARKING OF DANGER LEVEL ON BRIDGES**

**2.1 Fixing of danger level:-** The danger level shall be fixed for each bridge by the Divisional Engineer with great caution and due regard to conditions obtained at site. Factors to be taken into consideration, while deciding danger level, are contained in Para 703 of IRBM; which shall be strictly followed by DENs/ Sr. DENs for fixing and reviewing the danger level.

**2.2 Marking of danger level:-** The danger level shall be marked on the abutments or on the first and last pier of the bridge as per Para 703 of IRBM. In the case of long multiple span bridges, the danger level mark shall be repeated suitably on intermediate piers. These marks shall be fixed on the upstream side of the bridge, conspicuously visible to the inspecting officials, patrolmen and watchmen. The danger level shall be marked with a bright red band 5 cm wide centrally over a white band 10cm wide for a length of 60cm. Marking of danger level as per the above instructions shall be ensured on all Bridges.

#### **3.0 MAINTENANCE OF FLOOD RECORDS**

**3.1 Flood records: -** Flood records shall be prepared and maintained as per Para 710 of IRBM, for the list of bridges, identified and nominated from time to time by Chief Bridge Engineer.

**3.2 Flood records during Monsoon:-** Soundings of the specified bridges during floods shall be taken in mid span and around piers and structures etc. as per Para 711 (1) of IRBM. The periodicity of taking soundings shall be decided taking all factors into account, with at least one sounding to be taken daily during floods. Special Care shall be exercised, when taking soundings, especially in rapid water to ensure that they are trust worthy. Gauging, velocity and afflux measurements during monsoon shall be recorded for the specified bridges as per Para 711(2) of IRBM. For such specified bridges, cross section diagrams of the riverbed etc. during floods shall be prepared as per Para 711 (3) of IRBM.

**3.3 Flood records after the monsoon:-** Soon after the monsoon, cross sections across the bed shall be taken for such rivers as specified by the Chief Bridge Engineer as per Para 712 (1) of IRBM. Survey of scour holes, both on the upstream and down stream of river shall be done, after monsoon as per Para 712 (2) of IRBM. At each specified bridge, survey of the course of the river shall be made soon after the monsoon, as per Para 712(3) of IRBM. At the end of the monsoon, cross sections of guide, subsidiary and retired bund shall be taken as per Para 712 (4) of IRBM.

#### **4.0 MAINTENANCE & SUBMISSION OF RIVERS AND FLOOD REGISTER**

- 4.1** Assistant Engineer shall maintain continuous records of the behavior of large alluvial and other specified rivers and the condition of training and protection works of the bridges across them, if any, in “River and floods” register as per Para 714 of IRBM. This register should contain:
- a). Brief history of the bridge and protection works at and away from the bridge site with plans and sections.
  - b). Condition of foundation and protection works with particulars of action taken on repairs required.
  - c). Particulars of flood damage and remedial measures adopted with reference to Bridge Inspection Register. Blue prints of the cross section diagrams of the bed of the river, survey plans of the course of the river and cross sections of bunds vide Para 711 and 712 shall be attached to the register for reference. Past register shall be carefully preserved.
- 4.2** The Assistant Engineer shall submit the register to the Divisional Engineer by 15th November of each year, indicating the points on which the orders of the Divisional Engineer are required.
- 4.3** The Divisional Engineer shall carefully scrutinise the register, examine such works as called for his inspection, record his orders regarding the points referred to him and initial against every bridge or Kilometerage in token of his scrutiny. Points on which the HQ office decision is required shall be clearly indicated.
- 4.4** The register shall then be sent back to Assistant Engineer by Divisional Engineer by 15th December for noting the Divisional Engineer’s orders with instructions to return it within 15 days. The Assistant Engineer shall extract the orders issued by Divisional Engineer and arrange expeditious compliance.
- 4.5** The register shall then be forwarded by 15th January to the Chief Bridge Engineer for getting scrutiny of entries done at appropriate level, issuing orders regarding matters referred to HQ office, endorsing the register to that effect. These Registers will finally be returned back to the Divisional Engineer by 15th February. Subsequent action taken on HQ office notes shall be entered in the register by the Assistant Engineer and followed up for compliance by sectional DEN/Sr.DEN.
- 4.6** The time table for movement of bridge register shall be as under:-

<b>Movement</b>	<b>By date</b>	<b>As per para above</b>
ADEN to DEN	15 <sup>th</sup> November	4.2
DEN to ADEN	15 <sup>th</sup> December	4.4
ADEN to DEN	Within 15 days	4.4
DEN to CBE	15 <sup>th</sup> January	4.5
CBE to DEN	15 <sup>th</sup> February	4.5

(No. HQ/W/PCE/Circulars/Bridge/1 dated 11.01.11)

Principal Chief Engineer