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## SOUTH CENTRAL RAILWAY

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No.W. 71/BR/Bridge Policy

Dated. 10-12-2015

CAO/C/SC, CPM/RVNL/SC

Sr.DEN/Co-ord/SC, BZA, GTL, GNT, HYB & NED

Sub: Provision of flood protection works -Reg.

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During recent flood many deficiencies were noticed in the flood protection works, which resulted in to heavy damage to Railway embankment and consequent suspension of traffic for a longer duration. There is in general lack of appreciation by field supervisors/officers of divisions and construction/RVNL for the flood protection measures to be adopted and are not giving due attention while construction of bridges/culverts, banks etc. Therefore, need is felt to refresh the knowledge in this aspect.

The protection methodology for bridges/culverts and canal head works is more or less same as in both the cases the protection of foundations as well as the allied support system is required against flow of water. To explain the same, the detailed theoretical guidelines used for such protection measures for canal head work is enclosed herewith for guidance (Annexure-A) which clearly indicates the basic concept of various protection works such as flooring, drop wall, curtain wall etc. Since a bridge works like a canal head work, basic concept of protection for the bridge is also the same as the head works.

In line with that, a typical drawing is also enclosed (Annexure-B) showing the details of protection measures to be adopted which clearly show the requirement of proper hard apron/flooring (brick on edge flooring, cement concrete flooring, stone flooring with cement grouting etc.) and proper depth of curtain and drop walls. The depth of curtain wall and drop wall has been modified and increased to 1.7 m (as against 1 m being adopted in SC Railway) concept being that the curtain and drop wall must go below the foundation depth, which in general is minimum 1.2 m for shallow foundation, to protect against undermining of the foundation. In case of some culverts/bridges with shallow foundation where heavy flow is anticipated, the drop wall shall be further protected by boulder dumping/ flexible apron for a suitable length.

16/12/15

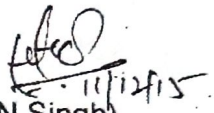
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| Date          | 17.12.15 |
| By            | 17.12.15 |

Similarly the protection measures for the protection of bank in bridge approaches and flood prone locations has been indicated in figure at Annexure-C and Annexure-D. The arrangement of boulder pitching shown in figure at Annexure-C should be used in case where velocity of water during flood is very less or it is mostly stagnated water body. The arrangement of boulder pitching and/or launching apron shown in figure at Annexure-D should be used in case where velocity of water is very high and there are lot of chances of erosion of soil from the bank. The launching apron provided should be of appropriate length beyond toe of the bank so that when the bed scour occurs, the scoured face get protected by launching of the apron stone.

It is advised that these instructions shall be followed in all cases of new bridges construction by RVNL, Construction organization, Divisions in cases of rebuilding of bridges and for flood protection of banks at susceptible locations.

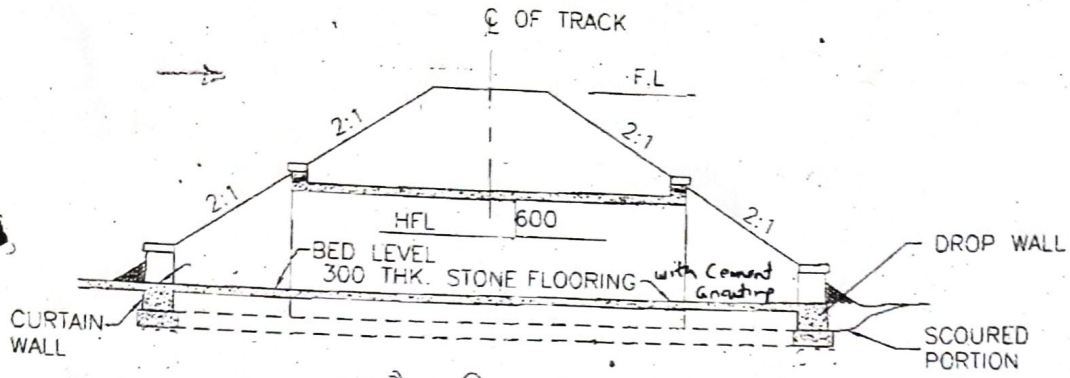
Encl: Annexure A-D

  
(S.N Singh)  
Principal Chief Engineer

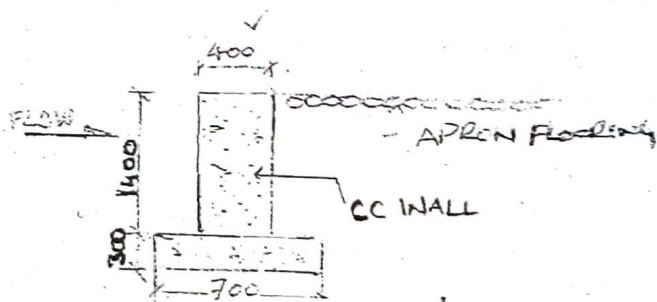
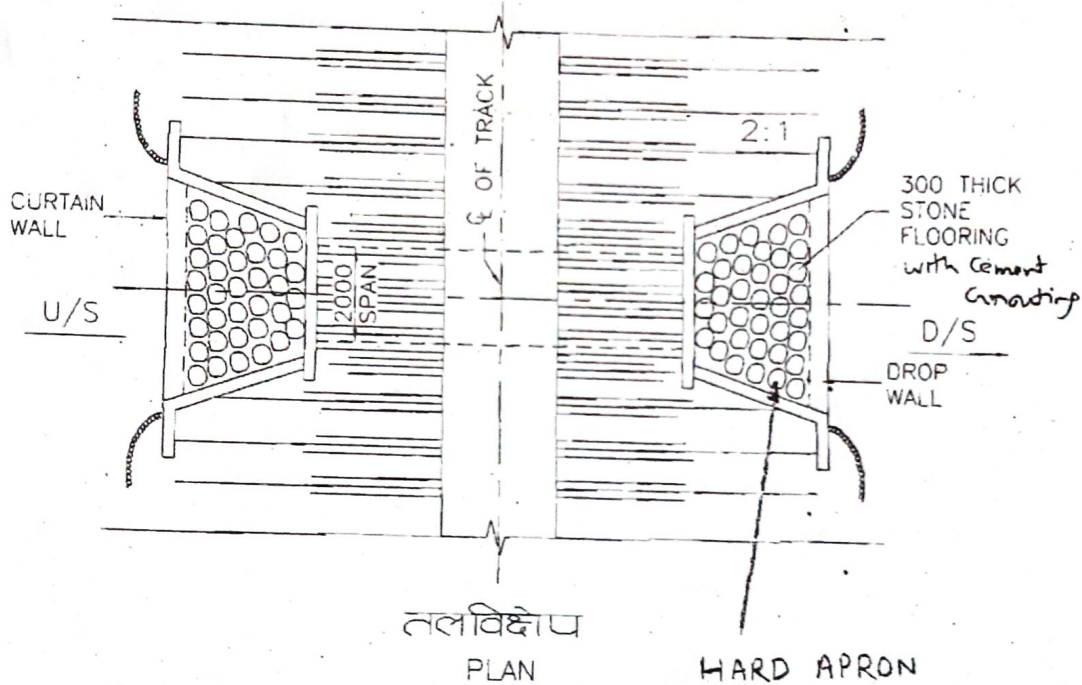
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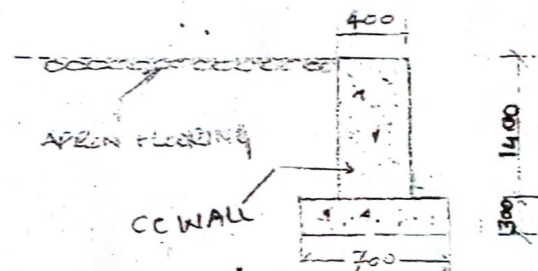




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LONGITUDINAL SECTION

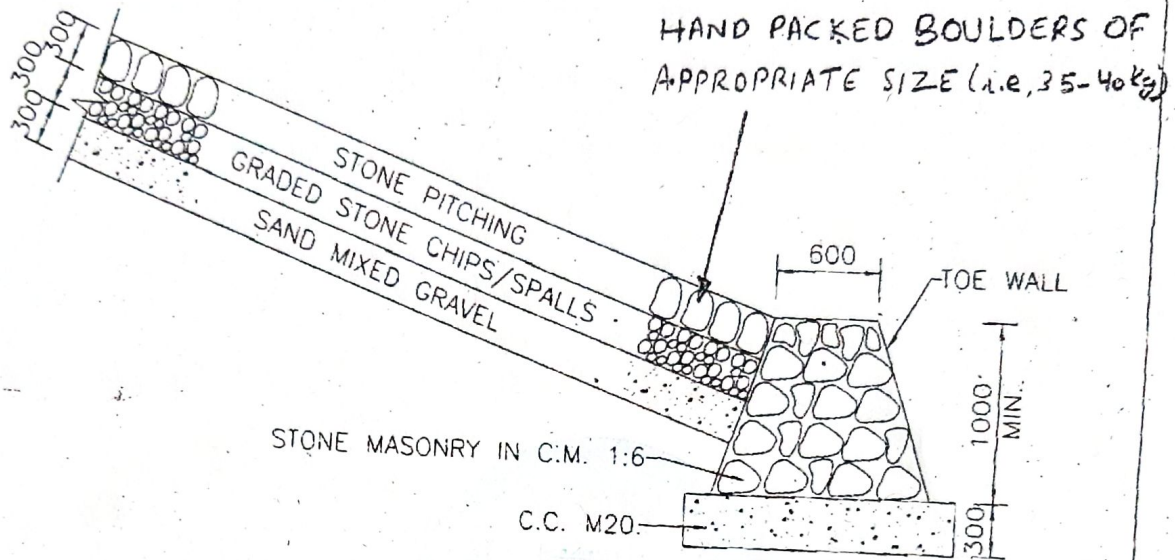


CURTAIN WALL



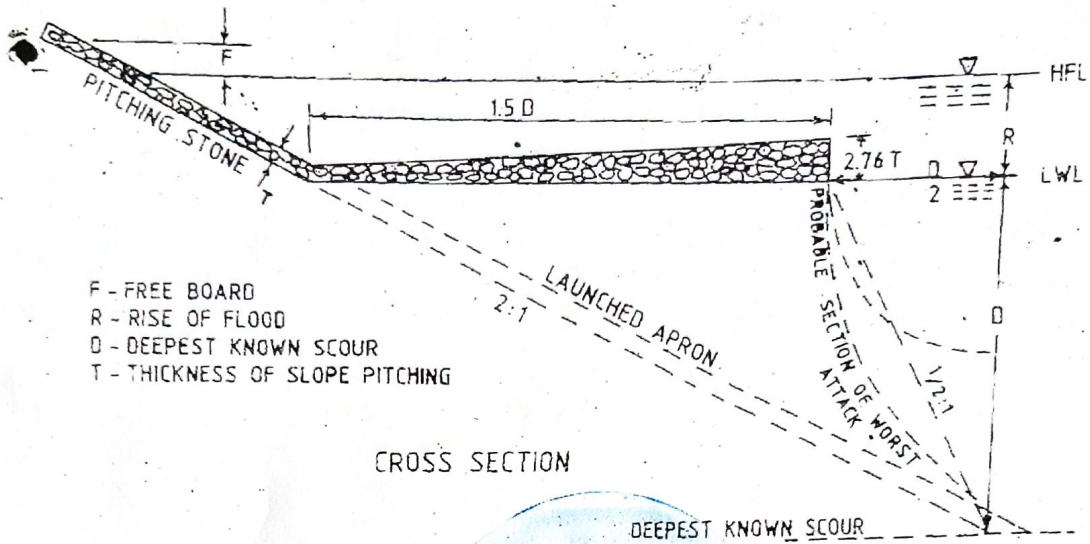
DROP WALL

# ANNEXURE-C



TOE WALL AND PITCHING

# ANNEXURE - D



- F - FREE BOARD
- R - RISE OF FLOOD
- D - DEEPEST KNOWN SCOUR
- T - THICKNESS OF SLOPE PITCHING

CROSS SECTION

GUIDE BUND AND APRON

