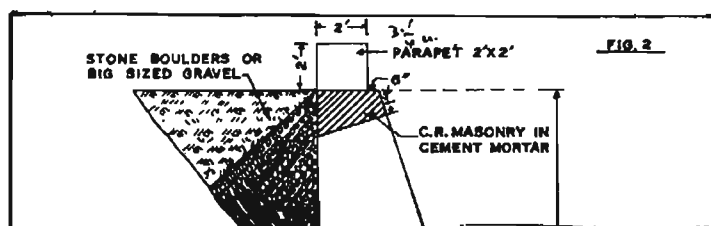
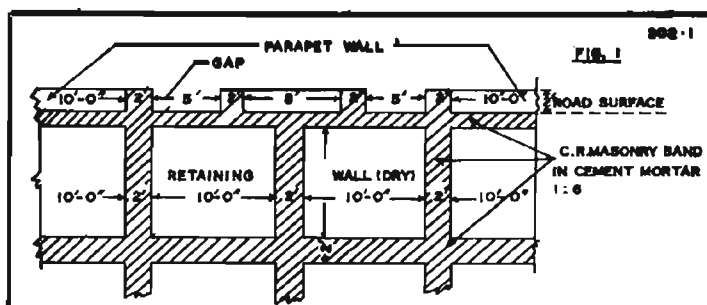


Circular dated 29.2.1960

STANDARDS TO BE ADOPTED FOR HILL ROADS

1. Alignment : Note :
***** : Not reproduced as these
2. Gradients : standards are now given
***** : in IRC : 52-1981
3. Formulation Width
4. Design of Cross-sections
 - (i) The following side slopes are adopted at cuts depending upon the type of soil

Ordinary soil including murum and hard clay	: 1 : 1 to ½ : 1
Disintegrated stuff or conglomerate	: ½ : 1 or ¼ : 1
Soft rock and shale	: ¼ : 1 to 1/8 : 1
Medium Rock	: 1/12 : 1 to 1/16 : 1
Hard Rock	: Near Vertical (or Half tunnelling if the height of cut exceeds 25 ft)
 - (ii) Gully cuttings (double side cuts) upto a height of 30 ft to 40 ft. are generally permitted for short lengths.
 - (iii) When the slope of the hillside is less than 30°, the formation is taken partly in cutting and partly in filling:
 - (iv) When the slope of the hillside is steeper than 30° but less than 60°, the formation is taken entirely in cutting or partly in cutting and partly in filling, the filling being retained by a retaining wall, consistent with the considerations of economy and with the object of straightening the road alignment over the minor warpings of the hill face.
5. Retaining walls
 - (i) The design of the retaining walls should be as per the sketch given below :



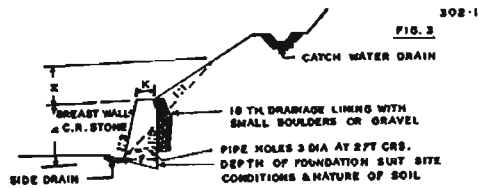
- (ii) The masonry, both dry and pucca, should be in hammer dressed coarse rubble.
- (iii) The rear of the retaining wall should always be vertical and necessary width obtained by a front batter only.

6. Parapet walls

The design of the parapet walls is indicated in the sketch at para 5 above.

7. Breast walls

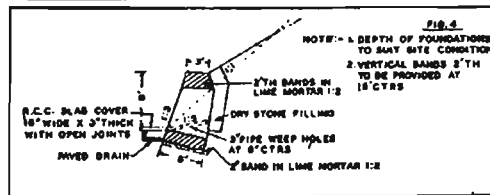
(i) Breast walls in pucca masonry should be built as per sketch and table given below :



TABLE

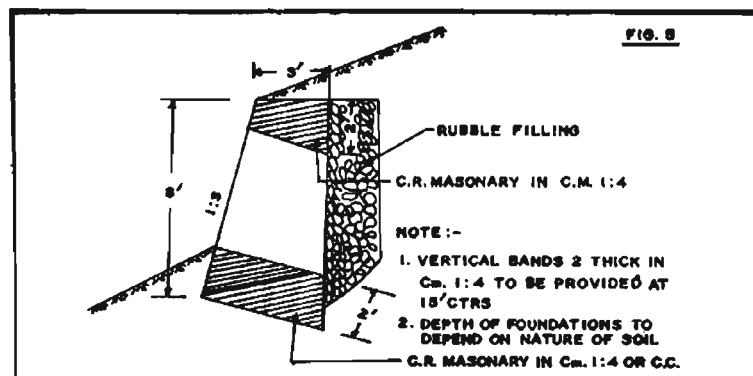
H	h	4 FT	h	8	h	8	h	10	h	12	h	14	h	16	h	18	h	20
(FT)	K	F	K	F	K	F	K	F	K	F	K	F	K	F	K	F	K	F
0-6	2-00	2-78	2-0	3-28	2-00	3-78	2-00	4-28	3-00	6-28	2-28	6-00	2-8	6-8	2-8	7-80	3-00	8-28
6-10	2-00	4-78	2-00	3-28	2-00	3-78	2-00	4-28	2-58	8-28	2-28	8-00	2-8	6-8	2-8	7-80	3-00	8-28
10-14	2-00	4-78	2-00	3-28	2-00	3-78	2-28	4-80	2-90	8-28	2-90	8-28	3-0	7-0	2-8	8-00	3-78	8-78
14-18	2-00	4-78	2-00	3-28	2-28	4-80	2-90	4-78	2-78	8-80	3-00	8-80	3-28	7-28	2-8	8-80	4-00	9-28
18-22	2-00	4-78	2-00	3-28	2-28	4-80	2-90	4-78	2-78	8-80	3-00	8-80	3-28	7-28	2-8	8-80	4-28	9-28

(ii) If built of dry masonry with pucca bands, the following section is recommended :



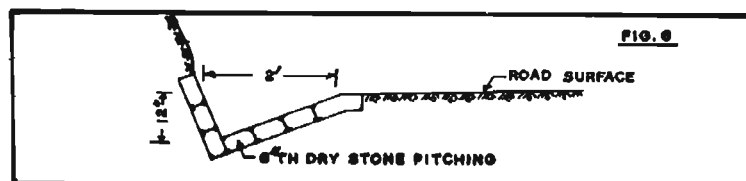
8. Check walls

Stout check walls required for the stability of slipping hill face should conform to the following section.



9. Side drains

(i) Side drains of the following section are to be built by the hill side of the formation.



(ii) The stone lining may be omitted at places where the natural formation is rocky. Where the formation consists of loose and slushy material, a layer of shingle or quarry rubbish should be laid under the stone lining.

10. *Cross drainage works*

- (i) Where there is no provision for the construction of permanent cross drainage works, dry stone scuppers and timber culverts should be built at nallah crossings. The minimum ventway should be 2'-6".
- (ii) Where there is provision for permanent C.D. works, hume pipe culverts, R.C.C. slab culverts or masonry arch culverts should be built. The minimum dimensions of the opening should preferably be 3'-0".
- (iii) In high hills, all C.D. works, temporary and permanent should be provided with an adequate-sized catchpit at the upstream end of the structure.

11. *Road Crust* : (Not reproduced. Refer to IRC : 52-1981 for extra width at curves)

12. *Hair-pin-bends* : These may be designed as under (Not reproduced, refer to IRC 52-1981)