

कार्यालय प्रमुख अभियन्ता एवं विभागाध्यक्ष, लोक निर्माण विभाग उत्तराखण्ड देहरादून  
OFFICE OF THE ENGINEER IN CHIEF, P.W.D., DEHRADUN, UTTARAKHAND  
Website- <http://pwd.uk.gov.in> E-Mail-[cepwdua@rediffmail.com](mailto:cepwdua@rediffmail.com)

पत्रांक :- 216/10 आधि प्रावि/13

दिनांक : 12/2/14

### कार्यालय ज्ञाप

लोक निर्माण विभाग में समस्त निर्माण कार्यों में एकरूपता लाने के लिए एतद्वारा Retaining Walls की विशिष्टियाँ एवं ड्राईंग्स जारी की जा रही हैं। समस्त अभियन्ता तत्काल प्रभाव से सभी Retaining Walls के निर्माण हेतु इन विशिष्टियों का कड़ाई से पालन करना सुनिश्चित करें।

प्रमुख अभियन्ता  
लोक निर्माण विभाग

प्रतिलिपि निम्नलिखित को सूचनार्थ प्रेषित :

1. प्रमुख सचिव, वित्त उत्तराखण्ड शासन।
2. प्रमुख सचिव, लोक निर्माण विभाग उत्तराखण्ड शासन।
3. प्रमुख सचिव, नियोजन, उत्तराखण्ड शासन।
4. अपर सचिव, लोक निर्माण विभाग उत्तराखण्ड शासन।
5. मुख्य अभियन्ता गढ़वाल/कुमायूँ क्षेत्र/पीएमजीएसवाई/एडीबी लोनिवि, पोड़ी/अल्मोड़ा/देहरादून/हल्द्वानी।
6. मुख्य अभियन्ता ग्रामीण अभियन्त्रण सेवा, देहरादून।
7. मुख्य अभियन्ता/विभागाध्यक्ष सिंचाई विभाग, देहरादून।
8. प्रबंध निदेशक, पेयजल निगम, देहरादून।
9. समस्त अधीक्षण अभियन्ता, सिविल लोक निर्माण विभाग उत्तराखण्ड। अधीक्षण अभियन्ता अपने स्तर से अधिशासी अभियन्ताओं को उपलब्ध कराना सुनिश्चित करें।
10. अधिशासी अभियन्ता टीएसी वित्त विभाग, उत्तराखण्ड शासन।
11. वरिष्ठ स्टाफ आफिसर I, II/अधिशासी अभियन्ता I, II, III, IV, V, VI कार्यालय प्रमुख अभियन्ता, लोनिवि देहरादून।
12. कनिष्ठ अभियन्ता (प्रा०), कार्यालय विभागाध्यक्ष, लोक निर्माण विभाग, देहरादून।

संलग्न : Retaining Walls की विशिष्टियाँ एवं ड्राईंग्स

जाड फावली

प्रमुख अभियन्ता  
लोक निर्माण विभाग



## SPECIFICATIONS FOR RETAINING WALLS

(As Per IRC SP:48- Hill Road Manual)

Retaining walls shall generally be constructed of :

1. Random rubble dry stone masonry.
2. Random rubble dry stone masonry with strengthening bands of RR masonry in 1:6 cement and sand mortar.
3. Random rubble stone masonry in 1:5 cement and sand mortar.

Retaining walls upto 4 metres height shall be in RR dry masonry(as per drawing number 01/RW/2014) . Walls from 4 to 8 metres in RR dry stone masonry with 1:6 cement masonry bands throughout the section both in lengthwise and breadthwise directions of the retaining wall to break the joints and to cover up short-comings in the execution of dry retaining wall (as per drawing number 02/RW/2014). Beyond 8 metres height, walls should be avoided and when unavoidable, these shall be stepped and built in 1:5 cement and sand mortar(as per drawing number 03/RW/2014).

**Foundations :** Foundations must be taken deep enough to rest on sound foundation materials which must be safe from scour, frost and surface water. Rock must be cut in level steps or to a downward slope towards the filling. Rock bed slope should be towards the hill and not away. The necessity of filling foundation pits in front of toe of the retaining wall back upto original ground level so as to avoid pooling of water leading to toe erosion, is to be considered.

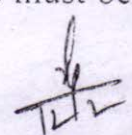
**Walls- Masonry Construction :** The top thickness shall be 0.6 metres. The front batter shall be given as 1 in 3 and the back face is kept vertical. The base width shall be calculated using the following formula :

$$B = 0.6 + H/3$$

Where, B : Width of the base of wall and

H : Height of the wall

Walls shall be made in random rubble masonry consisting of hammer dressed hard stones brought to course every 0.6 m (approx). Masonry courses must be normal

  
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देहरादून



to face batter and the back of the wall can be left rough. Masonry work should proceed in an uniform level.

The least dimension of stone should be  $20 \times 15 \times 10$  cm. Approximately half the stones should tail into the wall by twice their height. Stones must break joint by half the height of the course.

In case of dry rubble walls, it is generally advisable to bed each course in stone dust or earth, to spread the load and increase the frictional resistance between courses, particularly where shale slabs are used.

**Bond Stones :** In RR dry masonry walls, bond stones shall be provided at least one set per 0.5 square metre of wall face. They should overlap each other by atleast 15 cm. Where natural bond stones are not available, precast cement concrete bond stones of  $20 \times 20 \times 60$  cm size with nominal reinforcement shall be used.

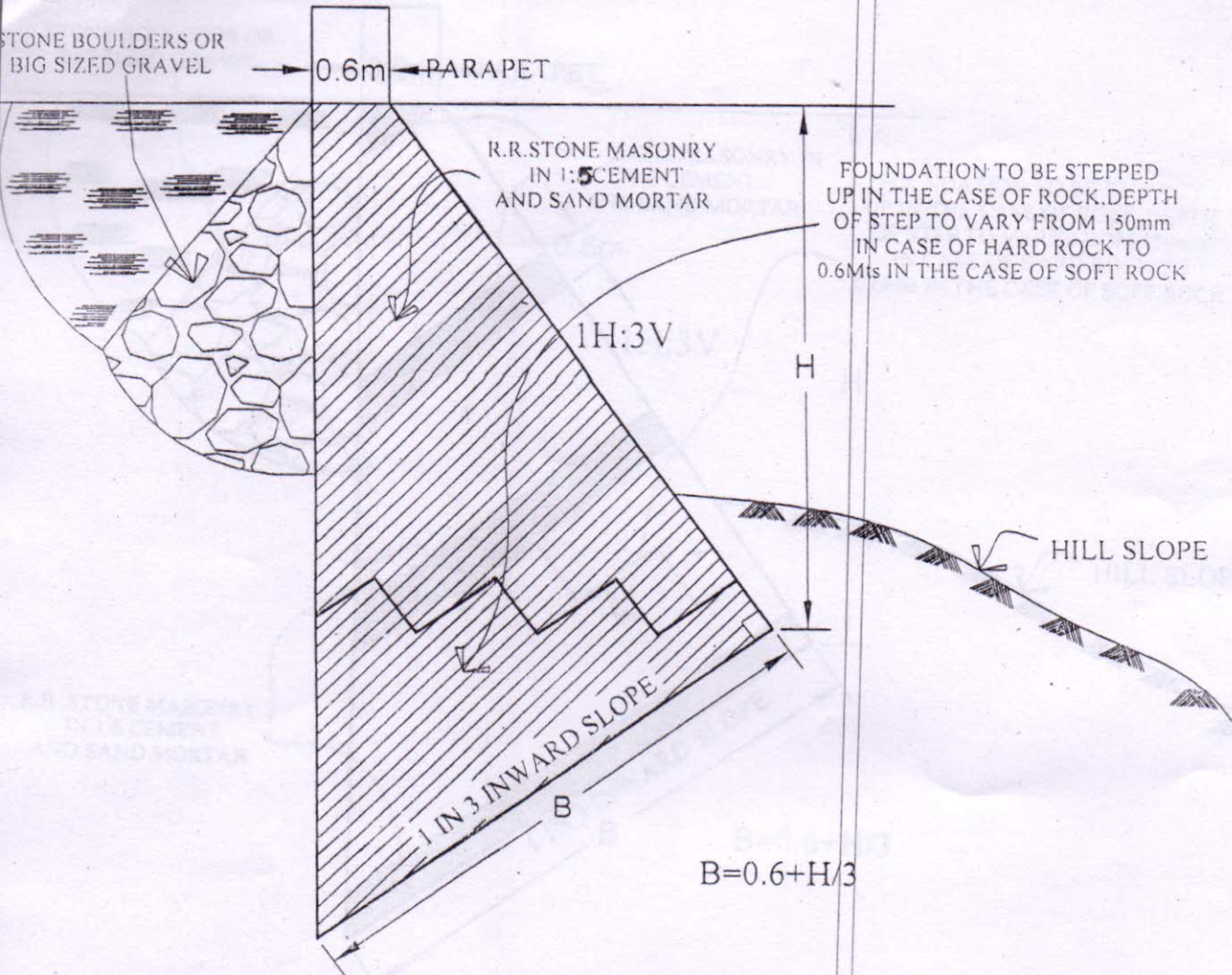
**Coping :** The coping should consist of large stones, laid and pointed in cement mortar or PCC 50-75 mm thick. The top of the coping should be, weather sloped towards valley side. Coping, preferably should be with stones on edge so that these are not easily dislodged. Parapets with weather slope may be provided on retaining walls in lieu of coping.

**Backfill :** The backfill layer immediately behind the wall should consist of hand packed stone or some granular material as shown in the drawing. Remainder of the backfill should be rammed in 150 mm thick layers sloping towards the back of the wall. The top layer should better be sealed with bituminous macadam to prevent unnecessary direct seepage of water in the retaining wall increasing thereby the back pressure.

**Drainage :** Provision must be made to prevent water accumulating behind the wall. Adequate staggered weep holes not less than  $15 \text{ cm} \times 10 \text{ cm}$  should be provided at one metre interval both horizontally and vertically. The inlets of all weep holes shall be surrounded by loose stones. In wet situations a continuous loose stone drain should connect the weep holes. The weep holes should have a slope of 1 in 10 towards valley side. Weep holes are not necessary in dry masonry walls due to open joints though it may be better to provide weep holes.

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काठमाडौं



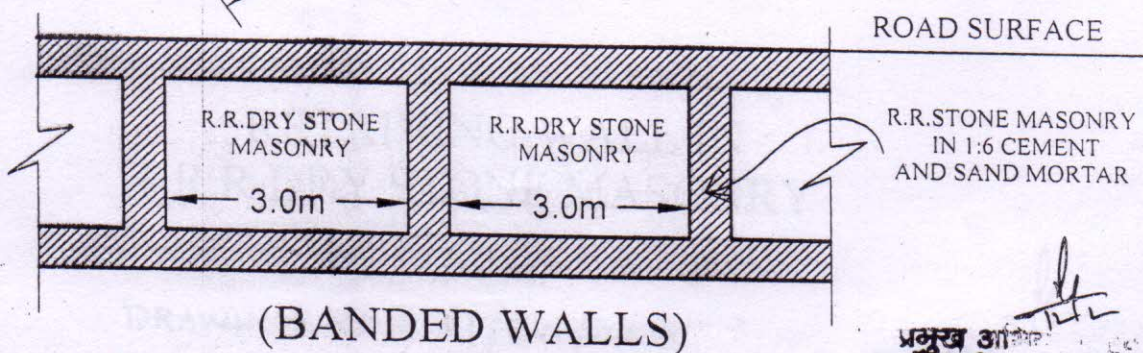
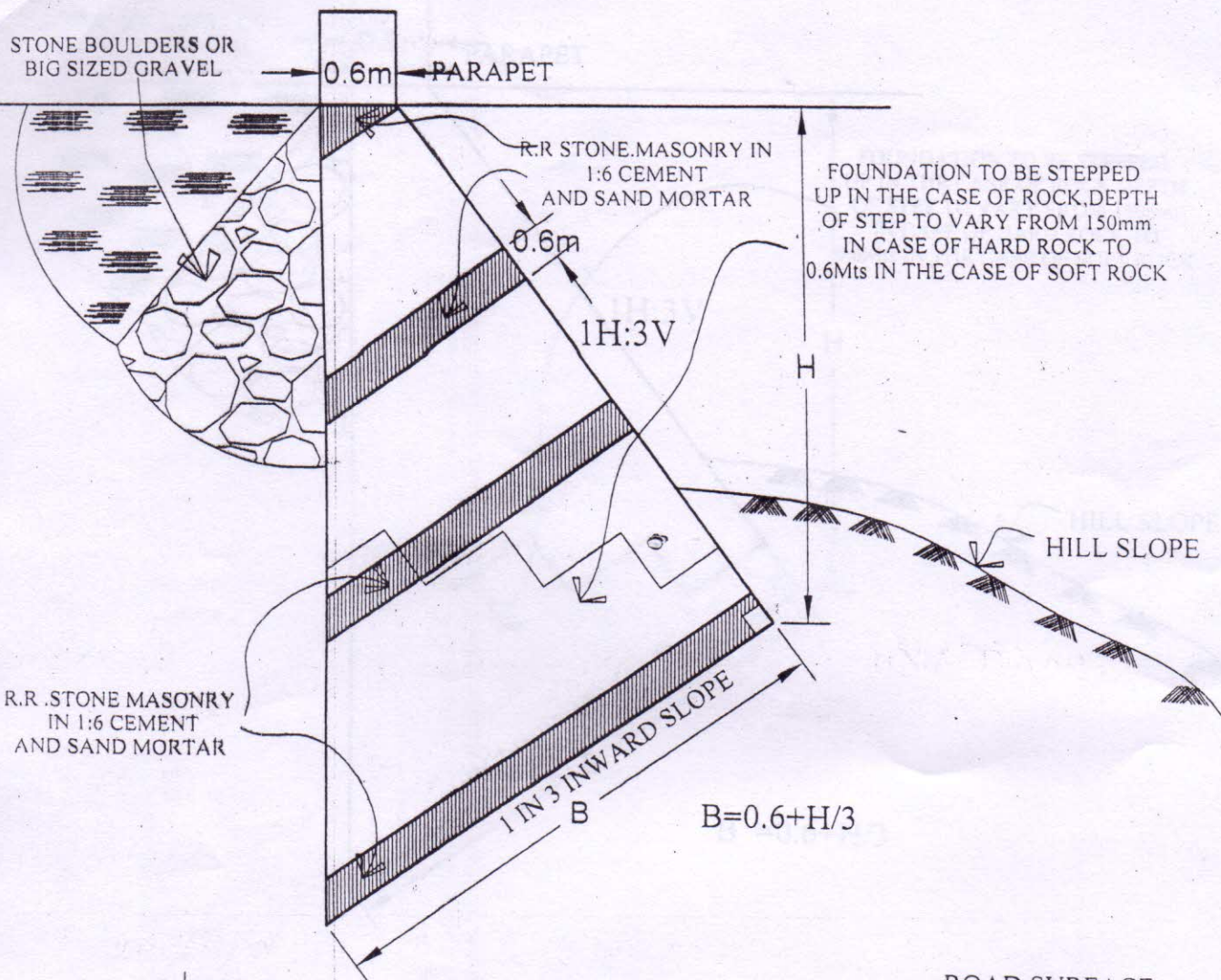


# RETAINING WALL OF R.R STONE MASONRY IN 1:5 CEMENT AND SAND MORTAR

DRAWING NO - 03/RW/2014

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देहरादून





# RETAINING WALL IN R.R.DRY STONE MASONRY WITH STRENGTHENING BANDS

DRAWING NO. - 02/RW/2014

प्रमुख आ  
लोक



STONE BOULDERS OR  
BIG SIZED GRAVEL

0.6m

PARAPET

FOUNDATION TO BE STEPPED  
UP IN THE CASE OF ROCK. DEPTH  
OF STEP TO VARY FROM 150mm  
IN CASE OF HARD ROCK TO  
0.6mts IN THE CASE OF SOFT ROCK

1H:3V

H

HILL SLOPE

1 IN 3 INWARD SLOPE

B

$$B = 0.6 + H/3$$

## RETAINING WALL IN R.R.DRY STONE MASONRY

DRAWING NO. - 01/RW/2014

प्रमुख आदेश : लो. म. वि. वि.  
लोक निर्माण विभाग, अहमदाबाद  
देहात