

*Indian Standard*

**GUIDELINES FOR ESTIMATING UNIT RATE OF ITEMS  
OF WORKS IN CONSTRUCTION OF RUBBLE  
MASONRY FOR RIVER VALLEY PROJECTS**

*(First Revision of IS 14835)*

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**FOREWORD**

(Formal clauses of the foreword will be added later)

Estimation of unit rate for different type of works in construction of rubble masonry for river valley projects is being done by various methods. It becomes very essential to follow certain guidelines during the process of estimation of unit rate, so that uniform methods are followed by concerned personnel.

First published in 2000, this standard lays down the guidelines for estimating unit rate of items of works in construction of rubble masonry for river valley projects. In view of the experiences gained while using the standard, this revision is being undertaken to bring the existing clauses in sync with the practices in the field. Relevant taxes and duties, wherever applicable, have been added in calculation of unit rates.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***GUIDELINES FOR ESTIMATING UNIT RATE OF ITEMS  
OF WORKS IN CONSTRUCTION OF RUBBLE  
MASONRY FOR RIVER VALLEY PROJECTS***(First Revision of IS 14835)***1 SCOPE**

This standard stipulates general requirements for the estimation of unit rate of various items of work in construction of rubble masonry used in river valley projects.

**2 REFERENCES**

The following standards contain provision which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on these standards are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS</i>	<i>Title</i>
269:1989	33 Grade ordinary Portland cement - Specification (fourth revision)
455:1989	Portland slag cement – Specification (fourth revision)
456: 2000	Code of practice for plain and reinforced concrete (third revision)
650:1991	Standard sand for testing cement - Specification (second revision)
1489(Pt 1):1991	Portland pozzolana cement: Flyash based - Specification (third revision)
1489(Pt. 2) :1991	Calcined clay based – Specification (third revision)
1597(Pt. 1):1992	Code of practice for construction of stone masonry: Rubble stone masonry (first revision)
1597(Pt. 2): 1992	Code of practice for construction of stone masonry: Ashlar masonry (first revision)
2116:1980	Sand for masonry mortars – Specification (first revision)
2250:1981	Code of practice for preparation and use of masonry mortars (first revision)
3466:1998	Specification for masonry cement (second revision)
4852:1987	Proforma for estimating unit rate of random rubble masonry used in construction of river valley projects (second revision)
6909:1990	Specification for supersulphated cement
8112:1989	43 Grade ordinary Portland cement - Specification (first revision)
8605:1977	Code of practice for construction of masonry in dams
9103 : 1999	Admixtures for concrete – Specification
12269 : 1987	53 Grade ordinary Portland cement – Specification

**3 TERMINOLOGY**

For the purpose of this standard, the definitions to terms defined in IS 1597 (Part 1) shall apply.

**4 MATERIAL, PREPARATION AND LAYING OF MASONRY**

The material used, preparation and laying of masonry shall conform to IS 1597 (Part 1).

**5 UNIT RATE**

In order to arrive at the output norms for various classes -of masonry, the stone masonry shall be classified, as one of the following or combination of various classes of works mentioned below:

- a) Cut stone in cement mortar
- b) Ashlar arching in cement mortar
- c) Rubble arching in cement mortar
- d) Coursed rubble in cement mortar - First sort
- e) Coursed rubble in cement mortar-Second sort
- f) Random rubble in cement mortar

### 5.1 Unit Rate for Cement Mortar (1: X)-Rate for 1 cu m

The mix proportion for the cement mortar shall comply with requirement of IS 2250 or as directed by the engineer-in-charge, according to the nature and requirements of items of work involving cement mortar.

Mix proportion 1: X (containing X part of sand by volume to be taken as one cubic metre and one part of cement by volume to be taken as  $\frac{1440}{X}$  kg).

Quantity	Description of Work	Unit	Rate	Amount
$\frac{1440}{X}$ kg	Cement	1 tonne		
1 cu m	Sand	1 cu m		
1 cu m	Mixing charges for mortar	1 cu m		
	Sundries	Lumpsum		

### 5.2 Unit Rate for Cut Stone in Cement Mortar (1: X)-Rate for 10 cu m

Quantity	Description of Work	Unit	Rate	Amount
10.5 cu m	Cut stone roughly dressed to shape at quarry	1 cu m		
1.6 cu m	Cement mortar	1 cu m		
35.3 No.	Masons including stone cutter labour (10.6 No. I Class, 24.7 No. II Class)	Each Each		
35.5 No.	Mazdoors category I	Each		
28.2 No.	Mazdoors category II Sundries (For brushing, washing, raking, watering, curing, etc)	Each Lumpsum		

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Total

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Rate for 1 cu m

#### NOTES

- 1 For rates applying to floor works above first storey or lift above initial lift of 2 metres, the concerned schedule of rates applicable to the area and year of execution shall

have to be adopted.

- 2 It should be noted that the labour including stone cutter allowed in the unit rate norms is for final stone dressing at work site and building. Rough dressing to cut stone size at quarry is to be included in the cost of the stone at quarry.

### 5.3 Ashlar Arching in Cement Mortar (1: X) – Rate for 1 cu m

Quantity	Description of Work	Unit	Rate	Amount
1 cu m	Rate for “Cut- stone in cement mortar” (1:X)	1 cu m		
1.4 No.	Extra masons	Each		
	I Class Centering, Etc	Lumpsum		
				<u>Total</u>
<u>Rate for 1 cu m</u>				

### 5.4 Rubble Arching in Cement (1: X) -Rate for 10 cu m

Quantity	Description of Work	Unit	Rate	Amount
11.50 cu m	Selected stones of sizes	1 cu m		
2.80 cu m	Cement mortar (1: X)	1 cu m		
42.4 No.	Masons including stone cutter			
	(14.2 No. I Class,	Each		
	28.2 No. II Class)	Each		
14.1 No.	Mazdoors category I	Each		
28.2 No.	Mazdoors category II	Each		
Lumpsum	Centering and Sundries	Lumpsum		
				<u>Total</u>
Rate for 1 cu m				

### 5.5 Coursed Rubble in Cement Mortar (1: X) - First Sort - Rate for 10 cu m

Quantity	Description of Work	Unit	Rate	Amount
11.0 cu m	Stone (including bond stones)	1 cu m		
2.8 cu m	Cement mortar (1:X)	1 cu m		
35.3 No.	Masons (including stone cutters vide standard specifications for dressing and rounding comers, etc			
	10.6 No. I Class	Each		
	24.7 No. II Class	Each		
14.1 No.	Mazdoor category I	Each		
	Mazdoor category II	Each		
	Sundries	Lumpsum		

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Total

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Rate for 1 cu m

**5.6 Coursed Rubble in Cement Mortar (1: X) - Second Sort - Rate for 10 cu m**

<i>Quantity</i>	<i>Description of Work</i>	<i>Unit</i>	<i>Rate</i>	<i>Amount</i>
1) <sup>1</sup> 16 cum	Coursed rubble stone including bond stones	cu m		
1) <sup>1</sup> 5 cum	Rough stones	cu m		
3.2 cum	Cement mortar (1:X)	cu m		
24.7	Masons (including stone cutters vide standard specifications for dressing and rounding comers, etc.			
	7.1 No. I Class	Each		
	17.6 No. II Class	Each		
14.1 No.	Mazdoor category II	Each		
	Sundries	Lumpsum		
				<u>Total</u>
Rate for 1 cu m				

1)<sup>1</sup> The proportion may vary for various clauses of stone and work specifications.

**5.7 Random Rubble (Undressed and Brought to Course) in Cement Mortar (1: X) - Rate for 10 cum**

<i>Quantity</i>	<i>Description of Work</i>	<i>Unit</i>	<i>Rate</i>	<i>Amount</i>
10.0 cum	Rough stone	1 cu m		
1.0 cum	Bond stone	1 cu m		
3.4 cum	Cement mortar	1 cu m		
17.7 No.	Masons (including stone cutter)			
	7.1 No. I Class	Each		
	10.6 No. II Class	Each		
14.1 No.	Mazdoors category I	Each		
14.1. No.	Mazdoors category II	Each		
	Sundries	Lumpsum		
				<u>Total</u>
Rate for 1 cu m				

**NOTES**

1 For 'Coping Work' - burnt stone on edge in mortar add 1.4 masons II Class for one cum of finished work.

2 For well steining in this class of masonry add 1.4 masons-II class for one cu m of finished work.

3 Thirty eight (38) percent of mortar shall be adopted in the data for Random Rubble Masonry Work for construction of Dam and appurtenant works.

4 In individual cases and if warranted, the above percentage limit can be raised up to 40 (forty) percent by the Superintending Engineer-in-Charge of the work for recorded reasons.

5 The provisions for bond stones shall be deleted in the data for Random Rubble Masonry for dams and its appurtenant works.

6 Contractors Overhead and profits are generally taken as 20% of prime cost.

7 The following taxes and duties may be considered wherever applicable (this list is just indicative)

- a) Sales Tax on works
- b) Services tax
- c) Labour cess
- d) VAT
- e) Entry tax

For the purpose of notes 2 and 5 above :

- a) 'Dam' means hydraulic structure built across a stream to hold water.
- b) Appurtenant works of a masonry dam are the abutments, aprons, water cushions and retaining walls forming part of masonry dam.
- c) Diversion works like anicuts, head regulators can not be classified as Dams.

**5.8** Works for cornice, corbel stones and other ornamental finishes, the unit rates shall be decided by the Engineer-in-Charge, based on observed data at site of work for the specifications and drawings.