

TABLE OF CONTENTS

12.	STONE MASONRY	12-1
12.A	SCOPE	12-1
12.0	RANDOM RUBBLE STONE MASONRY	12-1
12.1	MATERIAL	12-1
12.1.1	STONE	12-1
12.1.2	SIZE OF STONES	12-2
12.1.3	DRESSING	12-2
12.1.4	MORTAR	12-2
12.1.5	LAYING	12-2
12.1.6	BOND STONES	12-3
12.1.7	QUOIN AND JAMB STONES	12-3
12.1.8	JOINTS	12-3
12.1.9	SCAFFOLDING	12-4
12.1.10	CURING	12-4
12.1.11	PROTECTION	12-4
12.2	UNCOURSED & COURSED RUBBLE MASONRY	12-4
12.2.1	GENERAL	12-4
12.2.2	UNCOURSED RUBBLE MASONRY	12-4
12.2.3	COURSED RUBBLE MASONRY	12-4
12.2.4	DRY RUBBLE MASONRY	12-5
12.3	PLAIN ASHLAR MASONRY	12-6
12.3.1	SIZE OF STONE	12-6
12.3.2	DRESSING	12-6
12.3.3	MORTAR	12-6
12.3.4	LAYING	12-6
12.3.5	BOND STONES	12-7
12.3.6	JOINTS	12-7
12.3.7	POINTING	12-7
12.3.8	CURING	12-7
12.3.9	PROTECTIONS	12-7
12.3.10	SCAFFOLDING	12-7
12.4	PUNCHED ASHLAR (ORDINARY) MASONRY	12-7
12.4.1	STONE	12-7
12.4.2	SIZE OF STONE	12-7
12.4.3	DRESSING	12-8

12.4.4	OTHER DETAILS	12-8
12.5	MOULDED, SINK, CARVED ASHLAR MASONRY	12-8
12.5.1	STONE	12-8
12.5.2	DRESSING	12-8
12.5.3	SAMPLE	12-8
12.5.4	OTHER DETAILS	12-8
12.5.5	CENTERING AND SHUTTERING	12-8
12.6	SHELVES, COPING, PLAIN, CORNICES, STRING COURSES ETC.	12-8
12.6.1	STONE	12-8
12.6.2	DRESSING	12-8
12.6.3	LAYING	12-9
12.6.4	OTHER DETAILS	12-9
12.7	STONE MASONRY IN FREEZING WEATHER	12-9
12.8	DRY STONE UNCOURSED PITCHING, REVETMENT	12-9
12.8.1	GENERAL	12-9
12.8	MEASUREMENT AND PAYMENT	12-9
12.8.1	COMPOSITE RATE	12-9
12.8.2	LABOUR RATE	12-9
12.8.3	QUANTIFICATION	12-9
12.9	TERMINOLOGY	12-10

12. STONE MASONRY

12.A SCOPE

It shall cover all stone masonry for use in foundation and plinth, superstructures and walls etc. as shown on the drawings and such other uses as may be specified or directed by the Engineer-in-Charge. The dressing of stones and use of mortar together with its ingredients and proportions shall be specified or directed by the Engineer-in-Charge. Materials used shall conform to stipulations and requirements herein set forth except when such stipulations and requirements are specifically modified by the Engineer-in-Charge for any particular item of work.

The scope shall, however, include furnishing all labour, materials, plant, equipment, scaffolding, staging, ladders, instruments and accessories; and all services necessary to complete the work which shall be finished in a workmanlike manner true to dimensions and grades shown on the Drawings.

12.0 RANDOM RUBBLE STONE MASONRY

12.1 MATERIAL

12.1.1 STONE

The stone shall be of the type specified such as granite, trap, limestone, sand stone, quartzite, etc. and shall be obtained from the quarries (referred to constructional material sources study report), approved by the Engineer-in-Charge. Stone shall be hard, sound, durable and free from weathering decay and defects like cavities, cracks, flaws, sand holes, injurious veins, patches of loose or soft materials and other similar defects that may adversely affect its strength and appearance. As far as possible stones shall be of uniform colour, quality or texture. Generally stone shall not contain crypts crystalline silica or chart, mica and other deleterious materials like iron-oxide organic impurities etc. Stones with round surface shall not be used.

The compressive strength of common types of stones shall be as per Table 12.1 and the percentage of water absorption shall generally not exceed 5% for stones other than specified in Table 12.1. For laterite this percentage is 12%.

TABLE 12.1

Type of stone	Weight (lbs/cft)	Maximum Water Absorption Percentage by weight	Minimum Compressive Strength kg./sq.cm.
Granite	165	0.5	1000
Basalt	225	0.5	400
Lime stone (Slab & Tiles)	160	0.15	200
Sand stone(Slab & Tiles)	140	2.5	300
Marble	170	0.4	500
Quartzite	225	0.4	800
Laterite (Block)		12	35

12.1.2 SIZE OF STONES

Normally stones used should be small enough to be lifted and placed by hand. Unless otherwise indicated, the length of stones for stone masonry shall not exceed three times the height and the breadth on base shall not be greater than three-fourth of the thickness of wall, or not less than 150 mm. The height of stone for rubble masonry may be up to 300 mm.

The selection and grading of stones for rubble masonry is largely done at site and the smaller stones are used in the hearting of wall.

12.1.3 DRESSING

Each stone shall be hammer dressed on the face, the sides and the beds. Hammer dressing shall enable the stones to be laid close to neighboring stones such that the bushing in the face shall not project more than 40 mm on the exposed face.

(i) Face stone:

At least 25% stones shall be headers tailing into the work at least 2/3rd the thickness of wall in super structure masonry. Such stones shall not be less than 200 sq. cm in cross sections.

(ii) Hearting Stones:

The hearting or interior filling of a wall face shall consist of rubble stones not less than 150 mm in any direction, carefully laid, hammered down with a wooden mallet into position and solidly bedded in mortar. The hearting should be laid nearly level with facing and backing.

(iii) Quoin Stone:

Quoin stone shall be less than 0.03 cum in volume.

(iv) Jamb stones:

The jambs shall not be made with stones specified for quoins except that the stones which were required to be provided at 1 meter centre to centre on both the exposed faces shall be provided only on the jamb and the length shall be equal to the thickness of the wall for wall up to 60 cm and a line of headers shall be provided for walls thicker than 60 cm as specified for bond.

(v) Courses and Thickness of Joints

Courses:

The masonry shall be carried out in regular courses of height not exceeding 50 cm and masonry on any day will not be raised more than 60 cm in height when using mortars having compressive strength less than 20 kg./sq. cm at 28 days and 100 cm when using mortars exceeding this strength.

Thickness of Joints:

The joint thickness shall not exceed 30 mm at any point on the face. Chips of the stone and spalls shall be wedged into seating bed of face stones to avoid excessive bed thickness. No pinning shall be allowed to avoid excessive joint thickness.

12.1.4 MORTAR

The mortar used for joining shall be as specified complying with applicable provisions of cement mortar Section-11 Brickwork.

12.1.5 LAYING

- a) Stone shall be laid on their natural bed and shall be solidly bedded full in mortar with close joints, chips of stone spalls be wedged into the work wherever necessary. No dry work or hollow spaces shall be allowed and every stone whether large or small shall be carefully selected to fit snugly the interstices between the large stones. Masonry shall be built breaking joints in all the three directions. Bond stone and headers shall be properly laid into the work and shall be marked by the contractor with white lead paint. The bond stones shall be provided

as specified in para. The masonry work in wall shall be carried up true to plumb or to specified batter.

Random rubble masonry shall be brought to the level courses at plinth, window sills, lintel and roof levels. Leveling shall be done with concrete comprising of one part of the mortar as used for masonry and two parts of graded stone aggregate of 20 mm nominal size.

The masonry in structure shall be carried uniformly. Where the masonry of one part is to be delayed, the work shall be raked back at an angle not steeper than 45°.

Raking out joints

All the joints on the faces to be pointed or plastered shall be raked out with raking tool to a depth of 20mm while the mortar is still green.

- b) The stone masonry in freezing weather shall comply with all the requirements of brickwork for the same conditions as specified in Sub-section 11.7.10 – Brickwork.

12.1.6 BOND STONES

Though bond stones shall be provided in walls up-to 600 mm thickness, a set of two or more bond stones overlapping each other by at least 150 mm shall be provided in a line from face to back as shown on Drawings and approved by the Engineer-in-Charge. In case of highly absorbent types of stones (porous lime stone and sand stone etc.) the bond stone shall extend about two-third into the wall, as through stones in such walls a set of two or more bond stones overlapping each other by at least 150 mm shall be provided. Each bond stone or a set of bond stones shall be provided for every 0.5 m² of the wall surface and shall be provided at 1.5 m to 1.8 m apart clear in every course.

In case of highly absorbent types of stones (porous lime stone and sand stone etc.) single piece bond stones may give rise to dampness. For all thicknesses of such walls a set of two or more bond stones overlapping each other by at least 15 cm shall be provided. Length of each such bond stone shall not be less than two-third of the thickness of the wall.

Where bond stones of suitable lengths are not available pre-cast cement concrete block of 1:3:6 mix(1 cement : 3 coarse sand: 6 graded stone aggregate 20 mm nominal size) of cross section not less than 225 square centimeters and length equal to the thickness shall be provided.

At least one bond stone or a set of bond stones shall be provided at 1.5 m to 1.8 m apart clear in every course. (Bond stones shall be marked suitably with paint as directed by the Engineer-in-Charge).

12.1.7 QUOIN AND JAMB STONES

The quoin and jamb stones shall be of selected stones neatly dressed with hammer or chisel to form the required angle. Quoin stones shall not be less than 0.01 cum in volume. Height of quoins and jamb stones shall not be less than 15 cm. Quoins shall be laid header and stretcher alternatively.

12.1.8 JOINTS

Stones shall be so laid that all joints are fully packed with mortar and chips. Face joints shall not be more than 20 mm thick.

The joints shall be struck flush and finished at the time of laying when plastering or pointing is not to be done. For the surfaces to be plastered or pointed, the joints shall be raked to a minimum depth of 20 mm when the mortar is still green.

12.1.9 SCAFFOLDING

Single scaffolding having one set of vertical support shall be allowed. The supports shall be sound and strong, tied together by horizontal pieces, over which the scaffolding planks shall be fixed. The inner end of the horizontal scaffolding member may rest in a hole provided in the masonry. Such holes, however, shall not be allowed in pillars under one meter in width or near the skew back of arches. The holes left in masonry work for supporting scaffolding shall be filled and made good with 1:3:6 cement concrete (1 cement : 3 sand : 6 stone aggregate 20 mm nominal size).

12.1.10 CURING

Masonry work in cement mortar shall be kept constantly moist on all faces for a minimum period of seven days.

12.1.11 PROTECTION

Green work shall be protected from rain by suitable covering. The work shall also be suitably protected from damage, mortar dropping and rain during construction.

12.2 UNCOURSED & COURSED RUBBLE MASONRY

12.2.1 GENERAL

Random Rubble Masonry shall be un-coursed or brought to courses as specified.

12.2.2 UNCOURSED RUBBLE MASONRY

Un-coursed random rubble masonry shall be constructed with stones of sizes as referred in 12.1.2 and shapes picked up random from the stones brought from the approved quarry. Stones having sharp corners or round surfaces shall, however, not be used. No dressing of stone shall be required and stone shall be laid on its quarry bed. Each stone shall be wedged strongly into position by using sprawl or chips. The construction of un-coursed Rubble Masonry shall be carried as specified in 12.0.

12.2.3 COURSED RUBBLE MASONRY

12.2.3.1 GENERAL

Random rubble masonry brought to the course is similar to un-coursed random rubble masonry except that the courses are roughly leveled at intervals varying from 300mm to 900mm in height according to the size of stones used

12.2.3.2 STONE

Shall be as specified in 12.1.1

12.2.3.3 SIZE OF STONE

Shall be as specified in 12.1.2

12.2.3.4 DRESSING

Face stones shall be hammer dressed on all beds, and joints so as to give them approximately rectangular block shape. These shall be squared on all joints and beds. The bed joint shall be rough chisel dressed for at least 80 mm back from the face, and side joints for at least 40 mm such that no portion of the dressed surface is more than 6 mm from a straight edge placed on it. The remaining unexposed portion of the stone shall not project beyond the surface of bed and side joint. The bushing on the face shall not project more than 40 mm as an exposed face and 10 mm on a face to be plastered. The hammer dressed stone shall also have a rough tooling for minimum width of 25 mm along the four edges of the face of the stone, when stone work is exposed.

12.2.3.5 MORTAR

The mortar for jointing shall be as specified referred under Clause 12.1.4.

12.2.3.6 LAYING

All stones shall be wetted before use. The walls shall be carried up truly plumb or to specified batter. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. The height of each course shall not be less than 15 cm nor more than 30 cm.

Face stones shall be laid alternate headers and stretchers. No pinning shall be allowed on the face. No face stone shall be less in breadth than its height and at least one third of the stones shall tail into the work for length not less than twice their height.

The hearting or the interior filling of the wall shall consist of stones carefully laid on their proper beds in mortar; chips and spalls of stone being used where necessary to avoid thick beds of joints of mortar and at the same time ensuring that no hollow spaces are left anywhere in the masonry. The chips shall not be used below the hearting stone to bring these upto the level of face stones. The use of chips shall be restricted to the filling of interstices between the adjacent stones in hearting and these shall not exceed 10% of the quantity of stone masonry.

The masonry in a structure shall be carried up uniformly but where breaks are unavoidable, the joints shall be raked back at angle not steeper than 45°. Tothing shall not be allowed.

12.2.3.7 BOND STONES

Shall be as specified in 0except that a bond stone or a set of bond stones shall be inserted 1.5to 1.8 meters apart, in every course.

12.2.3.8 QUOINS

The quoins shall be of the same height as the course in which these occur. These shall be at least450 mm long and shall be laid stretchers and headers alternatively. These shall be laid square on the beds, which shall be rough-chisel dressed to a depth of at least 100 mm. In case of exposed work, these stones shall have a minimum of 25 mm wide chisel drafts at four edges, all the edges being in the same plane.

12.2.3.9 JOINTS

All bed joints shall be horizontal and all side joints vertical. All joints shall be fully packed with mortar, face joints shall not be more than one cm thick.

When plastering or pointing is not required to be done, the joints shall be struck flush and finished at the time of laying. Otherwise, joints shall be raked to a minimum depth of 20 mm by raking tool during the progress of work, when the mortar is still green.

12.2.3.10 SCAFFOLDING/CURING

Shall be as specified under 12.1.9 & 12.1.10.

12.2.4 DRY RUBBLE MASONRY

12.2.4.1 SIZE OF STONE

Dry rubble masonry shall be constructed with the largest practicable size of the stone available – the larger stone being used in the lower courses.

12.2.4.2 DRESSING OF STONE

Stone shall be roughly dressed to secure the maximum bedding surface without unduly reducing the size of the stone. Each course shall be built through the entire thickness of the wall.

12.2.4.3 BOND STONE

Bond stone shall be provided in each course at an interval of 5 feet. It shall be of the height of the course in which it is to be used, at least as broad and of the greatest length procurable. No bond stone shall be less than 2 feet long. When the length is less than the thickness of the wall 2 or more stones shall be used overlapping each other by at least 6 inches to provide through bond from front to back. All bond stones shall be separately stacked before use and marked so that they can be identified after having been built in the wall.

12.2.4.4 LAYING

Wherever required, filling behind dry stone walls shall be done immediately with stone refuse or chips. Earth shall not be used where stone refuse is available.

12.3 PLAIN ASHLAR MASONRY

Stone shall be of the type specified. It shall be hard, sound, durable and tough, free from cracks, decay and weathering and defects like cavities, cracks, flaws, sand holes, veins, patches of soft or loose materials etc. before starting the work, the contractor shall get the stones approved by Engineer-in-Charge. Every stone shall be cut to the required size and shape and fine machine dressed to the full depth so that a straight edge laid along the side of stone shall be in full contact with it.

12.3.1 SIZE OF STONE

Normally stones used should be small enough to be lifted and placed by hand. The length of the stone shall not exceed three times the height and the breadth on base shall not be greater than three-fourth of the thickness of wall nor less than 15 cm. The height of stone may be up to 30 cm.

12.3.2 DRESSING

Every stone shall be cut to the required size and shape chisel dressed on all beds and joints so as to be free from waviness and to give truly vertical and horizontal joints. In exposed masonry, the faces that are to remain exposed in the final position and the adjoining faces to a depth of 6 mm shall be the fine chisel dressed so that when checked with 60 cm straight edge, no point varies from it by more than 1 mm. The top and bottom faces that are to form the bed joints shall be chisel dressed so that variation from 60 cm straight edge at no point exceeds 3 mm. Faces which are to form the vertical joints should be chisel dressed so that variation at any point with 60 cm straight edge does not exceed 6 mm. Any vertical face that is to come against backing of masonry shall be dressed such that variation from straight edge does not exceed 10 mm. All angles and edges that are to remain exposed in the final position shall be true, square and free from chippings' sample of dressed stone shall be prepared for approval of Engineer-in-Charge. It shall be kept at the worksite as a sample after being approved.

12.3.3 MORTAR

The mortar for jointing shall be as specified in Clause 12.1.4.

12.3.4 LAYING

All stones shall be wetted before placing in position. These shall be floated on mortar and bedded properly in position with wooden mallets without the use of chips or under pinning of any sort.

The walls and pillars shall be carried up truly plumb or battered as shown in drawings. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical.

In case of ashlars' work without backing of brick work or coursed rubble masonry, face stone shall be laid headers and stretchers alternately unless otherwise directed. The headers shall be arranged to come as nearly as possible in the middle of stretchers above and below. Stone shall be laid in regular courses of not less than 30 cm in height and all the courses shall be of same height, unless otherwise specified.

For ashlars' facing with backing of brick work or coursed rubble masonry face stone shall be laid in alternate courses of headers and stretchers unless otherwise directed. Face stone and bond stone course shall be maintained throughout. All connected masonry in a structure shall be carried up nearly at one uniform level throughout, but where breaks are avoidable, the joint shall be made in good long steps so as to prevent cracks developing between new and old work.

When necessary, jib crane or other mechanical appliances shall be used to hoist the heavy pieces of stones and place these into correct positions, care being taken that the corners of the stone are not damaged. Stone shall be covered with gunny bags, before tying chain or rope is passed over it, and it shall be handled carefully. No piece which has been damaged shall be used in work.

12.3.5 BOND STONES

Shall be as specified in 12.1.6

12.3.6 JOINTS

All joints shall be full of mortar. These shall be not more than 6 mm thick. Face joints shall be uniform throughout and a uniform recess of 20 mm depth from face shall be left with the help of the steel plate during the progress of work.

12.3.7 POINTING

All exposed joints shall be pointed with mortar as specified. The pointing when finished shall be sunk from stone face by 5 mm or as specified. The depth of mortar in pointing work shall not be less than 15 mm.

12.3.8 CURING

Masonry work in cement mortar shall be kept constantly moist on all faces for a minimum period of seven days.

12.3.9 PROTECTIONS

Green work shall be protected from rain by suitable covering. The work shall also be suitably protected from damage, mortar dropping and rain during construction.

12.3.10 SCAFFOLDING

Double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed.

12.4 PUNCHED ASHLAR (ORDINARY) MASONRY

12.4.1 STONE

Shall be as specified in 12.3. In case of red or white sand stone, stone shall be red or white as specified in the item. In red sand stone, white patches or streaks shall not be allowed. However, scattered spots upto 10 mm diameter will be permitted.

12.4.2 SIZE OF STONE

Shall be as specified in 12.3.1.

12.4.3 DRESSING

Shall be as specified in 12.3.2 except that the faces exposed in view shall have a fine dressed chisel draft 2.5 cm wide all-round the edges and shall be rough tooled between the drafts, such that the dressed surface shall not be more than 3 mm from a straight edge placed over it.

12.4.4 OTHER DETAILS

The specifications for mortars, laying and fixing, bond stone, joints, pointing, curing, protections and scaffolding shall be same as specified in 12.3.

12.5 MOULDED, SINK, CARVED ASHLAR MASONRY

12.5.1 STONE

Shall be as specified in 12.3 and 12.3.1.

12.5.2 DRESSING

Every stone shall be cut to the required size and shape and chisel dressed on all beds and joints so as to be free from any waviness and to give perfectly vertical, horizontal, radial or circular joints with adjoining stones as the case may be. The dressed surface shall not be more than 3 mm from a straight edge placed on it. The face shall be gauged, cut, chamfered, grooved, rebated sunk or plain molded and fine tooled as shown in the working drawings. The joints 6 mm from the face shall also be fine tooled so that straight edge laid along it is in contact with every point. It shall be finest surface which can be given to a stone with the chisel and without rubbing.

In case of sink or moulded masonry, the corner stone shall be dressed at true right angles or true to the shape as specified, the corners being straight and vertical. For arch dome or circular work the stone shall be dressed to required wedge shape so that joints shall be truly radial.

12.5.3 SAMPLE

The full size layout of the moulding etc. shall be prepared on platform from which sheet templates shall be cut and the stone dressed to templates to a uniform and fine finish. All visible angles and edge shall be true square and free from chippings. A sample of dressed stone shall be prepared for approval and it shall be kept as sample after being approved by Engineer-in-Charge.

In case of Ashlar moulded and carved columns a full size model of the required moulding, carving etc. shall be prepared in plaster of Paris and kept at site of work as sample work after being approved by the Engineer-in-Charge. The stones shall be moulded and carved in accordance with the approved model to a uniform and fine finish.

12.5.4 OTHER DETAILS

Shall be as specified in 12.3.3, 12.3.4 and 12.3.6 to 12.3.9.

12.5.5 CENTERING AND SHUTTERING

Centering and shuttering required for arch dome or circular moulded work shall be proposed by the Contractor and approved by the Engineer-in-Charge.

12.6 SHELVES, COPING, PLAIN, CORNICES, STRING COURSES ETC.

12.6.1 STONE

Stone shall be of uniform color and texture and of the kind as stipulated.

12.6.2 DRESSING

The exposed faces and sides of shelves shall be chisel dressed such that the dressed surface shall not be more than 3 mm from a straight edge placed on it. All visible angles and edges shall be free from chippings. The surfaces to be buried in the masonry shall be rough dressed.

12.6.3 LAYING

These shall be laid in mortar of specified mix and fixed as shown in drawing or as directed by the Engineer-in-Charge.

12.6.4 OTHER DETAILS

Specifications for pointing, curing, protections and scaffolding shall be as specified in 12.3.3, 12.3.4 and 12.3.6 to 12.3.9.

12.7 STONE MASONRY IN FREEZING WEATHER

Stone Masonry in freezing weather shall be carried out in accordance with the provisions of Clause 11.7.10 - Brick laying in freezing weather. For purpose of application of this Clause, "Brick" shall be deemed to have been replaced with stone.

12.8 DRY STONE UNCOURSED PITCHING, REVETMENT

12.8.1 GENERAL

The stone will be perfectly sound and as regular in shape as possible. Their length will be about equal to the thickness of the required pitching or revetment without the backing.

The side of the bank will be trimmed to the required slope and profiles will be put up at required intervals to ensure regular work and uniform slope throughout.

The stone will be laid closely in position and firmly bedded, the length being made perpendicular to the face of the pitching or revetment.

The toe will be thoroughly secured against slipping by a properly constructed masonry wall in cement mortar.

12.8 MEASUREMENT AND PAYMENT

12.8.1 COMPOSITE RATE

The measurement and payment for the items of the work of Brickwork hereof shall be made corresponding to the applicable CSR items as provided in Contract Agreement and shall constitute full compensation, for procurement, transportation, performance in all respects and completion of work as specified including the site clearance as approved by the Engineer-in-Charge.

12.8.2 LABOUR RATE

The measurement and payment for the items of the work of Brickwork hereof shall be made corresponding to applicable CSR item as provided in Contract Agreement and shall constitute full compensation for procurement transportation, performance in all respects and completion of work as specified including site clearance, as approved by the Engineer-in-Charge except the cost of materials to be provided by Department at designated location as defined in the Contract Agreement.

12.8.3 QUANTIFICATION

The unit of measurement shall be measured as mentioned below in accordance with corresponding CSR items.

1. For Volumetric items, the unit of measurement shall be cubic meter or cubic foot. Following item of CSR is measured in the above mentioned criteria;
Item No.: 12-36
2. Following item shall be measured as %age increase;
Item No.: 12-52

3. For surface area items, the quantity of work shall be measured by surface area. The unit of measurement shall be Square meter or Square foot. Following item of CSR are measured according to this criteria;
Item No.:12-1 to 12-8,12-13,12-18 to12-24,12-32 to 12-35,12-37 to 12-40,12-45&12-47 to 12-50
4. For linear items, the quantity of work shall be measured linearly along centre line of structure. The unit of measurement shall be running meter or running foot. Following items of CSR are measured according to this criteria;
Item No.: 12-9,12-12,12-14,12-25 to 12-27,12-27,12-29 to 12-31, 12-42,12-46 and12-51
5. The following items shall be measured as Each;
Item No.: 12-10 to 12-11,12-15 to 12-17, 12-28,12-41,12-43 and 12-44

12.9 TERMINOLOGY

Ashlar

Stone masonry using dressed square stone blocks of given dimensions having faces perpendicular to each other and laid in courses.

Bed Joint

The joint where one stone presses on another for example, a horizontal joint in a wall or radiating joint between the voussoirs or arch.

Block

- a) Hollow Block (Open and Closed Cavity):

A concrete masonry unit with any one of the external dimension greater than the corresponding dimension of a brick and having one or more large holes or cavities which either pass through the block (open cavity) or do effectively pass through the block (closed cavity) and having the solid material between 50% and 75% of the total volume of the block calculated from the overall dimensions.

- b) Solid Block:

A concrete masonry unit with external dimensions greater than corresponding dimension of a brick and having solid material not less than 75% of the total volume of the block calculated from over all dimension.

Bond

An interlocking arrangement of structural units in a wall to ensure stability.

Bond Stone (through Stone)

Selected long stone used to hold a wall together transversely.

Corbel

Stone bonded well into the wall with part of it projecting out of the face of wall to form a bearing surfaces.

Cornice

A horizontal moulded projection which crowns or finishes either a wall, any horizontal division of wall, or any architectural feature.

Cramp

A small piece of metal or the hardest or toughest stone procurable, sunk in mortices and fixed across joints as additional ties. The ends of metal cramps are bent at right angles and stone cramps are dovetailed.

Course

A layer of stones in wall including the bed mortar.

Dowels

Dowels are small sections of metal, stone or pebbles bedded with mortar in corresponding mortice in bed or side joint or adjacent stones.

Jamb

The part of the wall at the side of an opening.

Joggle

A key between the stones by providing a groove in one stone to take a corresponding concealed projection in the edges on the other stone.

Natural Bed

The planes of stratification that occurs in a sedimentary rocks.

Parapet

A solid or pierced guard wall for flat stone terrace or balcony (or a bridge) or a curb wall at the lower part of a pitched roof which is exposed to atmosphere on face back and top.

Quoin

A quoin is the external angle of wall or building. The term is also applied to stone specially selected and neatly dressed for forming such angle.

Random

Random or irregular size and shapes.

Reveal

The part of the jamb between the frame and the arris.

Rubble Masonry

Masonry built of stones either irregular in shapes as quarried or squared and only hammer dressed and having comparatively thick joints. As far as possible, stones for rubble masonry shall be angular.

Skewback

Sloping surface against which the springing of an arch rests.

Spandrel

Space between the haunches below the decking level.

String Course

A horizontal band, plain or moulded, usually projecting slightly from the face of wall.

Surfacing or Dressing of Stones

The stones are dressed to have different surfaces as indicated below.

Template or Bed Block

A block of stone or concrete bedded on a wall to distribute the pressure from a concentrated load.

Self Faced Surfaces

Surfaces of stone slabs used for roofing, flooring, lintels etc. as obtained from quarry.

Squared Back Surface

Means the surface shall be dressed back at right angles to the face of the stone.

Chisel Drafted Margin

The dressing done with a drafting chisel in narrow strips of width generally 2 to 5 cm. Chisel drafted margin shall be punch dressed.

Hammer Dressed Surface

A hammer dressed stone shall have no sharp and irregular corners and shall have a comparatively even surface so as to fit well in masonry. Hammer dressed stone is also known as hammer faced, quarry faced and rustic faced. The bushing from the general wall face shall not be more than 40 mm on exposed face and 10 mm on faces to be plastered.

Rock Faced Surface

A rock faced stone shall have a minimum of 25 mm wide chisel drafted margin at the four edges, all the edges being in the same plane.

Rough Tooled Surface

A rough tooled surface shall have a series of bands, made by means of a plane chisel 4 to 5 cm wide, more or less parallel to tool marks all over the surface. These marks may be either horizontal, vertical or at an angle of 45° as directed. The edges and corners shall be square and true. The depth or gap between the surface and straight edge, held against the surface shall not be more than 3 mm (Rough tooled stones are used where fairly regular plane faces are required for masonry work).

PunchedDressedSurface

A rough surface is further dressed by means of punch chisel to show series of parallel ridges. The depth of gap between the surface and a straight edge held against the surface shall not exceed 3 mm. Punched dressed stones are used where even surfaces are required.

Close Picked Surface

A punched stone is further dressed by means of point chisel so as to obtain a finer surface, ridges or chisel marks left over being very tiny. The depth of gap between the surface and a straight edge kept over the surface shall not exceed 1.5 mm.

Fine Tooled Surface

Close picked surface is further dressed so that all the projections are removed and fairly smooth surface is obtained. The surfaces shall have 3 to 4 lines per centimeter width depending on the degree of hardness of stone and degree of fineness required. This type of dressing is commonly adopted for ashlar work.

PolishedSurface

Surfaces having a high gloss finish. Polishing of stones shall be done by rubbing them with suitable abrasive, wetting the surface where necessary with water. Alternatively polishing of stones shall be done by holding them firmly on the top of revolving table to which some abrasive material like sand or carborundum is fed. The final polishing shall be performed by rubber or felt, using oxide of lime (called by trade name as putty powder) as a polishing medium.

Moulded

Cut to profile of a molding with punched dressed surfaces, unless otherwise specified.