

NOTE FOR CONCRETE WORKS:**NOTES FOR CONCRETE & RELATED ITEMS:**

1. All concrete produced shall be machine mixed for all type of concrete.
2. All formwork should be rigid & water tight using best quality of ordinary shuttering ply / steel plates with supporting system of MS adjustable steel props / spans / frames for any shapes, sizes, planes including strutting, propping, bracing, staging etc., complete to give smooth & fair finish.
3. Only coarse River sand to be used in all concrete works.

ADDITIONAL NOTES FOR MASS CONCRETING FOR WALLS ABOVE 450MM THICK.

- 1). Contractor must refer all necessary specifications of optimum mix of concrete subject to radioactive shield and for heavy section of mass concrete mentioned in above detailed item specifications.
- 2). Concreting in wall shall be done only upto 1m height in single lift.
- 3). Temperature of fresh concrete must be maintained in between 10 to 20 degree celcius.
- 4). External curing must be done upto minimum 15 days.
- 5). All aggregates must be precooled with water having temperature not more than 20 degree celcius.
- 6). All necessary inserts & pipes shall be provided in the walls as clients requirements & detailed in the drawings.
- 7) Minimum 4 days gap shall be maintained between two lifts of concrete / lifts.
- 8) Curing agent of any approved manufacturing agency shall be used as per supplier's instructions.
- 9). Shuttering shall be removed only after 24 hours & before 36 hours or as per IS.
- 10). Construction joint shall be prepared as per drawings.

2.01 Providing and laying in foundation and plinth under floors, lime concrete with hand broken brick bats 40 mm. nominal size and 40% mortar comprising of proportion of 1 lime putty: 2 fine sand and curing etc. complete, including The cost of formwork (If required).

1.0 Materials : Water shall conform to M-1. Sand shall conform to M-6. Lime shall conform to M-2. Brick bats 40 mm. nominal size shall conform to M-14.

2.0 Workmanship :

2.1 General :

2.1.1 Before starting the concreting, the bed of the foundation trenches shall be cleared off, of all loose materials and watered and rammed well, as directed.

2.1.2 Lime mortar shall be kept damp, protected from sun and rain till used-up, covering it by tarpaulin or storing it in open sheds.

2.1.3 All the lime mortar shall be used as soon as possible after grinding. It should be used on the same day but in no case mortar made earlier than 36 hours shall be permitted to be taken in use.

2.2 Proportion of mix :

2.2.1 The proportion of lime, sand and aggregate shall be specified in the item of the work and shall be measured by volume.

2.2.2 The lime mortar shall consist of the proportion of 1 lime putty : 2 sand by volume. The lime mortar

shall be prepared by wet process. Power driven mill shall be used for preparation of lime mortar. The slaked lime shall be placed in the Mill in even layers and ground for 180 revolutions with sufficient water. The water shall be added as required during grinding and extreme care should be taken not to add more water so that it will bring the mixed materials to a consistency of stiff paste. Thoroughly wetted sand shall then be added evenly and the mixture shall be ground for another 180 revolutions.

2.3 **Mixing :**

The concrete shall be mixed in mechanical mixer. Mixing shall be continued till there is uniform distribution of the material and the mass is uniform in colour and consistency but in no case mixing shall be done for less than 2 to 3 minutes.

2.4 **Laying and compacting :**

The concrete shall always be used fresh. It shall be laid (not thrown) in layers not exceeding 150 mm. in thickness and shall be well and quickly rammed with wooden or iron rammers, till the required compaction is achieved. The concrete laid shall not be of too fluid consistency. After it has been mixed, no more water shall be added. The surface during and after compaction shall be kept damp. In laying consecutive layers, the layer cast shall be well watered and made rough, before the upper layer is laid. The concrete shall be kept continuously wet for period of 7 days from the date of placing or until it is built over, whichever is more.

3 **Mode of Measurements and Payment :**

3.1 The concrete work shall be measured in length, breadth and depth, as specified on drawing or as directed, correct upto nearest centimetre and cubical content shall be worked out nearest upto two decimal places.

3.2 The rate shall be for an unit of one m³.

Providing and laying Plain cement concrete in 1:3:6 in foundation and plinth / sub base to the floors using 40mm / 20 mm nominal size graded hard stone aggregate obtained from approved quarry in required thickness including compaction, finishing top surface to level, curing, cost of formwork (if required), etc., complete as per specifications. Mix ratio specified is for (cement: coarse sand: graded stone aggregate).

Note: Only Coarse river sand shall be used in all PCC works or as directed by the EIC

1.0 Materials: Water shall conform to M-1. Sand to M-6. Cement to M-3. Stone aggregate 40 / 20 mm. nominal size to M-12.

2.0 **Workmanship :**

2.1 **General:** Before commencing concreting, the bed of foundation trenches shall be cleared off of all loose materials, levelled, watered and rammed, as directed.

2.2 **Proportion of mix:** The proportion of cement, sand and coarse aggregate shall be one part of cement, 3 parts of sand, 6 parts of stone aggregates and shall be so measured by volume.

2.3 **Mixing:** The concrete shall be mixed in a mechanical mixer at the site of work. Hand mixing, may however be allowed for smaller quantity of work, if approved by the Engineer-in-charge. When hand mixing is permitted by the Engineer in-charge, in case of break down of machinery and in the interest of the work, it shall be carried out on a water tight platform and care shall be taken to ensure that the mixing is continued until the mass is uniform in colour and consistency. However

in such cases, 10% more cement than otherwise required, shall have to be used without any extra cost. The mixing in mechanical mixer shall be done for a period 1.5 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose.

2.4 **Transporting & placing the concrete :**

2.4.1 The concrete shall be handled from the place of mixing to the final position within 15 minutes by the method, as directed and shall be placed into its final position, compacted and finished within 30 minutes of mixing with water i.e. before the setting commences.

2.4.2 The concrete shall be laid in layers of 15 cm. to 20 cm.

2.5 **Compacting:** The concrete shall be rammed with heavy iron rammers and rapidly to get the required compaction and to allow all the interstices to be filled with mortar.

2.6 **Curing:** After the final set, the concrete shall be kept continuously wet, if required by ponding, for a period of not less than 7 days from the date of placement.

3.0 **Mode of Measurements and Payment :**

3.1 The concrete shall be measured for its length, breadth and depth, limiting dimensions to those specified on plan or as directed.

3.2 The rate shall be for an unit of one m³.

2.02.b **Providing and laying BBCC 1:3:6 (1 cement: 3 coarse sand: 6 graded brick bats 40 mm.) and curing complete, in foundation and plinth.**

1.0 **Materials :** The specifications of item no. 2.02.a shall be followed except that the brick bats shall be used as coarse aggregates instead of stone aggregates. Brick bats aggregate shall conform to M-14.

2.0 **Workmanship :** The relevant specification of item no. 2.02.a shall be followed except that the brick bat shall be used as coarse aggregate instead of graded stone aggregate.

3.0 **Mode of Measurements and Payment :**

3.1 The relevant specification of item no. 2.02.a shall be followed for mode of measurements and payment.

3.2 The rate shall be for a unit of one m³.

2.03.a **Providing and laying Cement Concrete 1:4:8 (1 cement : 4 coarse river sand : 8 stone aggregates using 40 / 20mm nominal size graded hard granite / black trap stone aggregate obtained from quarry) including compaction, finishing top surface to the level curing but excluding cost of formwork etc. complete as per specifications and directions as per Engineer - in - charge. In foundations, plinth, sub base of floors etc. For all civil, plumbing & electrical works.**

1.0 **Materials:** Water shall conform to M-1. Cement to M-3. Sand to M-6. Stone aggregate 40 / 20 mm. nominal size to M-12.

2.0 **Workmanship:** Relevant specifications of item no. 2.02.a shall be followed except that CC shall be

mixed in the proportion of 1:4:8 instead of 1:3:6 by volume.

3.0 Mode of Measurements and Payment :

3.1 The concrete shall be measured for its length, breadth and depth, limiting the dimensions to those specified on plans or as directed.

3.2 The rate shall be for a unit of one m³.

C02 Providing and laying Plain cement concrete in 1:4:8 in foundation and plinth / sub base to the floors using 40mm / 20 mm nominal size graded hard stone aggregate obtained from approved quarry in required thickness including compaction, finishing top surface to level, curing, cost of formwork (if required), etc., complete as per specifications. Mix ratio specified is for (cement:coarse sand:graded stone aggregate).

Note: Only Coarse river sand shall be used in all PCC works or as directed by the EIC

Relevant specification of Item No. 2.03.a to be followed.

2.03.b Providing and laying BBCC 1:4:8 (1 cement: 4 coarse sand: 8 graded brick bats) and curing complete, in foundation and plinth.

1.0 **Materials:** Water shall conform to M-1. Cement to M-3. Sand to M-6. Brick bat to M-14.

2.0 **Workmanship :** The specification of this item shall be followed as per item no. 2.03.a except that the proportion of brick bat CC shall be 1:4:8 i.e. 1 part of cement, 4 parts of coarse sand and 8 parts of graded brick bat by volume, using graded brick bat as coarse aggregate instead of stone aggregate.

3.0 Mode of Measurements and Payment :

3.1 The concrete work shall be measured for its length, breadth and depth, limiting the dimensions to those specified on drawings or as directed.

3.2 **Providing and laying Cement Concrete 1:5:10 (1 cement : 5 coarse river sand : 10 stone aggregates using 40 / 20mm nominal size graded hard granite / black trap stone aggregate obtained from quarry) including compaction, finishing top surface to the level curring but excluding cost of formwork etc. complete as per specifications and directions as per Engineer - in - charge. In foundations, plinth, subbase of floors etc. For all civil, plumbing & electrical works.**

1.0 **Materials :** Water shall conform to M-1. Cement to M-3. Sand to M-6. Stone aggregate 40 mm. nominal size to M-12.

2.0 **Workmanship :** The relevant specification of item no. 2.02.a shall be followed for the work except that the work is to be carried out in CC 1:5:10.

3.0 Mode of Measurements and Payment :

3.1 The concrete shall be measured for its length, breadth and depth, limiting the dimensions to those specified on plans or as directed.

3.2 The rate shall be for an unit of one m³.

2.04.a Providing and laying BBCC 1:5:10 (1 cement: 5 coarse sand: 10 graded brick bats 40 mm. nominal size) and curing etc. complete, in foundation and plinth.

1.0 Materials : Water shall conform to M-1. Sand to M-6. Cement to M-3. Brick bats to M-14.

2.0 Workmanship : The relevant specification of item no. 2.04.a shall be followed except that brick bats aggregate shall be used instead of stone aggregate, in proportion 1:5:10.

3.0 Mode of Measurements and Payment :

3.1 The relevant specification of item no. 2.04.a shall be followed.

3.2 The rate shall be for an unit of one m³.

2.05.a Providing and laying CC 1:6:12 (1 cement: 6 coarse sand : 12 graded stone aggregate 40 mm. nominal size) and curing etc. complete including the cost of formwork 9if required), for foundation and plinth.

1.0 Materials : 1.1 Water shall conform to M-1. Cement to M-3. Sand to M-6. Stone aggregate 40 mm. nominal size to M-12.

2.0 Workmanship : The relevant specification of item no. 2.02.a shall be followed for the work except that the work is to be carried out in CC 1:6:12.

3.0 Mode of Measurements and Payment :

3.1 The concrete shall be measured for its length, breadth and depth, limiting the dimensions to those specified on plans or as directed.

3.2 The rate shall be for an unit of one m³.

2.05.b Providing and laying BBCC 1:6:12 (1 cement: 6 coarse sand: 12 graded brick bats 40 mm. nominal size) and curing etc. complete, in foundation and plinth.

1.0 Materials : Water shall conform to M-1. Sand to M-6. Cement to M-3. Brick bats to M-14.

2.0 Workmanship : The relevant specification of item no. 2.05.a shall be followed except that brick bat aggregate shall be used instead of stone aggregate, in the proportion 1:6:12.

3.0 Mode of Measurements and Payment :

3.1 The relevant specification of item no. 2.05.a shall be followed.

3.2 The rate shall be for an unit of one m³.

2.06.a Providing and laying CC 1:2:4 (1 cement: 2 coarse sand: 4 crushed stone aggregate 20 mm. nominal size) and curing etc. complete, for all structures and mass concrete, excluding cost of formwork, for all floors at any height and levels.

1.0 Materials: Water shall conform to M-1. Cement to M-3. Sand to M-6. Grit to M-8. Graded stone

aggregate 20-mm. nominal size to M-12.

2.0 General :

- 2.1 The concrete mix is not required to be designed by preliminary tests and only nominal mix as per IS: 456-1978 shall be followed. The proportion of the concrete mix shall be 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm. nominal size) by volume. **All Concrete work shall have smooth/ fair finished concrete surface unless otherwise specified.**
- 2.2 The designation ordinary M-10, M-15, M-20, M-25 specified as per I.S. corresponds approximately to 1:3:6, 1:2:4, 1:1.5:3 and 1:1:2 nominal mix of ordinary concrete, by volume respectively.
- 2.3 The ingredients required for ordinary concrete containing one bag of cement of 50 Kg. by weight (0.0342 m^3 .) for different proportions of mix shall be as under :

Grade of Concrete	Total Qty of Dry aggregate by Volume per 5 kg of cement to be taken as the sum of individual volume of fine and Coarse aggregate, (maximum)	Proportion of fine aggregate to coarse aggregate	Qty of water per 50 kg of Cement, (Maximum)
M 10 (1:3:6)	300 liters	Generally 1:2 for FA to CA by volume but subject to upper limit of 1:1.5 and lower limit 1:3	34 liters
M 15 (1:2:4)	220 liters		32 liters
M 20 (1:1.5:3)	160 liters		30 liters
M 25 (1:1:2)	100 liters		27 liters

- 2.4 The water cement ratios shall not be more than those specified in the above table. The cement of the mix specified in the table shall be increased, if the quantity of water in a mix has to be increased to overcome the difficulties of placement and compaction so that the water cement ratio specified in the table is not exceeded.
- 2.5 The workability of the concrete shall be controlled by maintaining a water-cement ratio that is bound to give a concrete mix which is just sufficiently wet to be placed and compacted without difficulty, with the means available.
- 2.6 The maximum size of coarse aggregate shall be as large as possible within the limits specified but in no case greater than 1/4th of the minimum thickness of the member, provided that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and to fill the corners of the form.
- 2.7 For reinforced concrete work, coarse aggregates having a nominal size of 20 mm. are generally considered satisfactory.
- 2.8 For heavily reinforced concrete members as in the case of ribs of main beams, the nominal maximum size of coarse aggregate should usually be restricted to 5 mm. less than the minimum clear distance between the main bars, or 5 mm. less than the minimum cover to the reinforcement, whichever is

smaller.

- 2.9 Where the reinforcement is widely spaced as in solid slabs, limitations of size of the aggregate may not be important and the nominal maximum size may sometimes be as great as or greater than the minimum cover.
- 2.10 Admixture may be used in concrete only with approval of the Engineer-in-charge based upon the evidence that with the passage of time, neither the compressive strength of concrete is reduced nor are other requisite qualities of concrete and steel impaired by the use of such admixtures.
- 2.11 For hot and cold weather precautions to be taken as follow:
1. Temperature of coarse aggregate should be maintained as per IS specifications by use of Ice Flakes for mass concrete.
 2. Storing of coarse aggregate under shed in case of hot weather temperature.
 3. Avoiding concreting in the noontime in case of hot weather and during night time in case of Cold weather.

3.0 Workmanship :

- 3.1 **Proportioning :** Proportioning shall be done by volume, except cement which shall be measured in terms of bags of 50 Kg. weight. The volume of one such bag being taken as 0.0342 m^3 . Boxes of suitable sizes shall be used for measuring sand and aggregate. The size of the boxes (internal) shall be 30 cm. x 30 cm. and 38 cm. deep. While measuring the aggregate and sand, the box shall be filled without shaking ramming or hammering. The proportioning of sand shall be on the basis of its dry volume and in case of damp sand, allowances for bulkage shall be made.
- 3.2 **Mixing :**
- 3.2.1 For all work, concrete shall be mixed in a mechanical mixer which along with other accessories shall be kept in first class working condition and maintained throughout the construction. Measured quantity of aggregate, sand and cement required for each batch shall be poured into the drum of the mechanical mixer while it is continuously running. After about half a minute of dry-mixing, measured quantity of water required for each batch of concrete mix shall be added gradually and mixing continued for another one and a half minute. Mixing shall be continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all ingredients have been put into the mixer.
- 3.2.2 When hand mixing is permitted by the Engineer-in-charge for small jobs or for certain other reasons, it shall be done on a smooth watertight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platforms shall be so arranged that no foreign material gets mixed with concrete nor does the mixing water flow out. Cement in required number of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregate, which shall also be spread in a layer of uniform thickness on the mixing platform. Dry coarse and fine aggregate and cement shall then be mixed thoroughly by turning over to get a mixture of uniform colour. Specified quantity of water shall then be added gradually through a rose-can and the mass turned over till a mix of required consistency is obtained. In hand mixing, quantity of cement shall be increased by 10 % above that specified.
- 3.2.3 Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer-in-charge, the first batch of

concrete from the mixture shall contain only 2/3rds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

3.3 **Consistency :** The degree of consistency which shall depend upon the nature of the work and methods of vibration of concrete, shall be determined by regular slump tests in accordance with IS : 1199-1959. The slump of 10 mm. to 25 mm. shall be adopted when vibrators are used and 80 mm. when vibrators are not used.

3.4 **Inspection :**

3.4.1 Contractor shall give the Engineer-in-charge due notice before placing any concrete in the forms, to permit him to inspect and accept the false work and forms as to their strength, alignment and general fitness but such inspection shall not relieve the Contractor of his responsibility for the safety of men, machinery, materials and for results obtained. Immediately before concreting, all forms shall be thoroughly cleaned. Contractor shall proper access with railing for inspection of work.

3.4.2 Centering design and its erection shall be got approved from the Engineer-in-charge. One carpenter with helper shall invariably be kept present throughout the period of concreting. Movement of labour and other persons shall be totally prohibited after reinforcement is laid in position. For access to different parts, suitable mobile platforms shall be provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size / PVC cover shall be cast and tied to the reinforcement. Timber, kapachi or metal pieces shall not be used for this purpose.

3.4.3 All formwork shall be cleaned and made free from standing water, dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer-in-charge has been obtained.

3.4.4 **Formwork for Exposed concrete surface (If indicated):**

3.4.4.1 All vertical member for formwork shall be of steel like acroprops, H frame etc. Care shall be taken to set all formwork in perfect line, level (or in required camber or slope as specified) and plumb. Formwork propping shall be strong, rigid and sturdy. The formwork shall be as per pattern & design shown in drawings. Formwork shall be done accurately and precisely so as to achieve neat, clean and smooth concrete surface, in line, level and plumb. Clinks, twists, offsets, warps, riveting etc. in plates or forms shall not be allowed. Before placing concrete, forms shall be thoroughly cleaned off of all rust, dust and loose materials. **Colorless oil or grease of approved quality /shuttering releasing agent** shall be applied before placing steel. Also the formwork material will be of wood/plywood/steel or any sort of such material, as approved by the Engineer-in-charge, so that all exposed concrete surfaces have uniform colour. After deshuttering, all concrete surface to be properly rendered with hammary paper or stone.

3.4.4.2 For all kind of exposed concrete work only one brand (to be approved by the Engineer-in-charge) of cement shall be used.

3.5 **Transportation and laying :**

3.5.1 The method of transporting and placing concrete shall be as approved. Concrete shall be so transported and placed that no contamination, segregation or loss of its constituent material takes place.

3.5.2 Concreting shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete, which has been in position for more than 30 minutes, unless a proper construction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer. Except where otherwise agreed to by the Engineer in-charge, concrete

shall be deposited in horizontal layers to a compacted depth of not more than 0.45 m. when internal vibrators are used and not exceeding 0.3 m. in all other cases.

- 3.5.3 Unless otherwise agreed to by the Engineer-in-charge, concrete shall not be dropped into place from a height exceeding 2 m. when trunking or chutes are used they shall be kept closed and used in such a way so as to avoid segregation. When concreting has to be resumed on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and covered with a 13 mm. thick layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13-mm. layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgment of any particles or coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150 mm. in thickness and shall be well rammed against old work, particular attention being given to corners and close spots.
- 3.5.4 All concrete shall be compacted to produce a dense homogeneous mass with the assistance of vibrators, unless otherwise, permitted by the Engineer-in-charge for exceptional case, such as concreting under water, where vibrators cannot be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns.
- 3.5.5 Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream upto form an even surface. Compaction shall be completed before the initial setting starts i.e. within 30 minutes of addition of water to dry mixture. During compaction, it shall be observed that needle vibrators are not applied on reinforcement, as it tends to destroy the bond between concrete and reinforcement.
- 3.6 **Curing :** Immediately after placing and compaction, concrete shall be protected from weather, including rain, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. After 24 hours it shall be covered with wet sacking basin or other similar absorbent material approved soon after the initial set and shall be kept **continuously wet for** a period of not less than **14 days** from the date of placement. Masonry work over foundation concrete may be started after 48 hours of its laying but curing of concrete shall be continued for a minimum period of 14 days.
- 3.7 **Sampling and testing of concrete :**
- 3.7.1 Samples from fresh concrete shall be taken as per IS : 1199-1959 and cubes shall be made, cured and tested at 7 days or 28 days as per requirements in accordance with IS : 516-1959. A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested i.e. the sampling should be spread over the entire period of concreting and cover all mixing units. The minimum frequency of sampling of concrete of each grade shall be in accordance with following :

Qty. of concrete in the work		No. of samples	
1-5 m ³ .	1	16-30 m ³ .	3
6-15 m ³ .	2	31-50 m ³ .	4
51 and above	4 + one additional for each additional 50 Cm. or part thereof.		

NOTE : Atleast 1 sample shall be taken from each shift. Ten test specimens shall be made from each sample, 5 for testing at 7 days and the remaining 5 at 28 days. The samples of concrete shall be taken on each day of the concreting as per above frequency. The number of specimens may be suitably increased as deemed necessary by the Engineer-in-charge when procedure of tests given above reveals a poor quality of concrete and in other special cases.

3.7.2 The average strength of the group of cubes cast for each day shall not be less than the specified cube of specific grade of concrete at 28 days. 20% of the cubes cast for each day may have value less than the specified strength provided the lowest value is not less than 85% of the specified strength. If the concrete made in accordance with the proportions given for a particular grade, does not yield the specified strength, such concrete shall be classified as belonging to the appropriate lower grade. Concrete made in accordance with the proportions given for a particular grade shall not, however, be placed in a higher grade on the ground that the test strength are higher than the minimum specified.

3.8 Stripping :

3.8.1 The Engineer-in-charge shall be informed in advance by the Contractor of his intention to strike the formwork. While fixing the time for removal of formwork, due consideration shall be given to local conditions, character of the structure, the weather and other condition that influence the setting of concrete and of the materials used in the mix. In normal circumstances (generally where temperature are above 20°C) and where ordinary concrete is used, forms may be struck after expiry of periods specified in item no. 3.01 for respective item of formwork.

3.8.2 All formwork shall be removed without causing any shock or vibration as would damage the concrete. Before the soffit and struts are removed, the concrete surface shall be gradually exposed, where necessary in order to ascertain that the concrete has sufficiently hardened. Centering shall be gradually and uniformly lowered in such manner as to permit the concrete to take stress due to its own weight uniformly and gradually. Where internal metal ties are permitted, they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm. cover to the finished concrete surface. Where it is intended to re-use the formwork, it shall be cleaned and made good to the satisfaction of the Engineer in-charge. After removal of formwork and shuttering the Engineer-in-charge shall inspect the work and satisfy by random checks that concrete produced is of good quality.

3.8.3 Immediately after the removal of forms, all exposed bolts etc. passing through the cement concrete member and used for shuttering or any other purpose shall be cut inside the cement concrete member to a depth of atleast 25 mm. below the surface of the concrete and the resulting holes be filled by cement mortar. All fine mortar lines caused by form joints, all cavities produced by the removal of form ties and all other holes and depressions honeycomb spots, broken edges or corners and other defects shall be thoroughly cleaned saturated with water and carefully pointed and rendered true with mortar of cement and fine sand. Considerable pressure shall be applied in filling and pointing to ensure thorough filling in all voids. Surfaces which are pointed shall be kept moist for a period of 24 hours. For repairing concrete members, bonding agent shall be used.

3.8.4 If rock pockets/honeycombs in the opinion of Engineer-in-charge are of such an extent or character so as to effect the strength of the structure, materially or to endanger the life of the steel reinforcement, he may declare the concrete defective and require the removal and replacement of the portion of the structure affected.

4.0 Mode of Measurements and Payment :

- 4.1 The consolidated cubical contents of concrete work as specified in item shall be measured. The concrete laid in excess of section shown on drawing or as directed shall not be measured. No deduction shall be made for:
- Ends of dissimilar materials such as joists, beams, posts, girders, rafters, purline trusses, corbels and steps etc. upto 500 cm^2 in section.
 - Openings upto 0.1 m^2 .
 - No extra labour should be paid for forming such openings, voids or pockets.

4.2 The rate includes cost of all materials, labour, tools and plant required for mixing, placing in position, vibrating and compacting, finishing as directed, curing and all other incidental expenses for producing concrete of specified strength, for all floors, at any height and level, in any position. The rate excludes the cost of formwork.

4.3 The rate shall be for an unit of one m^3 .

2.06.b Providing and laying CC 1:2:4 (1 cement : 2 coarse sand : 4 crushed stone aggregate 20 mm. nominal size) and curing etc. complete, for all structures and mass concrete, including cost of formwork, for all floors at any height and levels.

The relevant specifications of item no. 2.06.a shall be followed except that the rate shall include the cost of formwork.

2.07.a.1 Providing and laying CC 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) and curing etc. complete for floor concrete.

The relevant specifications of item no. 2.06.a shall be followed except that the graded stone aggregate shall be 20 mm. size and the concrete work shall be for flooring concrete. The rate excludes the cost of formwork.

2.07.b.1 Providing and laying CC 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm. nominal size) and curing etc. complete, for floor concrete.

The relevant specifications of item no. 2.06.a shall be followed except that the proportion of concrete shall be 1:3:6, the graded stone aggregate shall be 20 mm. size and the concrete work shall be for flooring concrete. The work of flooring concrete shall be paid in this item in m^3 .

2.07.c.1 Providing and laying CC 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 20 mm. nominal size) and curing etc. complete, for floor concrete.

The relevant specifications of item no. 2.06.a shall be followed except that the proportion of concrete shall be 1:4:8, the graded stone aggregate shall be 20 mm. size and the concrete work shall be for flooring concrete. The work of flooring concrete shall be paid in this item in m^3 .

2.08.a Providing and laying CC 1:2:4 (1 cement : 2 coarse and : 4 graded stone aggregate 20 mm. nominal size) and curing etc. complete, excluding cost of formwork and reinforcement for reinforced concrete work, for all floors, at all heights, in any position, for all structures and mass concrete.

1.0 Materials & Workmanship :

- 1.1 The relevant specification of item no. 2.06.a shall be followed except that the work shall be carried out for reinforced concrete work, as specified in the item. In addition, the following stipulations shall

be followed for:

The bars shall be kept in position by the following methods :

(I) In case of beam and slab construction, sufficient number of precast cover blocks/ PVC cover blocks in cement mortar 1:2 (1 cement : 2 coarse sand) about 4 cm. x 4 cm. section and of thickness equal to the specified cover shall be placed between the bars and shuttering as to secure and maintain the requisite cover of concrete over the reinforcement.

In case of cantilevered or doubly reinforced beams/slabs, the top main reinforcing bars shall be held in position by introducing chair of appropriate bar spacers or supports bar at 1.0 to 1.2 m. centers.

(II) In case of columns and walls, the vertical bars shall be kept in position by means of timber/steel templates with slots accurately cut in them. The templates shall be removed after concreting has been done below it. The bars may also be suitably tied by means of annealed steel wires to the shuttering to maintain their position during concreting.

- 1.2 All bars projecting from pillars, columns beams, slabs, etc, to which other bars and concrete are to be attached or bounded to later on, shall be protected with a coat of thin neat cement grout, if the bars are not likely to be incorporated with succeeding mass of concrete within the following 10 days. This coat of thin neat cement shall be removed before concreting. All dowels to be kept in position by tying stirrups or a bar.

2.0 Mode of Measurements and Payment :

- 2.1 Relevant specification of item no. 2.06.a shall be followed. The rate shall exclude cost of formwork and reinforcement.
- 2.2 The volume occupied by reinforcement shall not be deducted from RCC work.
- 2.3 The rate shall be for an unit of one m³.

2.08.b Providing and laying CC 1:2:4 (1 cement : 2 coarse and : 4 graded stone aggregate 20 mm. nominal size) and curing etc. complete, including cost of formwork and excluding cost of reinforcement for reinforced concrete work, for all floors at all heights and levels in any position, for all structures and mass concrete.

The relevant specifications of item no. 2.08.a shall be followed except that the rate includes the cost of formwork only.

2.08.c Extra for exposed concrete surfaces to mass concrete, in desired patterns, shapes and sizes, including neat cleaning the exposed concrete surface as directed by the Engineer-in-charge (Same kind of shuttering material only should be used for standard and residual sizes).

The relevant specifications of item no. 3.03.a and 3.03.b shall be followed same for shuttering materials to be used for exposed finished surface.

The exposed finished surface shall be rendered and cleaned neatly. The rate shall be paid for bringing exposed surface to any concrete work. The work of concreting shall be paid under respective items. **The surface which shall be kept exposed and got rendered shall be paid under this item**

The rate shall be for an unit of one m².

2.08.d Providing and laying ordinary CC 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate

20 mm. nominal size) for exposed RCC lintels, chhajjas, pattas, sill slabs, corbellings, cornices, copings and fins (only external face of the member will have expose RCC as per detailed drawing) at all floors, including curing etc. complete, including the cost of formwork but excluding the cost of reinforcement etc. complete.

1.0 Materials & Workmanship :

- 1.1 The relevant specifications of item no. 2.08.c shall be followed except that exposed concrete work shall be for lintels, chhajjas, pattas, sill slabs, corbellings, cornices, and fins. Relevant specifications of item no. 3.03.a and 3.03.b shall be followed for formwork and centering work for exposed concrete work.

2.0 Mode of Measurements and Payment :

- 2.1 The relevant specifications of item no. 2.08.a shall be followed except that the item includes the cost of formwork and centering work for rendering exposed surfaces to the above specified concrete works. The rate excludes the cost of reinforcement.

- 2.2 The rate shall be for an unit of one m³.

2.09.a Providing and laying ordinary CC 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm. nominal size) for RCC pre-cast lintels, sill slabs, chhajjas, corbelling, pattas, copings, cornices, steps for spirals, fins etc., for all floors, including curing, etc. complete, including the cost of formwork but excluding cost of reinforcement etc. complete. The rate shall also include for erecting and fixing the pieces in position with necessary equipment and materials. The weight of any precast member shall not exceed 300 Kg. per piece.

1.0 Materials :

- 1.1 The relevant specifications of item no. 2.08.a shall be followed except that work shall be carried out for precast reinforced concrete as specified in the item.
- 1.2 All precast members shall be cast on site and not obtained from any manufacturing unit. Sufficient curing shall be done before placement of the same. Usually ordinary CC 1:2:4 shall be used for casting.
- 1.3 The method of transporting and placing the precast members shall be as approved by the Engineer-in-charge. Members shall be so transported that no breakage or undue stresses are induced in them.
- 1.4 All members shall have a key provided on both the faces i.e. top and bottom surfaces, of adequate size so as to fill the same with concrete while laying. The function of this key is to avoid the leakage through the joint between the precast member and the member on which it is laid.
- 1.5 While fixing the precast member, the key provided in the member shall be filled with ordinary cement concrete made of same proportion as that of the member except that grit shall be used instead of stone aggregate. Except for the key, cement mortar of proportion 1:1 (1 part cement : 1 part sand) shall be spread over the surface on which the member is to be laid. The mortar shall be of dry consistency as is possible to use. The member and the surface shall be thoroughly cleaned before placement and both shall be kept moist for a sufficient period after placement.

2.0 Mode of Measurements and Payment :

- 2.1 Relevant specification of item no. 2.06.a shall be followed. The rate shall include cost of formwork but exclude the cost of reinforcement.
- 2.2 The volume occupied by reinforcement shall not be deducted from RCC work.
- 2.3 The rate shall be for an unit of one m³.

2.09.b Providing and laying ordinary CC 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregates 20 mm. nominal size) for exposed precast RCC lintels, sill slabs, chhajjas, corbelling, pattas, copings, cornices, steps for spirals, fins etc., for all floors, including curing, cost of formwork but excluding the cost of reinforcement etc. complete, including lifting and laying in position. The weight of any precast member shall not exceed 300 Kg. per piece.

The relevant specification of item 2.09.a shall be followed except that exposed precast work is to be carried out. For rendering exposed surfaces, while casting, shuttering shall be used as per the relevant specifications of item no. 3.03.a and 3.03.b.

2.09.c Providing precast CC louvers with wire mesh jali (7/28 gauge), fixing with batten Patti on teak wood etc. complete.

- a) The precast CC louvers shall be of size as specified in detailed drawing. The louvers shall be casted with wire mesh jali using (7/28 gauge) wires. The spacing of louvers shall be as per direction and drawings. For casting and placing the louvers, relevant specifications of item no. 2.09.a shall be followed.
- b) The louvers shall be fixed with teakwood frame at required angle by using teakwood battens. The relevant specification item no. 5.13.a shall be followed except the precast concrete louver shall be used instead of 6 mm. thick wire glass.

The rate shall be for an unit of one m².

2.09.d.1 Providing and fixing precast CC jali or grill of 100 mm. thick CC 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm. nominal size) reinforced with 6 mm. dia. mild steel wire, including roughening, cleaning fixing and finishing in cement mortar 1:3 and curing etc. complete, as directed and as per approved drawings.

1.0 Materials : Water shall conform to M-1. Cement to M-3. Sand to M-6. Mortar to M-11. Aggregate to M-12. Mild steel wires to M-21. Shuttering to M-26.

2.0 Workmanship :

- 2.1 Precast jali shall be of CC 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm. nominal size) reinforced with 6 mm. dia mild steel wire unless otherwise specified.
- 2.2 The thickness of jali shall be as specified in the item. The work shall be of precast nature and relevant specifications of item no. 2.09.a shall be followed. The design of precast concrete jali shall be as per approved detail drawing.
- 2.3 The jali shall be set in position true to line and level before the jambs sills and soffits of the opening are plastered. It shall then be properly cemented with cement mortar 1:3: (1 cement : 3 sand) and rechecked for levels. Finally the jambs, sills and soffits shall be plastered gripping the jali uniformly on all sides.

3.0 Mode of Measurements and Payment :

- 3.1 The item shall be measured in m² of the visible area of the work done. It includes the casting and placement of the jali.
- 3.2 The rate shall be for an unit of one m².

2.09.d.2 Providing pre-cast concrete jali or grill of 75 mm. thick CC 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 6 mm. nominal size mild steel wire, including roughening, cleaning, fixing and finishing in C.M. 1:3 and curing etc. complete, as directed and as per approved drawings.

The relevant specifications of item no. 2.09.d.1 shall be followed same except that the thickness of grill shall be 75 mm. instead of 100 mm.

2.09.d.3 Providing pre-cast concrete jali or grill of 50 mm. thick CC 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 6 mm. nominal size mild steel wire, including roughening, cleaning, fixing and finishing in C.M. 1:3 and curing etc. complete, as directed and as per approved drawings.

The relevant specifications of item no. 2.09.d.1 shall be followed same except that the thickness of grill shall be 50 mm. instead of 100 mm.

2.09.d.4 Providing pre-cast concrete jali or grill of 40 mm. thick CC 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 6 mm. nominal size mild steel wire, including roughening, cleaning, fixing and finishing in C.M. 1:3 and curing etc. complete, as directed and as per approved drawings.

The relevant specifications of item no. 2.09.d.1 shall be followed same except that the thickness of grill shall be 40 mm. instead of 100 mm.

2.09.d.5 Providing pre-cast concrete jali or grill of 25 mm. thick CC 1:2:4 mix (1 cement : 2 sand : 4 graded stone aggregate 6 mm. nominal size mild steel wire, including roughening, cleaning, fixing and finishing in C.M. 1:3 and curing etc. complete, as directed and as per approved drawings.

The relevant specifications of item no. 2.09.d.1 shall be followed same except that the thickness of grill shall be 25 mm. instead of 100 mm.

2.10.a. Providing and fabricating mild steel reinforcement for RCC work, including bending, binding and placing in position etc. complete, for all floors.

1.0 Materials : Mild steel bars shall conform to M-18. Mild steel binding wires to M-21.

2.0 Workmanship :

- 2.1 The work shall consist of furnishing and placing reinforcement to the shape and dimensions, as shown on the drawings or as directed.
- 2.2 Steel shall be clean and free from rust and loose mill scale, at the time of fixing in position and subsequent concreting.

- 2.3 Reinforcing steel shall conform accurately to the dimensions given in the bar bending schedules shown on relevant drawings. Bars shall be bent cold to specified shape and dimensions or as directed using a proper bar bender, operated by hand or power to attain proper radius of bends. Bars shall not be bent or straightened in a manner that will injure the material. Bars bent during transportation or handling shall be straightened before being used on the work. They shall not be heated to facilitate bending. Unless otherwise specified, a U type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bend shall not be less than twice the diameter of the round bar and the length of straight part of the bar beyond the end of the curve shall be atleast 4 times the diameter of the round bar. In case of bars which are not round and incase of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any splitting of the concrete.
- 2.4 All the reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm. in size and by using stay blocks or metal chair spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals. Bars shall not be allowed to sag between supports nor displaced during concreting or any other operations of the work. All devices used for positioning shall be of non-corrodible material. Wooden and metal supports shall not extend to the surface of concrete, except where shown on drawing. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not allowed. Pieces of broken stone or brick and wooden blocks shall not be used. Layers of bars shall be separated by spacer bars, Precast mortar blocks or other approved devices. Reinforcement after being placed in position shall be maintained in a clean condition until completely embedded in concrete. Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement from corrosion, concrete cover shall be provided as indicated on drawing. All the bars projecting from concrete and to which other bars are to be spliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout.
- 2.5 Bars crossing each other where required shall be secured by binding wires (annealed) of size not less than 1 mm., in such manner than they do not slip over each other at the time of fixing and concreting.
- 2.6 As far as possible, bars of full length shall be used. In case this is not possible, overlapping of bars shall be done as directed. Where directed, where practicable, overlapping bars shall not touch each other, but be kept apart by 25 mm. or 1.25 times the maximum size of the coarse aggregate, whichever is greater by concrete between them. Where not feasible, overlapping bars shall be bound with annealed wires not less than 1 mm. thick, twisted tight. The overlaps shall be staggered for different bars and located at points along the span where neither shear nor bending movement is maximum.
- 2.7 Whenever indicated on the drawings or desired by the Engineer-in-charge, bars shall be joined by couplings which shall have a cross section sufficient to transmit the full stresses of bars. The ends of the bars that are joined by coupling shall be upset for sufficient length so that the effective cross sectional the base of threads is not less than normal cross section of the bar. Threads shall be standard threads. Steel coupling shall conform to IS : 226.
- 2.8 When permitted or specified on the drawings, joints of reinforcement bars shall be butt-welded so as to transmit their full stresses. Welded joints shall preferably be located at points when steel will not be subject to more than 75 % of the maximum permissible stresses and welds so staggered that any one section not more than 20 % of the rods are welded. Only electric are welding using a process which excludes air from the molten metal and conforms to any or all other special provisions for the work shall be accepted. Suitable means shall be provided for holding bars securely in position during welding. It shall be ensured that no voids are left in welding and when welding is done in 2 or 3

stages, previous surface shall be cleaned properly. Ends of the bars shall be cleaned of all loose scale, rust, grease paint and other foreign matter before welding. Only competent welders shall be employed on the work. The M.S electrodes used for welding shall conform to IS : 814. Welded pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number and frequency of test shall be as directed.

3.0 Mode of Measurements and Payment :

- 3.1 Reinforcement shall be measured in length including overlaps, separately for different diameters as actually used in the work. Where welding or coupling is resorted to in place of lap joints, such joints shall be measured for payment as equivalent length of overlap as per design requirement. From the length so measured, the weight of reinforcement shall be calculated in tones on the same basis of as per M-18. Length shall include hooks at the ends. The wastage and annealed steel wire for binding shall not be measured and the cost of these items shall be needed to be included in the rate for reinforcement.
- 3.2 The rate for reinforcement includes cost of mild steel binding wires and its carting. Cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices like chairs, pins etc. for keeping reinforcement in approved position, cost of joining as per approved method and all wastage, covers and spacer bars.
- 3.3 The rate shall be for an unit of one Kg.

2.10.b. Labour charges for fabricating only, mild steel reinforcement for RCC work, including bending, binding and placing in position etc. complete, for all floors.

The relevant specifications of item no. 2.10.a shall be followed except that the rate shall be for only cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices like chairs, covers, pins etc. for keeping reinforcement in approved position, cost of joining as per approved method. The cost of reinforcement shall not be included. This item will be operable when the steel is supplied by the Client.

2.10.c. Providing and fabricating High yield deform steel bars Fe-415 reinforcement for RCC work, including bending, binding and placing in position etc. complete, for all floors.

- 1.0 **Materials :** Cold twisted steel bars (high yield strength steel deformed bars) shall conform to M-19A. Mild steel binding wires to M-21.
- 2.0 **Workmanship :** The specifications of item no. 2.10.a shall be followed except that the cold twisted steel bars shall be used with or without hooks at the ends. Deformed bars without hooks shall, however, comply with relevant anchorage requirements.
- 3.0 **Mode of Measurements and Payment :**
- 3.1 The relevant specifications of item 2.10.a shall be followed.
- 3.2 The rate shall be for an unit of one Kg.

2.10.d. Labour charges for fabricating only, High yield deform steel bars Fe-415 reinforcement for RCC work, including bending, binding and placing in position etc. complete, for all floors.

The relevant specifications of item no. 2.10.c shall be followed except that the rate shall be for only cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices like chairs, covers, pins etc. for keeping reinforcement in approved position, cost of joining as per approved method. The cost of reinforcement shall not be included. This item will be operable when the steel is supplied by the Client.

2.10.e. Providing and fabricating High yield deform steel bars Fe-500 reinforcement for RCC work, including bending, binding and placing in position etc. complete, for all floors.

1.0 Materials : Cold twisted steel bars (high yield strength steel deformed bars) shall conform to M-19A. Mild steel binding wires to M-21.

2.0 Workmanship : The specifications of item no. 2.10.a shall be followed except that the cold twisted steel bars shall be used with or without hooks at the ends. Deformed bars without hooks shall, however, comply with relevant anchorage requirements.

3.0 Mode of Measurements and Payment :

3.1 The relevant specifications of item 2.10.a shall be followed. The rate shall be for an unit of one Kg.

2.10.f. Labour charges for fabricating only, High yield deform steel bars Fe-500 reinforcement for RCC work, including bending, binding and placing in position etc. complete for all floors.

The relevant specifications of item no. 2.10.c shall be followed except that the rate shall be for only cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices like chairs, covers, pins etc. for keeping reinforcement in approved position, cost of joining as per approved method. The cost of reinforcement shall not be included. This item will be operable when the steel is supplied by the Client.

E01 Supplying, fabricating and placing / fixing in position TMT reinforcement bars FE 500 D of Tata / SAIL / VIZAG (RINL) confirming to latest IS-1786 reinforcement for RCC structures / items as per design & drawings including transporting steel to the work site, handling, decoiling, cutting, bending, cranking, fabricating to required shape, placing in position and tying / binding the system with MS 1.00 mm wire with two strands wires, welding (if necessary), keeping it in position during concreting by means of stays, blocks, ties, spacers, chairs, hangars, etc. for all floors / all levels / all heights complete as per drawings, specifications. Measurement will be paid on the length and converted into weight by using standard co-efficient (rolling margin's and wastage shall not be paid). The quoted rate should be inclusive of the cost of Binding wire, and the same will NOT be measured and paid separately.

1.0 Materials : TMT Bar shall conform to M-19B. Mild steel binding wires to M-21.

2.0 Workmanship : The specifications of item no. 2.10.a shall be followed except that the TMT Bars shall be used instead of cold twisted steel bars.

3.0 Mode of Measurements and Payment :

3.1 The relevant specifications of item 2.10.a shall be followed. The rate shall be for an unit of one Kg.

2.10.g. Labour charges for fabricating only, TMT bars Fe-415 reinforcement for RCC work, including bending, binding and placing in position etc. complete for all floors.

The relevant specifications of item no. 2.10.c shall be followed except that the rate shall be for only cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices like chairs, covers, pins etc. for keeping reinforcement in approved position, cost of joining as per approved method. The cost of reinforcement shall not be included. This item will be operable when the steel is supplied by the Client.

2.10.h. Providing and fabricating TMT bars Fe-500 reinforcement for RCC work, including bending, binding and placing in position etc. complete, for all floors.

1.0 Materials : TMT bars shall conform to M-19B. Mild steel binding wires to M-21.

2.0 Workmanship : The specifications of item no. 2.10.a shall be followed except that the TMT - Fe-500 Bars shall be used instead of cold twisted steel bars.

3.0 Mode of Measurements and Payment :

3.1 The relevant specifications of item 2.10.a shall be followed. The rate shall be for an unit of one Kg.

2.10.i. Labour charges for fabricating only, TMT bars Fe-500 reinforcement for RCC work, including bending, binding and placing in position etc. complete for all floors.

The relevant specifications of item no. 2.10.c shall be followed except that the rate shall be for only cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices like chairs, covers, pins etc. for keeping reinforcement in approved position, cost of joining as per approved method. The cost of reinforcement shall not be included. This item will be operable when the steel is supplied by the Client.

2.10.j. Providing and fabricating CRS reinforcement Fe 415 /Fe 500 for RCC work, including bending, binding and placing in position etc. complete, for all floors.

1.0 Materials : CRS bar shall conform to M-19C. Mild steel binding wires to M-21.

2.0 Workmanship : The specifications of item no. 2.10.a shall be followed except that the TMT Bars shall be used instead of cold twisted steel bars.

3.0 Mode of Measurements and Payment :

3.1 The relevant specifications of item 2.10.a shall be followed. The rate shall be for an unit of one Kg.

2.10.k. Labour charges for fabricating only, CRS reinforcement for RCC work, including bending, binding and placing in position etc. complete for all floors.

The relevant specifications of item no. 2.10.c shall be followed except that the rate shall be for only cutting, bending, placing, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices like chairs, covers, pins etc. for keeping reinforcement in approved position, cost of joining as per approved method. The cost of reinforcement shall not be included.

This item will be operable when the steel is supplied by the Client.

2.11.a. Providing and laying controlled CC M-150 and curing, etc. complete, excluding the cost of formwork & reinforcement for reinforced concrete work, for all floors, at all heights and levels, in any position, for all structures and mass concrete.

1.0 Materials : Water shall conform to M-1. Cement to M-3. Sand to M-6. Grit to M-8. Coarse aggregate M-13.

2.0 General :

2.1 The relevant specifications of item no. 2.06.a and 2.08.a of ordinary concrete shall be followed except that the concrete mix shall be designed from preliminary tests the proportioning of cement and aggregates shall be done by weight and necessary precautions shall be taken in the production to ensure that the required work cube strength is attained and maintained. The controlled concrete shall be in grades of M-100, M-150, M-200, M-250, M-300, M-350 & M-400, with prefix controlled added to it. The letter "M" refers to mix and numbers specify 28 days works cube compressive strength of 150 mm. cubes of the mix expressed in Kg/cm².

2.2 The proportion of cement, sand and coarse aggregates shall be determined by weight. The **computerised** weight batch machine shall be used for maintaining proper control over the proportion of aggregates as per mix design. The strength requirements of different grades of concrete shall be as under :

Grade of Concrete **Compressive strength of 15 cm. cubes in Kg/cm²**
28 days conducted in accordance with IS : 516-1959.

	Preliminary test	Work test min.
M-15	200	150
M-20	260	200
M-25	320	250
M-30	380	300
M-35	440	350
M-40	500	400

In all cases, the 28 days compressive strength specified in above table be the criteria for acceptance or rejection of the concrete.

2.3 Where the strength of a concrete mix as indicated by tests, lies in between the strength of any two grades specified in the above table, such concrete shall be classified in for all purposes as concrete belonging to the lower of the two grades between which its strength lies.

2.4 To secure good exposed and normal concrete surface necessary care in formwork and concrete shall be taken. For any sub-standard results of exposed and normal surface concrete form-work and steel shall be treated as one item even though they are two separate items in bills of quantities.

2.5 The Contractor shall take necessary care to avoid sand streaks, air holes, honey combining etc., on finished concrete surface.

3.0 Workmanship :

- 3.1 The proportions for ingredients chosen shall be such that concrete has adequate workability for conditions prevailing on the work in question and can be properly compacted with means available except where it can be shown to the satisfaction of the Engineer-in-charge that the supply of properly graded aggregate of uniform quality can be maintained till the completion of work. Grading of aggregate shall be controlled by obtaining the coarse aggregate, in different sizes and blending them in the right proportions as required. Aggregate of different sizes shall be stocked in separate stock piles. The required quantity of material shall be stock piled several hours, preferably a day before use. The grading of coarse and fine aggregate shall be checked as frequently as possible, the frequency for a given job being determined by the Engineer-in-charge to ensure that the suppliers are maintaining the uniform grading, as approved for samples used in the preliminary tests.
- 3.2 In proportioning concrete, the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the maker's weight per bag a reasonable number of bags shall be weighed separately, to check the net weight, where cement is weighed from bulk stocks at site and not by bags. It shall be weighed separately from the aggregates. Water shall either be measured by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in clean and serviceable condition. Their accuracy shall be periodically checked and calibrated in standard laboratory.
- 3.3 It is most important to keep the specified water cement ratio constant and at its correct value. To this end, moisture content in both fine and coarse aggregates shall be determined by the Engineer-in-charge, according to the weather conditions. The amount of mixing water shall then be adjusted to compensate for variations in the moisture content. For the determination of moisture content in the aggregates, IS : 2386 (Part III) shall be referred to. Suitable adjustments shall also be made in the weights of aggregates due to variation in their moisture content.

3.4 The minimum cement content for the various mixes shall be as under :

<u>MIX</u>	<u>MINIMUM CEMENT/Cum.</u>	<u>MIX</u>	<u>MINIMUM</u>
M-15	285 Kg.	M-25	360 Kg.
M-17	300 Kg.	M-30	400 Kg.
M-20	325 Kg.	M-35	430 Kg.

- 3.5 All RCC works shall be carried out as per the detailed drawings and direction of Engineer-in-charge.

4.0 Mode of Measurements and Payment :

- 4.1 The relevant specifications item no. 2.06.a shall be followed except that the controlled concrete RCC work for work as specified in item shall be measured under this item. The rate excludes cost of formwork and reinforcement and is for any cross sectional area of the members specified in the item.
- 4.2 The rate shall be for an unit of one m³.

2.11.b. Providing and laying controlled CC M-15 and curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work, for all floors, at all heights and levels, in any position, for all structures and mass concrete.

The relevant specifications of item no. 2.11.a shall be followed except that the rate includes the cost of formwork only.

2.11.c. Extra for exposed concrete surface in desired patterns and sizes, including neat cleaning the exposed concrete surface, as directed by the Engineer-in-charge (Same kind of shuttering material only should be used for standard and residual sizes).

The relevant specifications of item no. 2.08.c shall be followed same for rendering exposed finished surface to all structures in controlled CC M-15.

The exposed finished surface shall be cleaned neatly. The rate shall be paid for bringing exposed surface to any concrete work. The work of concreting shall be paid under respective items.

The rate shall be for an unit of one m².

2.11.d. Providing and laying controlled CC M-15 for exposed RCC lintels, chhajjas, pattas, sill slabs, corbellings, cornices, copings and fins (only external face of the lintel will have expose RCC as per detailed drawing), at all floors, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, etc. complete.

1.0 Materials & Workmanship : The relevant specifications of item no. 2.08.c shall be followed except that exposed concrete work shall be carried out for lintels, chhajjas, pattas, sill slabs, corbellings, cornices, and fins, using controlled CC M-15. Relevant specifications of item no. 3.03.a and 3.03.b shall be followed for formwork and centering work for exposed concrete work.

2.0 Mode of Measurements and Payment :

2.1 The relevant specifications of item No. 2.06.a shall be followed except that the item includes the cost of formwork and centering work for rendering exposed surfaces to the above specified concrete works. The rate does not include the cost of reinforcement.

2.2 The rate shall be for an unit of one m³.

2.12.a. Providing and laying controlled CC M-15 with curing, etc. complete for RCC work, of any cross sectional area, excluding the cost of formwork and of reinforcement, in
a) Plinth beams, b) Column footings and columns upto plinth level, c) Copings

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall exclude the cost of formwork and reinforcement.

2.12.b. Providing and laying controlled CC M-15 with curing, etc. complete for RCC work, of any cross sectional area, including the cost of formwork but excluding the cost of reinforcement, in
i) Plinth beams,
ii) Column footings and columns upto plinth level
iii) Copings

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall include the cost of formwork and not of reinforcement.

2.13.a.1 Providing and laying controlled CC M-15, including curing, etc. complete, excluding the cost

of formwork and reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both.

2.13.a.2 Providing and laying controlled CC M-15, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.13.b.1 Providing and laying controlled CC M-15, including curing, etc. complete, excluding the cost of formwork and reinforcement for RCC work in columns of any cross sectional area, in foundation upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall exclude the cost of formwork and reinforcement, both.

2.13.b.2 Providing and laying controlled CC M-15, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC work in columns of any cross sectional area, in foundation upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.13.c.1 Providing and laying controlled CC M-15, including curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall exclude the cost of formwork and reinforcement, both.

2.13.c.2 Providing and laying controlled CC M-15, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.13.d.1 - do - as per 2.13.c.1 but over and above extra for providing and laying controlled CC M-15, including curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, for each floor level above ground floor level. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.13.d.2 - do - as per 2.13.d.1 but for providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for columns of any given cross sectional area, for each floor above ground floor. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor above plus the extra for each floor and so on).

2.14.a.1 Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams etc. of any given cross section, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both.

2.14.a.2 Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams etc. of any given cross section, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.14.b.1 Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for ground floor.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams etc. of any given cross section, for ground floor. The rate shall exclude the cost of formwork and reinforcement, both.

2.14.b.2 Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for ground floor.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams etc. of any given cross section, for ground floor. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.14.c.1 - do - as per 2.14.b.1 but over and above extra for providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams etc. of any given cross section, for each floor level above ground floor. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.14.c.2 - do - as per 2.14.c.1 but for providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams etc. of any given cross section, for each floor above ground floor. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.15.a.1 Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc. of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.15.a.2 Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc. of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.15.b.1 Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, in foundation (raft slab) upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, in foundation upto plinth level. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.15.b.2 Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, in foundation upto plinth.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, in foundation upto plinth. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.15.c.1 Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, for ground floor.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, for ground floor. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.15.c.2 Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, for ground floor.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, for ground floor. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.15.d.1 - do - as per 2.15.c.1 but over and above extra for providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, for each floor level above ground floor level. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.15.d.2 - do - as per 2.15.d.1 but for providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete shall be for slabs, etc. of any given thickness, for each floor level above ground floor. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each

floor and so on).

- 2.15.e.1 Providing and laying controlled CC M-15 and curing, etc. complete excluding the cost of formwork and reinforcement, for RCC work in sloping slab of any thickness, for all floors, etc. complete, as per approved drawings.**

The relevant specification of item no. 2.15.a.1 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position.

- 2.15.e.2 Providing and laying controlled CC M-15 and curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in sloping slab of any thickness, for all floors, etc. complete, as per approved drawings.**

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position.

- 2.15.f.1 Providing and laying controlled CC M-15 and curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in dome and vaults, of any thickness, etc. complete, as per approved drawings, for all floors.**

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position.

- 2.15.f.2 Providing and laying controlled CC M-15 with curing etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in dome and vaults, of any thickness, etc. complete, as per approved drawings, for all floors.**

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position.

- 2.16.a Providing and laying controlled CC M-15, for RCC Arches with curing, etc. complete, as per approved drawings, excluding the cost of formwork and reinforcement, for all floors, etc. complete.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for RCC Arches. The rate is exclusive of formwork and reinforcement, for all floors, at any height and level, in any position.

- 2.16.b Providing and laying controlled CC M-15, for RCC Arches with curing, etc. complete, as per approved drawings, including the cost of formwork but excluding the cost of reinforcement, for all floors, etc. complete.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for RCC Arches. The rate is inclusive of formwork and exclusive of reinforcement, for all floors, at any height and level, in any position.

- 2.17.a Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in

situ concrete staircases only. The rate is exclusive of formwork and reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.17.b Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in situ concrete staircases only. The rate is inclusive of formwork and exclusive of reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.18.a Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls like pardis, parapets, dividers, partitions etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC walls, fins etc., for all floors, at any height and level, in any position. The rate is exclusive of formwork and reinforcement.

- 2.18.b Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC works in vertical walls like pardis, parapets, dividers, partitions etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC walls, fins etc., for all floors, at any height and level, in any position. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.18.c Providing and laying controlled CC M-15 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls (Retaining walls) for foundations and upto plinth level, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level. The rate is exclusive of formwork and reinforcement.

- 2.18.d Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC works in vertical walls (Retaining walls) for foundations and upto plinth level, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.19.a Providing and laying controlled CC M-15 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 300 Kg. per piece.**

The relevant specification of item no. 2.11.a shall be followed same for concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant

specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipment required, fixing in position in cement mortar, etc. complete.

- 2.19.b Providing and laying controlled CC M-15 and curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast spiral staircase steps, including erecting and keeping in position with necessary scaffolding. The rate shall also includes for fixing and finishing required for fixing the steps, etc. complete, as per approved drawing.**

The relevant specification of item no. 2.11.a shall be followed same for concrete work except that the work shall be for pre-cast concrete steps. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipment required, fixing in position in cement mortar, etc. complete.

- 2.19.c Providing and laying controlled CC M-15 having exposed surfaces, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, sides of spiral staircase steps, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 300 Kg. per piece.**

The relevant specification of item no. 2.11.a shall be followed same for concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipment required, fixing in position in cement mortar, etc. complete. The rate includes cost of providing necessary formwork, staging required cost of all materials, labour, etc. required for exposed surface. The relevant specification of item no. 3.03.a and 3.03.b shall be followed for formwork. The work shall be carried out to the entire satisfaction of Engineer-in-charge, as per drawings and instructions.

The work shall be measured in m³.

- 2.19.d Providing and laying in position REINFORCED CEMENT CONCRETE (RCC) for ALL WORKS such as Slabs / Beams / Columns / Foundations/ Flooring /Coping/Lintel, etc for all RCC works for foudation & plinth and Superstructure above plinth level for all floors / at all levels / at all heights with: RCC 1:1.5:3 Mix ratio (Compressive strength should not be less than 20 N/ Sqmm) is specified is for (cement : coarse sand : graded stone aggregate) or Design Mix M20 (without using plastisizers) or Ready Mix Concrete M20 (the source of RMC should be approved by EIC) machine batched & machine vibrated using graded hard stone aggregate of 20mm nominal size obtained from approved quarry including mechanical mixing, Transporting (if any), vibrating, compacting, finishing, curing, etc., complete all as per specifications. Note The formwork and steel reinforcement shall be measured and paid under respective item of this tender. The quotred rate should be inclusive of labour for keeping embedments if any, wherever required while casting. Only coarse river sand shall be used in all RCC works all as per specifications.**

- 1.0 Materials & Workmanship :** The relevant specifications of item no. 2.11.a shall be followed except that the grading of concrete shall be controlled concrete M-20 grade, for the work as specified in item.

- 2.0 Mode of Measurements and Payment :**

2.1 The relevant specifications of item no. 2.11.a shall be followed and rate excludes the cost of formwork and is for any cross sectional area of the members, at any floor, height, level and in any position.

2.2 The rate shall be for an unit of one m³.

2.20.b Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work, for all floors, at all heights and levels, in any position, for all structures and mass concrete.

The relevant specifications of item no. 2.11.a shall be followed except that the rate includes the cost of formwork only and the grade of concrete shall be M-20 instead of M-15.

2.20.c Extra for exposed concrete surface, in desired patterns and sizes, including neat cleaning the exposed concrete surface, as directed by the Engineer-in-charge (Same kind of shuttering material only should be used for standard and residual sizes).

The relevant specifications of item no. 2.08.c shall be followed same for rendering exposed finished surface to all structures in controlled CC M-20.

The exposed finished surface shall be cleaned neatly. The rate shall be paid for bringing exposed surface to any concrete work. The work of concreting shall be paid under respective items. The rate shall be for an unit of one m².

2.20.d Providing and laying controlled CC M-20, for exposed R.C.C lintels, chhajjas, pattas, sill slabs, corbellings, cornices, copings and fins (only external face of the lintel will have expose RCC as per detailed drawing), at all floors, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, etc. complete.

1.0 Materials & Workmanship :

1.1 The relevant specifications of item no. 2.08.c shall be followed except that exposed concrete work shall be for lintels, chhajjas, pattas, sill slabs, corbellings, cornices, and fins, using controlled CC M-20. Relevant specifications of item no. 3.03.a and 3.03.b shall be followed for formwork and centering work for exposed concrete work.

2.0 Mode of Measurements and Payment :

2.1 The relevant specifications of item no. 2.06.a shall be followed except that the item includes the cost of formwork and centering work, for rendering exposed surfaces to the above specified concrete works. The rate does not include the cost of reinforcement.

2.2 The rate shall be for an unit of one m³.

**2.21.a Providing and laying controlled CC M-20 with curing, etc. complete, for RCC work, of any cross sectional area, excluding the cost of formwork and of reinforcement, in
a) Plinth beams, b) Column footings and columns upto plinth level, c) Copings**

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall exclude the cost of formwork and reinforcement. The grade of controlled concrete shall be M-20 instead of M-15.

2.21.b Providing and laying controlled CC M-20 with curing, etc. complete, for RCC work, of any

cross sectional area, including the cost of formwork but excluding the cost of reinforcement, in a) Plinth beams, b) Column footings and columns upto plinth level, c) Copings

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall include the cost of formwork and not of reinforcement. The grade of controlled concrete shall be M-20 instead of M-15.

2.22.a.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both.

2.22.a.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.22.b.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, in foundation upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall exclude the cost of formwork and reinforcement, both.

2.22.b.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, in foundation upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.22.c.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall exclude the cost of formwork and reinforcement, both.

2.22.c.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.22.d.1 - do - as per 2.22.c.1 but over and above extra for providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, for each floor level above ground floor level. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.22.d.2 - do - as per 2.22.d.1 but for providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for columns of any given cross sectional area, for each floor level above ground floor level. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor above plus the extra for each floor and so on).

2.23.a.1 Providing and laying controlled CC M-20 with curing, etc. complete excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for all floor heights and levels, in any position, in M-20. The rate shall exclude the cost of formwork and reinforcement, both.

2.23.a.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for all floor heights and levels, in any position, in M-20. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.23.b.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for ground floor.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for ground floor, in M-20. The rate shall exclude the cost of formwork and reinforcement, both.

2.23.b.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area for ground floor.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for ground floor, in M-20. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.23.c.1 - do - as per 2.23.b.1 but over and above extra for providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for each floor level above ground floor level, in M-20. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.23.c.2 - do - as per 2.23.c.1 but for providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC in beams, lintels, chhajjas, for any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for each floor level above ground floor level, in M-20. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.24.a.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc. of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.24.a.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc. of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.24.b.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc., of any thickness, in foundation (raft slab) upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-

20 shall be for slabs, etc. of any given thickness, in foundation upto plinth level. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.24.b.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, in foundation upto plinth.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for slabs, etc. of any given thickness, in foundation upto plinth. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.24.c.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness for ground floor.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for slabs, etc. of any given thickness, for ground floor. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.24.c.2 Providing and laying controlled CC M-20 with curing etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, for ground floor.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for slabs, etc. of any given thickness, for ground floor. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.24.d.1 - do - as per 2.24.c.1 but over and above extra for providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for slabs, etc. of any given thickness, for each floor level above ground floor level. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.24.d.2 - do - as per 2.24.d.1 but for providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-20 shall be for slabs, etc. of any given thickness, for each floor level above ground floor level. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor above plus the extra for each floor and so on).

2.24.e.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in sloping slab of any thickness, for all floors, etc. complete, as per approved drawings.

The relevant specification of item no. 2.15.a.1 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position, in M-20.

2.24.e.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in sloping slab, of any thickness, for all floors, etc. complete, as per approved drawings.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position, in M-20.

2.24.f.1 Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in dome and vaults, of any thickness etc. complete, as per approved drawings, for all floors.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position, in M-20.

2.24.f.2 Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC work in dome and vaults, of any thickness etc. complete, as per approved drawings, for all floors.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position, in M-20.

2.25.a Providing and laying controlled CC M-20, for RCC Arches with curing, etc. complete, as per approved drawings, excluding the cost of formwork and reinforcement, for all floors etc. complete.

The relevant specification of item no. 2.11.a shall be followed except the work shall be for concrete M-20 for Arches. The rate is exclusive of formwork and reinforcement for all floors, at any height and level, in any position.

2.25.b Providing and laying controlled CC M-20, for RCC Arches with curing, etc. complete, as per approved drawings, including the cost of formwork but excluding the cost of reinforcement, for all floors etc. complete.

The relevant specification of item no. 2.11.a shall be followed except the work shall be for concrete M-20 for Arches. The rate is inclusive of formwork and exclusive of reinforcement, for all floors, at any height and level, in any position.

- 2.26.a Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in situ concrete M-20 in staircases only. The rate is exclusive of formwork and reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.26.b Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in situ concrete M-20 in staircases only. The rate is inclusive of formwork and exclusive of reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.27.a Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls like pardis, parapets, dividers, etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC M-20 for walls, fins etc. for all floors, at any height and level, in any position. The rate is exclusive of formwork and reinforcement.

- 2.27.b Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC works in vertical walls like pardis, parapets, dividers, etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC M-20 for walls, fins etc. for all floors, at any height and level, in any position. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.27.c Providing and laying controlled CC M-20 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls (Retaining walls) for foundations and upto plinth level, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level, in M-20 concrete. The rate is exclusive of formwork and reinforcement.

- 2.27.d Providing and laying controlled CC M-20 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC works in vertical walls (Retaining walls) for foundations and upto plinth level, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level, in M-20 concrete. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.28.a Providing and laying controlled CC M-20 and curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for**

fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 300 Kg. per piece.

The relevant specification of item no. 2.11.a shall be followed same for M-20 concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipment required, fixing in position in cement mortar, etc. complete.

2.28.b Providing and laying controlled CC M-20 and curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast spiral staircase steps, including erecting and keeping in position with necessary scaffolding. The rate shall also includes for fixing and finishing required for fixing the steps, etc. complete, as per approved drawing.

The relevant specification of item no. 2.11.a shall be followed same for M-20 concrete work except that the work shall be for pre-cast concrete steps. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipments required, fixing in position in cement mortar, etc. complete.

2.28.c Providing and laying controlled CC M-20 having exposed surfaces, including curing etc. complete, including the cost of formwork but excluding the cost of reinforcement for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, side of spiral staircase steps, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 500 Kg. per piece.

The relevant specification of item no. 2.11.a shall be followed same for M-20 concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipments required, fixing in position in cement mortar, etc. complete. The rate includes cost of providing necessary formwork, staging required cost of all materials, labour, etc. required for exposed surface. the relevant specification of item no. 3.03.a and 3.03.b shall be followed for formwork. The work shall be carried out to the entire satisfaction of Engineer-in-charge, as per drawings and instructions. The work shall be measured in m³.

2.29a Providing and laying in position REINFORCED CEMENT CONCRETE (RCC) for ALL WORKS such as Slabs / Beams / Columns / Foundations/ Flooring / Coping/ Lintel, etc for all RCC works for foudation & plinth and Superstructure above plinth level for all floors / at all levels / at all heights with: RCC 1:1:2 Mix ratio (Compressive strength should not be less than 25 N/ Sqmm) is specified is for (cement : coarse sand : graded stone aggregate) or Design Mix M25 (without using plastisizers) or Ready Mix Concrete M25 (the source of RMC should be approved by EIC) machine batched & machine vibrated using graded hard stone aggregate of 20mm nominal size obtained from approved quarry including mechanical mixing, Transporting, pumping (if any), vibrating, compacting, finishing, curing, etc., complete all as per specifications. Note The formwork and steel reinforcement shall be measured and paid under respective item of this tender. The quotred rate should be inclusive of labour for keeping embedments if any, wherever required while casting. Only coarse river sand shall be used in all RCC works all as per specifications.

1.0 Materials and Workmanship : The relevant specifications of item no. 2.11.a shall be followed except that the grading of concrete shall be controlled concrete M-25 grades for the works as

specified in the item.

2.0 Mode of Measurements and Payment :

s

2.1 The relevant specifications of item no. 2.11.a shall be followed.

2.2 The rate shall be for an unit of one m³.

2.29.b Providing and laying controlled CC M-25 and curing, etc. complete, including the cost of formwork and excluding the cost of reinforcement, for RCC work, for all structures and mass concrete, at all floor heights.

1.0 Materials and Workmanship : The relevant specifications of item no. 2.11.b shall be followed except that the grading of concrete shall be controlled concrete M-25 grades for the works as specified in the item.

2.0 Mode of Measurements and Payment :

2.1 The relevant specifications of item no. 2.11.a shall be followed. The rate shall be for an unit of one m³.

2.29.c - do - as per 2.29.a & b but extra for exposed concrete surface, in desired patterns and sizes, including neat cleaning the exposed concrete surface as directed by the Engineer-in-charge (Same kind of shuttering material only should be used for standard and residual sizes).

The relevant specifications of item no. 2.08.c shall be followed same for rendering exposed finished surface to all structures in controlled CC M-25.

The exposed finished surface shall be cleaned neatly. The rate shall be paid for bringing exposed surface to any concrete work. The work of concreting shall be paid under respective items.

The rate shall be for an unit of one m².

2.29.d Providing and laying controlled CC M-25, for exposed R.C.C lintels, chhajjas, pattas, sill slabs, corbellings, cornices, copings and fins, etc. (only external face of the lintel will have expose RCC as per detailed drawing), at all floors, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, etc. complete.

1.0 Materials and Workmanship: The relevant specifications of item no. 2.08.c shall be followed except that exposed concrete work shall be for lintels, chhajjas, pattas, sill slabs, corbelling, cornices, and fins, using controlled CC M-25. Relevant specifications of item no. 3.03.a and 3.03.b shall be followed for formwork and centering work for exposed concrete work.

2.0 Mode of Measurements and Payment:

2.1 The relevant specifications of item no. 2.06.a shall be followed except that the item includes the cost of formwork and centering work for rendering exposed surfaces to the above specified concrete works. The rate does not include the cost of reinforcement.

2.2 The rate shall be for an unit of one m³.

2.30.a Providing and laying controlled CC M-25 with curing, etc. complete for RCC work, of any

cross sectional area, excluding the cost of formwork and of reinforcement, in
a) Plinth beams, b) Column footings and columns upto plinth level, c) Copings

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall exclude the cost of formwork and reinforcement. The grade of controlled concrete shall be M-25 instead of M-15.

2.30.b Providing and laying controlled CC M-25 with curing, etc. complete, for RCC work, of any cross sectional area, including the cost of formwork but excluding the cost of reinforcement, in
a) Plinth beams, b) Column footings and columns upto plinth level, c) Copings

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall include the cost of formwork and not of reinforcement. The grade of controlled concrete shall be M-25 instead of M-15.

2.31.a.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both.

2.31.a.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.31.b.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, in foundation upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall exclude the cost of formwork and reinforcement, both.

2.31.b.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, in foundation upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.31.c.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall exclude the cost of formwork and reinforcement, both.

2.31.c.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.31.d.1 - do - as per 2.31.c.1 but over and above extra for providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, for each floor level above ground floor level. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.31.d.2 - do - as per 2.31.d.1 but for providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for columns of any given cross sectional area, for each floor level above ground floor level. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.32.a.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, etc., for any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc., of any given cross section, for all floor heights and levels, in any position, in M-25. The rate shall exclude the cost of formwork and reinforcement, both.

2.32.a.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC in beams, lintels, chhajjas, etc., for any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for all floor heights and levels, in any position, in M-25. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.32.b.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, etc., for any cross

sectional area, for ground floor.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for ground floor, in M-25. The rate shall exclude the cost of formwork and reinforcement, both.

2.32.b.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, etc., for any cross sectional area, for ground floor.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for ground floor, in M-25. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.32.c.1 - do - as per 2.32.b.1 but over and above extra for providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, etc., for any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for each floor level above ground floor level, in M-25. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.32.c.2 - do - as per 2.32.c.1 but for providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, etc., for any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for each floor level above ground floor level, in M-25. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.33.a.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc. of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.33.a.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The

rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.33.b.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, in foundation (raft slab etc.) upto plinth level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, in foundation upto plinth level. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.33.b.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, in foundation upto plinth.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, in foundation upto plinth. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.33.c.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness for ground floor.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, for ground floor. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.33.c.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, for ground floor.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, for ground floor. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.33.d.1 - do - as per 2.33.c.1 but over and above extra for providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, for each floor level above ground floor level. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the

cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.33.d.2 - do - as per 2.33.d.1 but for providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms etc. of any thickness, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-25 shall be for slabs, etc. of any given thickness, for each floor level above ground floor level. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.33.e.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in sloping slab of any thickness, for all floors, etc. complete, as per approved drawings.

The relevant specification of item no. 2.15.a.1 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position, in M-25.

2.33.e.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in sloping slab of any thickness, for all floors, etc. complete, as per approved drawings.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position, in M-25.

2.33.f.1 Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in dome and vaults, of any thickness, etc. complete, as per approved drawings, for all floors.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position, in M-25.

2.33.f.2 Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in dome and vaults, of any thickness, etc. complete, as per approved drawings, for all floors.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position, in M-25.

2.34.a Providing and laying controlled CC M-25, for RCC Arches with curing, etc. complete, as per approved drawings, excluding the cost of formwork and reinforcement for all floors, etc. complete

The relevant specification of item no. 2.11.a shall be followed except the work shall be for RCC Arches. The rate is exclusive of formwork and reinforcement for all floors, at any height and level, in

any position.

- 2.34.b Providing and laying controlled CC M-25, for RCC Arches with curing, etc. complete, as per approved drawings, including the cost of formwork but excluding the cost of reinforcement for all floors, etc. complete**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for RCC Arches. The rate is inclusive of formwork and exclusive of reinforcement for all floors, at any height and level, in any position.

- 2.35.a Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in situ concrete M-25 in staircases only. The rate is exclusive of formwork and reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.35.b Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in situ concrete M-25 in staircases only. The rate is inclusive of formwork and exclusive of reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.36.a Providing and laying controlled CC M-25, with curing etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls like pardis, parapets, dividers, etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC M-25 for walls, fins, etc., for all floors, at any height and level, in any position. The rate is exclusive of formwork and reinforcement.

- 2.36.b Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC works in vertical walls like pardis, parapets, dividers, etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC M-25 for walls, fins, etc., for all floors, at any height and level, in any position. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.36.c Providing and laying controlled CC M-25 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls (Retaining walls) for foundations and upto plinth level, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level, in M-25 concrete. The rate is exclusive of formwork and reinforcement.

- 2.36.d Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC works in vertical walls (Retaining**

walls) for foundations and upto plinth level, as per approved drawings.

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level, in M-25 concrete. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.37.a Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 500 Kg. per piece.**

The relevant specification of item no. 2.11.a shall be followed same for M-25 concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipments required, fixing in position in cement mortar, etc. complete.

- 2.37.b Providing and laying controlled CC M-25 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast spiral staircase steps, including erecting and keeping in position with necessary scaffolding. The rate shall also includes for fixing and finishing required for fixing the steps, etc. complete, as per approved drawing. The weight of the member shall not exceed 500 Kg. per piece.**

The relevant specification of item no. 2.11.a shall be followed same for M-25 concrete work except that the work shall be for pre-cast concrete steps. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipments required, fixing in position in cement mortar, etc. complete.

- 2.37.c Providing and laying controlled CC M-25 having exposed surfaces, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, side of spiral staircase steps, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 500 Kg. per piece.**

The relevant specification of item no. 2.11.a shall be followed same for M-25 concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipments required, fixing in position in cement mortar, etc. complete. The rate includes cost of providing necessary formwork, staging required cost of all materials, labours etc. required for exposed surface. the relevant specification of item no. 3.03.a and 3.03.b shall be followed for formwork. The work shall be carried out to the entire satisfaction of Engineer in charge, as per drawings and instructions.

The work shall be measured in m³.

- 2.38.a Providing and laying controlled CC M-30 and curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work, for all structures and mass concrete, at all floor**

heights.

1.0 Materials and Workmanship : The relevant specifications of item no. 2.11.a shall be followed except that the grading of concrete shall be controlled concrete M-30 grades for the works as specified in the item.

2.0 Mode of Measurements and Payment :

2.1 The relevant specifications of item no. 2.11.a shall be followed.

2.2 The rate shall be for an unit of one m³.

2.38.b Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of reinforcement, for RCC work, for all structures and mass concrete, at all floor heights.

1.0 Materials and Workmanship: The relevant specifications of item no. 2.11.b shall be followed except that the grading of concrete shall be controlled concrete M-30 grades for the works as specified in the item.

2.0 Mode of Measurements and Payment :

2.1 The relevant specifications of item no. 2.11.a shall be followed.

2.2 The rate shall be for an unit of one m³.

2.38.c - do - as per 2.38.a & b but extra for exposed concrete surface, in desired patterns and sizes, including neat cleaning the exposed concrete surface, as directed by the Engineer-in-charge (Same kind of shuttering material only should be used for standard and residual sizes).

The relevant specifications of item no. 2.08.c shall be followed same for rendering exposed finished surface to all structures in controlled CC M-25.

The exposed finished surface shall be cleaned neatly. The rate shall be paid for bringing exposed surface to any concrete work. The work of concreting shall be paid under respective items.

The rate shall be for an unit of one m².

2.38.d Providing and laying controlled CC M-30, for exposed R.C.C lintels, chhajjas, pattas, sill slabs, corbelling, cornices, copings and fins (only external face of the lintel will have expose RCC as per detailed drawing) at all floors, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, etc. complete.

1.0 Materials and Workmanship: The relevant specifications of item no. 2.08.c shall be followed except that exposed concrete work shall be for lintels, chhajjas, pattas, sill slabs, corbelling, cornices, and fins, using controlled CC M-300. Relevant specifications of item no. 3.03.a and 3.03.b shall be followed for formwork and centring work for exposed concrete work.

2.0 Mode of Measurements and Payment: The relevant specifications of item No. 2.06.a shall be followed except that the item includes the cost of formwork and centring work for rendering exposed surfaces to the above specified concrete works. The rate does not include the cost of reinforcement. The rate shall be for an unit of one m³.

- 2.39.a Providing and laying controlled CC M-30 with curing, etc. complete for RCC work, of any cross sectional area, excluding the cost of formwork and of reinforcement, in**
a) Plinth beams, b) Column footings and columns upto plinth level, c) Copings

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall exclude the cost of formwork and reinforcement. The grade of controlled concrete shall be M-30 instead of M-15.

- 2.39.b Providing and laying controlled CC M-30 with curing, etc. complete, for RCC work, of any cross sectional area, including the cost of formwork but excluding the cost of reinforcement, in**
a) Plinth beams, b) Column footings and columns upto plinth level, c) Copings

The relevant specification of item no. 2.11.a shall be followed same except that the concrete shall be for members specified in the item, for any cross sectional area. The rate shall include the cost of formwork and not of reinforcement. The grade of controlled concrete shall be M-30 instead of M-15.

- 2.40.a.1 Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.**

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-300 shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both.

- 2.40.a.2 Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, for all floor heights and levels, in any position.**

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-300 shall be for columns of any given cross sectional area, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement.

- 2.40.b.1 Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, in foundation upto plinth level.**

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-300 shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall exclude the cost of formwork and reinforcement, both.

- 2.40.b.2 Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, in foundation upto plinth level.**

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-300 shall be for columns of any given cross sectional area, in foundation upto plinth level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

- 2.40.c.1 Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.**

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-300 shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall exclude the cost of formwork and reinforcement, both.

2.40.c.2 Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, above plinth level upto first floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-300 shall be for columns of any given cross sectional area, above plinth level upto first floor level. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.40.d.1 - do - as per 2.40.c.1 but over and above extra for providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-300 shall be for columns of any given cross sectional area, for each floor level above ground floor level. The extra rate shall exclude the cost of formwork and reinforcement, both. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.40.d.2 - do - as per 2.40.d.1 but for providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in columns of any cross sectional area, for each floor level above ground floor level.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-30 shall be for columns of any given cross sectional area, for each floor level above ground floor level. The extra rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall be extra for each floor, (the rate of first floor will be the rate for ground floor plus the extra for each floor and so on).

2.41.a Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for all floor heights and levels, in any position, in M-30. The rate shall exclude the cost of formwork and reinforcement, both.

2.41.b Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC in beams, lintels, chhajjas, for any cross sectional area, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed except that the work shall be carried out for beams, etc. of any given cross section, for all floor heights and levels, in any position, in M-30. The rate shall include the cost of formwork but exclude the cost of reinforcement.

2.42.a.1 Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-30 shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The rate shall exclude the cost of formwork and reinforcement, both. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.42.a.2 Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in slabs, sill slabs, shelves, platforms, etc., of any thickness, for all floor heights and levels, in any position.

The relevant specification of item no. 2.11.a shall be followed the same except that the concrete M-30 shall be for slabs, etc. of any given thickness, for all floor heights and levels, in any position. The rate shall include the cost of formwork but exclude the cost of reinforcement. The rate shall also include the cost of all labour, etc. required for construction joints and obtaining the brooming surface. The work shall be carried out in true line and camber. The rate shall be for an unit of one m³.

2.42.b.1 Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in sloping slab of any thickness, for all floors, etc. complete, as per approved drawings.

The relevant specification of item no. 2.15.a.1 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position, in M-30.

2.42.b.2 Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in sloping slab of any thickness, for all floors, etc. complete, as per approved drawings.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for slopping slabs, for all floors, at any height and level, in any position, in M-30.

2.42.c.1 Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in dome and vaults, of any thickness, etc. complete, as per approved drawings, for all floors.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position, in M-30.

2.42.c.2 Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in dome and vaults, of any thickness, etc. complete, as per approved drawings, for all floors.

The relevant specification of item no. 2.15.a.2 shall be followed except that the work shall be for RCC domes and vaults, at all floors, at any height and level, in any position, in M-30.

2.43.a Providing and laying controlled CC M-30 for RCC Arches with curing, etc. complete, as per approved drawings, excluding the cost of formwork and reinforcement, for all floors, etc. complete.

The relevant specification of item no. 2.11.a shall be followed except the work shall be for concrete M-30, for Arches. The rate is exclusive of formwork and reinforcement for all floors, at any height and level, in any position.

- 2.43.b Providing and laying controlled CC M-30, for RCC Arches with curing, etc. complete, as per approved drawings, including the cost of formwork but excluding the cost of reinforcement, for all floors, etc. complete.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for RCC Arches. The rate is inclusive of formwork and exclusive of reinforcement for all floors, at any height and level, in any position.

- 2.44.a Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in situ concrete M-30 in staircases only. The rate is exclusive of formwork and reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.44.b Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC work in staircases of all types, for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for cast in situ concrete M-30 in staircases only. The rate is inclusive of formwork and exclusive of reinforcement. The rate is for all floors, at any height and level, in any position.

- 2.45.a Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls like pardis, parapets, dividers, etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC M-30 for walls, fins, etc., for all floors, at any height and level, in any position. The rate is exclusive of formwork and reinforcement.

- 2.45.b Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC works in vertical walls like pardi, parapets, dividers, etc., for all floors, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for the RCC M-30 for walls, fins, etc., for all floors, at any height and level, in any position. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.45.c Providing and laying controlled CC M-30 with curing, etc. complete, excluding the cost of formwork and reinforcement, for RCC works in vertical walls (Retaining walls) for foundations and upto plinth level, as per approved drawings.**

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level, in M-30 concrete. The rate is exclusive of formwork and reinforcement.

- 2.45.d Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for RCC works in vertical walls (Retaining**

walls) for foundations and upto plinth level, as per approved drawings.

The relevant specification of item no. 2.11.a shall be followed except the work shall be for retaining wall upto plinth level, in M-300 concrete. The rate is inclusive of formwork and exclusive of reinforcement.

- 2.46.a Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 500 Kg. per piece.**

The relevant specification of item no. 2.11.a shall be followed same for M-30 concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipment required, fixing in position in cement mortar, etc. complete.

- 2.46.b Providing and laying controlled CC M-30 with curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast spiral staircase steps, including erecting and keeping in position with necessary scaffolding. The rate shall also includes for fixing and finishing required for fixing the steps, etc. complete, as per approved drawing.**

The relevant specification of item no. 2.11.a shall be followed same for M-300 concrete work except that the work shall be for pre-cast concrete steps. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipment required, fixing in position in cement mortar, etc. complete.

- 2.46.c Providing and laying controlled CC M-30 having exposed surfaces, including curing, etc. complete, including the cost of formwork but excluding the cost of reinforcement, for pre-cast lintels, sill slabs, copings, blocks, pattas, cornices, corbelling, side of spiral staircase steps, including erecting and keeping in position with necessary scaffolding, at all floors, at any height and level, in any position. The rate shall also includes for fixing and finishing required for fixing the members, etc. complete, as per approved drawing. The weight of the member shall not exceed 500 Kg. per piece.**

The relevant specification of item no. 2.11.a shall be followed same for M-300 concrete work except that the work shall be for pre-cast concrete members as specified in the item. For precasting, the relevant specifications of item no. 2.09.a shall be followed. The rate is inclusive of casting, formwork, scaffolding for erecting, equipment required, fixing in position in cement mortar etc. complete. The rate includes cost of providing necessary formwork, staging required cost of all materials, labours etc. required for exposed surface. The relevant specification of item no. 3.03.a and 3.03.b shall be followed for formwork. The work shall be carried out to the entire satisfaction of Engineer-in-charge, as per drawings and instructions.

The work shall be measured in m³.

- 2.47 Extra for adding additives or admixtures, as approved by the Engineer-in-charge, as per the specifications stipulated by the manufacturer. (The make and its technical specifications must be specified herein.)**

- a) Cement mortar adhesives such as STP, Fosroc, Cico, MC Bauchemie or equivalent each a combination of mortar plasticizer which impart waterproofing characteristic to the applied surface.
- b) Water proofing additives such as, Fosroc, Cico No. 1 or equivalent should produce waterproof concrete conforming to IS: 2645.
- c) Plasticizer for concrete:
 - 1) Rapid hardening additives such as MC-schnell SDS/OC of MC-Bauchemie(I) Pvt. Ltd. or equivalent should conform with A.S.T.M.-C 309 specifications.
 - 2) Curing compound such as Emcoril of MC-Bauchemie(I) Pvt. Ltd. or equivalent.
- d) Chemical compound for stone cladding such as Zentrival HS of MC-Bauchemie (I) Pvt. Ltd. or equivalent.

- 1.0 **Materials:** The additives and admixture materials shall be as per the manufacturer's standards. They shall conform to M-67.
- 2.0 **Workmanship:** The additives and admixtures used for different purpose shall be as specified by manufacturer.
- 3.0 **Mode of Measurements and Payment:** The rate shall be for an unit of one Kg.

2.48.a.1 Providing and laying in position controlled CC M-20 for Vaults and Currency chests, at any floor, including provision of required openings for doors, manholes, plenum ducts, etc., as required by the security bylaws, excluding the cost of formwork and reinforcement, with special nuts and bolts (to be left in the concrete, if required), mechanical compaction, curing, finishing, etc. complete. The rate should include for embedding tang bar reinforcement, grouting and embedding the vault doors, manhole doors, ventilators, etc. Once they are fitted in the openings provided, necessary certificate from PWD/RBI authorities or other concerned authorities must be taken and submitted to the Client.

- a) Vault floor (without bottom shuttering)
- b) Vault floor/roof (with bottom shuttering)
- c) Vault walls (450 mm. thick)

The relevant specification of 2.20.a shall be followed except that the work shall be carried out for vaults and currency chest in controlled CC M-200, excluding the cost of formwork and reinforcement.

The rate shall be for an unit of one m³.

2.48.a.2 - do - as per above but including the cost of formwork but excluding the cost of reinforcement.

The relevant specification of 2.20.a shall be followed except that the work shall be carried out for vaults and currency chest in controlled CC M-200, including the cost of formwork and excluding the cost of reinforcement.

The rate shall be for an unit of one m³.

2.48.b.1 Providing and laying in position controlled CC M-25, for Vaults and Currency chests, at any floor, including provision of required openings for doors, manholes, plenum ducts, etc., as required by the security bylaws, excluding the cost of formwork and reinforcement with

special nuts and bolts (to be left in the concrete if required), mechanical compaction, curing, finishing, etc. complete. The rate should include for embedding tang bar reinforcement, grouting and embedding the vault doors, manhole doors, ventilators, etc. Once they are fitted in the openings provided, necessary certificate from PWD/RBI authorities or other concerned authorities must be taken and submitted to the Client.

- a) Vault floor (without bottom shuttering)
- b) Vault floor/roof (with bottom shuttering)
- c) Vault walls (450 mm. thick)

The relevant specification of 2.29.a shall be followed except that the work shall be carried out for vaults and currency chest in controlled CC M-250, excluding the cost of formwork and reinforcement.

The rate shall be for an unit of one m³.

2.48.b.2 - do - as per above but including the cost of formwork but excluding the cost of reinforcement.

The relevant specification of 2.29.a shall be followed except that the work shall be carried out for vaults and currency chest in controlled CC M-250, including the cost of formwork and excluding the cost of reinforcement.

The rate shall be for an unit of one m³.

2.48.c.1 Providing and laying in position controlled CC M-30, for Vaults and Currency chests, at any floor, including provision of required openings for doors, manholes, plenum ducts, etc., as required by the security bylaws, excluding the cost of formwork and reinforcement with special nuts and bolts (to be left in the concrete if required), mechanical compaction, curing, finishing, etc. complete. The rate should include for embedding tang bar reinforcement, grouting and embedding the vault doors, manhole doors, ventilators, etc. Once they are fitted in the openings provided, necessary certificate from PWD/RBI authorities or other concerned authorities must be taken and submitted to the Client.

- a) Vault floor (without bottom shuttering)
- b) Vault floor/roof (with bottom shuttering)
- c) Vault walls (450 mm. thick)

The relevant specification of 2.38.a shall be followed except that the work shall be carried out for vaults and currency chest in controlled CC M-300, excluding the cost of formwork and reinforcement.

The rate shall be for an unit of one m³.

2.48.c.2 - do - as per above but including the cost of formwork but excluding the cost of reinforcement.

The relevant specification of 2.38.a shall be followed except that the work shall be carried out for vaults and currency chest in controlled CC M-300, including the cost of formwork and excluding the cost of reinforcement.

The rate shall be for an unit of one m³.

NOTE for Ready Mix Concrete

- 1) Ready Mixed Concrete should be from reputed manufacturers like ACC, LAFARGE, Ultra Tech, Ready mix, Contractor has to obtain prior approval of EIC with respect to supplier of RMC.
- 2) Cement to be used for RMC shall be OPC 53 grade which will not be issued by the department. Cement content should comply to IS 12269 or as per approved design mix adopted by the contractor having the required water cement ratio in adherence to the relevant codal values.
- 3) Rate to include the transportation in transit mixers with all leads from RMC plant to the place of work and pumping of concrete to any height and the rate shall be for all leads.
- 4) Cement concrete delivered at site should be workable and should satisfy all the required standard tests like cube test and slump test etc., as specified in code of practice. Sample taken at site only will be deciding factor.
- 5) Department will not have any direct contact in matters relating to payment, delivery schedule, quality of concrete etc. It is the responsibility of contractor to ensure proper co-ordination for the timely supply of concrete and approved quality product.
- 6) Contractor has to make arrangement for proper approach road (for which nothing extra shall be paid for) to enable the vehicle carrying concrete to move freely without any extra cost to the department before ordering the concrete. However existing approach road may be made use of for this purpose.
- 7) Contractor has to ensure proper strong shuttering / centering to receive the concrete at all heights..
- 8) Contractor has to indemnify the Department against claims arising out of possible dispute with the manufacturers.
- 9) The design mix of RMC of the manufacturer / supplier of RMC has to be obtained well in time and approval of EIC to be obtained prior to use. The design mix should be based on latest IS 456/ IS 10262. This approval has to be obtained whenever the design mix is changed. The RMC should be supplied confirming to the approved design mix which shall be continuously checked during the progress of work. All the quality checks as per IS stipulations should be scrupulously followed during the concreting. The work shall be carried out at all heights.
- 10) Fly ash mixing is not permitted
- 11) Laid RMC will be accepted by EIC based on criteria as per 456 which will be based on test results of concrete cube specimen taken at site.
- 12) The rate quoted shall also include refinishing the top of slab surface (delayed finish) as per the specifications of RMC Manufacturer.
- 13). The contractor shall have to submit pouring sequence of concrete to avoid cold joints. The contractor shall in his method statement demonstrate limit temperature differential between hottest and coolest position in the concrete to less than 20 degrees by means of adequate thermal insulation of exposed surface throughout the curing period. Curing agent shall be applied on exposed surfaces as early as possible within 3-4 hours of concreting so as to avoid any cracks due to shrinkage.

Providing and laying Ready Mixed Concrete grade machine batched by weight, machine mixed as per the design mix standards in the Ready Mix Plant and transported to the place of work for ALL WORKS such as Raft/ pedestal / Beams / Columns / Foundations/ Retaining walls etc for all RCC works for any size and shape, below ground level upto plinth level at all levels / at all depths. The concrete to be made using graded hard stone aggregates of maximum 20mm nominal (down graded) size obtained from approved quarry including fine aggregates conforming to latest IS 383 and cement all as per the design mix proportions conforming to relevant IS with minimum cement content for durability including supplying and providing concrete cover blocks etc; which shall be followed as per latest IS 456 including pumping to all heights, placing, spreading, vibrating, compaction, finishing to required levels, curing, etc., complete all as per specifications but excluding cost of formwork and steel reinforcement Rate to include charges for providing & mixing water proofing compound, if any specified, and labour for keeping embedments if any wherever required while casting. The work shall be carried out at all heights. Rate also to include lift charges and scaffolding for all floors / heights/

all levels from FFL/GL.

Note: Admixtures are permitted as per relevant IS code. The quoted rate includes the cost of admixtures & superplasticizers etc. OPC Cement shall be used. Fly Ash mixing is not permitted.

C03 As above By using RMC M-25 grade

Mode of Measurement and Payment.

The work shall be measured under relevant item in the schedule of quantities and paid for

Providing and laying Ready Mixed Concrete grade machine batched by weight, machine mixed as per the design mix standards in the Ready Mix Plant and transported to the place of work for ALL WORKS such as Slabs / Beams / Columns / Flooring / Coving/ Lintel, etc for all RCC works for any size and shape ,for Superstructure above plinth level for all floors / at all levels / at all heights The concrete to be made using graded hard stone aggregates of maximum 20mm nominal (down graded) size obtained from approved quarry including fine aggregates conforming to latest IS 383 and cement all as per the design mix proportions conforming to relevant IS with minimum cement content for durability including supplying and providing concrete cover blocks etc; which shall be followed as per latest IS 456 including pumping to all heights, placing, spreading, vibrating, compaction, finishing to required levels, curing, etc., complete all as per specifications but excluding cost of formwork and steel reinforcementRate to include charges for providing & mixing water proofing compound, if any specified, and labour for keeping embedments if any wherever required while casting. The work shall be carried out at all heights. Rate also to include lift charges and scaffolding for all floors /heights/ all levels from FFL/GL.

Note: Admixtures are permitted as per relevant IS code. The quoted rate includes the cost of admixtures & superplasticizers etc. OPC Cement shall be used. Fly Ash mixing is not permitted

C04 As above by using RMC M-20 grade

Mode of Measurement and Payment.

The work shall be measured under relevant item in the schedule of quantities and paid for

C05 As above By using RMC M-25 grade

Mode of Measurement and Payment.

The work shall be measured under relevant item in the schedule of quantities and paid for

C06 Extra for Vacuum Dewatering from concrete for 75mm to 150mm thickness flooring including hire charges for equipment, vibrating the concrete, finishing the concrete with machine trowel, finishing the surface neatly all as per specification. The rate includes all the labour and materials involved for the work.

Mode of Measurement and Payment.

The work shall be measured under relevant item in the schedule of quantities and paid for

C07 Charges for making holes in RCC walls, slabs or any other RCC member of any size by core cutting machine of Hilti / Fischer/ Mungo, including disposing the debris. For all floors/ all heights/all level. and complete as directed by EIC.

Note: Measurement will be taken for the depth of holes in running meter for specified diameter. For disposal of the debris specification of relevant items shall be followed.

a) For cutout holes upto 100mm dia

Mode of Measurement and Payment.

The work shall be measured under relevant item in the schedule of quantities and paid for

C08 b) As above for diameter from 101mm to 150mm dia

Mode of Measurement and Payment.

The work shall be measured under relevant item in the schedule of quantities and paid for