

**NAME OF
WORK :**

**CONSTRUCTION OF ROAD IN DIFFERENT AREAS OF NANI
NAGALPAR VILLAGE TA. ANJAR (DMF/PMKKY/2026)**

ITEM WISE SPECIFICATIONS FOR CIVIL WORK

Item No. 1

Box cutting the road surface to proper slope and camber for making a base for road work including removing the excavated stuff and depositing on the road side slope as directed upto 50Mt.lead.

1. This work shall consist of excavation, removal and satisfactory disposal of all materials necessary for the construction of widening carriageway in accordance with requirements of these specifications and the lines, grades and cross sections shown in the drawings or as indicated by the Engineer.
2. After the site has been cleared the limits of excavation/ box cutting the road surface shall be set out true to lines, curves, slopes, grades and sections as shown on the drawings or as directed by the Engineer.
3. Box cutting shall be carried out in conformity with the directions laid here in under and in a manner approved by the Engineer. The work shall be so done that the suitable materials available from box cutting/ excavation are satisfactorily utilized as directed.
4. The contractor shall not excavate outside the limits of box cutting. Subject to the permitted tolerances, any excess depth/ width excavated beyond the specified levels/ dimensions on the drawings shall be made good at the cost of the contractor with suitable material of characteristics similar to that removed and compacted as directed.
5. Cutting shall be done in proper grade & camber as shown on drawing or as directed. Care must be taken that all slopes are evenly and truly dressed. Cutting shall be done to the exact depth required and shall be as per formation level in proper grade and the camber. If extra depth of cutting is done due to negligence of contractor the same shall be refilled with approved quality of materials duly consolidated to the satisfaction of the Engineer-in-charge (without extra cost).
6. The stuff received from the cutting of existing crust shall be screened on site and stone aggregates shall be stacked at suitable place which shall be reused for modified sub base as directed by the Engineer in charge. The unsuitable materials shall be removed from the site and same shall be used for filling and correcting side slopes of bank and earthwork for embankment as directed by the Engineer in charge with lead up to 50 mtr..
7. The measurement of box cutting shall be taken on level basis & level shall be taken at 30 mt. interval. Volume shall be computed in cubic meters by average area method.
8. The payment shall be made on Cmt. basis.
9. The rate includes cost of all labour, machineries required, cost of carting and spreading the cutting stuff with all lead and lift and leveling the dumping ground/ embankment, rolling and consolidation of subgrade level etc. complete.

Item No. 2

Providing & Laying cement concrete 1:4:8 (1-Cement 4-Coarse sand 8-machine crushed stone aggregates 40mm nominal size) and curing complete in foundation and plinth.

Providing and laying ordinary cement concrete 1:3:6 for foundation including cost of formwork if required using cement, sand and machine crushed stone aggregates of 40mm nominal size.

1. In no case of ordinary cement concrete mix is not required to be designed by preliminary tests and proportions of cement, fine aggregates and coarse aggregates are specified by volume as given in item,
2. The ordinary cement concrete mix shall general be specified by volume for cement which normally cement in bags and is available by weight, volume shall be worked out taking 50 Kg. cement as 0.035

Cu.M. in volume. While measuring aggregate by volume, shaking ramming or hammering shall not be done. Proportioning of sand shall be as per its dry volume incase it is damp allowance for bulking shall be made as IS : 2386 {Part III}

3. Ingredient required for ordinary cement concrete containing one 5 Kg. bag of cement for different proportions of mix shall be as given the table below.

| Grade of Concrete | Sand in Cu.M. | Aggregates in Cu.M. |
|-------------------|---------------|---------------------|
| 1 | 2 | 3 |
| 1:4:8 | 0.135 | 0.270 |

4. **Cement** :- Cement shall be ordinary Portland stab cement as per IS 1975 properties of cement as per IS 455 1976.

5. Sand

5.1 Sand shall be natural sand, clean well graded, hard strong, durable and gritty particularly free from immures amounts of dust, clay, kankar modules, soft or flaky particles shell, alkali slats, organic matter, lean mica or other deleterious substances and shall be got approved from the Engineer in charge. The sand shall not contain more than 8 percent of silt as determined by field test, if necessary the sand.

5.2 Coarse sand :- The fineness modules of coarse sand shall not be less than 2.5 and shall not exceeds

3.0. The sieve analysis of coarse sand be as under.

| I..S. Sieve Designation | % by weight passing |
|-------------------------|---------------------|
| 4.75 mm | 100 |
| 2.36 mm | 90 to 100 |
| 1.18 mm | 70 to 100 |
| 600 MC | 30 to 100 |
| 300 MC | 85 to 70 |
| 150 MC | 00 to 50 |

5.3 **Fine sand** :- The fineness module shall not exceeds 1.0 to sieve analysis of fine sand be as under :-

| I..S. Sieve Designation | % by weight passing |
|-------------------------|---------------------|
| 4.75 mm | 100 |
| 2.36 mm | 100 |
| 1.18 mm | 75 to 100 |
| 600 MC | 40 to 85 |
| 300 MC | 0 to 50 |
| 150 MC | 00 to 10 |

6.0 Stone coarse aggregates for nominal mix concrete :- Coarse aggregates shall be or machine crushed stone of black trap or equivalent and hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

The aggregates shall be generally be cubical in shape unless special stones of particular quarries are mentioned aggregated shall be machine crushed from the best black trap of equivalent hand done as approved. Aggregates shall have no deleterious reaction with cement. The size of the coarse aggregates for plain concrete and ordinary reinforced cement. The concrete shall generally be as per the table given below, if however in case of reinforced cement concrete the minimum limit may be

restricted to unless that the minimum lateral clear distance between bars or 6mm less than the cover whatever is smaller.

| I.S. Designation | Sieve | Percentage passing for single sized aggregates of nominal size | | |
|------------------|--------|--|--------|-------|
| | | 40 mm | 20 mm | 16 mm |
| 80 mm | -- | -- | -- | -- |
| 63 mm | 100 | -- | -- | -- |
| 40 mm | 85-100 | 100 | 0 | |
| 20 mm | 0-20 | 85-100 | 100 | |
| 16 mm | -- | -- | 85-100 | |
| 12.5 mm | -- | -- | -- | |
| 10 mm | 0.50 | 0.20 | 0.30 | |
| 4.75 mm | -- | 0.50 | 0.50 | |
| 2.35 mm | -- | -- | | |

Note :- This percentage may be varied some what by the Engineer in charge when considered necessary containing better density and strength of concrete.

The grading test shall be taken in the beginning and at the change of source of material. The necessary test indicates in IS 383-1970 and IS 456-1976 shall have to be carried out to ensure the acceptability. Aggregates shall be stored separately and handled in such a manner as to prevent the intermixing of different aggregate. If the aggregates are covered with dust, they shall be washed with water to make them clean.

7. All materials shall be stored as to prevent their deterioration or destruction of their quality and fitness for the work. Any material which has deteriorated or has been damaged or is otherwise considered defective by the Engineer in charge shall not be used in the works.

8. Cement shall be stored above the ground level in perfectly dry and watertight sheds and shall be stocked not more than eight bags high. Cement more than 3 to 4 months old shall invariably be tested to ascertain that the acceptability requirements. The aggregates shall be stored in such a way as to prevent admixture of foreign materials different sizes of the fine or coarse aggregates shall be stored in separate stock piles sufficiently removed from each other to prevent the mixing of the materials at the edge of the piles.

9. The water for mixing shall be potable water to the satisfaction of the Engineer in charge. The quality of water shall be just sufficient to produce a dense concrete of required workability for the job.

10. **Workmanship :** Before starting concreting the road of foundation trenches shall be cleared of all loose materials leveled, watered and rammed as directed.

11. **Mixing:-** The concrete shall be mixed in a mechanical mixer. If quantity of cement concrete is very small after taking prior permission of Engineer in charge. Mixing shall be done on a smooth water tight platform large enough to allow efficient turning over of the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign material shall be mixed with concrete nor does the mixing water flow out. Cement in required numbers of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregates, which shall also be spread in layers of uniform thickness on the mixing platform. Dry coarse and fine aggregates and cement shall then be mixed thoroughly by turning over to get a mixture of uniform colour, enough water shall then be gradually added thoroughly by and the mass turned over till a mix of required consistency is obtained. In hand mixing quantity of cement shall be increased by 10 percent above that specified.

12. For mass concrete work, the concrete shall be mixed in mechanical mixer. The method of transporting and placing concrete shall be approved by the Engineer in charge. Concrete shall be so transported and placed that no contamination, segregation or loss of its constituent material takes place. All formwork and reinforcement contained in it shall be cleared 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.

13. Unless otherwise agreed to by the Engineer in charge concrete shall not be dropped into place from a height exceeding 2 meter. When trenching or chutes are used they shall be kept clean and used in such a way as to avoid segregation. When concrete has to be resumed on a surface which has hardened, it shall be roughening, swept, clean, thoroughly wetted, and covered with a 13mm thick layer of mortar composed cement and sand in the same ratio as in the concrete mix itself. This 13mm layer of mortar shall be freshly mixed and placed immediately before placing on new concrete. Where concrete has not fully hardened all balance shall be removed by scrubbing the wet surface with wire or bristle brushes, care should be taken to avoid dislodgement of any particles of coarse aggregates. The surface shall then be thoroughly wetted, all free water removed, and the coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150mm in thickness and shall be well rammed against old work particular attention being given to corners and close spots.

14. Formwork if required.

Form work shall include all temporary or permanent forms required for forming the concrete. Together with all temporary construction required for their support. Forms for concrete shall be constructed of metal or timber suitably line and be of substantial and rigid construction true to shape and dimensions shown on the drawings. Where metal forms are used, all bolts and rivets shall be countersunk and well ground to provide a smooth and plane surface. Where timber is used it shall be well seasoned. For exposed concrete faces, timbers for shuttering shall be wrought on all faces in contractor with concrete.

15. The Engineer in charge shall be informed in advance by the contractor of his intention to strike any formwork. While fixing the time for removal of formwork due consideration shall be given to local conditions, character or the structure. The weather and other conditions that influence the setting of concrete and of the materials used in the mix. Vertical forms of beams, columns and walls maybe removed after 2 days. All formwork shall be removed without causing any damage to the concrete.

16. The unit rate of concrete shall include the cost of all labour tools and plant required for mixing, placing in position, compacting, finishing as per directions of the Engineer in charge, curing and all other incidentals expenses for producing concrete of specified strength to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all centers and forms required for the work.

The payment should be made on Cmt.basis.

Item No. – 3

Proving and laying cement concrete Grade M20 C.C.1:1.5:3(1 Cement:1.5 Coarse Sand:3 stone agg 20mm nominal size) for CC road and curring etc. comp. incl. cost of form work. Finishing the cement concrete road by Tri-mix process inclusive of labour charges for trimix vacume dewatering process on cement conc. road by using vacume dewatering pump, surface floater, including chanelling and making grooves & rough finish to surface, providing expansion joint, construction joint incl. filling the joint with asphalt filler and recron 3 s as secondary reinforcement as per direction by engineer in charge and as per specification.

1. In case of ordinary concrete mix in not required to be designed by preliminary tests and proportions of cement, fine aggregates and coarse aggregates are specified by volume as given in tables below for different grades of concrete designated as ordinary M100, M150, M200 and M250.

2. IN the designation of a concrete mix, letter "M" refers to the mix and the number the specified 28 days works cube compressive strength of that mix on 150mm cubes expressed in Kg/Cm².

3. The ordinary concrete mix shall generally be specified by volume. For cement which normally comes in bags and issued by weight, volume shall be worked out taking 50 Kg. of cement as 0.035 Cu.M. in volume. While measuring aggregates by volume, shaking, ramming or hammering shall not be done. Proportioning of sand shall be as per its dry volume. In case it is dump, allowance for bulking shall be made as per IS : 2386 {Part : III}

3. Ingredient required for ordinary cement concrete containing one 5 Kg. bag of cement for different proportions of mix shall be as given the table below.

| Grade of Concrete | Mix by Volume | Total Quantity of dry aggregates by volume per 50 Kg. of cement to be taken as sum of the individual volumes of fine and coarse aggregates mix | Proportion of fine aggregates to coarse aggregates | Quantity of water per 5 Kg. of cement max. |
|-------------------|---------------|--|--|--|
| Ordinary | Liter | One Cubic meter = 1000 liters | | Liter |
| M100 | 1:3:6 | 300 | General 1:2 for fine agg. To coarse agg. By volumes but subject to a upper limit of 1 : 1 ½ & a lower limit of 1:3 | 34 |
| M150 | 1:2:4 | 220 | | 32 |
| M200 | 1:1 ½ : 3 | 160 | | 30 |
| M250 | 1:1:2 | 100 | | 27 |

Note :- The proportion of the aggregates shall be adjusted from upper limit to lower limit progressively as the grading of the fine aggregates becomes finer & the maximum size of coarse aggregates becomes larger.

Example : For an average grading of fine aggregates (that is zone II or IS 383-1963) the proportions shall be 1 : 1 ½ 1:2 and 1:3 for maximum size of aggregates 10mm, 20mm and 40mm respectively (after carrying out sieve analysis).

Note : 2 A mix leaner than M100 (1:3:6)m may be used for non structural parts, if provided in the contract, in such case grading of aggregates shall be by volume. Other requirement for mixing and placing & curing shall be the same.

5. Following shall be the maximum nominal size of coarse aggregates for the different items of work

| Sr. No. | Item of Construction | Maximum nominal size of coarse aggregates |
|---------|--|---|
| 1. | R.C.C. Well curbs, R.C.C. well staining and R.C.C. piles | 40mm |
| 2. | R.C.C. well staining | 63mm |
| 3. | Well cap or pile cap, solid type piers, abutment and wing walls and other pier caps | 40mm |
| 4. | R.C.C. work in cross girders, deck slab, wearing course, kerb, light post, blast walls, approach slab, etc. and hollow type piers, abutments, wing walls, and their pier cap | 20mm |
| 5. | R.C.C. bearings | 20mm |
| 6. | For any other items of construction not covered by Item 1 to 4. | As specified on the drawing or as desired by the Engineer in charge in case it is not specified on drawing. |

For heavily reinforced concrete members as in the case of ribs of main beams nominal maximum size of aggregate shall be usually be restricted to 5mm less than the minimum cover to the reinforcement which is the smaller.

6. Fine aggregates shall be clean hard, coarse sand. It shall be free from dust and such other substance. The sand be got approved by the Engineer in charge.

7. All materials shall be stored as to prevent their deterioration or destruction of their quality and fitness for the work. Any material which has deteriorated or has been damaged or is otherwise considered defective by the Engineer in charge shall not be used in the works.

8. Cement shall be stored above the ground level in perfectly dry and watertight sheds. Wherever bulk storage containers are used, their capacity should be sufficient to cater to the requirements at site and should be cleaned at least one every 3 to 4 months. The aggregates shall be stored in such a way as to prevent admixture of foreign materials different sizes of the fine or coarse aggregates shall be stored in separate stock piles sufficiently removed from each other to prevent inter mixing of the materials.

9. The water for mixing shall be potable water to satisfaction of the Engineer in charge. The quality of water shall be just sufficient to produce a dense concrete of required workability for the job.
10. 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 so maintained throughout the construction. 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 aggregates show 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.
11. 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 of the ingredients of concrete before and after adding water. Mixing platform shall be so arranged that no foreign material shall be mixed with concrete nor does the mixing water flow out. Cement in required numbers of bags shall be placed in a uniform layer on top of the measured quantity of fine and coarse aggregates, which shall also be spread in a layer of uniform thickness on the mixing platform. Dry coarse and fine aggregates and cement shall then be mixed thoroughly by turning over to get a mixture of uniform colour, enough water shall then be gradually added and the mass turned over till a mix of required consistency is obtained. In hand mixing quantity of cement shall be increased by 10 percent above that specified.
12. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in new batch. Unless otherwise agreed to by the Engineer in charge, the first batch of concrete from the mixer shall contain only two thirds of normal quantity of coarse aggregates. Mixing plant shall be thoroughly cleaned before changing from one type cement to another.
13. The method of transporting and placing concrete shall be approved by the Engineer in charge. Concrete shall be so transported and placed that no contamination, segregation or loss of its constituent material takes place. All formwork and reinforcement contained in it 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.
14. If concreting is not started within 24 hours of the approval being given, it shall have to be obtained again from the Engineer in charge. Concreting being given it shall proceed continuously over the area between construction joints. Fresh concrete shall not be laid 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 unless carried in properly designed agitators, operating continuously. When this time shall be within 2 hours of the addition of cement to the mix and within 30 minutes of its discharge from the agitator. Except where otherwise depth of not more than 45 minutes when internal vibrators are used and not exceeding 0.30 meter in all other cases.
15. Unless otherwise agreed to by the Engineer in charge concrete shall not be dropped into place from a height exceeding 2 meters. When trunking or chutes are used they shall be kept clean and used in such a way as to avoid segregation. When concreting has to resume on surface which has hardened it shall be roughened, swept, clean, thoroughly wetted and covered with a 13mm thick layer of mortar composed of cement and sand in the same ratios as in the concrete mix itself. This 13mm 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 wall surface with wire or bristly brush, care being taken to avoid dislodgement of any particles of 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 150mm in thickness and shall be well rammed against old work particular attention being given to corner and close spots.
16. 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 cases such as concrete under water, where vibrators can not be used. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of breakdowns.
17. Immediately after compaction, concrete shall be protected against harmful effect of weather including rains, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sacking, hessian or other similar absorbent material approved by the Engineer in charge soon after the initial set and shall be kept continuously wet for a period not less than 14 days from the date of placement. Masonry work over the foundation concrete may be started after 48 hours of its laying but the curing of concrete shall be continued for a minimum period of 14 days.

18. Formwork shall include all temporary or permanent forms required for forming the concrete together with all temporary construction required for their support. Formwork shall however be divided into following two distinct categories.

1. Shuttering i.e. formwork required for forming the concrete
2. Scaffolding i.e. formwork required for supporting shuttering.

Forms for shuttering shall be constructed only in metal suitably line. Forms for scaffolding shall be constructed of metal or timber. Both shuttering and scaffolding shall be of substantial rigid construction and shuttering shall be true to shape and dimension shown on the drawings. All bolts and rivets shall be counter sunk and well ground to provide a smooth plane surface.

19. Forms shall be made mortar tight and shall be made sufficiently rigid by the use of ties and bracings to prevent any displacement or sagging between supports. They shall be strong enough to withstand all pressure, ramming and vibration, without deflection from the prescribed line occurring during and after the placing of concrete. Screw jack or hard wood wedges where required shall be provided to make up any settlement in the formwork either before or during the placing of concrete. Suitable camber shall be provided in horizontal member of structure, specially in long spans so counteract the effect of any fixed camber as to provide for such camber. Forms shall be so constructed as to be removable in sections in the desired sequence, without damaging the surface of concrete or disturbing other section. Unless otherwise specified or directed, chamfers or fillets of size 25mm x 25mm shall be provided at all angles of formwork to avoid sharp corners.

20. The inside surfaces of shuttering shall except in the case of permanent formwork or where otherwise agreed to by the Engineer in charge be coated with an approved material to prevent adhesion of concrete to the formwork. Release agents shall be applied strictly in accordance with the manufacturer's instructions and shall not be allowed to come into contact with any reinforcement or prestressing tendons and anchorages. Different release agents shall not be used in formwork for concrete which will be visible in the finished work.

21. Special measures shall be taken to ensure that the formwork does not hinder or shrinkage of concrete because without these cracking could occur before the formwork is removed. Where ever applicable arrangements must be made to ensure that the formwork does not restrain the shortening and hogging of the beams or slabs during tensioning of the tendons. The formwork should take due account of the calculated amount of positive or negative camber so as to ensure the correct final shape for the structure having regard to the deformation of a false work, scaffolding or propping and the instantaneous or deferred deformation due to various causes affecting prestressed structures. Where there are re-entrant angles in the concrete sections the formwork should be removed at those sections as soon as possible after the concrete has set in order to avoid cracking due to shrinkage of concrete. Formwork shall be tight enough to prevent any appreciable loss of cement during vibrations, suitable tolerance allowed. 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 safety of men, machinery, material and results obtained.

22. The Engineer in charge shall be informed in advance by the contractor of his intentions to strike any formwork. When fixing the time for removal of formwork due consideration shall be given to local condition, character of the structure, the weather and other conditions that influence the setting of concrete and of the materials used in the mix. Where field operations are controlled by the strength tests of concrete the removal of the load supporting or soffit forms may commence when concrete has attained strength equal to at least twice the stress to which the concrete will be subjected at the time of striking props including the effect of any further addition of loads. When field operations are not controlled by strength tests of concrete the vertical forms of beams, columns and wall may be removed after 2 days. The props of slabs and beams may be removed after 14 and 21 days respectively. All formwork shall be removed without causing any damage to the concrete. Centering shall be gradually and uniformly lowered in such a 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 permanent embedded metal part shall have less than 25mm cover to the finished concrete surface. Where it is intended to reuse the formwork, it shall be cleaned and made good to the satisfaction of the Engineer in charge.

23. Immediately after the removal of forms all exposed bars or bolts passing through the cement concrete members and used for shuttering or any other purpose shall be cut inside the cement concrete member to a depth of at least 25mm below the surface of the concrete and the resulting holes be filled by cement mortar. All fins caused by form joints all cavities produced by the removal of the 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 aggregate mixed in the proportions used in the grade of concrete that is being finished and of as dry as consistency as is possible to sue. Considerable pressure shall be applied in filling and pointing to ensure through filling in all voids. Surface which have been pointed shall be kept moist for a periods of twenty four hours. If rock pockets / honeycombs in the opinion of the Engineer in charge are of such an extent or character as to affect the strength of the structure materially or to endanger the lime of the steel reinforcement he may declare the concrete defective and required the removal and replacement of the portion of the structure affected.

24. In the case of reinforcement work workability shall be such that the concrete surrounds and properly grips all reinforcement. The degree of consistency which shall depend upon the nature of work and methods of vibration of concrete shall be determined by regular slumps tests. Following slump shall be adopted for different type of works.

| | Type of work | Slumps | |
|-------|--|-------------------------|-----------------------------|
| | | Where vibrator are used | Where vibrator are not used |
| (i) | Mass concrete in RCC foundations, footing and retaining walls. | 10mm to 25mm | 80 mm |
| (ii) | Beams, slab and columns simply reinforced. | 25mm to 40 mm | 100mm to 120 mm |
| (iii) | Thin RCC section or section with congested | 40mm to 50mm | 125mm to 150mm |

25. Works strength test shall be made in accordance with IS 516. Each test shall be conducted on ten specimens five of which shall be tested at seven days and the remaining five at 28 days. The sample of concrete shall be taken on each day of concreting and cubes shall be made at the rate of one for every 5 Cu.M. of concrete or a part thereof. However if concreting done in a day is less than t15 Cu.M. the minimum number of cubes can be reduced to 6 with the specific permission of the Engineer in charge. Similar works test shall be carried out whenever the quality and grading of materials is charges irrespective of the quantity concrete proud. The number of specimens may be suitably increased as deemed necessary by the Engineer in charge, when procedure of tests given above reveal a poor quality of concrete and in other special cases.

26. The average strength of the group of cubes cast for each day shall not be less than the specified work cub strength 20 percent of the cubes cast for each day may have values less than the specified strength, provided the lowest value is not less than 85 percent of the specific strength.

27. R.C.C. work shall have exposed concrete surfaces. Centering design and its erection shall approved by the Engineer in charge. One carpenter with helper will invariably be kept present throughout the period of concreting. Movement of labour and other persons shall be totally prohibited over reinforcement laid in position. For access to different parts, suitable mobile platforms shall provided so that steel reinforcement in position is not disturbed. For ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber kapachi or metal pieces shall not be used for this purpose. Concreting of important structural members shall always be done in the presence and under the supervision of departmental person not below the rank of Assistant Engineer / Addi. Asst. Engineer, Overseer or as instructed by the Engineer in charge. After removal work checks that concrete produced is of good quality. Plastering shall not be allowed to the expressed faces of concrete.

28. In reinforced concrete the volume occupied by reinforcement shall not be deducted. The slap shall be measured as running continuously through and the beam as the portion below the slab.

29. All necessary labours, materials, equipment etc for sampling preparing test cubes, curing etc. comp. shall be provided by the contractor. Testing of the materials and concrete may be arranged by the Engineer in charge in an approved laboratory at the cost of contractor

30 The payment shall be made on Cu.M. basis for the finished work.

31. The unit rate for concrete shall include the cost of all materials, labour, tools and plant required for mixing, placing in position, vibrating and compacting, finishing as per the directions of the Engineer in charge, curing and all other incidental expenses for producing concrete of specified strength to complete the

structure or its components as shown on the drawings and according to these specifications. The rate shall also include the cost of making / fixing and removing of all centers and forms required for the work

**Signature of
contractor**

**Deputy Executive Engineer
Panchayat R. & B. Sub Division
Mundra-Kachchh**

**Executive Engineer
Panchayat R. & B. Division
Bhuj-Kachchh**