

10.3. Proportion of Mortar :

10.3.1. In hand mixed mortar, cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more till a homogeneous mixture of uniform colour is obtained. Mixing platform shall be so arranged, that no deleterious extraneous material shall get mixed with mortar or mortar shall flow out. While mixing, the water shall be gradually added and thoroughly mixed to form a stiff plastic mass of uniform colour so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio shall be adopted as directed. The mortar so prepared shall be used within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes.

M-11 Stone Coarse Aggregate For Nominal Mix Concrete

11.1 coarse aggregate shall be of machine crushed stone of black trap or equivalent and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

11.2 The aggregate shall generally be cubical in shape. Unless special stones of particular quarries are mentioned aggregates shall be machine crushed from the best black trap or equivalent hard stone as approved. Aggregate shall Have no deleterious reaction with cement. The size of the coarse aggregate for plain cement and ordinary reinforced cement concrete shall generally be as per the table given below However, in case of reinforced cement concrete the maximum limit may be restricted to 6 mm less than the minimum lateral clear distance between bars or 6 mm. less than the cover whichever is smaller

TABLE

IS. Sieve	Percentage passing for single			IS. Sieve	Percentage passing for single		
Designation	Sized aggregates of Nominal size			Designation	Sized aggregates of Nominal size		
	40mm	20mm	16mm		40mm	20mm	16mm
80mm	-			12.5mm	0.5		0.20
63mm	100			10 mm		0.5	0.5
40mm	85-100	100		4.75mm			
20mm	0.2	85-100	100	2.35 mm			
16mm		85-100					

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

11.3. The grading test shall be taken in the beginning and at the change of source of materials. The necessary tests. Indicated in IS. 383-1970 and 456-1978 shall have to be carried out to ensure the acceptability. The aggregates shall be stored separately and handled in such a manner as to prevent the mixing of different aggregates. If the aggregates are covered with dust, they shall be washed with water to make them clean.

M-12 Black Trap or Equivalent Hard Stone Coarse

12.1. Aggregate For Design Mix Concrete Coarse aggregate shall be of machine crushed stone of black trap or equivalent hard stone and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar,

12.2. The aggregates shall generally be cubical in shape. Unless special stones of particular quarries are mentioned, aggregates shall be machine crushed from the best, black trap or equivalent hard stones as approved, Aggregate shall have no deleterious with cement.

12.3. The necessary tests indicated in IS. 383-1970 and IS.456-1978 shall have to be carried out to ensure the acceptability of the material. If aggregate is covered with dust it shall be washed with water to make it clean.

M-13 Brick

13.1 The brick shall be machine moulded and made from suitable fly ash, cement, lime, gypsum, etc. They shall be free from cracks and nodules of free lime. They shall have smooth rectangular faces with sharp corners and shall be of uniform colour. The bricks shall be moulded with the frog of 100mm x 40 mm and 10mm to 20mm deep on one of its flat sides. The bricks shall not break when thrown on the ground from a height of 600mm.

13.2 The size of the modular bricks shall be 190 x 90 x 90 mm.

13.3 The size of the conventional bricks shall be 225 x 110 x 75mm.

13.4 Only bricks of one standard size shall be used on one work. The following tolerance shall be permitted in the conventional size adopted in a particular work. Length +3.0mm, Width + 1.50mm, Height +1.50mm.

13.5 The crushing strength of the brick shall not be less than 35.0 Kg / Sq cm. The average water absorption shall not be less than 20 per cent by weight. Necessary test for crushing strength and water absorption shall be carried out as per IS 3495 : (Part I to Part IV) 1976.

M-14 Stone

14.1 The stone shall be of the specified variety such as Granite/Trap Stone/-Quartzite Or any other type of good hard stones. The stones shall be only from the approved quarry and shall be hard sound, durable and free from defects like cavities, cracks, sand holes, flaws injurious veins, patches of loose or soft materials etc., and weathered portions and other structural defects or imperfections tending to affect their soundness and strength. The stone with round surface shall not be used. The percentage of water absorption shall not be more than 5% of dry weight. When tested in accordance with I.S. 1124-1974. The minimum crushing strength of stone shall be 200 Kg/Sq. Cm. unless otherwise, specified.

16.2 The samples of the stone to be used shall be got approved before the work is started.

16.3 The Khanki facing stone shall be dressed by chisel as specified in the item for khanki facing in required shape and size. The face of the stone shall be so dressed that the bushing on the exposed face shall not project by more than 40 mm. from the general wall surface and on face to be plastered it shall not project by more than 19 mm. nor shall it have depressions more than 10 mm. from the average wall surface.

M-15 Laterite Stone

15.1 Laterite stone shall be obtained from the approved quarry. It shall be compacted in texture, sound, durable and free from soft patch. It shall have minimum crushing strength of 100Kg/Sq.Cm.in its-dry condition. It shall not absorb water more than 20% of its own weight, when immersed for 24 hours in water. After quarrying, the stone shall be allowed to weather for some time before using in work.

15.2 The stone shall be dressed into regular rectangular blocks so that all faces are free from waviness and unevenness, and the edges true and square.

15.3 Those types of stone in which white clay occurs should not be used. Special corner stones shall be provided where so directed.

M-16. Mild Steel Binding Wire

16.1. The mild steel wire shall be of 1.63 mm. or 1.22 mm. (16 to 18 gauge) diameter and shall conform to I.S. 280-1972.

16.2. The use of black wire will be permitted for binding reinforcement bars. It shall be free from rust, oil paint, grease, loose mill scale or any other undesirable coating which may prevent adhesion of cement mortar.

M-17. Structural Steel

17.1. All structural Steel shall conform to I.S. 226-1985. The steel shall be free from the defects mentioned in I.S. 226-1975 and shall have a smooth finish. The material shall be free from loose mill scale, rust pits or other defects affecting the strength and durability. River bars shall conform to I.S. 1148-1973. When the steel is supplied by the Contractor test certificate of the manufacturers shall be obtained according to I.S. 226-1975 and other relevant Indian. Standards.

M-18 Shuttering

18.1: The shuttering shall be plywood sheet. The shuttering shall be supported on battens and beams and tubular steel supports properly cross braced together so as to make the centering rigid.

18.2. The form work shall be sufficiently strong and shall have camber, so that it assumes correct shape after deposition of the concrete and shall be able to resist forces caused by vibration of live load of men working over it and other incidental loads associated with it. The shuttering shall have smooth and even surface and its joints shall permit leakage of cement grout.

18.3. If at any stage of work during or after placing concrete in the structure, the form work sags or bulges out beyond the required shape of the structure, the concrete shall be removed and work redone with fresh concrete and adequately rigid form work. The complete formwork

shall be got inspected by and got approved from the Engineer-in-Charge, before the reinforcement bars are placed in position

18.4. The props shall consist to tubular steel support shall be placed as per design requirement. These shall rest squarely on steel sole plates and minimum bearing area of 0-10 sq m. laid on sufficiently hard base.

18.5. Double wedges shall further be provided between the sole plate and the wooden props so as to facilitate tightening and easing of shuttering without jerking the concrete.

18.6. The timber used in shuttering shall not be so dry as to absorb water from concrete and swell or bulge nor so green or wet as to shrink after erection. The timber shall be properly sawn and planed on the sides and the surface coming in contact with concrete, Wooden form work with metal sheet lining or steel plates stiffened by steel angles shall be permitted,

18.7. As far as practicable, clamps shall be used to hold the forms together and use of nails and spikes avoided.

18.8. The surface of timber shuttering that would come in contact with concrete shall be well wetted and coated with soap solution before the concreting is done. Alternatively coat of raw linseed oil or oil of approved manufacture may be applied in place of soap solution. In case of steel shuttering either soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Under no circumstances black or burnt oil shall be permitted.

18.9. The shuttering for beams and slabs shall have camber of 4 mm. per metre

18.10. (1in250) or as directed by the Engineer-in-Charge so as to offset the subsequent deflection. For cantilevers, the camber at free end shall be 1/50 of the projected length or as directed by the Engineer-in-Charge.

M-19 Teak wood

19.1 The teak wood shall be of good quality as required for the item to be executed. When the kind of wood is not specifically mentioned, good Indian teak wood as approved shall be used.

19.2 Teak wood shall generally be free from large, loose dead or cluster knots, flaws shakes, warps, twists, bends or any other defects, it shall generally be uniform in substance and of straight fibres as far as possible. It shall be free from rot decay, harmful fungi and other defects of harmful nature which will affect the strength, durability or its usefulness for the purpose for which it is required. The colour shall be uniform as far as possible. Any effort like painting using any adhesive materials made to hide the defects shall render the pieces liable to rejection by the Engineer-in-Charge.

19.3 All scantlings, planks etc., shall be sawn in straight lines and planes in the direction of grains and of uniform thickness.

19.4 The tolerances in the dimensions shall be allowed at the rate of 1.5 mm. per face to be planed.

19.5. First class teak wood

29.5.1. First class teak wood shall have no individual hard and sound knots, more than 6 sq. cm. in size and the aggregate area of such knots shall not be more than 1% of area of piece. The timber shall be closed grained.

19.6. Second Class Teak Wood :

29.6.1.No individual hard and sound knots shall be more than 15 sq. cms. in size and aggregates area of such knots shall be not exceed 2% of the area of piece.

M- 20. Aluminum doors, windows ventilators

20.1. Aluminum alloy used in the manufacture of extruded window sections shall conform to I.S. designation HEA-WP of I.S. 733-1975 and also to I.S. Designation WVG-WP of I.S. 1285-1975. This section shall be as specified in the drawing and design. The fabrication shall be done as directed.

31.2. The hinges shall be cast or extruded aluminum hinges of same type as in window but of larger size. The hinges shall normally be of 50 mm. projecting type. Non-projecting type of hinges may also be used if directed. The handles of door shall be of specified design. A suitable lock for the door operable either from outside or inside shall be provided. In double shutter door, the first closing shutter shall have concealed aluminum alloy bolt at top and bottom.

M-21. Rolling Shutters

21.1. The rolling shutters shall conform to I.S.6248-1979. Rolling shutters shall be supplied of specified type with accessories. The size of the rolling shutters shall be specified in the drawings. The shutters shall be specified in the drawings. The shutters shall be constructed with interlocking lath sections formed from cold rolled steel strips not less than 0.9 mm. thick and 80 mm. wide for shutters up to 3.5 m. width not less than 1.25 mm. thick and 80 mm. wide for shutters 3.5 m. in width and above, unless otherwise specified.

21.2. Guide channels shall be of mild steel deep channel section and of rolled pressed or built-up (fabricated) joint less construction. The thickness of sheet used shall not be less than 3.15 mm.

21.3. Hood covers shall be made of M.S. Sheets not less than 0.90 mm. thick. For shutters having width 3.5 Meter and above, the thickness of M.S. sheet for the hood cover shall be not less than 1,25 mm.

21.4. The spring shall be of best quality and shall be manufactured from tested high tensile spring steel wire or strip of adequate strength to balance the shutters in all position.

The spring pipe shaft etc. shall be supported on strong M.S. or malleable C.I. brackets. The brackets shall be fixed on or under the lintel as specified with rawl plugs and screws bolts etc.

21.5. The rolling shutters shall be of self rolling up to 8 Sq. m. clear area without ball bearing and up to 12 Sq.m. clear area with ball bearing. If the rolling shutters are of larger, then gear operated type shutters shall be used.

21.6. The locking arrangement shall be provided at the bottom of shutter at both ends. The shutters shall be opened from outside.

21.7. The Shutters shall be completed with door suspension shafts, locking arrangements, pulling hooks, handles and other accessories.

M-22. Collapsible Steel Gate

22.1. The collapsible steel gate shall be in one or two leaves and size as per approved drawings or as specified. The gate shall be fabricated from best quality mild steel channels, flats, etc. Either steel pulleys or ball bearings shall be provided in every double channel. Unless otherwise specified the particulars of collapsible gate shall be as under :

(a) Pickets : These shall be of 20mm MS channels of heavy sections unless otherwise shown on drawings. The distance centre to centre of pickets shall be 12 cms. with an opening of 10 cms.

(b) Pivoted MS flats shall be 20 mm x 6 mm.

(c) Top and bottom guides shall be from tee or flat iron of approved size.

(d) The fittings like stoppers, fixing hold fasts, locking cleats, brass handles and cast iron rollers shall be of approved design and size.

M- 23. Plywood

23.1. The plywood for general purpose shall conform I.S.303-17-1975

Plywood is made by cementing together than boards or sheets of wood into panels. There are always an odd number of layers, 3,5,7,9, ply etc. The plies are placed so that grain of each layer is at right angles to the grain in the adjacent layer.

23.2. The chief advantages of plywood over a single board of the same thickness is the more uniform strength of the plywood, along the length and width of the plywood and greater resistance to cracking and splitting with change in moisture content.

23.3. Usually synthetic resins are used of gluing, phenol resins are usually cured in a hot press which compresses and simultaneously heats the plies between hot plates which maintain a temperature of 90 degree C to 140 degree C and a pressure of 11 to 14 Kg/Sq. Cm. on the wood. The time of heating may be. anything from 2 to 60 minutes depending upon thickness.

23.4. When water glue are used the wood absorbs so much water that the finished plywood must be dried carefully. When synthetic resins are used as adhesive the finished plywood must be exposed to an atmosphere of controlled humidity until the proper amount of moisture has been absorbed.

23.5. According to I.S: 303-1975 the plywood for general purpose shall be of the grades namely BWR, WWR and CWR, depending upon the adhesives used for bonding the veneers, and it will be further classified into six types namely AA, AB, AC, BB, BC and CC based on the quality of the two faces each face being of three kinds namely A, Band C After pressing,

the finished plywood should be reconditioned to a moisture content not less than 8 percent and not more than 16 percent. Thickness of plywood Boards :

TABLE

Board	Thickness	Board	Thickness	Board	Thickness	Board	Thickness
3 ply	3mm	5 ply	5mm	7 ply	9mm	9 ply	16mm
	4mm		6mm		13mm		19mm
	5mm		7mm		16mm	11 Ply	19mm
	6mm		8mm	9 ply	13mm		25mm

M-24. Glass

24.1. All glass shall be of the best quality, free from specks, bubbles, smokes veins, air holes, blisters, and other defects. The kind of glass to be used shall be as mentioned in the item or specification or in the special provision or as shown in detailed drawings. Thickness of glass panes shall be uniform. The specifications for different kinds of glass shall be as under.

24.2. Sheet Glass

24.2.1. In absence of any specified thickness or weight in the item or detailed specifications of the item of work, sheet glass shall be weighing 7.5 Kg/Sq. m. for panes up to 600 mm. x 600 mm.

24.2.2. For panes larger than 600 mm. x 600 mm. and up to 800 mm. x 800 mm. the glass weighing not less than 8.75 Kg/Sq. m. shall be used For bigger panes up to 900 mm. x 900 mm. glass weighing not less than 8.75 Kg/Sq. m. shall be used. For bigger panes up to 900 mm. x 900 mm. glass weighting not less than 11.25 Kg/Sq. m. shall be used.

24.2.3. Sheet glass shall be patent flattened glass of best quality and for glazing and framing purposes shall conform to I.S. : 1761-1960. Sheet glass of the specified colours shall be used, if so shown, on detailed drawings or so specified. For important buildings and for panes with any dimension over 900 mm. plate glass of specified thickness shall be used.

24.3. Plate Glass :

24.3.1. When plate glass is specified it shall be " polished patent plate glass " of best quality It shall have both the surface ground, flat and parallel and polished to obtain clear undisturbed vision and reflection. The plate glass shall be of the thickness mentioned in the item or as shown in the detailed drawing or as specified. In absence of any specified thickness, the thickness of plate glass to be-supplied shall be 6 mm. and a tolerance of 0.20 mm. shall be admissible.

24.4. Obscured Glass :

24.4.1. This type of glass transmits light so that vision is partially or almost completely obscured. Glass shall be plain rolled, figured, ribbed or fluted, or frosted glass as may be specified as required. The thickness and type of glass shall be as per details on drawings or as specified or as directed.

24.5. Wired Glass :

24.5.1. Glass shall be with wire netting embedded in a sheet of plate glass. Electrically welded 13 mm. Georgian square mesh shall be used. Thickness of glass shall not be less than 6 mm. Wired glass shall be of type and thickness as specified.

M-25. Particle board

25.1. The particle boards used for face panels shall of best quality free from any defects. The particleboards shall be made with phenol formaldehyde adhesive. The particle boards shall conform I.S.3087-1965. " Specification for wood particle board for general purpose". The size and the thickness shall be as indicated.

M-26. Fixtures and fastenings

26.1. General :

26.1.1. The fixtures and fastenings, that is butt hinges tee and strap hinges sliding door bolts, tower bolts, door latch, bath-room latch, handles, door stoppers, casement window fasteners, casement stays, and ventilators catch shelf be made of the metal as specified in the item or its specification.

26.1.2. They shall be of iron, brass, aluminum chromium plated iron, chromium plated brass, copper oxidized iron, copper oxidized brass or anodized aluminum as specified.

26.1.3. The fixtures shall be heavy medium or light type. The fixtures and fastenings shall be smooth finished and shall be such as will ensue ease of operations.

26.1.4. The samples of fixtures and fastenings shall be got approved as regards, quality and shape before providing them in position

26.1.5. Brass and anodized aluminum fixtures and fastenings shall be bright finished.

26.2. Holdfasts :

26.2.1. Holdfasts shall be made from mild steel flat 30 cm. length and one of the holdfasts shall be bent at right angle and two nos. of 6 mm. diameter holes, shall be made in it for fixing it to the frame with screws. At the other end, the holdfast shall be forked and bent at right angles in opposite directions.

26.3. Butt hinges :

26.3.1. Railway standard heavy type butt hinges shall be used when so specified.

26.3.2. Tee and strap hinges shall be manufactured from M.S. Sheet

26.4. Siding door bolts (Aldrops) :

26.4.1. The aldrops as specified in the item shall be used and shall be got approved.

26.5. Tower bolts (Barrel Type) :

26.5.1. Tower bolts as specified in the item shall be used and shall be got approved.

26.6. Door Latch :

26.6.1. The size of door latch shall be taken as the length of latch.

26.7. Bathroom Latch :

26.7.1. Bathroom latch shall be similar to tower bolt.

26.8. Handle:

The size of the handles shall be determined by the inside grip length of the handles. Handles shall have a base plate of length 50 mm. more than the size of the handle.

26.9. Door Catch :

26.9.1. Door stoppers shall be either floor door stopper type or door catch type. Floor stopper shall be of overall size as specified and shall have a rubber cushion.

26.10. Door Stoppers :

26.10.1. Door catch shall be fixed at a height of about 900 mm. from the floor level such that one part of the catch is fitted on the inside of the shutter and the other part is fixed in the wall with necessary wooden plug arrangements for appropriate fixity. The catch shall be fixed 20 mm. inside the face of the door for easy operation of catch.

26.11. Wooden Door Stop with hinges :

26.11.1. Wooden door stop of size 100 mm. x 60 mm. x 40 mm. shall be fixed on the door frame with a hinges of 75 mm. size and at a height of 900 mm. from the floor level. The wooden door stop shall be provided with 3 coats of approved oil paint.

26.12. Casement Window Fastener :

26.12.1. Casement window fastener for single leaf window shutter shall be left or right handed as directed.

26.13. Casement stays (Straight Fed Stay) :

26.13.1. The stays shall be made from a channel section having three holes at appropriate position so that the window can be opened either fully or partially as directed. Size of the stay shall be 250 mm. to 300 mm. as directed.

26.14. Ventilator Catch :

26.14.1. The pattern and shape of the catch shall be as approved.

26.15. Pivot:

26.15.1. The base and socket plate shall be made from minimum 3 mm. thick plate, and projected pivot shall not be less than 12 mm-, diameter and 12 mm. length and shall be firmly riveted to the base plate in case of iron pivot and in single piece plate in the case of brass pivot.

M-27. Paints :

27.1. Oil paints :

27.1.1. Oil paints shall be of the specified colour and as approved. The ready mixed paints shall only be used. However, if ready mixed paint of specified shade or tint is not available white ready mixed paint with approved strainer will be allowed. In such a case, the contractor shall ensure that the shade of the paint so allowed shall be uniform.

27.1.2. All the paints shall meet with the following general requirements

(i) Paint shall not show excessive setting in a freshly opened full can and shall easily be re dispersed with a paddle to a smooth homogeneous state. The paint shall show no curdling, livering, caking or colour separation and shall be free from lumps and skins.

- (ii) The paint as received shall brush easily, possess good levelling properties and show no running or sagging tendencies.
- (iii) The paint shall not skin within 48 hours in a three quarters filled closed container.
- (iv) The paint shall dry to a smooth uniform finish free from roughness, grit unevenness and other imperfections.

27.1.3. Ready mixed paint shall be used exactly as received from the manufacturers and generally according to their instructions and without any admixtures whatsoever.

27.2. Enamel paints :

27.2.1. The enamel paint shall satisfy in general requirements in specification of oil paints, Enamel paint shall conform to I.S.2933-1975

M-28. Marble chips for marble mosaic terrazzo

28.1. The marble chips shall be of approved quality and shades. It shall be hard, sound, dense and homogeneous in texture with crystalline and coarse grains. It shall be uniform in colour and free from stains cracks, decay and weathering.

28.2. The size of various colours of marble chips ranging from the smallest up to 20 mm shall be used where the thickness of top wearing layer is 6 mm. size. The marble chips of approved quality and colours only as per grading as decided by the Engineer-in-charge shall be used for marble mosaic tiles or works.

28.3. The marble chips shall be machine crushed. They shall be free from foreign matter, dust etc. except as above, the chips shall conform to I S.2114-1962.

M-29. Flooring Tiles.

29.1. (A) Plain Cement tiles ;

29.1.1. The plain cement tiles shall be of general purpose type. These are the tiles in the manufacture of which no pigments are used. Cement used in the manufacture of tiles shall be as per Indian Standards.

29.1.2. The tiles shall be manufactured from a mixture of cement and natural aggregates by pressure process. During manufacture the tiles shall be subjected to pressure of not less than 140Kg/Sq.Cm. The proportion of cement to aggregate in the backing of the tiles shall be not less than 1 : 3 by weight. The wearing face, through the tiles are of plain cement, shall be provided with stone chips of 1 to 2 mm size. The proportions of cement to aggregate in the wearing layer of the tiles shall be three parts of cement to one parts chips by weight. The minimum thickness of wearing layer shall be 3 mm. The colour and texture of wearing layer shall be uniform throughout its face and thickness. On removal from mould, the tiles shall be kept in moist condition continuously at least for seven days and subsequently, if necessary, for such long period as would ensure their conformity to requirements of I.S. 1237-1980 regarding strength resistance to wear and water absorption.

29.1.3 The wearing face of the tiles shall be plane, free from projections, depressions and cracks and shall be reasonably parallel to the back face of the tile. All angles shall be right angle and all edges shall be sharp and true.

29.1.4. The size of tiles generally be square shape 24.85 Cm x 24.85 Cm. or 25 Cm x 25 Cm. The thickness of tiles shall be 20 mm.

29.1.5. Tolerance of length and breadth shall be plus or minus one millimeter. Tolerance on thickness shall be plus 5 m.m.

29.1.6. The tiles shall satisfy the tests as regards transverse strength; resistance to wear and water absorption as per I.S. 1237-1980.

29.2.(B) Plain Coloured Tiles:

29.2.1. The tiles shall have the same specification as for plain cement tiles as per (A) above except that they shall have a plain wearing surface wherein pigments are used. They shall conform to I.S.1237-1980.

29.2.2. The pigments used for colouring cement shall not exceed 10 percent by weight of cement used in the mix. The pigments, synthetic or otherwise, used for colouring tiles shall have permanent colour and shall not contain materials detrimental to concrete.

29.2.3. The colour of the tiles shall be specified in the item or as directed.

29.3. (C) Marble mosaic tiles :

29.3.1. These tiles have same specification as per plain cement tiles except the requirements as stated below:

29.3.2. The marble mosaic tiles shall conform to I.S. 1237-1980. The wearing face of the tiles shall be mechanically ground and filled. The wearing face of tiles shall be free from

projections, depressions, and cracks and shall be reasonably parallel to the back face of the tiles.

All angles shall be right angles and all edges shall be sharp and true.

29.3.3. Chips used in the tiles be from smallest unto 20 mm. size. The minimum thickness of wearing layer of tiles shall be 6 mm. For pattern of chips to be used on the wearing face, a few samples with or without their full size photographs as directed shall be approved by the Engineer-in-Charge, for approval.

29.3.4. Any particular samples if found suitable shall be approved by the Engineer - in - Charge, or he may ask for a few more samples to be presented. The sample shall have to be Made by the contractor till a suitable sample is finally approved for use in the work. The Contractor shall ensure that the tiles supplied for the work shall be in conformity with the approved sample only, in terms of its dimensions thickness of backing layer and wearing surface, materials, ingredients, colour, shade, chips, distribution etc. required.

29.3.5. The tiles shall be prepared from cement conforming to Indian Standards or Coloured Portland cement generally depending upon the colour of tiles to be used or as directed.

29.4. (D) Chequered Tiles :

29.4.1. Chequered tiles shall be plain cement tiles or marble mosaic tiles. The former shall have the same specification as per (A) above and the latter as per marble mosaic tiles as per (C) except as mentioned below .

47.4. 2. The tiles shall be of nominal size of 250 mm. x 250 mm. or as specified. The centre to centre distance of chequer shall not be less then 25 mm. and not more than 50 mm. The overall thickness of the tile shall be 22 mm.

29.4.3. The grooves in the chequers shall be uniform and straight. The. depth of the grooves shall not be less than 3 mm. The chequered tiles shall be plain coloured or mosaic as specified. The thickness of the upper layer measured from the top of the chequers shall not be less than 6 mm. The tiles shall be given the first grinding with machine before delivery to site.

29.4.4. Tiles shall conform or relevant I.S. 1237-1980.

29.5. (E) Chequered Tiles For Stair Cases :

29.5.1. The requirements of these tiles shall be the same as chequered tiles as per (D) above except in following respects :

(1) The length of a tile including note shall be 300 mm.

(2) The minimum thickness shall be 28 mm.

(3) The nosing shall have also the same wearing layer as at the top.

(4) The nosing edge shall be rounded.

(5) The front portion of the tile for a minimum length of 75 mm. from and including the nosing shall have grooves running parallel to nosing and at centers not exceeding 25 mm. Beyond that the tiles shall have normal chequer pattern.

M-30. Polished Kotah Stones

30.1. Polished Kotah stone shall have the same specification as per rough Kotah stone except as mentioned below :

30.2. The stones shall have machine polished surface. When brought on site, the stones shall be single polished or double polished depending upon its use. The stones for paving shall generally be single polished. The stones to be used for dado, skirting, sink, veneering, sills, steps, etc. where machine polishing after the stones are fixed in situ is not possible shall be double polished.

M-31. White glazed tiles

31.1. The tiles shall be of best quality as approved by the Engineer-in-Charge. They shall be flat and true to shape. They shall be free from cracks, crazing spots, chipped edges and corners The glazing shall be of uniform shade.

31.2 The tiles shall be nominal size of 150 mm. x 150 mm. unless otherwise, specified. The maximum variation the stated sizes, other than the thickness of tile shall be plus or minus 1.5 mm. The thickness of tile shall be 6 mm. Except as above the tiles shall conform to I.S. 1977-1970.

M-32. Galvanized iron pipes and fittings

32.1. Galvanized iron pipes shall be of the medium type and or required diameter and shall comply with I.S.1239-1979. The specified diameter of the pipes shall refer to the inside diameter of the bore. Clamps, screw and all galvanized iron fittings shall be of the standard ' R ' or equivalent make.

M-33. Bib cock and stop cock

33.1 A bib cock is a draw off tap with a horizontal inlet and free outlet. A stop cock is a valve with a suitable means of connection for insertion in a pipe line for controlling or stopping the flow.

33.2. They shall be of screw down type and or brass chromium plated and of diameter as specified in the description of the item. They shall conform to I.S. 781-1977 and they shall be best Indian make. They shall be polished bright.

33.3. The minimum finished weight of bib cock and stop cock shall be as given below :

Diameter	Bib cock	Stop cock	Diameter	Bib cock	Stop cock
8mm	0.25kg	0.25 kg	15mm	0.40kg	0.40 kg
10mm	0.30 kg	0.35 kg	20mm	0.75kg	0.75 kg

M-34. Gun metal wheel valve

58.1. The gun metal wheel valve shall be of approved quality. These shall be of gun metal fitted with wheel and shall be of gate valve opening full way and of the size as specified. These shall conform to I.S.778-1971.

M-35. White glazed porcelain wash basin

35.1. Wash basin shall be of white porcelain first quality best Indian make and it shall conform to I.S.2556.(Part-IV) -1972 and I.S.771-1979. The size of the wash basin shall be as specified in the item. Wash basin shall be of one piece construction with continued overflow arrangements. All internal angles shall be designed so as to facilitate cleaning. Wash basin shall have single tap hole or two holes as specified. Each basin shall have a circular waste hole which is either rebated or beveled internally with 65mm. diameter at top and 10 mm. depth to suit the waste fitting. The necessary stud slot to receive the bracket on the underside of the basin shall be provided. Basin shall have an internal soap holder recess which shall fully drain into the bowl.-

35.2. White glazed pedestal of inequality and color as that to the basin shall be provided where specified in the item. It shall be completely recessed at the back for reception of supply and wash pipe. It shall be capable of supporting the basin rigidly and adequately and shall be so designed as to make the height from the floor to top of the rim of basin 750 mm. to 800 mm. as directed.

M-36. European type water closet / with low level flushing.

36.1 The European type water closet shall be white / coloured glazed porcelain first quality and shall be of wash down type conforming to IS 2556 – 1973 and IS 771 – 1979.

36.2 'S' trap shall be provided as required with water seal not less than 50mm. The solid plastic seat and cover shall be of the best Indian make conforming to IS 2548 – 1980. They shall be made of moulded synthetic materials which shall be tough and hard with high resistance to solvents and shall be free from blisters and other surface defects and shall have chromium plated brass hinges and rubber buffer of suitable size.

M-37. Orissa type water closet

37.1 The specification of Orissa type white / coloured glazed water closet of first quality shall conform to IS 256 (Part III) 1981 and relevant specification of Indian type water closet except that pan will be with the integral squatting pan of size 580 mm x 440 mm with raised footrest.

M-38. Indian type water closet

38.1. The Indian type white glazed water closet of first quality shall be of size as specified in the item and conforming to I.S. : 771-1979 and I.S. :2556- (Part -II) 1981. Each pan shall have integral flushing. It shall also have an inlet at back or front for connecting flush pipes as directed, The inside of the bottom or the pan shall have sufficient slope from the front towards the outlet and surface shall be uniform and smooth. Pan shall be provided with 100 mm. diameter 'P' or 's' trap with approximately 50 mm. Water seal and 50 mm. diameter vent horn.

M-39. A. Foot Rests

39.A. 1. A pair of white glazed earthen ware rectangular foot to minimum size 250 mm. x 130 mm. x 20 mm. shall be provided with the water closet.

M-40. Glazed earthen-ware Lipped type flat back urinal/corner type urinal

40.1. The lipped type urinal shall be flat back or corner type as specified in the item and shall conform to I.S.771-1979. It shall be of best Indian make and. size as specified and

approved by the Engineer-in-Charge. The flat back of corner type urinal must be of 1st quality free from any defects, cracks etc.

M-41. Flush cock.

41.1. Half turn flush cock (Heavy weight) shall be of gun metal chromium plated of diameter as specified in the description of the item. The flush cock shall conform to relevant Indian Standard.

M-42. Cast iron pipes and fittings.

42.1. All soil, water, vent and anti-siphonage pipes and fitting shall conform to I.S.1729-1964. The pipes shall have spigot and socket ends with head on spigot end. The pipes and fitting shall be true to shape, smooth, cylindrical, their inner and outer surfaces being as nearly as practicable concentric. They shall be sound and nicely cast and shall be free from cracks, laps, pinholes or the imperfection and shall be neatly dressed and carefully fettled.

68.2. The end of pipes and fittings shall be reasonable square to their axis.

68.3. The end of cast iron pipes shall be of the diameter as specified in the description and shall be in lengths of 1.5 M., 1.8 M. including socket ends of the pipe unless shorter lengths are either specified or required at junctions etc. The pipes and fittings shall be supplied without ears unless specified or directed otherwise.

42.4. Tolerances :

42.4.1. The Standard weights and thickness of pipes shall be as shown in the following table.

A tolerance up to minus 10 per cent may however be allowed against these standard weights.

Sr. No.	Nominal dia. of bore	Thickness	Overall 1,5 m. long	Weight of pipe 1.8 m. long	excluding ears 2.m. long
1	75mm	5mm	12.38kg	16.52kg	18.37kg
2	100mm	5mm	18.14kg	21.67 kg	24.15kg

42.4.2. A tolerance up to minus 15 percent in thickness and 20 mm. length will be allowed. For fittings tolerance in lengths shall be plus 25 mm. and minus 10 mm.

42.4.3. The thickness of fittings and their socket and spigot dimensions shall conform to the thickness and dimensions specified for the corresponding sizes of straight pipes. The tolerance in weights and thickness shall be the same as for straight pipes.

M-43. Nahni Trap

43.1. Nahni trap shall be of cast iron and shall be sound and free from porosity or other defects which affect serviceability. The thickness of the base metal shall not be less than 6.5mm. The surface shall be smooth and free from craze, chips and other flaws or any other kind of defects which affect serviceability. The size of Nahni trap shall be specified and shall be of self cleaning design.

43.2. The Nahni trap shall be of quality approved by the Engineer-in-Charge and shall generally conform to the relevant Indian Standards. , ,

43.3. The Nahni trap provide shall be with deep seal, minimum 50 mm. except at places where trap with deep seal cannot be accommodated. The cover shall be cast iron perforated cover shall be provided on the trap of appropriate size.

M-44. Gully Trap

44.1. Gully trap shall conform to I.S.651 -1980. It shall be sound, free from defects such as fire cracks or hair. cracks. The glaze of the traps shall be free from crazing. They shall give a sharp clear note when struck with light hammer. There shall be no broken blisters.

70.2. The size of the gully trap shall be as specified in the item.

70.3. Each gully trap shall have one C.I. grating of square size corresponding to the dimensions, of inlet of gully trap. It will also have a water tight C.I. cover with frame inside dimensions 300mm.x300mm. the cover with frame inside dimensions 300 mm. x 300 mm. the cover and weighing not less than 4.53 Kg. and the frame not less than 2.72 Kg. The grating cover and frame shall be of sound and good casting and shall have truly square machined seating faces.

M 45. Glazed Stone Ware pipe And Fittings

45.1. The pipes and fittings shall be of best quality as approved by the Engineer – in - Charge. The pipe shall be of best quality manufactured from stone-ware of fire clay, salt glazed thoroughly burnt through the whole thickness, of a close even texture, free from air blows, fire blisters, cracks and other imperfections, which affect the serviceability. The inner and outer surfaces shall be smooth and perfectly glazed. The pipe shall be capable to withstand pressures or 1.5 M. lead without showing sign of leakage. The thickness of the wall shall not be less than 1/12th of the internal dia. The depth of socket shall not be less than 38 mm. The socket shall be sufficiently large to allow a joint of 6 mm. around the pipe. The pipes shall generally conform to relevant I.S.651-1980.

M-46 Barbed Wire

46.1: The barbed wire shall be of galvanized steel and it shall generally conform to I.S.278-1978. The barbed wire shall be of type-I whose nominal diameter for line wire shall be 2.5 mm. and point wire 2.24 mm. The nominal distance between two barbs shall be 75 mm. unless otherwise specified in the item. The barbed wire shall be formed by twisting together two line wires. One containing the barbs. The size of the line and point wires and barb spacing shall be as specified above. The permissible deviation from the nominal diameter of the line wire and point wire shall not exceed + 0.08 mm.

46.2. The barbs shall carry four points and shall be formed by twisting two point wires, each two turns, lightly round one line wire, making altogether four complete turns. The barbs shall have a length of not less than 13 mm. and not more than 18 mm. The point shall be sharp and cut at an angle not greater than 35 degree of the axis of the wire forming the barbs.

46.3. The line and point wires shall be circular in section, free from scale and other defects and shall be uniformly galvanized. The line wire shall be in continuous length and shall not contain any welds other than those in the rod before it is drawn. The distance between two successive splices shall not be less than 15 metres.

46.4. The lengths per 100 Kg. of barbed wire I.S. type I shall be as under: Nominal 1000 metre Minimum 934 Metre Maximum 1066 Metre.

(E7) :DETAIL SPECIFICATION FOR WORK ITEMS:-

Excavation for foundation in trenches in ordinary, dense, hard soil, sand, clay, soft murrum up to 1.50 Mt. depth including strutting, shoring wherever necessary and throwing away the extra stuff within any lead and outside of Substation premises and its dressing etc. complete as directed by E. I. C.

1.0. General

1.1. Any soil which generally require close application of picks or jumpers or scarifiers to loosen it, stiff clay, gravel and stone, etc. or organic soil, gravel silt, sand, turf, loam, clay, peat, etc. fall under this category.

2.0. Clearing the site

2.1. The site on which the structure is to be built shall be cleared, and all obstructions loose stone, materials, and rubbish of all kind, bush wood and trees shall be removal as directed. The materials so obtained shall be property of the Government and shall be conveyed and stacked as directed up to any. lead. The roots of the trees coming in the sides shall be cut and coated with a hot asphalt.

2.2. The rate of side clearance is deemed to be included in the rate of earth work for which no extra will be paid.

3.0. Setting out

After clearing the site the centre lines will be given, by the Engineer-in-Charge. The contractor shall assume full responsibility for alignment, elevation and dimension of each and all parts of the work. Contractor shall supply labours materials, etc., required for setting out the reference marks and bench marks and shall maintain them as long as required and directed.

4.0. Excavation

The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as directed. The contractor shall do the necessary shoring and shutting or providing necessary slopes to a safe angle, at his own cost. The payment for such precautionary measures shall be paid separately if not specified.

The bottom of the excavated area shall be leveled both longitudinally and transferal as directed by removing and watering as required. No earth filling will be allowed for brining it to level. If by mistake or any excavation is made deeper or wider than that shown on the plan or directed. The extra depth or width shall be made up with concrete of same proportion as specified for the foundation concrete at the cost of the contractor. The excavation up to 1.5 m depth shall be measured under this item.

5.0. Disposal of the excavated stuff

5.1. The excavated stuff of the selected type shall be used in filling the trenches and plinth or leveling the ground in layers including ramming and watering etc.

5.2. The balance of the excavated quantity shall be removed by the contractor from the site of work to a place as directed with lead up to all lead and lift.

6.0. Mode of measurements & payment

6.1. The measurement of excavation in trenches for foundation shall be made according to the sections of trenches shown on the drawing or as per sections given by the Engineer-in-Charge. No payment shall be made for surplus excavation made in excess of above requirements or due to stopping and sloping back as found necessary on account of conditions of soil and requirements of safety.

6.2. The rate shall be for a unit of one cubic meter.

Excavation for foundation in trenches in ordinary, dense, hard soil, sand, clay, soft murrum up to 1.50 Mt. to 3.0 mt. depth including strutting, shoring wherever necessary and throwing away the extra stuff within any lead and outside of Substation premises and its dressing etc. and its dressing etc. complete as directed by E. I. C.

1.0 Workmanship

1.1 The relevant specification of item no. 1 shall be followed except that the excavation work shall be carried out with 1.5Mt to 3.0Mt lift in ordinary soil, sand, clay, soft murrum.

2.0. Mode of measurements & payment

2.1 The relevant specification of item no. 1 shall be followed.

2.2 The excavation work from 1.5Mt to 3.0Mt shall be measured under this item.

2.3. The rate shall be for a unit of one cubic meter.

Excavation for foundation in trenches in ordinary, dense, hard soil, sand, clay, soft murrum up to 3.00 Mt. to 5.0 mt. depth including strutting, shoring wherever necessary and throwing away the extra stuff within any lead and outside of Substation premises and its dressing etc. and its dressing etc. complete as directed by E. I. C.

1.0 Workmanship

1.1 The relevant specification of item no. 1 shall be followed except that the excavation work shall be carried out with 3.0Mt to 5.0Mt lift in ordinary soil, sand, clay, soft murrum.

2.0. Mode of measurements & payment

2.1 The relevant specification of item no. 1 shall be followed.

2.2 The excavation work from 3.0Mt to 5.0Mt shall be measured under this item.

2.3. The rate shall be for a unit of one cubic meter.

Filling available excavated earth (Excluding rock) in trenches, plinth sides of foundation etc. in layers not exceeding 20 CM in depth, consolidating each deposited layers by ramming and watering.

1.0 Workmanship

1.1 The earth to be used for filling shall be free from salts, organic or other foreign matter. All clots of earth shall be broken.

1.2 As soon as the work in foundation has been completed and measured the site of foundation shall be cleared of all debris, brick bats, mortar dropping etc., and filled with earth in layers not exceeding 20 cms. Each layer shall be adequately watered, rammed and consolidated before the succeeding layer is laid. The earth shall be rammed with iron rammers where feasible and with the butt ends of crow bars, where rammer cannot be used.

1.3 The plinth shall be similarly filled with earth in layers not exceeding 20 cms. adequately watered and consolidated by ramming with iron or wooden rammers. When filling

reaches finished level the surface shall be flooded with water for at least 24 hours and allowed to dry and then rammed and consolidated.

1.4 The finished level of filling shall be kept to shape intended to be given to floor.

1.5 In case of large heavy duty flooring like factory flooring, the consolidation may be done by power rollers, where so specified. The extent of consolidation required shall also be as specified.

1.6 The excavated stuff of the selected type shall be allowed to be used in filling the trenches and plinth. Under no circumstances black cotton soil be used for filling in the plinth.

2.0 Mode of Measurements & Payment

2.1 The payment shall be made for filling the plinth and trenches. No deduction shall be made for shrinkage and voids, if consolidated as instructed above.

2.2 The rate shall be for a unit of one cubic meter.

Filling in foundation and plinth with murrum or selected soil in layers of 20 CM thickness including watering, ramming and consolidation etc. complete (Yellow earth should be brought by contractor from out side) Note : 25 % of the successive bill amount shall be retained till lapse of one full scale monsoon and rectifications of subsistence if any to the design ground level)

1.0. Materials

1.1. Murrum shall be clean, of good binding quality, and of approved quality obtained from approved pots / quarries of disintegrated rocks which contain silicon materials and natural mixture of clay of calcareous origin. The size of murrum shall not be more than 20mm.

2.0 Workmanship

The relevant specifications of item No. 4 shall be followed except that murrum or selected soil shall be filled in foundation and plinth in 20 cms. Layers including consolidating, ramming, watering, dressing, etc. complete.

3.0. Mode of Measurements & Payment

3.1. The relevant specifications of item No. 4 shall be followed.

3.2. The rate includes cost of collecting, carting murrum / or selected earth of approved quality with all lead and labour required for filling the same in trenches and plinth under floors.

3.3. The rate shall be for a unit of one cubic meter.

Filling in plinth with sand under floors including watering, ramming consolidating and dressing etc. complete.

1.0. Materials

1.1. Sand shall conform to M6.

2.0 Workmanship

The relevant specifications of item No. 4 shall be followed except that sand shall be filled in under floors, including watering, ramming, consolidating and dressing etc. complete.

3.0. Mode of Measurements & Payment

3.1. The relevant specifications of item No. 4 shall be followed.

3.2. The rate includes cost of collecting, carting sand with all lead and labour for filling the same in plinth under floors.

3.3. The rate shall be for a unit of one cubic meter.

Providing and applying anti termite treatment, as per IS 6313 (part II & Part III 2001) for building works in pre construction & Post construction stages, using chemicals conforming to relevant IS in water emulsion and effective when applied uniformly over the area to treated. The chemical to be used is chloro-pyriphos 20 % EC or its equivalent. The treatment is to be carried out as per the procedure mentioned below and treated plinth surface area is to be taken for measurement.

a) For pre-construction treatment: For plinth filling and periphery holes inside plinth to be drilled and 300mm centre to centre each having depth 1.5 mtr and for inside plinth the holes are to be treated with diluted chemical solution 1.5 ltr. Per hole in the ratio of 1:20 per periphery, i.e. outside plinth the ditch is to be treated with diluted solution 2.25 ltr. per Rmt. in the ratio 1:20. The entire surface area is to be treated with diluted solution of dose 2.25 ltr. per smt over and above as a plinth surface treatment.

Specification for the item shall be as per item description and relevant IS code.

"For Anti-termite Treatment:-

The contractor shall submit performance guarantee of the anti-termite treatment item at the rate of 20% of cost of item of work order in the form of DD or in the form of BG of Schedule Bank / Nationalised Bank in favour of GETCO (A/c Agency) for a period of 5 years from actual date of completion of work on non-judicial stamp paper of appropriate value in approved format of GETCO. In the event of unsatisfactory performance of anti-termite treatment work, the agency shall carry out necessary remedial/rectification works that may be necessary in the opinion of GETCO at no extra cost, failing which BG shall be encashed by GETCO. The BG shall be released only after satisfactory completion of performance period of 5 years."

Measurement will be paid in square meter basis.

Brick work using common fly ash / concrete blocks/ building bricks having crushing strength not less 35 kg. / sq. cm. in foundation and plinth in cement mortar 1:6 (1 -Cement : 6 - Fine sand).

1.0. Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Cement mortar shall conform to M-11. Brick shall conform to M-15.

2.0 Workmanship

2.1. Proportion : The proportion of the cement mortar shall be 1:6 (1 Cement : 6 fine sand) by volume.

2.2 Wetting of bricks : The bricks required for masonry shall be thoroughly wetted with clean water for about two hours before use or as directed. The cessation of bubbles, when the bricks are wetted with water is an indication of thorough wetting of bricks.

2.3.1 Laying : Bricks shall be laid in English bond unless directed otherwise. Half or cut bricks shall not be used except when necessary to complete to bond, closers in such case shall be cut to the required size and used near the ends of walls.

2.3.2 A layer of mortar shall be spread on full width for suitable length of the lower course. Each brick shall first be properly bedded and set home by gently tapping with the handle of trowel or wooden mallet. Its side face shall be flushed with mortar before the next brick is laid and pressed against it. On completion of course, the vertical joint shall be fully filled from the top with mortar.

2.3.3 The wall shall be taken up truly in plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate course shall generally be directly one over the other. The thickness of the brick course shall be kept uniform.

2.3.4 The bricks shall be laid with frog upwards. A set of tools comprising of wooden straight edges, mason's spirit level, square half meter rub, and pins, string and plumb shall be kept on the site of the work for frequent checking during the progress of work.

2.3.5 Both the faces of the walls of thickness greater than 23 cms. shall be kept in proper place. All the connected brickwork shall be kept not more than one meter over the rest of the work. Where this is not possible the work shall be raked back according to bond (and not left toothed) at an angle not steeper than 45 degrees.

2.3.6 All fixtures, pipes, outlets of water, holdfasts of doors and windows, etc. which are required to be built in wall shall be embedded in the cement mortar.

2.4 Joints

2.4.1 Bricks shall be so laid that all joints are quite flush with mortar. Thickness of the joint shall not exceed 12mm. The face joints shall be raked out as directed by raking tool daily during the progress of work, when the mortar is still green so as to provide key for plaster or pointing to be done.

2.4.2 The face of the brick shall be cleaned the very day on which the brick work is laid and all mortar dropping removed.

2.5 Curing

2.5.1 Green work shall be protected from the rain suitable. Masonry work shall be kept moist on all the faces for a period of seven days. The top of the masonry work shall be kept well wetted at the close of the day.

2.6 Preparation of the foundation bed

2.6.1 If the foundation is to be laid directly on the excavated bed, the bed shall be leveled, cleaned of all the loose materials, cleaned and wetted before starting masonry. If masonry is to be laid on concrete footing, the top of the concrete shall be cleaned and moistened. The contractor shall obtain the engineer's approval for the foundation bed, before foundation masonry is started. When pucca flooring is to be provided flush with the top to plinth, the inside plinth offset shall be kept lower than the outside plinth top by the thickness of the flooring.

3.0 Mode of measurement

3.1 The measurements of this item shall be taken for the brick masonry fully completed in foundation up to plinth. The limiting dimensions not exceeding those shown on the plans or as directed shall be final. Battered, tapered and curved portion shall be measured net.

3.2 No deduction shall be made from the quantity of brick work, nor any extra payment made for embedding in masonry or making holes in respect of following items.

(1) End of joints, beams, posts, girders, rafters, purlins, trusses, corbel, steps, etc. where cross section area does not exceed 500 sq cm.

(2) Opening not exceeding 1000 sq cm.

(3) Wall plates and bed plates, bearing of slabs, and the like whose thickness does not exceed 10 cm and the bearing does not extended to the full thickness of the wall.

(4) Drainage holes and recesses from cement concrete blocks to embed hold fasts for doors, windows, etc.

(5) Iron fixtures, pipes up to 300mm dia, hold fasts and doors and windows built into masonry and pipes, etc. for concealed wiring.

(6) Forming chases of section not exceeding 350 sq. cm. in masonry.

3.3 Apertures for fire places shall not be deducted nor shall extra labour required to make splaying of jambs, throttling and making arches over the apertures be paid for separately.

3.4 The rate shall be for a unit of one cubic meter.

Brick work using common fly ash building bricks having crushing strength not less 35 kg. / sq. cm. for super structure above plinth level up to floor two level (i.e. 4.0 m above plinth level and parapet above the same) in cement mortar 1:6 (1 -Cement : 6 - Fine sand)

The specification of item no. 8 shall be applicable to this item but for brick masonry for super structure above plinth level up to floor two level i.e. 4.0m above plinth level and parapet above the same.

The rate shall for a unit of one cubic metre.

Half brick masonry in fly ash / concrete blocks building bricks having crushing strength not less than 35 kg/sq.cm. in cement mortar 1:3 (1 - Cement : 3 - Coarse sand) with 2 Nos. of 6 mm mild steel round bars after every three courses embedded in cement mortar above plinth level up to floor two level.

1.0 Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Cement mortar shall conform to M-11. Brick shall conform to M-15. M.S. reinforcement shall conform to M-18.

2.0 Workmanship

2.1 Relevant specification of bricks, wetting and laying of bricks, joints, curing, scaffolding etc. shall conform to Item no. except the following :

2.2 Cement mortar used in masonry work shall be in proportion of one part of cement and three parts of sand by volume and shall conform to M-11, and this work is for half brick thickness for partition walls.

2.3 The hoop iron i.e. two nos. of 6mm dia MS round bars shall be provided at every third course. The ends of reinforcement shall be full embedded in main walls on both sides as directed. Reinforcement shall be placed on top of the bottom-most course. Laps shall be of 15 cms. of mild steel bars of hoop iron.

2.4 The joints in the course where reinforcement is placed shall admit of mortar cover to the reinforcement.

3.0 Mode of measurements and payment

3.1 The rate shall be for half brick masonry work including providing specified reinforcement, the limiting dimension not exceeding those in plan or as directed. The length shall be measured nearest to one cm.

3.2 Any work done extra over specified dimensions shall be ignored.

3.3 The rate shall be for a unit of one sq. meter.

Providing & laying M-15 grade of concrete with minimum cement content 300 kg/M³ and keeping maximum free water cement ratio as 0.60, for plain structure foundation using 12 mm to 20 mm size black trap machine crushed metal including necessary centering for all sides as required, mixing the concrete in mixer machine, ramming with vibrator, including keeping pockets for foundation bolts & finishing the exposed honey combed surface if any, curing, etc., complete as per drawing & specification, and as directed by E. I. C. (Finishing by Plaster & Reinforcement if any will be paid separately)

M-15 grade of concrete using machine cut black trap of size 12 to 20mm shall be laid using minimum cement content of 300 Kg / Cmt. and free water cement ratio of 0.55. Sample of ingredients to be used shall be got approved.

The general specification of concrete shall be applicable for this item. Rate quoted shall be of all materials, labour, tools, tackles, shuttering, scaffolding, curing, etc. as per item. Concreting work, involved in this item, is for the foundation work for various equipments and machinery.

Payment shall be made on actual cu. M. of concrete work done as per detailed drawing furnished by department.

The pockets to be grouted shall be properly cleaned. Dust and other foreign materials shall be removed. If required, it shall be cleaned by Air blower. If surface is not rough, roughening shall be done, if necessary and instructed by Engineer – in – Charge for bonding purpose. Existing surface shall be applied with thick paste of cement mortar. No separate payment will be admissible for this.

Payment shall be made for actual quantity of concrete work done for grouting.

Providing & Laying controlled cement concrete M-200 curing complete excluding the cost of form work and reinforcement for reinforced concrete work in

- a) Foundation, footings, Bases of columns etc. and Mass concrete,**
- b) Slabs, Landings, shelves, Balconies, Lintels, Beams, Girders and cantilever up to floor two level,**
- c) Columns pillars posts and struts up to floor two level.**

1.0 Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Grit shall conform to M-8. Graded stone aggregate 20mm nominal size shall conform to M-12.

2.0 General

2.1 The concrete mix shall be designed by 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 grade of M-200 with prefix controlled added to it. The letter 'M' refers to mix and numbers specify 28 days works cube compressive strength of 150mm cubes of the mix expressed in Kg/ Cm²

2.2 The proportion of cement, sand and coarse aggregates shall be determined by weight. The weigh batching 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 cms. cubes in Kg / Cm ² at 28 days, conducted in accordance with IS 516 – 1959.	
	Preliminary test (min)	Work test (min)
M-150	200	150
M-200	260	200
M-250	320	250
M-300	380	300
M-350	440	350
M-400	500	400

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

2.3 Admixture may be used in concrete only with approval of 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 admixture.

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 aggregates, in different sizes and being in 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 the 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 equipments shall be maintained in clean, and serviceable condition. Their accuracy shall be periodically checked.

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 2389 (Part III) shall be referred to. Suitable adjustments shall also be made in the weights of coarse aggregates due to variation in the moisture content. Minimum quantity of cement to be used in concrete shall not be less than 320 Kg / Cmt.

3.4 Mixing

3.4.1 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 so maintained throughout the construction. Measured quantity of aggregate, sand, 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 half a 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 two minutes after all ingredients have been put into the mixer.

3.4.2 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 two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

3.5 Consistency

3.5.1 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.

3.6 Inspection

3.6.1 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.

3.6.2 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 for reinforcement 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 shall be cast and tied to the reinforcement. Timber, kapachi or metal pieces shall not be used for this purpose.

3.7 Transporting and laying

3.7.1 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. All form work 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 Engineer – in – Charge has been obtained.

3.7.2 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 metre when internal vibrators are used and not exceeding 0.30 metre in all other cases.

3.7.3 Unless otherwise agreed to by the Engineer – in – Charge, concrete shall not be dropped into place from a height exceeding 2 metres. When trucking or chutes are used they shall be kept close and used in such a way 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 13mm thick layer of mortar composed of cement and sand in 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. When 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 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 corners and close spots.

3.7.4 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 cases, such as concreting 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.

Concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate and begins to cream up to 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 which is likely to destroy the bond between concrete and reinforcement.

3.8 Curing

Immediately after compaction, concrete shall be protected from weather, including rain, 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, 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.

3.9 Sampling and testing of concrete

3.9.1 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:

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

NOTE : At least one sample shall be taken from each shift. Ten test specimens shall be made from each sample, five for testing at 7 days and the remaining five at 28 days. The samples of concrete shall be taken on each day of 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.

3.9.2 The average strength of the group of cubes cast for each day shall not be less than the specified cube strength of 150 Kg / Cm² 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.

4.0 Stripping

4.0.1 The Engineer – in – Charge shall be informed in advance by the contractor of his intention to strike the form work. While fixing the time for removal of form work, 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 temperatures are above 20° C and where ordinary concrete is used, forms may be struck after expiry of periods specified in item for respective item of form work.

4.0.2 All form work 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 exposed, where necessary in order to ascertain that the concrete has sufficiently hardened. 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 permanently embedded metal part shall have less than 25 mm cover to the finished concrete surface. Where it is intended to re-use the form work, it shall be cleaned and made good to the satisfaction of the Engineer – in – Charge. After removal of form work and shuttering, the Executive Engineer shall inspect the work and satisfy by random checks that concrete produced is of good quality.

4.0.3 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 at least 25 mm below the surface of the concrete and the resulting holes be filled by cement mortar. All line caused by form joint, 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 aggregate mixed in proportions used in the grade of concrete that is being finished and of as dry consistency as is possible to use. 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.

If rock pockets / honeycombs in the opinion of the Engineer – in – Charge are of such and extent or character 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 portions of the structure effected.

4.1 Mode of measurement and payment

4.1.1 Controlled concrete RCC work as specified shall be measured under this item. The rate excluded the cost of form work.

4.1.2 The consolidated cubical contents of concrete work as specified in item shall be measured. The concrete laid in excess of section shown on drawings or as directed shall not be measured. No deduction shall be made for –

(a) Ends of dissimilar materials such as joists, beams, posts, girders, rafters, purlin trusses, corbels and steps, etc. up to 500 Sq. Cm. in section.

(b) Opening up to 0.1 Sq. M.

4.1.3 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.

4.3 The rate shall be for a unit of one cubic metre.

Providing & Fixing in position as per approved drawing corrosion resistant steel reinforcement bars FE500/500D conforming to IS 1786/IS 9077 in RCC work including Cutting, bending, binding with 16 gauge annealed wire, of bars as per IS requirement If necessary and placing in position etc. completed for RCC work. etc completed as directed by EIC

All reinforcement CRS bar specified in item shall conform to relevant IS standard 1786 for Corrosion mechanical Tested bars, Wherever tested brands to be used, certificate for the same from manufacture shall be submitted. If it is instructed by Executive Engineer, contractor shall have to arrange for testing of bars at the laboratory or institution, suggested by GETCO at his cost.

If the bars are to be supplied by GETCO at specified rate, in schedule "A" the same shall be collected and carted to the site of use.

Bars shall be bent as per bar bending schedule supplied with drawing. If bar bending schedule is not supplied contractor shall prepare it and get it approved at the site before cutting for fabrication. Bars shall be clean, free from rust, dust, mud etc. if coils are there, they shall be first straightened. Bars shall be cut according to the cutting length specified/approved by department. Bars shall be bent gradually. Bars having crack or spits shall be rejected. Bars shall be bent cold, unless otherwise specified in case of higher diameter bars. If bar is bent wrongly, it should be straightened and re-bent such that it does not injure the materials.

Laps and splices shall be got approved. They shall be staggered and shall be at location shown/approved. Lapping shall be avoided when full length bars are available. All laps, hooks, bends etc. shall be provided as per IS standards. Reinforcement bars shall be placed in position as per drawing or details given. It shall be tied with annealed black wire/G.I. wire of 18 gauge. Blocks, spacers, chairs etc., shall be provided as per IS. 2502 at places instructed.

Bars shall be provided with clear cover as shown in drawing or as instructed on site. Cover shall be provided with cement mortar cover block prepared of specified thickness with binding wire embedded to fix cover in position and tie with the reinforcement so that it may not get disturbed. Minimum clear cover shall be less than 13 mm or diameter of bars for slabs. For beam and columns depending on size it shall be 20mm to 25mm. Cover shall be provided depending on structure, weather condition, location of structure etc., as per ISI.

After the reinforcement is tied and checked by contractor himself it shall be got checked by GETCO's authorized representative and okayed for pouring of concrete. Quantity of reinforcement bars in M.T. embedded in concrete shall be paid. Weight shall be computed on cutting length approved or given multiplied by standard weight of particular diameter of bars as per IS standards. Work shall to be carried out at all levels. "Rate quoted shall inclusive of wastages, cost of binding wire etc., No separate payment will be made for binding wire. However laps, dowels etc., shall be paid as per drawing or as approved in site. For the purpose of payment, the bar shall be measured correct up to 100 mm length and weight payable worked out at the rate specified below :

1	6 mm x 0.22 Kg / Rmt.	8	20mm x 2.47 Kg / Rmt.
2	8 mm x 0.39 Kg / Rmt.	9	22mm x 2.98 Kg / Rmt.
3	10 mm x 0.62 Kg / Rmt.	10	25mm x 3.85 Kg / Rmt.
4	12 mm x 0.89 Kg / Rmt.	11	28mm x 4.83 Kg / Rmt.
5	14mm x 1.21 Kg / Rmt.	12	32mm x 6.31 Kg / Rmt.
6	16 mm x 1.58 Kg / Rmt.	13	36mm x 7.99 Kg / Rmt.
7	18 mm x 3.00 Kg / Rmt.	14	40mm x 9.86 Kg / Rmt.

Providing 15 mm. thick cement plaster in single coat in C. M. (1:3) on fair side brick / concrete wall for interior plastering of floor two level including finishing the surfaces with smooth cement finishing, necessary drip moulding, scaffolding, curing with three coats of the white wash or colour wash as directed by E. I. C.

1.0 Materials

1.1 Water M-1. The cement mortar of proportion 1:3 shall conform to M-13.

2.0 Workmanship

2.1 Scaffolding : Wooden ballies, bamboos, planks, trestles and other scaffolding shall be sound. These shall be properly examined before erection and use. Stage scaffolding shall be provided for ceiling plaster which shall be independent of the walls.

2.2 Preparation of back ground :

2.2.1 The surface shall be cleaned of all dust, loose mortar droppings, traces, of algae, efflorescence and other foreign matter by water or by brushing. Smooth surface shall be roughened by wire brushing if it is not hard and by racking if it is hard. In case of concrete surface, if a chemical retardant has been applied to the hard and by racking if it is hard. In case of concrete surface, if a chemical retardant has been applied to the form work, the surface shall be roughened by wire brushing and all the resulting dust and loose particles cleaned off and care shall be taken that none of the retardant is left on the surface. Trimming of projections on brick / concrete surface where necessary shall be carried out to get an even surface.

2.2.2 Raking of joints in case of masonry where necessary shall be allowed to dry out for sufficient period before carrying out the plaster work.

2.2.3 The work shall not be soaked but only damped evenly before applying the plaster. If the surface becomes dry such area shall be moistened again.

2.2.4 For external plaster, the plastering operation shall be started from top floor and carried downwards. For internal plaster, the plastering operations may be started wherever the building frame and cladding work are ready and the temporary supporting ceiling resting on the wall of the floor have been removed. Ceiling plaster shall be completed before starting plaster to walls.

2.3 Applications of plaster :

2.3.1 The plaster about 15 x 15 cms. shall be first applied horizontally and vertically at not more than 2 metre intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be truly in plane of the finished plastered surface. The mortar shall then be applied in uniform surface slightly more than the specified thickness, then brought to a true surface by working a wooden straight edge reaching across the gauges with small upward and sideways movement at a time. Finally, the surface shall be finished off true with a trowel or wooden float according as a smooth or a sandy granular texture is required. Excessive trowelling or overworking the float according as a smooth or a sandy granular texture is required. Excessive trowelling or overworking the float shall be avoided. All corners, arises, angles and junctions be truly vertical or horizontal as the case may be and shall be carefully

finished. Rounding or chamfering corners, arises, junctions etc. shall be carried out with proper templates to the size required.

2.3.2 Cement plaster shall be used within half an hour after addition of water. Any mortar or plaster which is partially set shall be rejected and removed forthwith from the site.

2.3.3 In suspending the work at the end of the day, the plaster shall be left out clean to the line both horizontally and vertically. When recommencing the plaster, the edges of the old work shall be scraped clean and wetted with cement putty before plaster is applied to the adjacent areas to enable the two to properly join together. Plastering work shall be closed at the end of the day on the body of the wall and nearer than 15cms to any corners or arises. Horizontal joints in plaster work shall not also occur on parapet tops and copings as these invariably lead to leakage. No portion of the surface shall be left out initially to be packed up later on.

2.3.4 Each coat shall be kept damp continuously till the next coat is applied or for a minimum period of 7 days. Moistening shall commence as soon as plaster is hardened sufficiently. Soaking of walls shall be avoided and only as much water as can be readily absorbed shall be used, excessive evaporation on the sunny or windward side of building in hot air or dry weather shall be prevented by hanging matting or gunny bags on the outside of the plaster and keeping them wet.

3.0 Mode of measurement & payment:

3.1 The rate shall include the cost of all materials, labour and scaffolding etc. involved in the operations described under workmanship.

3.2 All plastering shall be measured in square metres unless, otherwise specified. Length, breadth or height shall be measured correct to a centimeter.

3.3 Thickness of the plaster shall be exclusive of the thickness of the key i.e. grooves or open joints in brick work, stone work etc. or space between laths. Thickness of plaster shall be average thickness with minimum 10mm at any point on this surface.

3.4 This item includes plastering up to floor two level.

3.5 The measurement of wall plastering shall be taken between the walls or partition (dimensions before plastering being taken) for length and from the top of floor or skirting to ceiling for height. Depth of cover of cornices if any shall be deducted.

3.6 Soffits of stairs shall be measured as plastering on ceilings. Flowing soffits shall be measured separately.

3.7 For jambs, soffits, sills, etc. for openings not exceeding 0.5 Sq. Mt. each in area for ends of joists, beams, posts, girders, etc. not exceeding 0.5 Sq. Mt. each in area and for openings exceeding 0.5 Sq. Mt. and not exceeding 3.00 Sq. Mt. in each area deductions and additions shall be made in the following manner :

(a) No deduction shall be made for ends of joints, beams, posts, etc. and openings not exceeding 0.5 Sq. Mt. each and no addition shall be made for reveals jambs, soffits, sills etc. of these opening for finish to plaster around ends of joints, beams, posts etc.

(b) Deduction for openings exceeding 0.5 sq.mt. but not exceeding 3 sq.mt. each shall be made as follows and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings.

(i) When both faces of all wall are plastered with same plaster, deduction shall be made for one face only.

(ii) When two faces of wall are plastered with different types of plasters or if one face is plastered and the other pointed, deductions shall be made from the plaster or pointing on the side of frame for door, window etc. on which width of reveals is less than that on the other side but no deductions shall be made on the other side. Where with of reveals on both faces of all equal, deductions of 50 % of area of opening on each face shall be made from area of plaster and / or pointing as the case may be.

3.8 For opening having door frames equal to projecting beyond the thickness of wall, full deduction for opening shall be made from each plastered face of the wall.

3.9 In case of openings of area above 3 sq.mt. each, deduction shall be made for opening but jambs, soffits & sills shall be measured.

3.10 The rate shall be for unit of one sq.mtr.

Providing 20 mm thick smooth cement plaster finished in two coats, first base coat of 12 mm thick in C. M. (1:3) and second coat of 8 mm thick in C. M. (1:2) including providing drip moulding, making grooves in plaster, curing, scaffolding etc., completed as directed by E. I. C.

1.0. Materials

1.1. Water shall conform to M-1. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. The work shall be carried out in the coats. The backing coat (base coat) shall be 12 mm. thick in C.M.

1:3. The relevant specifications of item No. 14 shall be followed except that the thickness of back coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tappers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.

2.2. The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sample approved.

2.3. Curing:

The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

3.0. Mode of measurement & payment

3.1. The relevant specifications of item No. 17.58 shall be followed except that the sand face

plaster on outside up to 10 m. above ground level shall be measured under this item.

3.2. The rate shall be for a unit of One sq. metre.]

Providing 20 mm thick SAND FACED CEMENT PLASTER on wall up to height 10 mtrs. above ground level finished in two coats, 1st base coat of 12 mm thick in C. M. (1:3) and 2nd coat of 8 mm. thick in C. M. (1:1) including making grooves in plaster curing, scaffolding etc., complete as directed by E. I. C. with three coats of water proofing cement paint on wall surface, including watering as directed by E. I. C.

1.0. Materials

1.1. Water shall conform to M-1. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. The work shall be carried out in the coats. The backing coat (base coat) shall be 12 mm. thick in C.M. 1:3. The relevant specifications of item No. 14 shall be followed except that the thickness of back coat shall be 12 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tappers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.

2.2. The second coat shall be completed to 8 mm. thickness in C.M. 1:1 as described above, including raising sand facing by bushing. The sample of sand face shall be got approved before the work is started. The whole work shall be carried out uniformly as per sample approved.

2.3. Curing:

The curing shall be started overnight after finishing of plaster. The plaster shall be kept wet for a period of 7 days. During this period, it shall be protected from all damages.

3.0. Mode of measurement & payment

3.1. The relevant specifications of item No. 17.58 shall be followed except that the sand face plaster on outside up to 10 m. above ground level shall be measured under this item.

3.2. The rate shall be for a unit of One sq. metre.]

Providing 100 mm quarter round water proofing cement vata in C. M. (1:1) at junction of walls & slab in parapets, weather sheds, cantilevers including finishing the top with smooth cement finishing using water proofing compound, curing scaffolding etc., complete as directed by E. I. C.

1.0. Materials

1.1. Water shall conform to M-1. Cement mortar shall conform to M-11.

2.0. Workmanship

2.1. The work of cement vata of 10 cms. x 10 cms. size shall be earned out at junctions of parapets and terraces as directed. The vata shall be finished in quarter round shape. The work shall be earned out in the best workman like manner. The inner portion of rain water pipe shall be rounded off properly during constructing the vata. The work shall be cured for 7 days.

3.0. Mode of measurements and payment

3.1. The work shall be measured for finished item in running metre.

3.2. The rate shall be for a One running metre.

Providing & applying 3 coats of oil bound distemper and with one coat of primer of approved shade & make including scaffolding touching with putty, smoothening the surfaces etc., completed as directed by E. I. C.

1.0. Materials

1.1. Oil bound washable distemper and primer shall be of approved brand and manufacture. The distemper shall be of required colour and shade and the same shall conform to I.S. : 428- 1969.

2.0. Workmanship

2.1. Scaffolding

Where scaffolding is required, it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be distempered. A properly secured and well tied suspended platform (Joola) may be used for distempering. Where ladders are used, pieces of old gunny bags" shall be tied at top and bottom to prevent scratches to the walls and floors. For distempering to ceiling, proper stage scaffolding shall be erected where necessary.

2.2. Preparation of surface :

2.2.1. The undecorated surface to be distempered shall be thoroughly brushed from dust, dirt, grease, mortar dropping and other foreign matter and sand papered smooth. New plaster surface shall be allowed to dry for at least 2 months before applications of distemper.

2.2.2. All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster again with a fine grade sand paper and made smooth. A coat of distemper shall be applied over the patches. The surface shall be allowed to dry thoroughly before the regular coat of distemper is allowed. The surface affected by moulds, moss, fungi, algae lichens, efflorescence etc. shall be treated in accordance with I.S; 2395 (Part01) 1966. Before applying distempering, any unevenness shall be made good by applying putty made of plaster of paris mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.

2.3. Priming coat :

2.3.1. A priming coat of distemper primer of approved manufacture and shade shall be applied over the papered surface in case of new work on undecorated surface. If the distemper priming is done after the wall completely, the distemper primer shall be applied.

2.3.2. Application of primer shall be done as under : The primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours before oil bound distemper or paint is applied.

2.3.3. Oil bound distemper is not recommended to be applied within six months of the completion of wall plaster.

2.4. Preparation of oil bound distemper :

2.4.1. The distemper shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer only. Sufficient quantity of distemper required for a days work shall be prepared.

2.5. Application of Distemper coat :

2.5.1. For undecorated surfaces, after the primer coat is dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the distemper, taking care not to rub but priming coat. All loose particles shall be dusted off after rubbing. Minimum two coats of distemper shall be applied with brushes in horizontal strokes followed

immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coats to permit proper drying of the proceeding coat. The finished surface shall be even and inform without patches, brush marks, distemper drops etc.

2.5.2. Sufficient quantity of distemper shall be mixed to finish one room at a time. The application of a coat in each room shall be finished in one operation and no work shall be striated in any room which cannot be completed on the same day.

2.5.3. 15 cm. double bristled distemper brush shall be used. After day's work brushes shall be thoroughly washed in hot water with soap solution and hung down to dry. Old brushes which are dirty and caked with distemper shall not be used on the work.

2.6. Protective measurements : The surfaces of doors, windows, floors, articles of furniture etc. and such other parts of the buildings as are not to be distempered shall be protected from being splashed upon. Such surface's shall be cleaned of distemper splashes if any.

3.0. Mode of measurements and payment

3.1. Priming coat of distemper primer, scraping of surface spoiled by trunk soots, removal of oil and grease spots, treatment for infraction of effloresces., mould. moss, fungi, algae and lichen and patch repairs to plaster shall be included in this item for which nothing extra shall be paid.

3.2. All the work shall be measured net in the decimal system as in place subject to the following limits unless otherwise stated hereinafter :

(a) Dimensions shall be measured to the nearest 0.01 m.

(b) Area in individual items shall be worked out to the nearest 0.01 sq. m. All work shall be made for ends of joints, beams, posts etc., and openings, not exceeding 0.5 sq.mt. each and no addition shall be made for reveals, jambs, soffits, sills etc. of these openings not for finish around ends of joints, beams, posts etc.

3.3. Deductions of opening exceeding 0.5 sq.m. but not exceeding 3 sq. m. each shall be made as follows and net addition shall be made for reveals, jambs, soffits etc. of these openings

(a) When both the faces of wall are provided, with same finish, deductions shall be made for one face only.

(b) When each face of wall is provided with different finish, deduction shall be made for that side of frame for doors, windows etc. on which width of reveals is less than that of the other side but no deduction shall- be made on the other side. Where the width of reveals on the both the faces of wall are equal, deduction of 50% of area of opening on each face shall be made from area of finish.

(c) When only one face of wall is treated and the other face is not treated, full deductions shall be made if the width of the reveal on treated side is less than that on untreated side but if the width of the reveal is equal or more than that on untreated side neither deductions nor additions to be made for reveals, jambs, soffits, sills etc.

3.4. In case of opening of area exceeding 3 sq. m. each deduction shall be made for openings but jambs, sills and soffits shall be measured.

3.5. No deductions shall be made for attachments such as casings, conduits, pipes, electric wiring and the like.

3.6. Item includes removing nails, making good holes, patches with materials similar in composition of distemper.

3.7. The rate includes cost of all materials, labours, scaffolding, protective measures etc. involved in all the operations described above. This shall also include conveyance, delivery, handing, unloading, storing work etc.

The rate shall be for a unit of one sq. metre.

Providing & applying 3 coats of ACID / ALKALI resisting paint of approved shade & make to wall, ceiling including filling putty smoothing the surfaces scaffolding etc., complete as directed by E. I. C.

Acid/Alkali resisting painting of approved brand and tint be got approved before, collecting. Surface shall be cleaned as described in item of distempering. One coat of primer shall be applied to the surface, after same is made even with putty application.

Primer shall be of same manufacture and suitable for Acid. Alkali resisting paint. Acid & Alkali resisting paint shall be applied in 2 to 3 coats as per item, with either brush or with

spray painting. Uniform painting on surface shall be done & got approved. manufacturers instructions regarding use of paint be followed.

Providing & applying 2 coats of APEX or its equivalent ACRYLIC EXTERIOR paint on exiting plastered surface or approved makes & shade including finishing & thinning as per manufacturer's instruction. A gap of 6 hrs. should be given between 2 subsequent coats. The work should be carried out strictly as per manufacturer's specifications and requirement etc., complete as directed by E. I. C.

Specification of item no. 7 shall be followed for preparing of surface to receive the painting work. Surface shall be applied with smoothing coat of paint, putty, before application of paint. Surface shall be applied first coat of APOCOLITE APEX or its equiv. ACRYLIC EXTERIOR paint after putty has dried and surface is smoothed by applying fine sand paper. Second coat of paint shall be after first coat had dried. Surface shall be rolled with 3 layer to get uniformity. Sample of painting work shall be first prepared and got approved before taking further work. Manufacturers instructions shall be followed while applying the paint.

Providing & fixing steel rolling shutter 18 Gauge of approved make & made 30 mm wide M. S. Laths interlock together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with bracket plates guide channel and arrangement for inside and outside locking with push pull operation complete including the cost of hood cover and spring etc., complete with both sides one coat of red oxide and three coats of oil cover painting of approved colour & tint with drum & cover in perfect working condition etc., complete as directed. (THE MEASUREMENT SHALL BE PAID FOR WALL OPENING PLUS DRUM ONLY)

Rolling shutter shall be of interlocking scroll rolled from 18 gauge, steel metal. The scrolls are to be held in place by markable iron locks, which are riveted to alternate latches, wind lock on slots shall be included. The bottom bar shall be of two angles back to back. Steel guide shall be of angle-framed, screwed to the metal frame at opening. The hood shall be of 18 gauge-selected steel suitably reinforced to prevent sag. The guaranteed deflection of shaft and hood shall be stated in the tender. This shall be set on inside of wall; above high point of opening, as shown on drawing. Rolling shutter shall be manually operated and for big shutter, if chain pulley arrangement of electrically operated is specified; the same shall be designed and installed by contractor. The rolling shutter shall be applied one coat of red oxide as shop coat and 2 coats of aluminum paint after erection. Contractor shall give satisfactory operation of shutter trial and has to maintain the shutter during guarantee period.

Pull & push operations shall be constructed with curve slab from steel metal of 18 gauge with dimension 65mm between centers inter lock and bridge depth of 16mm. These curve slab shall slide into one another, fitted with alternatively inter lock. They shall coil at the head of the opening with the weight of shutter at all positions, tempered steel. Shutter when coiled up, shall be housed in a box of 18 gauge steel metal. They shall be opened from outside and locking arrangement shall be provided at the bottom of the shutter on both ends.

The rate quoted shall be inclusive of complete supply of shutter with hood, drives etc., scaffolding, fixing in position, painting, labour, tools, equipments, pull & push arrangements. Measurement shall be taken for clear area plus drum area provided on top and paid as per unit rate quoted for item.

Providing and fixing aluminium anodised sliding windows having standard section using extruded section fabricated by standard. Manufacturers with 20 Microns colour anodising as per drawing windows shall be of 4 mm thick. Triveni 'HB4' plain glass glazing rubber gasket and necessary hardware, handles cum locking arrangement etc. complete unit shall be fabricated from aluminum section conforming to HE9WP designated to IS - 1285 / 1980 for its chemical and mechanical properties. Anodised shall be conforming to IS - 1868 / 1968. All joints shall be mechanically joint having secured with specially design M. S. Zink plated heat arrangement. The frame section shall be 61.85 mm. X 31.75 mm. weighing 0.695 Kg per mtr. Minimum of section no 8687 Jindal Aluminium Ltd. make or its equivalent and section for shutter shall be of 50 mm X 20 mm size weighing 0.571

Kg per mtr. minimum of section no. 8305 of Jindal Aluminium Ltd. make or its equivalent. No welding process shall be allowed in the unit.

The aluminium section to be utilized shall confirm to IS 1285/1980 and IS 1869/1968 for the material grade and anodizing respectively. The frame section shall be 61.85mm x 31.75mm weighing 0.695kg per mtr. Minimum of section no 8687 Jindal Aluminum Ltd make or its equivalent and section for shutter shall be of 50 mm x 20 mm size weighing 0.571kg per Mtr. minimum of section No 8305 of Jindal aluminium Ltd make or its equivalent. Necessary additional / special sections shall be used to facilitate locking arrangement, handle stay if necessary. As directed by EIC. Payment shall be made on Smt. Basis. No additional payment shall be made for fixture or addition /special section. Gold Colour anodizing is to be provided. The same shall be got approved from EIC.

ITEM : -- DO --- as above, but for ventilator.

The material grade and anodizing shall confirm to IS mentioned in Item No 57. The frame section size shall be 50mm x 25mm and the section shall be 1.5 mm. The ventilation shall be adjustable louvered type with glass fins of 125mm size. The description of item 57 is confirming this item in terms of material only.

Supply & Fixing to doors & windows, ventilator, cup-boards following fixtures & fastenings of approved quality with wooden or metal screws, nuts & bolts as directed or as per the drawing & specifications etc., complete as directed by E. I. C.

Supplying & fixing to doors, windows, ventilators, cupboards fixtures & fastenings of approved quality with wooden or metal screws, nuts & bolts as directed or as per drawings.

Oxidized iron

Sample of oxidized iron fixtures proposed to be used shall be got approved and approved sample shall be displayed on Board, of work site for comparison. Aldrop shall be with plate handle covering the rod and riveted. All fixtures shall confirm to relevant IS Standards.

All G. I., Iron, C. P. brass, C. P. & aluminum fixtures shall be got approved and approved sample kept on site. Only approved brand and quality fixtures shall be used in the work.

Ten-takora khataka lock with latch of approved quality & make shall be provided & fixed.

All the fixtures & fastenings are to be fixed with required size & no, of nuts & bolts, screws etc. All Aldrop shall be with nuts & bolts arrangements for fixing.

Rate quote for fixtures and fastenings are inclusive of supplying & fixing with nuts, bolts etc., screws of approved quality, make, brand and size.

Providing & fixing M. S. Grill of approved quality & design weighing 25 to 30 KG / Smt. as per drawing & as directed with necessary grill door (IF REQUIRED) including welding or bolted fixtures and fastening, M. S. Flat hold fasts, 300 mm. long 16 mm. dia. Aldrop & 300 mm. long tower bolt necessary handles etc., with 3 coats of oil painting of approved shade & tint with one coat of red oxide primer including grouted hold fast in C. C. (1:2:4) etc., complete as directed by E. I. C.

General specification of fabrication shall be applicable. Grill shall be prepared of approved design supplied by Board. Fabricated grill shall be in one plane, line & level with all members. If any members, is found destroyed, it shall have to be changed. All fixtures & fastenings shall be bolted unless otherwise instructed welded. Tower bolt, aldrop etc shall be of approved quality. Bolts, nuts shall be "GKW" brand or its equivalent confirming to I.S. standard. All structure shall be given one coat of red oxide primer and 3 coats of oil painting. Holdfast shall be grouted in c. c. 1:2:4.

Rate quoted shall be inclusive of erection at site. Actual weight arrived at with standard sectional wt. of members, shall be paid. No. payment shall be made for weight due to welding.

Providing fabricating & erecting in position GI Angle, channels girders etc., for purlins rafters, columns etc., including welding the section as per instruction & drawing making holes etc. complete. (ALL MATERIALS SHALL BE BROUGHT BY THE CONTRACTOR)

General specification of fabrication shall be applicable. Cutting schedule of the various members shall be prepared as per drawing and got approved.

The rate quoted shall be for supplying steel, confirming I. S. Standards, fabricating erecting. Payment will be made by computing the weight of various structural section on the basis of standard weight as per I. S. and weight of bolts and nuts if provided. No Payment shall be considered for the weight due to riveting or welding or G.I Coating.

Providing & laying 40 mm. thick I. P. S. Flooring in C. C. (1:2:4) including finishing the floor with smooth cement slurry, marking diagonal lines, curing etc., complete as directed by E. I. C.

1.0 Materials

Water shall conform to M-1. Cement shall conform to M-3. Sand shall conform to M-6. Stone aggregate 20mm nominal size shall conform to M-12. Cement concrete 1:2:4 proportion measured by volume shall conform to relevant specification or ordinary grade 1:2:4 concrete.

2.0 Workmanship

2.1 The cement concrete flooring of 40 mm thick (average) is to be laid as per the site condition. The concrete shall be mixed in a mechanical mixer at the work. Hand mixed however, may be allowed for smaller quantities of the work and in case of failure of machines or as permitted by the Engineer – in – Charge. It shall be carried out on a water tight platform and care shall be taken to ensure that 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 mechanical mixing shall be done for period of ½ to 2 minutes. The quantity of the water shall be just sufficient to produce a dense concrete of required workability. The flooring of specified thickness shall be laid in accordance with the approved pattern or as directed. Finishing operation shall start shortly after the cessation of beating and shall be spread over a period of one to six hours depending upon the temperature and atmospheric condition. The surface shall be left for some time till moisture disappears from it. Fresh quantity of cement shall be mixed with water to form a thick slurry to spread over the surface while the concrete is still green. Use of dry cement or cement and sand mixture sprinkled on this surface to stiffen the concrete or absorb excessive moisture shall not be permitted. The cement slurry shall then be properly pressed twice by means of iron floats, once when the slurry is applied and the second time when cement starts setting and finished smooth. The surface shall be marked with string or BRC fabric jail to make the surface non-slippery as and when directed. The junction of the floors with wall plaster, dado or skirting shall be rounded off where so required up to 25 mm radius. Flooring in lavatories and bathrooms shall be laid after fixing of water closet and squatting pans and floor traps which shall be plugged while laying the floors and opened after the floors are completed. Any damage done water supply or sanitary fittings during the execution of the work shall be made good.

2.2 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.

2.3 The form work shall be provided, if necessary as directed by the Engineer – in – Charge. Concreting shall be done as per alternate bay method with necessary centering either by mastic or cement mortars as directed.

3.0 Mode of measurement and payment

3.1 The rate shall include the cost of all materials and labour involved in all the operations described above. No deduction shall be made or extra paid for any opening up to 0.1 Sq. Mt. In area in the floor, nothing extra shall be paid for laying the floor at different level in the same room or the courtyard.

3.2 The rate shall be for unit of one square metre.

Providing & laying 25 mm. thick POLISHED KOTAH STONE HAND DRESSED on all sides of approved quality of 600 mm X 600 mm size in floor & dado in (1:1.5) lime mortar bedding & setting the stone in cement slurry filling the joints with cement, curing, machine mirror polishing etc., complete as directed. (CONCRETE BEDDING SHALL BE PAID SEPERATELY). This item includes providing and fixing of marble patti of 600 X 25 X 25 mm thick size between the joints of the Kotah Stone flooring in line and level as per the instruction of the EIC.

1.0. Materials

1.1. Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-11. Polished kota stone shall conform to M-49.

2.0. Workmanship

2.1. Each slab shall be cut to the required size and shape and fine chisel dressed at all the edges. The sides must be dressed shall have a full contact if a straight edge is laid along. The sides shall be table rubbed with coarse sand before paving. All angles and edges of the slabs shall be true square and free from chippings and giving a plane surface. The thickness shall be 25 mm. (Average) as specified in the item but not less than 20 mm. at any place of the slab.

2.2. Bedding for the Kota stone slabs shall be of cement mortar 1:6 (1 cement : 6 coarse sand) or M. 1:1.5. of average thickness 20 mm. given in the description of the item. Sub grade shall be cleaned, wetted and mopped. Mortar of the specified mix and thickness shall then be spread on an area sufficient to receive one kota stone slab. The slab shall be washed clean before laying. It shall be laid on top, pressed, tapped gently to bring it in level with the other slabs. If shall then be lifted and laid aside. Top surface of the mortar shall then be corrected by adding fresh mortar at hollows or depressions. The mortar shall then be allowed to harden bit. Over this surface, cement slurry of honey-like consistency shall be applied. The slab shall then be gently placed in position and tapped with wooden mallet till it is properly padded in level with and close to the adjoining slab. The joint shall be as fine as possible. The slabs fixed in the floor adjoining, the walls shall enter not less than 10 mm. under the plaster, skirting or dado. The junction between the wall and door shall be finished neatly. The finished surface shall be true to levels and slopes as directed.

2.3 The floor shall be kept wet for a minimum period of 7 days so that bedding and joints set properly.

2.4 Polishing shall be normally commenced after 14 days of laying the stone slab. First polishing shall be done with carborundum stones of 120 grade grit fitted in the heavy machine and then second polishing shall be done with carborundum stone of 220 to 350 grade grit fitted in heavy machine. Water shall be properly used during polishing. The stone shall then be washed clean with water. When directed by the Engineer-in-charge, wax polish of approved quality shall be applied on the surface with the help of soft cloth over a clean and dry surface. Then the polishing machine fitted with bobs shall be run over it.

2.5. The holes required for Nahni traps, pipes and any other fittings shall be made without any extra cost.

3.0. Mode of Measurement & payment

3.1. The rate shall include the cost of all materials and labour involved in all the operations described above. The kota stone flooring shall be measured in square metres correct to two places decimal, length and breadth shall be measured correct to a centimeter and between the finished face of skirting dado or wall plaster and no deduction shall be made nor extra paid for any opening in floor of areas up to 0.1 sq. mt.

3.2. The rate shall be for a unit of one sq. metre.

ITEM : --- DO --- as above item No. but for 1600 mm X 350 mm wide for steps, riser, dado, pillar laid on 10 mm thick C. M. (1:3) etc., complete etc., complete.

1.0. Materials

1.1. Water shall conform to M-1. Lime mortar shall conform to M-10. Cement mortar shall conform to M-11. Polished kota stone shall conform to M-49.

2.0. Workmanship

2.1 The relevant specification of item no. 28 shall be followed except that the Kota stone shall be fixed for riser of steps, dado or skirting in cement mortar 1:3 and shall be done manually instead of machine polishing.

3.0. Mode of Measurement & payment

3.1 The riser of steps, skirting or dado shall be measured in sq. meter. Length shall be measured along the finished faces of the riser, skirting or dado. Height shall be measured from finished level of treads or floor to top. Lining of the pillars shall be measured under this item.

3.2. The rate shall be for a unit of one sq. metre.

Providing & fixing white / coloured glazed tiles of Spartek / Kajaria / Nittco / JOHNSON or its equivalent make in flooring, skirting & dado including fixing the same in cement mortar bedding (1:2) & 12 mm. thick back coating of cement plaster in C. M. (1:3) for base, filling the joints with white / colour cement neatly.

1.0. Materials

Water shall conform to M-1. Cement mortar shall conform to M-11. White / coloured glazed tiles shall conform to M-55

2.0. Workmanship

2.1. Preparation of Surface:

In case of brick masonry wall, the joints shall be raked out to a depth of least 15 mm. while the masonry is being laid. In case of concrete wall the surface shall be chiselled and roughed with wire brushes. The surface shall be cleaned and wetted thoroughly before commencing the laying work.

2.2. Laying :

2.2.1. The wall surface shall be covered with 10 mm. thick plaster of cement mortar 1:3 mix and allowed to harden. The plaster shall be roughened with wire brushes both way. The back of tiles shall be floated with grey cement slurry set and edges with white cement slurry in bedding mortar. The tiles shall be gently tapped in position on after the other keeping the joints as thin as possible. Top of skirting or dado shall be truly horizontal and the joints vertical or as per required pattern.

2.2.2. Risers of steps, skirting and dado shall rest on top of treads or flooring. Where full size tiles can not be fixed, They shall be cut to the required size and the edges be smoothened,

2.2.3. The joints shall be cleaned and flush pointed with white cement. The surface shall be kept wet for seven days. After curing the surface shall be washed clean.

3.0. Mode of measurements and payment

3.1. The rate shall include the cost of all materials and labour required for various operations described above. Risers of steps, skirting and dado shall be measured in square metres. Length and height shall be measured along the finished face of the skirting or dado including curves, where special such as covers, internal and external angles, etc., used. The length and height shall be measured correct to the centimeter except in case of risers and skirting where height shall be measured correct to 3 mm.

The rate shall be for a unit of one sq. meter.

Providing, supplying, fabricating & erecting chain link fencing panel of size 2400 X 2000 mm. made from 75 X 75 mm & 10 Gauge G. I. Chain links & GI 50 X 50 X 6 mm. angle including fixing the chain link in angle frame by means of 40 X 3 mm. GI Flat welded to angle frame drilling to holes in angle frame & flat with hot deep galvanizing as per IS-2633 / 72 and 209 of 1966 or latest amendment including making necessary arrangement of gate 0.75 X 2.0 in it with locking arrangement and fixing the same with angle post in line level & plumb by means of 10 mm. dia. bolts frame & flat & nuts, etc., complete as per drawing & as directed by E. I. C. (ALL THESE MATERIALS LIKE GI FLAT, CHAINLINK FENCING, GI ANGLES, BOLTS, NUTS, WILL HAVE TO BE SUPPLIED BY THE CONTRACTOR)

Necessary GI Angle GI Flat, chain link jali, bolts, nuts and washers shall be procured by contractor. Fabrication work shall be carried out as per general specifications of fabrication work. Chain link fencing panels shall be prepared as described in the item. All corners shall be at right angle and frame in one plane. One frame shall be prepared & got approved. Chain link shall be got approved before collecting. It shall be properly galvanized.

Frame work shall be hot dip galvanized as per IS 2633 /72 and 209 of 1966 or latest amendment and as directed. Fabrication work shall be as per drawing and as directed on site.

Payment shall be made on number of panels prepared and erection of the same as above and rate shall be inclusive of all labour, materials tools, plant etc., required fabricated. Surplus panel if any is to be credited to store or stack at place shown, shall be done without any extra cost.

Providing, supplying, fabricating & fixing 50 X 50 X 6 mm. GI Angle for vertical support 2.75 Mt. long including providing & 50 X 6 mm. GI Flat / Pieces, 150 mm. long welded at top & bottom of support with 18 mm. dia. slotted holes in flats, as directed by E. I. C. with hot dip galvanizing as per IS-2633 / 72 and 209 of 1966 or latest amendment & grouting the same in pillar in line & level etc., complete. (THE ITEM RATE INCLUDES COST OF SUPPLY OF MATERIALS, FABRICATION & ERECTION AT SITE).

GI Angle 50 x 50 6mm shall be fabricated as per detailed drawing supplied and as described in the item. General specification of fabrication shall be followed. Necessary holes for providing barbed wire on top shall be provided. Angle shall be fabricated as per drawing. Angle shall be erected in line & level at the center to center distance given on the drawing or as directed at site. Angle shall be welded with holdfasts, anchor at bottom to have fixing with concrete work done at base. MS flats / pieces 150mm long shall be welded at top & bottom on two sides as shown in the drawing with 18mm dia slotted holes to receive the bolts required for fixing chain link fencing panel.

Frame work shall be hot dip galvanized as per IS 2633 /72 and 209 of 1966 or latest amendment and as directed. Fabrication work shall be as per drawing and as directed on site.

Rate quoted shall be for supply and fabrication of GI Angle 50 x 50 x6mm with GI flat 5-x6mm necessary bolts, nuts, washers, cutting bending, welding, erection in line & level & plumb, hot dip galvanizing, etc. complete. Payment shall be made on number basis.

Providing and applying water proofing treatment by following procedure mentioned here under.

(1) Surface preparation by cleaning dirt, dust and loose Particles by mechanical cleaning by grinder and then after mechanical cleaning use air blower to remove all dust & dirt after cleaning hammering test and crack filling (6 mm to 10mm) by mortat and polyurethen sealant including Patch work repairing by polymer mortar or GP-2, pressure grouting, geofabric, waterproof tape etc. are supply by contractor if require.

(2) Waterproofing treatment include,

Step-1) Providing and applying primer application of Providing and applying primer application of aquastop base solvent base polyurethane primer as per manufacture specification and as directed by EIC.

Step-2) After applying priming coat, apply two coats of Aquastop extraflex as per manufacturer specification and as directed by EIC

Step-3) After applying two coat of aquastop extraflex, apply one coats of Aquastop protect as per manufacturer specification and as directed by EIC

(3) After completion of work pond testing testing with fill water 50mm for 7 Days to be carried out.

The treatment is to be carried out up to 300 mm on vertical wall as vata. The measurements shall be given only for clear area of terrace excluding the area of vatta.

"For Water ProofingTreatment:-

The contractor shall submit performance guarantee of the waterproofing item at the rate of 20% of cost of item of work order in the form of BG or in the form of DD of Schedule Bank / Nationalised Bank in favour of GETCO (A/c Agency) for a period of 5 years from actual date of completion of work on non-judicial stamp paper of appropriate value in approved format of GETCO. In the event of unsatisfactory performance of waterproofing work, the agency shall carry out necessary remedial/rectification works that may be necessary in the opinion of GETCO at no extra cost, failing which BG shall be encashed by GETCO. The BG /DD amount shall be released only after satisfactory completion of performance period of 5 years."

Providing, laying and jointing in true line and level UPVC pipe (SCH-40) for cold water including fittings make PRINCE / SUPREME / ASTRAL / FINOLEX or equivalent as approved by Engineer in charge. Pipe shall be fixed on the wall with the help of clamp at every two-meter c/c or shall be concealed as directed including

necessary fittings, fastening, fixtures, excavation and back filling. The rates includes testing of pipe and jointing and fixing the same with adhesive solvent, including cost of all materials.

a) 15 mm dia pipe

b) 25 mm dia pipe

c) 40 mm dia pipe

1.1 The pipe material and specials like bend shoe cowl coupler etc shall conform to grade and quality specified in relevant IS code. The spout pipe shall be fixed at level, suitable to drain complete rainwater. The vertical pipes shall be truly in plumb, shall be fixed to walls by means of G.I. clamps of approved quality with G.I. studs, saddles etc. complete leak proof test shall be given before payment is realized.

1.2 P. V. C. pipes shall be fixed on wall with wooden plugs and suitable clamps.

1.3 The pipes and sockets shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then be roughened with emery paper, and then solvent cement joint. Since solvent cement is aggressive to P.V.C., care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags, or paper impregnated with cement should not be buried in the trenches. They should be gathered, not left scattered about, as they can prove to be a hazard to animals, which may chew them.

1.4 If manufacturer recommends its own methods of jointing, the same shall be adopted after necessary approval from the Engineer - in - Charge.

1.5 Payment shall be given in running length of the pipe irrespective of specials used.

General specifications of water supply piping shall be followed. Rate shall be quoted for the diameter specified with all specials required for completing pipe work as per drawing or as directed.

Testing of joints :

After laying and jointing, the pipes and fittings shall be inspected under working conditions of pressure and flow. Any joints found leaking shall be redone, and all leaking pipes removed and replaced without extra cost.

The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg/sq. cm. The pipe shall be slowly and carefully charged with water allowing all air to escape and avoiding all shock and water hammer. The draw off takes and stop cock shall then be closed and specified hydraulic pressure shall be applied gradually. The pressure gauge must be accurate. The pipes and fittings shall be tested in sections as the work laying proceeds, keeping the joints exposed for inspection during the testing.

Providing & Fixing approved best quality I. S. S. approved full way G.M. Wheel valve.

a) 15 mm. dia. Valve

b) 25 mm. dia. Valve

c) 40 mm. dia. Valve

1.0. Materials : The gun metal check or not return full way wheel valve or specified dial, shall conform to I.S. : 778-1964. The non-return valve shall be of tested quality.

2.0. Workmanship

2.1. The gun metal check or non return valve shall be fully cleared of all foreign matter before fixing. The fixing of shall be done by means of bolts nuts and 3 mm. rubber insertions with flags of spigot and socketed tail pieces, drilled to the same specifications as in case of socket and spigot flanges in case of flanged pipes. The joining shall be done leak proof.

3.0. Mode of measurements and payment

3.1. The rate includes all labours, materials, tools and plant etc. required for satisfactory completion of this item.

32. The rate shall be for a unit of One number.

Providing & Fixing 25 mm. dia. half turn brass C. P. Flush cock with one union of approved quality prince or its equivalent I. S. I. approved quality including fixing the same in pipe line as directed by E. I. C.

1.0. Materials : Chromium plated brass half turn flush cock shall conform to M-67.

2.0. Workmanship

The half turn flush cock of specified diameter shall be fixed as directed. The flush cock shall be fixed in G.I. pipe line With necessary fittings. The joints shall be made leak proof by using spun yarn and white zinc. The fixing work shall be carried out as per relevant specifications of item No. 35.

3.0. Mode of measurements and payment

3.1. The rate includes cost of all materials and labour required for satisfactory completion of this item including fittings.

3.2. The rate shall be for a unit of One number.

Providing & Fixing 15 mm. dia. brass C. P. Screw down bib cock of approved quality having 250 to 300 grams weight etc., complete as directed by E. I. C.

1.0. Materials :

15 mm. dia. brass screw down with bright polished finished shall conform to I.S, 781-1977. The bib cock shall be best Indian make and quality.

2.0. Workmanship.

2.1. The screw down bib cock 15 mm. as specified above shall be fixed as directed. The threaded portion shall be smeared with white or red lead and around with a few turns of fine spun yarn round the screwed end of the pipe. The bib cock shall be then screwed and fixed to water tight position.

3.0. Mode of measurements and payment

3.1. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of this item.

3.2. The rate shall be for a unit of One Number.

Providing & Fixing readymade 1000 LITRE capacity P. V. C. water tight storage tank made from linear low density polyethylene & low density polyethylene LDPE product confirming to I. S. : 10146 - 1982 with cover including providing & fixing one 20 mm. dia. float valve ball-cock, one 20 mm. dia. G. I. Waste pipe with plug one 25 mm. dia. G. I. Over flow pipe of length up to 0.30 mt. including making all connection for inlet / outlet supply with necessary fittings for outlet / inlet etc., complete as directed by E. I. C.

P.V.C. Polythene readymade water tank (equivalent to Sintex make 'Sintex' brand and not the 'Reno' brand) internally white coated shall be approved make and as per I.S. 10146. Quality of tank proposed to be provided shall be got approved Technical literature of tank shall be submitted for approval. Tank of capacity specified shall be installed at places shown with 20mm dia float valve with polythene ball and brass handle and fixing arrangements, 20mm dia G.I. "C" class waste pipe with G.I. plug, 25mm G.I. "C" class overflow pipe with all necessary fittings of heavy type for inlet/outlet connection.

Tank shall be installed on terrace or other places shown. Rate shall be inclusive of providing tank at place of use, installing at terrace or place shown with all fittings specified above, and giving test with filling of water. Payment shall be made for tank provided and installed of capacity specified in the tender, with all necessary fitting specified above. On number basis.

Providing and fixing FINOLEX brand or equivalent rigid P. V. C. Pipe for rain water (4.0 Kgf/cm²) including necessary fittings like bend shoe, cowl etc., & fixing the pipes to the wall in plumb by means of G. I. Clamps of 18 gauge sheet with 1 meter distance and joining pipe with approved solution etc., complete as directed by E. I. C.

a) 110 mm. dia. O. D., P. V. C. Pipe

b) 140 mm. dia. O. D., P. V. C. Pipe

1.1 The pipe material and specials like bend shoe cowl coupler etc shall confirm to grade and quality specified in relevant IS code. The spout pipe shall be fixed at level, suitable to drain complete rainwater. The vertical pipes shall be truly in plumb, shall be fixed to walls by

means of G.I. clamps of approved quality with G.I. studs, saddles etc. complete leak proof test shall be given before payment is realized.

1.2 P. V. C. pipes shall be fixed on wall with wooden plugs and suitable clamps.

1.3 The pipes and sockets shall be accurately cut. The ends of the pipes and fittings should be absolutely free from dirt and dust. The outside surface of the pipes and the inside of the fittings shall then be roughened with emery paper, and then solvent cement joint. Since solvent cement is aggressive to P.V.C., care must be taken to avoid applying excessive cement to the inside of pipe sockets as any surplus cement cannot be wiped off after jointing. Empty solvent cement tins, brushes, rags, or paper impregnated with cement should not be buried in the trenches. They should be gathered, not left scattered about, as they can prove to be a hazard to animals, which may chew them.

1.4 If manufacturer recommends its own methods of jointing, the same shall be adopted after necessary approval from the Engineer - in - Charge.

1.5 Payment shall be given in running length of the pipe irrespective of specials used.

Providing & fixing (HEAVY DUTY) C. I. Soil pipe for drainage line including necessary fittings like bend, tee, Y bend, plug bend etc., fixed with wall by means of clamps and nails filling the joints with cement as directed by E. I. C.

a) 75 mm. dia. pipe

b) 100 mm. dia. pipe

1.0. Materials :

1.1 The specified dia C.I. spigot and socket soil or waste pipe shall conform to M-68.

2.0. Workmanship

2.1 The fixing of C.I. spigot and socket soil waste and ventilating pipe shall be carried out as per relevant specifications of item 35 except the C.I. spigot and socket shall be fixed. The joints shall be fixed with cement mortar 1:2 (1 cement : 2 sand) and spun yarn. The pipes without ears shall be fixed to wall with M. S. clamps. The pipes with ears shall be secured with 40mm before steel or iron barrel distance pieces or bobils and stout galvanized iron nails 10 cms. long driven into hard wood plugs fixed in walls. Access doors to fittings shall be provided with 3mm rubber insertion packing and secured without screws to make air and water tight.

2.2 All soil pipes shall be carried up above the roof and shall have a wire balloon guard or a cowl.

2.3 The ventilating pipe or shaft shall be carried out to a height of at least one metre above the outer covering of the roof of the building or in the case of windows in a gable wall or a dormer windows, it shall be carried up to the ridge of the roof or at least two metres above the top of the windows. In case of flat roof to which access for use is provided, it shall be carried out up to a height of at least one metre above the parapet or two metres measured vertically from the top of any windows or opening which may exist up to a horizontal distance of five metres from the vent pipe into such building and in no case shall be carried out to a height less than three metres.

2.4 Where ventilating pipe are carried in pipe shafts, the shafts shall be of a minimum size of one metre. If the shafts are also used to give light and air to rooms, the ventilating pipes must be carried out to a horizontal distance at roof level not less than five metres from the site of shaft.

2.5 The sand cast iron pipes above the parapet shall be fixed with M.S. clamps and stays. The clamps shall be made from 1.5 mm thick M. S. flat or 3 mm width band to the required shape and size to fit tightly on the sockets when tightened with screw bolts. It shall be formed of two semi-circular pieces with flanged ends on both sides, with holes to fit in the screw bolts and nut 40mm dia M. S. bars. One end of the stay shall be bent to form a hook to be fixed with clamps by means of bolts and the other end shall be bent for embedding in wall in cement concrete block of size 200mm x 100 mm x 100 mm in 1:2:4 mix. The concrete shall be finished to match the surrounding surfaces.

2.6 The connection between the main pipe and branch pipes shall be made by using branches and bends with access doors for cleaning.

2.7 The waste from lavatories, kitchens, basins, sinks, baths, and other floor traps shall be separately connected to respective stacks of upper floors. The waste stack of lavatories shall be connected directly to manhole while waste stack of other shall be separately discharged over gulley trap.

3.0. Mode of measurements and payment

3.1 The length of pipe shall be measured including all fittings along its length in running metres correct to a centimeter. No allowance shall be made for the portion of pipe length entered in the sockets of the adjacent pipe or fittings.

3.2 The rate includes all labour, and materials, tools and plant etc. required for satisfactory completion of this item.

3.3. The rate shall be for a unit of one running metre.

**Providing & fixing S. W. G. Pipe for sanitary connection (SEWER DRAIN PIPE) with necessary slope including excavation refilling the trenches, providing 150 mm. thick B. B. C. C. (1:4:8) below joints filling the joints with C. M. (1:1) curing etc., complete as directed by E. I. C.
100 mm. dia. Pipe**

1.0 Materials

(1) Water shall conform to M-1, (2) Cement mortar of proportion 1:1 shall conform to M-11,

(3) 100mm dia glazed stone ware pipe shall conform to M-71.

2.0 Workmanship

2.1 The trenches for stone ware pipe drains shall be carried out as per relevant specifications item no. 1 & 35 except that the work is for stone ware pipes of 100 mm dia.

2.2 Laying

2.2.1 The pipes shall be laid accurately and perfectly true to line, levels and gradients. Great care shall be taken to prevent sand etc. from entering the pipes. The pipes between two man holes shall be laid truly in a straight line without vertical or horizontal undulation. All junctions and changes in direction and diameter shall be made inside manholes by means of curved tapered channels formed in cement concrete finished smooth and benched on both sides. The body of the pipe shall rest for its entire length, on an even level bed grips being made or left on the bed to receive the sockets of the pipes.

2.3 Jointing

2.3.1 Tarred gaskin or yarn soaked in neat cement slurry first be placed around the spigot of each pipe and the spigot shall then be placed well in home into the socket of the pipe previously laid. The pipe shall then be adjusted and fixed in the correct position and gaskin caulked home so as to fill not more than $\frac{1}{4}$ th of the total depth or (13mm in depth) of the socket.

2.3.2 The remainder of the socket shall be filled with the stiff mixture of cement mortar in proportion of one part of cement and one part of sharp sand. When the socket is filled, a fillet, shall be formed round the joints trowel, forming an angle of 45° with the barrel of the pipe.

2.3.3 The mortar shall be mixed as necessary for immediate use.

2.3.4 After the joint is made, any extraneous materials shall be removed from the inside of the joints with a suitable scraper of 'badger'. The newly made joint shall be protected, until set, from the sun, dry winds, rain or frost, sacking or other suitable materials which shall be used for the purpose.

2.3.5 The mortar shall be cured for 10 days.

2.3.6 CC (1:4:8) 150mm thick shall be provided below joints so as joints are not affected due to any settlement. Specification of item no. 93 shall be applicable to this item.

2.4 Testing of joints

2.4.1 The pipes shall be tested as directed.

2.4.2 If any leakage is visible, the defective part of the work shall be made good at no extra cost.

2.4.3 A slight amount of sweating which is uniform may be overlooked, but excessive sweating from a particular pipe or joints shall be watched for and taken as indicating a defect to be made good.

3.0 Mode of measurements & payment:

3.1 Pounding or bottoming of the trenches bed to fit the lower part of the pipe and 'Grips' left to take socket, collars etc. are included in the rate of laying of the pipes.

3.1 CC (1:4:8) 150mm thick provided below the joints is also included in the rate of laying of the pipes.

3.2 The measurements shall be net without any allowance for cutting and waste. The length of bends, junctions and other connections shall be included in the total length of the drain pipes. Noting extra shall be paid for the same. The rate includes necessary excavation, refilling the trenches, etc. complete.

Providing & laying 300 mm dia. (NP - 2) 'A' Class R. C. C. hume pipe including necessary excavation, refilling the trenches, laying 150 mm. thick B. B. C. C. (1:4:8) below joints up to half the height of joints making water tight joints in C. M. (1:1) curing etc., complete as directed by E. I. C.

1.0 Materials

The reinforced concrete light duty non-pressure pipes of specified diameter shall conform to IS 458 – 1971.

2.0 Workmanship

2.1 The relevant specification of item no. 41 shall be followed for work of trenches except that the excavation in trenches shall be for reinforced concrete pipes of specified diameter.

2.2 Laying

2.2.1 The pipes shall be lowered into the trenches carefully. Mechanical appliances may be used. Where necessary pipe shall be laid in straight lines or with easy curves and true to line and gradient as specified and true to line and gradient as specified. The laying of pipe shall proceed upgrade of a slope. In the with loose collars, the collars shall be slipped on before the next pipe is laid.

2.2.2 In case where the foundation conditions are unusual such as proximity of trees or holes, under existing or proposed around in 150mm thick cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40mm nominal size) or compacted sand or gravel.

2.2.3 In case where the natural foundation is inadequate the pipe shall be laid either in concrete cradle, supported on proper foundation or on any other suitably designed structure. If concrete bedding is used, the depth of concrete below bottom of the pipe shall be at least $\frac{1}{4}$ th of the internal diameter of the pipe subject to a minimum of 100mm and maximum 300mm. The concrete shall be extended up to the sides of the pipe at least a distance of $\frac{1}{4}$ th of the outside diameter for pipes 300mm and over in diameter.

2.2.4 The pipes shall be laid in the concrete bedding before the concrete has set. Pipes laid in trenches in earth shall be bedded evenly and firmly and as up to the haunches of the pipe as to safely transmit the load expected from the back fill through the pipe to the bed. This shall be done either by excavating the bottom of the trenches to fit the curve of the pipe or by compacting the earth under round curve of the pipe to form an even bed. Necessary provision shall be made for joints wherever required.

2.3 Jointing

2.3.1 The joints shall be done by slipping the collar over and clear of the end of the pipe. The recess of the end of the pipe shall be filled with jute threading dipped in hot bitumen. The new pipe shall then be brought forward until the bitumen ring in recess of first pipe is set into the recess of the second pipe. This process shall be repeated for two or three pipe which shall then be jacked up to as to thoroughly compress the bitumen. The quantity of jute and bitumen shall be just enough to fill the recess when pressed hard by jacking, care being taken that no offset of the jute braiding shall be visible either outside or inside of pipe. The collar shall then be set up over the joints covering equally both the pipe and leaving an even caulking space all round. Cement and sand mortar 1:1 shall then be well punched or pressed home with a caulking tool within this caulking space. Care shall be taken that the underside of the joints is properly filled with mortar.

2.4 Curing

2.4.1 Every joint shall be kept wet for about 10 days for maturing, the section of the pipe line and joint shall be covered immediately to protect from weather effects. Minimum bore of 100mm is considered adequate.

2.4.2 The joints shall be left exposed for observation.

2.5 Testing of joints

2.5.1 The testing of joints shall be done as per relevant specification of item no. 44 except that the testing of reinforced concrete pipes shall be done.

3.0 Mode of measurements & payment:

- 3.1 The relevant specifications of item no. 44 shall be followed except that the rate includes for laying (to level or slope in trenches etc. measured separately) making the joints as indicated and testing to stand the water test.
- 3.2 The measurement shall be net without any allowance for cutting and waste. The length of bends, junctions, and other connections being numbered afterwards and paid for extra over pipes.
- 3.3 CC (1:4:8) 150mm thick provided below the joints is also included in the rate of laying of the pipes.
- 3.4 Nothing extra shall be paid separately from the use of mechanical appliances, where necessary, as described above.
- 3.5 The rate shall be for a unit of one running metre.

**Providing & fixing C. I. Nahani trap of approved size & make with additional aluminium perforated Jali Cover & C. I. Pipe outside the wall with plug, bend, etc., complete as directed by E. I. C.
75 mm. dia.**

C.I. nahni trap of specified diameter shall be fixed at locations shown, Nahni trap shall be with arm, length as per thickness of wall so as to have joint outside wall and any leakage may not harm the wall. Nahni trap shall be fixed in concrete. Aluminum perforated jali of approved make and shape shall be provided on the nahni trap. Necessary C.I. pipe of the diameter of main line shall be connected from nahni trap to Gully Trap/main line outside the wall necessary plug bend etc. as required.

Payment shall be made per number of nahni trap fixed with necessary jali, plug bend, pipe pieces etc. complete.

Providing & Fixing 150 X 100 mm. stone ware gully trap with 300 X 300 mm. B. B. Masonry in C. M. (1:6) clear chamber including B. B. C. C. (1:4:8) 150 mm. thick bed concrete, plastering the chamber with 300 X 300 mm. C. I. Cover with frame curing etc., complete as directed by E. I. C.

Stoneware gully trap 150 x 100mm shall be as per I.S. specifications and free from crack, other defects and shall be uniformly glazed. Trap shall rest on B.B.C.C. (1:4:8) 150mm thick. Brick masonry chamber of 225 x 150mm clear size and of required height shall be built in c.m. (1:6). Height of chamber shall be constructed on site as per site conditions. Masonry wall shall be carried out on base concrete of B.B.C.C. (1:4:8). Direction of trap opening shall be as per line layout on site for drainage work. Gully trap shall be provided with C.I. Cover of 225 x 150mm with frame on top of camber. Inner side of chamber of 200mm below final ground level of other area shall be plastered 12mm thick in c.m. (1:3) C.I. cover shall be given three coats of black anticorrosive paint as per item No. 17 of Section F.

Payment shall be made on number basis for all described above.

Providing 300 X 300 mm. B. B. Masonry in C. M. (1:6) clear chamber including B. B. C. C. (1:4:8) 150 mm. thick bed concrete, plastering the chamber with 300 X 300 mm. C. I. Cover with frame curing etc., complete as directed by E. I. C.

B.B. masonry inspection chamber (manhole) of specified size, item shall be constructed at location shown with base concrete of (1:4:8) B.B.C.C. 150mm thick, 225mm thick. Brick masonry wall in c.m. (1:6) shall be constructed of width as per drawing or as per details furnished on site. Plastering inside including bottom and outside 300mm below final ground level shall be provided in c.m. (1:3) 12mm thick. Curing the cement work, fixing light type C.I. manhole cover with frame as per size of the chamber including necessary excavation, backfilling, disposed off surplus earth etc., complete, necessary chamber shall be provided with slope in bottom C.I. cover shall be given 3 coats of anticorrosive paint.

Specification of earth work and backfilling of section B, specification of brick masonry of section C, specification of concrete of section D, and plastering section E shall be followed. Payment shall be made on number of chamber constructed of the size specified in the tender with all operations as per item.

Providing B. B. Masonry inspection chamber (MANHOLE) of 610 X 455 mm. Clear size including light type C. I. Cover having total weight including frame not to be less than 38 Kgs. (Weight of Cover 23 Kgs & Weight of frame 15 Kgs.) with frame, 100 mm. thick R. C. C. top slab in C. C. (1:2:4) with necessary excavation bottom concreting of B. B. C. C. (1:5:10) 150 mm. thick / 225 mm. thick B. B. Masonry in C. M. (1:6) 12 mm thick cement plaster in C. M. (1:3) inside & to all exposed faces up to 300 mm. below ground level, curing etc., including disposal off surplus excavated earth up to radius of 300 mt. including 3 coats of white or colour wash to all exposed finished surface etc. complete as directed by E. I. C. (B. B. MASONRY UPTO 900 mm. DEPTH)

B.B. masonry inspection chamber (manhole) of specified size, item shall be constructed at location shown with base concrete of (1:4:8) B.B.C.C. 150mm thick, 225mm thick. Brick masonry wall in c.m. (1:6) shall be constructed of width as per drawing or as per details furnished on site. Plastering inside including bottom and outside 300mm below final ground level shall be provided in c.m. (1:3) 12mm thick. Curing the cement work, fixing light type C.I. manhole cover with frame as per size of the chamber including necessary excavation, backfilling, disposed off surplus earth etc., complete, necessary chamber shall be provided with slope in bottom C.I. cover shall be given 3 coats of anticorrosive paint.

Channels shall be constructed in semi circular shape in the bottom half and of diameter equal to the sewer. Above the horizontal diameter, the sides shall be extended vertically to the same level as the crown of the outgoing pipe and the top edge shall be suitably rounded off. The branch channels shall also be similarly constructed with respect to the benching but at their junction with the main channel an appropriate fall suitably rounded off in the direction of flow in the main channel shall be given.

The channel and benching shall be done in CC 1:2:4 (1 Cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) rising at a slope in line from edges of channel. The channels of the bottom of the chamber shall be plastered with C.M. (1:2) (1 cement : 2 coarse sand) and steel troweled smooth.

Manhole shall be tested by filling with water to a depth not exceeding 1.2 m as directed. After completion of work, manhole covers shall be sealed by means of thick grease.

Specification of earth work and backfilling of section B, specification of brick masonry of section C, specification of concrete of section D, and plastering section E shall be followed. Payment shall be made on number of chamber constructed of the size specified in the tender with all operations as per item.

Providing B. B. Masonry inspection chamber (MANHOLE) of 500 X 700 mm. Clear size including light type C. I. Cover having total weight including frame not to be less than 38 Kgs. (Weight of Cover 23 Kgs & Weight of frame 15 Kgs.) with frame, 100 mm. thick R. C. C. top slab in C. C. (1:2:4) with necessary excavation bottom concreting of B. B. C. C. (1:5:10) 150 mm. thick / 225 mm. thick B. B. Masonry in C. M. (1:6) 12 mm thick cement plaster in C. M. (1:3) inside & to all exposed faces up to 300 mm. below ground level, curing etc., including disposal off surplus excavated earth up to radius of 300 mt. including 3 coats of white or colour wash to all exposed finished surface etc. complete as directed by E. I. C. (B. B. MASONRY UPTO 900 mm. DEPTH)

The relevant specification of item no. 50 shall be followed except that instead of 610 X 455 clear size of chamber 500 x 700 mm clear size chamber shall be constructed and paid for.

Providing & fixing best INDIAN make white or coloured porcelain rectangular wash hand basin size 500 X 400 mm. with C. I. M. S. Brackets fixed in wall including approved quality of 1 No. of brass C. P. Pillar cock (PRINCE TYPE) or its equivalent 15 mm. dia. Bottle trap, one brass C. P. 15 mm. dia. Stop cock, with P. V. C. pipe connection for stop cock to pillar cock 25 mm. dia. G. I. Waste pipe up to 1.0 M. length etc., complete as directed by E. I. C.

1.0. Materials

1.1. The white glazed earthenware wash basin shall be 550 mm. x 400 mm. of 1st quality and make as approved by the Engineer-in-charge. The wash basin shall conform to M-59.

2.0. Workmanship

2.1. The washbasin shall be fixed on the wall as and where directed. The wash basin shall be supported on a pair of M.S. or C.I. brackets fixed in C.M. 1:3 (1 cement : 3 sand). The bracket shall conform to I.S. : 775-1962. The wall plaster on the rear shall be cut to rest the top edge of the washbasin. After fixing the basin, plaster shall be made good and surface finished to match the existing one.

2.2. The brackets shall be painted white with ready-mixed paint.

2.3. The C.I. brass trap and union shall be connected to 32 mm. dia. waste pipe which shall be suitably bent towards the wall and which shall discharge into an open drain leading to a gully trap or direct in to gully-trap on the ground floor and shall be connected to a waste pipe through a floor trap on the upper floors. C.P. brass trap and union may not be provided where the surface drain or a floor trap is placed directly under the basin and the waste is discharged in to vertically.

2.4. The height of the front edge to the wash basin from the floor level shall be 80 cms.

2.5. The necessary inlet, outlet connections and fittings such as pillar cocks (Prince type), CP brass waste trap, waste pipe, stop cock, chain with rubber plug etc. shall be fixed.

3.0. Mode of measurements & payment

3.1. The rate includes cost of all labour, materials, tools and plant etc. required for satisfactory completion of this item as specified in workmanship.

The rate shall be for a unit of One number.

Providing & Fixing 500 mm X 700 mm size light type C. I. Manhole covers with water tight C. I. frame & fixing the same in concrete etc., complete as directed by E. I. C.

Materials

C.I. Manhole cover of 500 x 700 mm size shall be of best quality. The weight of C.I. cover and frame shall be less than 35 Kg. The C.I. manhole cover shall be of light duty and conform relevant I.S.

2.0. Workmanship

2.1. The C.I. Manhole cover shall be fixed as per relevant specifications of item No. 50 except that the C.I. cover shall be fixed as and where directed.

3.0. Mode of measurements and payment

3.1. The rate includes cost of all labour and materials required for satisfactory completion of this item.

3.2. The rate shall be for a unit of One number.

Providing & Fixing WHITE / COLOURED ORISSA PAN W. C. SEAT of ROLEX / CLASSIC / JOHNSON MAKE and of approved quality of 580 mm. size including trap, necessary C. I. Piping with plug bends up to soil chamber for G. F. & up to the outside wall for floors including porcelain foot rests etc., in complete working condition & as directed by E. I. C.

Orissa Pan type WC. if specified size shall be of first quality and of approved make according to I.S. Specifications. It shall be fixed in B.B.C.C 1:5:10 shall be provided in 115mm portion with required slope towards WC. pan. Top surface shall be finished as per specified in item of I.P.S glazed or ordinary tiles, which shall be as per item. W.C. shall be provided, with pipe from flush cock to pan, for flushing arrangement, trap with WC. pan and 100mm C.I. pipe for trap to chamber with plug bend. For W.C. on floors, pipe with plug bend shall be provided up to main soil pipe line in wall.. All joints shall be in CM. 1:1 and leak proof test be given.

Rate quoted shall be for providing & fixing WC. pan with all other accessories specified and whole thing shall be paid per No. of WC pan provided and fixed.

Providing & Fixing white or coloured porcelain lip shaped wall type URINAL PAN of 550 X 300 mm. of approved quality & make including waste coupling bends & necessary outlet of 25 mm. dia. G. I. Pipe connections including providing brass stop cock, PVC connection etc., completed as directed by E. I. C.

1.0 Materials

The white earthenware flat pack or corner type urinal of size 550 x 300mm shall conform to M-64

2.0 Workmanship

2.1 The urinals shall be fixed in position by using wooden plugs and screws and shall be at a height of 65 cms. from the floor level to the top of the lip or urinal unless otherwise directed. The wooden plugs shall be 50 mm x 50 mm at base tapering to 38mm x 38 mm at top and 50mm in length shall be fixed in wall in cement mortar 1:3 (1 cement : 3 coarse sand). The urinal shall be connected to 32 mm dia galvanized mild steel waste pipe which shall discharge in the channel or floor trap. The connection between the urinal and flush or waste pipe shall be made by means of putty or white lead mixed with chopped hemp.

2.2 The urinal shall be provided with waste coupling bends, necessary outlet of 25mm dia GI pipe connection, brass stop cock, PVC connection pipe from stop cock to urinal inlet provided at the top.

3.0 Mode of measurement and payment.

3.1 The rate includes cost of all labours, materials, tools and plants, etc. required for satisfactory completion of this item.

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

Providing Fixing 25 mm. thick POLISHED KOTAH STONE wall partitions 600 mm. wide & required height & all sides polished, machine cut & of approved quality including fixing the same in wall in line & level etc, complete as directed by E. I. C.

25mm thick polished kotah stone partition shall be provided for urinals. The quality of kotah stone shall be got approved. The stone shall be machine polished to all side. The outer edges of the stone shall be machine cut, rounded and polished properly. The size of the kotah stone shall be of 600mm wide and height according to the site condition. A groove shall be cut in wall for fixing of the stone. Stone shall be fixed with the wall in line, level and plumb as directed in the groove white c.m. 1:1 and finished smoothly with existing finishing.

Payment shall be made on square meters basis.

Providing & Fixing 75 mm. dia. C. I. cowl ventilator of LIGHT Type for water tanks etc., complete.

The material shall be got approved in advance prior to supplying the same on the site.

The relevant specification of item no. 43 shall be applicable to this item except that CI cowl ventilator of 75mm dia with socket and spigot ends and light type shall be provided and paid for.

Drilling of bore well of 300 / 400 mm. dia. by machine in all kinds of soil, sand, clay, murrum, soft rock and hard murrum, etc., complete, truly vertical with all equipments and labours etc., complete as directed by E. I. C.

- a) For 00.00 to 30.00 Mt. Depth
- b) For 31.00 to 60.00 Mt. Depth
- c) For 61.00 Mt. onwards

Bore well 300mm / 400mm Ø shall be drilled with drilling machine at the place shown, Necessary arrangement for required water for drilling, preparing water tank etc. may be made by contractor. The drilling shall be carried out to the depth decided on site as per availability of the water bearing strata. Necessary cutting edge and column length of the

drilling shall be arranged by the contractor. Drilling shall be carried out truly vertical. Bentonite powder slurry circulation shall be arranged as required. Samples of various strata shall be collected, showing the depth of the strata. A chart of the various strata with depth shall be prepared and submitted for record. They shall be kept on site in a wooden box indicating the strata with depth so the information is easily available for inspection. Rate shall be quoted for various depth given in the item per running meter basis.

Providing and installing vertically 150mm dia 'C' class M S ERW casing pipe in the bore as per specifications including supplying graded gravel of suitable size & packing the same surrounding the pipe from the bottom including sealing the bottom of the pipe & welding at joints & top clamping etc. complete as directed by the Engineer – in – Charge.

"C" class ERW casing pipe conforming to IS specifications shall be provided and installed in the well as directed. Pipe shall be painted with 3 coats of anticorrosive paint from outside. Pipe shall be lowered slowly so that drilled well is not damaged or collapsed on some portion. Pipe shall be joined with couplings and couplings tack welded on both ends as directed or welded fully with specified thickness of welding as approved. Pipe shall be sealed at bottom by full welding of plate of 12mm thickness and applied with 3 coats of anti-corrosive paint. Necessary arrangement for lowering pipe shall be made by the contractor. After the pipe line is lowered completely and cleaned at top and covered at top, annular space all-round pipe shall be filled with pea size gravel uniformly all-round. Gravel collected shall be screened and all dust small and big size and gravel and other foreign materials shall be removed.

Rate shall be quoted for the diameter of pipe specified with all the operations and materials required with plant, machinery, tools and tackles, etc. for completing the item. Payment shall be made on pipe lowered as above with filling of gravel all-round on Rmt basis.

Labour charges for making slotted holes in pipe supplied under item no. 55 i.e. MS ERW casing pipe as directed by the Engineer – in – Charge for making strainer pipe.

Slotted holes of approved / required size shall be made in the pipes supplied under item no. 5 shall be made for the water bearing strata as approved by the Engineer – in – Charge.

Payment shall be made on Rmt. basis for the length of pipe through which required holes are made with all operations, plant, machinery, tools and tackles etc. for completing the item.

Providing & Laying 112 mm. thick brick on edge paving (SOLING) including leveling the ground & laying the bricks with required grade & camber etc., complete with two vertical bricks as kerbing on each side of the road filling the joints with yellow earth & spreading sand at the rate 0.15 M3/10 M2 including 3 coats colour wash to vertical kerbing bricks etc., complete as directed.

The bricks of approved quality shall be used. Bricks shall be laid on sub grade checked and approved for alignment level, camber and consolidation where area is infilling; Brick on edge i.e. 110mm thick shall be laid in haring bond, bond unless otherwise instructed. The sides of the road shall be provided with two vertical bricks to each side for curbing. Curbing shall be in line, level and grade as instructed and shall be laid close to the road edge. Excavation required for curbing shall not be paid separately; only good quality of full brick shall be used in curbing. No bricks or brickbats shall be allowed in the paving work, unless the same is required at the ends. Brick shall be laid closed so that no voids or space is left out between two bricks. All joints shall be filled with yellow earth by spreading, brooming and watering. Surplus earth shall be removed from the surface. Finally clean river sand usable in plasterwork shall be spread uniformly, at the rate of 0.15 cmt/10 smt of road surface. Payment shall be made on actual square meter of work carried out including side curbing, earth filling and sand spreading. Rate quoted shall be inclusive of all materials, tools, tackles required for complete excavation of item.

Supplying & Stacking 40 to 60 mm. size hard stone road metal including transportation filling the box etc., complete

1. The field of machine cut metal shall be of approved quarry as shown on the quarry chart as well as approved by the Executive Engineer prior to collection.
2. The machine cut metal shall be hard, tough, sound, durable, black trap field metal of close texture, free from decay and weathering. Each piece of the stone shall be angular and roughly cubical in shape and round elongated or flaky material shall be rejected. No round or oblong pebbles or angular chips larger or smaller than specified size shall be allowed.
3. All unsound, weathered or disintegrated stone obtained from the upper surface layer of the quarry or other layer of boulders shall be rejected. The physical requirement for standard size metal shall conform to the test results indicated in para 3 of item 4.
4. Machine cut metal shall be as nearly uniform in size as possible and shall conform to following minimum requirements of passing through the rings :
63 mm 100
50 mm 95-100
40 mm 35-70
20mm 0-10
5. Wherever and doubt exists as to whether the above requirements are satisfied in whole or part, the collection of machine cut metal shall be got screened by the contractor if so ordered by the Executive Engineer and for which no extra payments shall be claimed by the contractor.
6. Any collection which does not fully satisfy the above requirements is liable to be rejected altogether.
7. Stacking shall be done by filling in the standard steel pharas of 2.00 x 1.50 x 0.50 metre and 20% deduction of voids shall be made from the gross measurements.
8. Regular stacks shall be done by the contractors on a fairly level ground. All the stacks shall be marked by white wash immediate on being measured and recorded by the Engineer-in-charge. The rate includes blasting the rock, if any, breaking the metal, stacking, measuring in pharas etc. complete.

Supplying & Stacking 25 to 40 mm. size hard stone road metal including transportation filling the box etc., complete

1. The field of machine cut metal shall be of approved quarry as shown on the quarry chart as well as approved by the Executive Engineer prior to collection.
2. The machine cut metal shall be hard, tough, sound, durable, black trap field metal of close texture, free from decay and weathering. Each piece of the stone shall be angular and roughly cubical in shape and round elongated or flaky material shall be rejected. No round or oblong pebbles or angular chips larger or smaller than specified size shall be allowed.
3. All unsound, weathered or disintegrated stone obtained from the upper surface layer of the quarry or other layer of boulders shall be rejected. The physical requirement for standard size metal shall conform to the test results indicated in para 3 of item 4.
4. Machine cut metal shall be as nearly uniform in size as possible and shall conform to following minimum requirements of passing through the rings :
63 mm 100
50 mm 95-100
40 mm 35-70
20mm 0-10
5. Wherever and doubt exists as to whether the above requirements are satisfied in whole or part, the collection of machine cut metal shall be got screened by the contractor if so ordered by the Executive Engineer and for which no extra payments shall be claimed by the contractor.
6. Any collection which does not fully satisfy the above requirements is liable to be rejected altogether.
7. Stacking shall be done by filling in the standard steel pharms of 2.00 x 1.50 x 0.50 metre and 15% deduction of voids shall be made from the gross measurements.
8. Regular stacks shall be done by the contractors on a fairly level ground. All the stacks shall be marked by white wash immediate on being measured and recorded by the Engineer-in-charge. The rate includes blasting the rock, if any, breaking the metal, stacking, measuring in pharas etc. complete.

Supplying & Stacking murrum of approved quality including transportation filling the box etc., complete E. I. C.

Murrum of approved quality preferably Red shall supply. Sample of the murrum shall be got approved. It shall be free from dust, vegetation, foreign materials and powdery substance etc. The murrum shall be stacked at the places shown, in regular boxes approved by the Engineer-in-charge.

The measurements shall be paid on Cubic Meter basis on the box measurement. The contractors shall make arrangements for marking of the stacks measured for separating the same.

Supply & Stacking black trap stone machine crushed grit / stone dust including royalty, all Government taxes transportation, filling boxes etc., complete as directed by E. I. C.

1.0 The field of machine cut grit shall be of approved quarry as shown on the quarry chart as well as approved by the Executive Engineer prior to collection.

11. The machine cut grit shall be hard, tough, sound, durable, black trap field metal of close texture, free from decay and weathering. Each piece of the stone shall be angular and roughly cubical in shape and round elongated or flaky material shall be rejected. No round or oblong pebbles or angular chips larger or smaller than specified size shall be allowed.

12. All unsound, weathered or disintegrated stone obtained from the upper surface layer of the quarry or other layer of boulders shall be rejected. The physical requirement for standard size metal shall conform to the test results indicated in para 3 of item 4.

13. Machine cut grit shall be as nearly uniform in size as possible and shall conform to following minimum requirements of passing through the rings : 5. Wherever and doubt exists as to whether the above requirements are satisfied in whole or part, the collection of M.C metal shall be got screened by the contractor if so ordered by the Executive Engineer and for which no extra payments shall be claimed by the contractor.

12. Any collection which does not fully satisfy the above requirements is liable to be rejected altogether.

13. Stacking shall be done by filling in the standard steel pharas of 2.00 x 1.50 x 0.50 metre and no deduction of voids shall be made from the gross measurements.

14. Regular stacks shall be done by the contractors on a fairly level ground. All the stacks shall be marked by white wash immediately on being measured and recorded by the Engineer in-charge. The rate includes blasting the rock, if any, breaking the metal, stacking, measuring in pharas etc. complete.

Labour charges for spreading metal in 100 mm. thick layer for soling with required grade & camber & filling the voids with small size of chips and earth & watering consolidating by 8 to 10 tonnes power roller etc., complete as directed by E. I. C.

1. Metal shall not be spread without permission of the Engineer-in-charge. Metal should be spread under careful supervision by trained coolies. Contractor shall see that uniform spreading as per collection of metal is done. The contractor shall spread the metal fully from the stacks without keeping any balance unless directed by the Engineer-in charge to keep some stack in balance for making good unevenness or depressions during roiling works. To ensure that the material is spread to the required thickness, the road surface shall be marked out in to length over which the contents of heaps are to be spread. The bounds of earth or murrum (one on either side) shall be laid with a distance between them equal to the width of road to be metalled and shall be enough to prevent the loose metal from spreading during consolidation as well as to retain water used for consolidation. Payment for bunds will be made in the respective item.

2. The metal (including old metal) shall be screened and rubbish, dust, grass shall be removed and spread evenly on the prepared surface in grade and camber by using camber board etc. so as to ensure that the surface is true to camber and grade. At least two camber by using camber boards shall be in use at site. The surface shall be checked at every 50 ft. by means of template while the correctness of the camber in between shall be tested by string and corrected as required. Between the straight lengths and the curves in camber of

road to super elevation shall be made very gradually as may be directed by the Engineer-in-charge.

3. The spreading of metal shall proceed only 20 mt.(max.) advance of the rolling operations. The collection and spreading of the metal shall not be carried out in one and the same kilometer.

4. At the time of rolling by 8 to 10 tonne roller all surface irregularities, hollows, depressions, humps etc. shall be straight. The spreading of metal in required layer shall be done by the contractor.

The rate for this item shall be paid on cmt. basis and includes all the above operations with all lead and lift and consolidation by 8 to 10 tonne power rollers up to the satisfaction of Engineer - in - Charge.

Labour charges for spreading murrum or yellow soil filling voids of metalling including watering consolidating by 8 to 10 tonnes power roller etc., complete as directed by E. I. C.

Murrum of yellow earth shall be spread uniformly on the surface as instructed. Murrum shall be collected from the stacks shown by department. Earth shall be excavated and taken from the places shown. After uniform spreading, dry rolling with 8 to 10 tone roller shall be carried out. After rolling, surface shall be broomed and voids shall be filled up. After dry rolling is complete, the surface shall be watered and rolled again. All the voids shall be filled up again, watered and re - rolled. Rolling shall be carried out such that the layer already spread and rolled earlier shall not get disturbed. If required additional quantity of murrum/earth shall be spread at the places shown to get uniform surface. The operation of rolling, watering and re-rolling shall have to be continued, till uniform surface with required grade and camber is obtained.

Rate quoted shall be for all labour, tools, tackles and machinery. Payment shall be made for actual square meter of area provided with spreading of murrum/earth as above.

As above but grit / stone dust

Specification of above item shall also be applicable to this item except that instead of spreading murrum / yellow earth grit / stone shall be provided and paid for.

Providing & Laying 600 mm dia. NP - 3 class R. C. C. Hume Pipe of approved size with collars for road crossing including excavation up to 900 mm. depth & refilling the trenches, joining, the pipes with C. M. (1:1) & filling 150 mm. thick concrete (1:4:8) below joints, curing etc., completed as directed by E. I. C.

NP3 class R.C.C. Hume pipe of required diameter shall be of approved make. Contractor shall produce necessary test certificate. Pipes shall confirm to the IS.

Pipes shall be laid to required depth and to the slope as instructed on site. Marking or invert levels on both sides shall be erected and pipe laid accordingly in line and level, Joint of the pipes shall be filled with c.m. 1:1 with necessary hemp rope. Joint shall be packed properly with semi-wet mortar with pressing. Outer surface shall be chamfered and finished neatly. C. C. 1:4:8 shall be provided with crushed stone chips of 12mm and down graded. Curing arrangement shall be made for the cement mortar joint and concrete for keeping continuous wet for period of minimum 12 days.

The relevant specification of item no. 45 shall also be followed for workmanship and mode of measurement.

Rate quoted shall be inclusive of all materials like pipe, collars, cement, coarse and fine aggregate hump ropes, labour, excavation, back filling etc. complete and disposing extra earth as directed.

Payment shall be made on running meters of pipe laid.

ITEM : --- DO --- but 300 mm. dia Pipe

The relevant specification of item no. 45 shall also be followed for workmanship and mode of measurement.

Specification of above item shall be applicable to this item also but instead of 600mm dia pipe 300mm dia shall be provided and fixed and paid for.

Providing plantations to development of plants / trees / flowers, ornamental plants and gardens shrubs small trees of plants of selected and approved name, quality, size and growth in good condition. The work including the cost of plants, materials, digging pits in the soil of size 0.60 X 0.60 X 0.60 mtr, soil for planting trees mixing of manure & refilling the pit with good earth, watering as and when required. Providing pesticides / fertilizers with twelve months of maintenance, replacement and replacing of dead plants during maintenance, cleaning, removing, labourers tools and tackles, transportation, loading and unloading etc., complete as directed by E. I. C.

The work shall be carried out as per description of the item. The work includes all materials like plants, soil, manure, pesticides, fertilizers, labour, and maintaining the plants up to completion of work. The plant selection its location and duration shall be got approved in advance. The payment shall be made per no. of plant provided and maintained.

Providing & Fixing 20 mm. dia. M. S. bar steps 150 mm. wide & 300 mm. long clear including grouting in wall, 3 coats of oil painting etc., complete as directed by E. I. Concrete

20 mm dia MS bars steps are to be bent as per size specified in item with extra anchor length of 225 mm, with suitable hooks for proper grip in the wall. Grooves shall be cut in masonry at required distance as directed in the wall. The bar steps shall be properly grouted in wall in line & level with C. C. (1:2:4) and finishing smooth the same. Steel bar steps shall be given one coat of red oxide and 2 coats of approved brand, quality, tint enameled paint.

Payment shall be made on number bases for all above, including materials etc. complete.

Providing & Fixing 450 X 600 X 6 mm. thick size approved best quality of looking glass mirror with plastic moulded frame with shelf etc., complete as directed by E. I. C.

1.0. Materials

1.1. The 600 mm. x 450 mm. size mirror shall be of superior glass with edge rounded offer beveled as specified. It shall be free from flaws specks, or bubbles and its thickness shall not be less than 6 mm. The glass for the mirror shall be uniformly silver plated at the back and shall be free from silvering defects. Silvering shall have a protective uniform covering of red lead paint. The 6 mm, thick plywood shall conform to M-37. The 6 mm. thick A.C. sheets shall conform to M-24.

2.0. Workmanship

2.1. The mirror of 600 mm. x 450 mm. size mounted on A.G. Sheet or plywood 6 mm. thick with C.P. brass clips shall be fixed as directed, by fixing wooden plugs in wall and C.P. brass screws and washers. The work shall be carried out in best workman like manner.

3.0. Mode of measurements & payment

3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of this item. The rate shall be for a unit of One number.

Providing & Fixing a set of 6 Nos. of stainless steel coat racks of approved quality fixed on 20 mm. thick teak wood batten including 3 coats of oil painting etc., complete as directed by E. I. C.

Teakwood batten of 600mm x 100mm x 20mm thick shall be provided as per general specification of woodwork. The wooden batten shall be fixed at the place shown at the height instructed at site with the wall. 6Nos. of aluminum anodized coat racks of approved quality, shall be fixed on the batten at 150mm c/c 3 coats of oil paint shall be applied to wood work of approved quality make, tint shall be applied as per specification no. 16 of Schedule F.

Providing & Fixing 16 mm. dia. M. S. fan hooks embedded in slab or beam during casting as per instruction including 3 coats of oil painting etc., complete as directed by E. I. C.

16mm Dia M.S. bar fan hooks shall be provided in slab, beam, during casting as per instruction of Engineer-in-charge. The hook shall be kept vertical and binded with the slab, or beam bars as the case may be. The hooks shall be applied 3 coats of oil paint of approved color make in tint as per specification no. 17 of section F. If instructed by the Engineer - in - Charge to provide fan hook with smaller dia of bar, necessary reduction in the rate shall be made applicable by the Engineer - in - Charge.
Payment shall be made per number basis.

Providing & Fixing 300 X 300 mm. size marble year plate with black border all-round & letters including fixing the same in cement mortar etc., complete as directed by E. I. C.

The marble plate should be 25mm thick and 300 x 300mm size of approved white marble, free from cracks and other defects and machine polished. The size of letters for number and the year shall be provided as directed by Engineer-in-charge and engraved and finished black with border all round. Necessary groove shall be provided in wall at the place shown by Engineer-in-charge. The plate shall be fixed in line level and plumb with c.m . 1:2 and all the edges shall be well finished as directed.
Payment shall be made per number basis for all above operations.

Providing & Fixing 600 mm. long & 20 mm. dia. aluminium anodised towel rod with brackets etc., complete as directed by E. I. C.

1.0, Materials

1.1. The 20mm dia aluminum anodized towel rod shall be 600 x 20 mm. of best quality as approved by the Engineer-in- charge. The brackets shall be of anodized aluminum of best quality.

2.0. Workmanship

2.1. The brackets of the towel rail shall be fixed by means of CP, brass screws to wooden firmly embedded in the wall with C.M. 1:3 (1 cement: 3 coarse sand). The towel rail shall be fixed as and where directed.

3.0. Mode of measurements and payment

3.1. The rate includes cost of all labour and materials, tools and plant etc. required for satisfactory completion of this item.

3.2. The rate shall be for a unit of One number.

Painting the letters with best enamel oil paint in 200 to 250 mm. size etc., complete as directed by E. I. C. (Paint should be brought by the contractor.)

Letters shall be painted with best synthetic enamel paint of approved quality make and tint. Generally the letters shall be appointed with black letters with yellow background and black border of 12mm size or as per instruction of Engineer-in-charge and as specified in item. The letters shall be painted at the place shown by Engineer-in-charge. General specification of painting is applicable.
The rate shall be for a unit of one number.

Providing & Fixing SIGN BOARD having size 2000 X 1000 mm. for SUB-STATION made from 16 gauge M. S. Sheet having frame work of 35 X 35 X 3 mm. M. S. angle all-round & 4 vertical intermediate angle supports at equal distance welded to sheet with 3 Nos. of 50 X 50 X 6 mm. M. S. angle posts 3.0 M. long with arrangement of bolting, 3 coats of oil painting etc., complete as directed by E. I. C.

General specification of fabrication shall be applied. The signboard shall be prepared from 16 gauge M.S. Sheet of specified size with angle frame of 35 x 35 x 3 mm size with 2 vertical angle supports to be welded at intermediate portion with the frame, as instructed. The

signboard shall be fixed with 50 x 50 x 6mm M.S. angle supports by bolts and nuts. The angle supports shall be erected in line level and plumb as directed including necessary excavation. c.c. (1:3:6), grouting, curing etc. complete as per instruction of Engineer-in-charge. All steel work shall be given one coat of anticorrosive paint 2 coats of approved enamel oil paint. The signboard is painted with letters with boarder as per instruction of Engineer-in-charge with approved synthetic enamel paint. Rates shall be inclusive of all above materials, operation, tools, tackles etc. complete. The rate shall be for a unit of one number.

Providing COOKING PLATFORM 3000 X 675 mm. size with approved quality of stainless steel sink of size 450 mm. dia. & 4 Nos. of partition walls (middle) with cement plaster in C. M. (1:3) to all exposed faces, 75 mm. thick R. C. C. Slab in C. C. (1:2:4) at top with necessary reinforcement making holes in slab for gas connection, including kotah stone flooring with side Patti of required size & thickness, with polishing etc., complete & fixing teak wood cupboard of frame size 75 X 50 mm with shutter for opening of size 1.20 X 0.60 Mtrs. made from 19 mm. thick Nova Pan / ECO Board exterior laminated with all round teak batten Patti including two coats of oil paints & one coat of primer including PVC waste pipe, Nahni trap, bib cock, etc., complete as per drawing & instruction of E. I. C.

R.C.C. cooking platform of 3000 x 675mm size shall be constructed at the place shown as per drawing and instruction of engineer-in-charge. The relevant specification of B.B. masonry cement, concrete, reinforcement, cement plastering etc. shall be applicable as per items of the respective sections. B.B. masonry of 225/115mm thick in c.m. (1:6) shall be constructed on bed concrete of floor up to the required height as per drawing or as directed. The top R.C.C. slab 75mm thick, with sink, shall be cast in c.c. 1:2:4 with necessary shuttering and reinforcement, keeping holes for gas connections and waste coupling. Masonry and R.C.C. work shall be extra plastered 40 x 12mm thick all round. Arrangement for keeping pot shall be made on the top as per drawing or as directed. One brass waste coupling of 30mm size shall be provided and fixed in the sink with necessary P.V.C. waste pipe up to nahani trap. All masonry, R.C.C. plastering work shall be cured for minimum 10 days. Payment shall be made per number which covers all above as specified with all materials, labour, tools, tackles, shuttering, curing etc. complete.

Providing of template & foundation bolt in line and level before concreting of foundation and making arrangement for fixing template in such a way as it remains in position during concreting etc., complete as directed by E. I. C.

The templates and foundation bolts shall be line and level before concreting. Payment shall be made on number basis.

Supply, erecting and Commissioning 2 H. P. self priming Mono Block pump set of ISI make as per the instruction of Engineer-in-charge, with 2.0" suction and 1.5" delivery including casting cement concrete foundation for pump, with required length of G. I. pipe for suction with all necessary fittings like elbow, union, tees, bends, set of flange one brass float valve etc., complete as directed including supplying and fixing the starter of ISI make with ICTP switch & allied wiring of copper cable & board, testing etc., complete as directed by E. I. C.

Single phase 2 HP self priming mono-block pump having ISI mark with 2" suction and 1.5" as described in the item description, approved by Engineer – in – Charge shall be supplied and installed. Required panel BOARD, with all accessories, described in item description shall be installed, with steel framework and fixed as per instruction of Engineer – in – Charge with CC (1:2:4). Foundation of pump and motor shall be cast in CC (1:2:4), with necessary shuttering, reinforcement, supplying and fixing of foundation bolts, curing and finishing smooth of concrete work etc. complete. 18 gauge GI sheet cover with 25mm x 25mm x 5 mm angle frame shall be prepared as per approved design with hinges, locking arrangement etc. complete with 3 coats of oil painting as directed. All electrical installation will be carried

out by licensed electrical supervisor only. Necessary test report shall be submitted for electrical installation.

Pump with motor shall be handed over in complete working condition with trial run as decided by the Engineer – in – Charge. Guarantee for pump and motor from manufacturer shall be submitted for minimum one year.

Rate quoted shall be for supplying, installing with all labour, materials, tools, tackles etc. and giving test to required delivery head as directed by Engineer-in-charge with manufacturers guarantee for satisfactory performance of pump and motor for minimum period of one year.

Payment will be made on number basis for all described in item and specifications.

Providing and fixing 24 gauge chicken mesh jali in plaster concrete and masonry joint work including required nails, tools tackles & approved quality of jali as directed by E. I. C.

The material to be used shall have to be got approved before start of work.

Payment shall be made on actual square meter basis.

Supplying and spraying "Round up" (Glyphosphate 41 % SL) or equivalent weedicide for weed control in proportion of 250 ml. Weedicide in 15 litre of clean fresh water in two spray as per the manufacturer's specification and as directed by EIC.

The Contractor has to carry out the work as per manufacturer's specification for the duration specified by the manufacturer of the product. Result shall be guaranteed for the duration specified and shall be backed by bank guarantee for the amount of 5 % of the operated item.

Providing and fixing of acrylic sign board of Acrylic sheet, computerised vinyl diagram in GI box with tube light fitting size 1800 mm X 1200 mm for various 66 KV S/S.

The matter in the board size of lettering and colors shall be got approved in advance.

Labour charges for leveling the transformer rail etc., complete as directed by E. I. C.

The work shall be carried out in line and level as directed EIC. The level of both the rail shall be uniform.

The pockets to be grouted shall be properly cleaned. Dust and other foreign materials shall be removed from the pockets. If required, Air blower shall be used for cleaning the pocket. If surface is not rough, roughening shall be done, if necessary and instructed by Engineer – in – Charge for bonding purpose. Payment shall made for the pair of rails made available for grouting and will include all labours, tools, tackles, etc. complete.

Providing & Fixing 25 mm. dia. PVC, conduit pipe for electric wiring as directed by the EIC.

25mm dia OD PVC pipe of the ISI quality and approved brand specified by the Engineer – in – Charge shall be fixed in the RCC column as per the instruction. Care shall be taken to plug all the ends by cloth so as to prevent entry of concrete or any other foreign material which may block the pipe for future insertion of cables. The pipe shall be so laid and fixed that while casting / constructing gate pillars, it remains in truly vertical position in centre of column.

The payment shall be made on running meter basis for the length of pipe fixed in the column and shall include all materials, specials such as bend, tee, etc, labour, tools, tackles, etc. complete.

Providing & Laying C. C. M. 7.5 for foundation & plinth with gravel or picked up metal or hand broken stone of size 40 mm. to 60 mm. as coarse aggregates including mixing in mixture machine only, watering, ramming, consolidating etc., complete as directed by EIC.

1.0. Materials

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

2.0 Workmanship

2.1 The proportion of the concrete mix shall 1:4:8 (one cement : four coarse sand : 8 hand broken stone aggregate 40 mm to 60mm nominal size) by volume. Concrete work shall have surface or as specified in the item.

2.2 The designation ordinary M-7.5, specified as per IS corresponding approximately 1:4:8 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 Cu. M.) for different proportions of mix shall be as under :

2.4 The quantity of water in a mix shall be just so adjusted to overcome the difficulties of placement and compaction.

2.5 Workability of the concrete shall be controlled by maintaining 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 the coarse aggregate shall be as large as possible within the limits specified.

2.7 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 Cu. meter. Boxes of suitable sizes shall be used for measuring sand aggregate. The size of the boxes (internal) shall be 35 cms. X 25 cms. and 40 cms. 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 allowance for bulking shall be made.

2.8 When hand mixing is permitted by the engineer – in – Charge for small jobs or for certain other reasons it shall be done on the smooth water tight platform large enough to allow efficient turning over the ingredients of concrete before and after adding water. Mixing platform 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 to 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 percent above the specified.

3.0 Mode of measurements and payment

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

3.2 The rate shall be for a unit of one cubic meter.

Providing form work of ply sheathing and tubular steel support so as to give fair finish including centering, shuttering strutting and propping etc., height of propping and centering below supporting floor to ceiling not exceeding 4 M. and removal of the same for in situ reinforced concrete and plain concrete work in

1.0 Materials

1.1 The shuttering to be provided shall be of plywood make and shall conform to IS4990:2011.

1.2 The dimensions of scantlings and battens shall conform to the design. The strength of the wood shall not be less than that assumed in the design.

2.0 Workmanship

2.1 The form work shall conform to the shape, lines and dimension as shown on the plans and be so constructed as to remain sufficiently rigid during the placing and compacting of the concrete. Adequate arrangements shall be made by the contractor to safe-guard against any settlement of the form work during the course of concreting and after concreting. The form work of shuttering, centering, scaffolding, bracing, etc. shall be as per design.

2.2 Cleaning and Treatment of forms

2.2.1 All rubbish, particularly chippings, shaving and saw dust shall be removed from the interior of the form before the concrete is placed and the form work in contact with concrete shall be cleaned and thoroughly wetted or treated. The surface shall be then coated with soap solution applied before concreting is done. Soap solution for the purpose shall be prepared by dissolving yellow soap in water to get consistency of paint. Alternatively a coat of raw linseed oil or form oil of approved manufacture may be applied in case steel shuttering is used. Soap solution or raw linseed oil shall be applied after thoroughly cleaning the surface. Care shall be taken that the coating does not get on construction joint surface and reinforcement bars.

2.3 Stripping time

2.3.1 In normal circumstances and where ordinary cement is used, forms may be struck after expiry of following periods.

- | | | |
|-----|---|-----------------|
| (a) | Sides of walls, columns, and vertical faces of beam | 24 to 48 hours. |
| (b) | Beam soffits. (Props left under) | 7 days. |
| (c) | Removal of props slabs | |
| | (i) Slabs spanning upto 4.5 m | 7 days. |
| | (ii) spanning over 4.5 m | 14 days. |
| (d) | Removal of props to beams and Arches | |
| | (i) Spanning up to 6 m | 14 days |
| | (ii) Spanning over 6 m | 21 days |

2.4 Procedure when removing the form work

2.4.1 All form work shall be removed without such shock or vibrations as would damage the reinforced concrete surface. Before the soffit form work and struts are removed, the soffits and the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened.

2.5 Centering

2.5.1 The centering to be provided shall be got approved. It shall be sufficiently strong to ensure absolute safety of the form work and concrete work before, during and after pouring concrete. Watch should be kept to see that behaviour of centering and form work is satisfactory during concreting. Erection should also be such that it would allow removal of forms in proper sequence without damaging either the concrete or the forms to be removed.

2.5.2 The props of centering shall be provided on firm foundation or base of sufficient strength to carry the loads without any settlement.

2.5.3 The centering and form work shall be inspected and approved by the Engineer - in - Charge before concreting. But this will not relieve the contractor of his responsibility for strength, adequacy and safety of form work and centering. If there is a failure of form work or centering, contractor shall be responsible for the damages to the work, injury to life and damage to property.

2.6 Scaffolding

2.6.1 All scaffolding, hoisting arrangement and ladders, etc. required for the facilitating of concreting shall be provided and removed on completion of work by contractor at his own expense. The scaffolding, hoisting arrangements and ladders etc. shall be strong enough to withstand all live, dead and impact loads expected to act and shall be subject to the approval of the Engineer - in - Charge. However, contractor shall be solely responsible for the safety of the scaffolding, hoisting arrangement, ladders, work and workman etc.

2.6.2 The scaffolding, hoisting arrangements and ladders shall allow easy approach to the work spot and afford easy inspection.

2.6.3 The rate is applicable to all conditions of working and any height. The rate shall include the cost of materials and labour for various operations involved such as:

- Splayed edges, notching allowance for over laps and passing at angles, battens centering, shuttering, strutting, propping, bolting, nailing, wedging, easing, striking and removal.
- Filleting to form stop chamfered edges or splayed external angles not exceeding 20mm width to beams, columns and the like.
- Temporary openings in the forms for pouring concrete, if required, removing rubbish etc.
- Dressing with oil to prevent adhesion of concrete with shuttering, and
- Raking or circular cutting.

2.7 Re-use

2.7.1 Before re-use, all forms shall be inspected by the Engineer - in - Charge and their suitability ascertained. The forms shall be scarred, cleaned, and joints gone over, repaired where required. Inside surface shall be retreated adhesion of concrete.

3.0 Mode of measurements and payment

3.1 Form work shall be measured as the area in square metres of shuttering in contact with concrete except in the case of inclined member and portion of curved profile and upper side in which case only area of underside shall be measured for payment.

3.2 Form work to secondary beams shall be measured up to the sides of main beams but no deduction shall be made from the form work of the main beam at the inter section point. No deduction shall be made from the form work of a column at inter section of beams.

3.3 The rate is for the completed item.

3.4 The rate shall be for a unit of one square metre.

Providing fitting & fixing fully glazed/ partly glazed double leaf 20micron colour anodized aluminum entrance door using extruded section fabricated by standard manufactures with framing 10.15cm x4.45cm rectangular section & door shutter made from 10.15 cm x 4.45cm aluminum bottom section top & vertical section 6.35x3.80cm size using 5.5mm thick approved quality or HB4 plain glass with glazing deep rubber gasket with locking arrangement(Godrej type) with all fixtures & fastenings of anodized section with aluminum bedding floor spring mounted door closer with all labours & materials etc. Complete as per drawing and as directed by E.I.C.

The aluminium section to be utilized shall confirm to IS 1285/1980 and IS 1869/1968 for the material grade and anodizing respectively. The frame section shall be 61.85mm x31.75mm weighing 0.695kg per mtr. Minimum of section no 8687 Jindal Aluminum Ltd make or its equivalent and section for shutter shall be of 50 mm x 20 mm size weighing 0.571kg per Mtr. minimum of section No 8305 of Jindal aluminum Ltd make or its equivalent.

Necessary additional / special sections shall be used to facilitate locking arrangement, handle stay if necessary. As directed by EIC.

Payment shall be made on Smt. Basis. No additional payment shall be made for fixture or addition /special section.

Providing & Fixing MS grill for exhaust fan of approved quality and design and drawing including welding or bolting fixtures and fastening MS hold fast with three coats of oil painting of approved shade and make with one coat of red - oxide primer including grouting the hold fasts in C C (1:2:4) / fixing in wall with required size of nails including tools, tackles and materials and all labours including making holes for fan etc., complete.

Specification shall be as per item description.

Payment shall be made on the basis of number of grills for exhaust fan fixed and shall include all materials, labour, tools, tackles, etc. complete.

Providing & Fixing Garware film of approved quality and make etc. complete.

Before starting the work, Garware film sample shall be got approved from the Engineer - in - Charge. Work shall be executed as per manufacturer's specification and instructions.

Payment shall be made on the basis of Sq. meter of film applied on the glass panel of windows / doors. The payment includes all materials, labour, tools, plants, wastage, if any etc. complete.

Providing & Fixing M. S. Cover for cable trench in control room made from 14 Gauge M. S. Sheet having M. S. Angle frame all-round of 40 X 40 X 5 mm. size and cover shutter frame of angle 30 X 30 X 5 mm. size & 2 supports at middle including oil painting of 3 coats of approved shade & make. Providing 2 handles of 6 mm. dia. M. S. bar as per instruction etc., complete as directed by E. I. C.

General specification of fabrication shall be applicable. The covers shall be fabricated as per detailed drawing given as instructed on site. Item provides for supplying, fabrication, painting

and fixing M.S. Covers at site, with 2 handles of 6mm dia bars shall be provided with holes in the cover, with necessary flat welded at the bottom of the handle so that the handle do not project outside when the covers are placed on the cable trench. Measurements shall be paid on the square meter of the covers provided.

Providing 2500 mm. internal dia meter and 3.0 mt. deep soak pit including excavation in all types of soil and soft / hard rock and B. B. C. C. (1:4:8) bedding 300 mm. thick below masonry and 450 mm. thick B. B. masonry in C. M. (1:6) up to 2000 mm height, 350 mm. thick for further 2000 mm and 230 mm thick for remaining height honey combed plastering in CM 1:3 inside up to full height and 100 mm thick R. C. C. slab with 600 X 600 mm. C. I. Heavy duty cover with frame, with necessary reinforcement as per design and C. I. Vent pipe 1800 mm. long with B. B. Masonry pillar 350 X 350 X 450 plastered all around filling 40 to 50 mm size brick bats up to 1.5 tm. depth, including 16 mm dia M. S. U Steps refilling and as directed and including disposal of the surplus excavated earth up to the lead of 500 tm. radius including 3 coats of white or colour wash to all exposed finished surface etc., complete as directed by E. I. C.

Soak pit of given dimension shall be constructed at place shown.

The specification of excavation, brick masonry, concrete, plaster etc. shall be as provided in respective section. Brick wall on B.B.C.C. 1:4:8 shall be constructed as described in item in C.M. (1:6). R.C.C. slab to be provided at top, shall be in c.c. 1:2:4 with necessary shuttering and reinforcement. 600 x 600mm heavy duty C.I. cover with frame as per I.S. standard shall be provided in top slab. Honeycombed brick masonry shall be provided for the depth as shown in drawing or as directed. 12mm thick outside plastering in c.m. 1:3 shall be provided for 1:5 tm. depth of masonry from top. The pit shall be filled with brickbats of 40mm to 50mm size up to 1.5 meter depth. Brickbats shall be of size specified and free from dust, small pieces and other foreign materials. If desired by Engineer-in-charge the same shall be screened and other foreign materials. If desired by Engineer-in-charge the same shall be screened and provided. 16mm dia M.S.U. shape steps shall be provided @ 200mm c/c as directed. Plastered surface and top shall be given 3 coats of whitewash, 75mm dia C.I. vent pipe of 1800 mm length shall be provided with brick masonry plastered pillar and C.I. cowl ventilator shall be provided at the top of vent pipe with joint filled in c.m. 1:1.

Payment shall be made per number, which covers all above as specified with all materials, labour, tools, tackles scaffolding, curing etc. complete.

Providing and fixing Acrylic name plates of required size including painting letters as directed and fixing as directed by engineer in charges.

Before starting the work, acrylic sheet sample as well as type of letter style and size of letter shall be got approved from the Engineer - in - Charge. Work shall be executed as per Engineer - in - Charge's instructions.

Payment shall be made on the basis of one number. The payment includes all materials, labour, tools, plants, wastage, if any etc. complete.

Labour charges for beveling the Kotah stone as directed.

The item shall be executed on the exposed edges of Kotah stone fixed on sills, steps and wherever directed by the Engineer - in - Charge. The Kotah stones shall be beveled in half round shape with smooth finishing.

The payment shall be made on the basis of running metre of edges beveled and shall include all tools, tackles and plant, labour, etc. complete.

Providing & laying CC (1:3:6) or M 10 for structural foundations and for erection of M. S. angle posts using 20 to 25 mm. size black trap machine crushed metal including shuttering for all side up to any height and mixing in mixer machine, ramming with mechanical vibrator & including grouting of foundation bolts simultaneously with the help of templates (setting of template of foundation bolts and finishing by plaster will be paid separately)

M-10 grade of concrete using machine cut black trap of size 12 to 20mm shall be laid using minimum cement content of 221 Kg / Cmt. and free water cement ratio of 0.60. Sample of ingredients to be used shall be got approved.

The general specification of concrete shall be applicable for this item. Rate quoted shall be of all materials, labour, tools, tackles, shuttering, scaffolding, curing, etc. as per item. Concreting work, involved in this item, is for the foundation work for various equipments and machinery.

Payment shall be made on actual cu. M. of concrete work done as per detailed drawing furnished by department.

The pockets to be grouted shall be properly cleaned. Dust and other foreign materials shall be removed. If required, it shall be cleaned by Air blower. If surface is not rough, roughening shall be done, if necessary and instructed by Engineer – in – Charge for bonding purpose. Existing surface shall be applied with thick paste of cement mortar. No separate payment will be admissible for this.

Payment shall be made for actual quantity of concrete work done for grouting.

Providing and Laying controlled cement concrete M-150 and curing complete excluding the cost of form work and reinforcement for reinforced concrete work in (a) Foundation, footings, Bases of columns etc. and Mass concrete.

(b) Slabs, Landings, shelves, Balconies, Lintels, Beams, Girders and cantilever up to floor two level.

(c) Columns, pillars, posts and struts up to floor two level

1.1. The relevant specifications of item No. 12 shall be followed except that the work shall be carried out for M-150 reinforced concrete work. In addition, the following stipulations shall be followed for :

(a) 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 in cement mortar 1:2 (1 cement : 2 coarse sand) about 4 cms. x 4 cms. 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 reinforce beams or slabs, the main reinforcing bars shall be held in position by introducing chain spacers or supports bars at. 1.0 to 1.2 metre centres. (ii) In case of columns and walls, the vertical bars shall be kept in position by means of timber templates with slots accurately cut in them, the templates shall be removed after concreting has been done below it. The bars may be 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.

2.0. Mode of Measurement & Payment

2.1. The relevant specifications of item No. 12 shall be followed.

2.2. The volume occupied by reinforcement shall not be deducted from R.C.C. work.

2.3. The rate shall be for a unit of one cubic metre.

Providing & fixing sliding gate of 40 mm. dia. mild steel pipe 'B' Class all round and 20 mm. dia. mild steel pipe at 200 mm C/C and 12 mm. mild steel square bars at 200 mm. c/c alternatively i. e. One square bar between two pipe vertically welded to 40 mm dia. pipe frame as per drawing and design with necessary brackets, holdfasts, locking arrangement on top & aldrop on both sides including base rail for sliding the gate having ball bearing rollers & guide track of 50 X 6 mm. M. S. Flat with holdfast, fabrication of side supports including fixing the letters "GETCO" on front side etc. complete with three (3) coats of approved Oil Painting & one coat of red oxide primer as directed (The cost does not include the cost of reinforcement, column supports, joists, concrete masonry work)

Sliding gate with 40 mm dia M.S. Pipe frame shall be prepared as per detailed drawing. General specifications for fabrication shall be applicable. Holes shall be drilled in 40mm dia m.s. pipe in top and bottom members at 200mm c/c for 20mm dia pipe. Pipe shall be inserted at least 20mm inside and then welded to frame. Similarly 12mm M.S. Square bars shall be provided alternatively at 20mm c/c necessary brackets. hold fast, aldrop, locking arrangement shall be provided as per detailed drawing and as per item description. GETCO letters shall be of 250mm sizes and shall be fixed on gate as shown or as directed. Gate shall be erected in plumb, line and level with bottom rail and guide and rollers with bearing. Gate shall be given one coat of red oxide and 3 coats of approved quality, brand and tint oil paint or 3 coats of aluminum paint as directed. Trial for smooth operation shall be given and defect observed during guarantee period of 12 months will have to be attended with replacing of parts etc. without any extra cost.

Payment shall be made on square meter basis. Area of gate provided & fixed shall be measured and paid, based on unit rate quoted.

Providing & Fixing hinged type 40 mm. dia. M. S. pipe "B" class all around & 20 mm. dia. M. S. Pipe gate as per drawing & design with necessary brackets, hold fasts welded to vertical girders, ball bearing wheels for sliding the gates with 50 x 6 mm. M. S. Flat, guide rail fixed in concrete with 3 coats of oil painting of approved shade & make, with one coat of red oxide primer etc., complete as directed by E. I. C. (COST DOES NOT INCLUDE THE COST OF COLUMNS, STEEL / JOISTS, CONCRETE, MASONRY ETC.)

The specification of item No. 104 shall be applicable. The gate shall be hinged and provided with sliding arrangement with ball bearing wheels, 50 x 6mm guide holdfasts for fixing in concrete for guide as well as gate. Aldrop shall be provided on both side with locking arrangement at top. General specification of fabrication shall be applicable. After gate is completely fabricated and okayed. One coat of red oxide shall be given and after erection in position and testing, 3 coats of oil painting of approved quality, brand and tint shall be applied or 3 coats of aluminum paint shall be applied according to instruction at site. All fabrication, welding etc. shall be in best workmanship like manner. For frame of 40mm dia pipe elbow shall be provided at corners. For smooth bending shall be have to be adopted by approved method. Any damage, deshaping etc. during fabrication, bending or welding shall make member for rejection. Where bending is approved smooth and uniform bending shall be for all corners.

Payment shall be made for actual square meter area of gate provided as per drawing or per details furnished on site.

Providing & applying two coats of snowcem or equivalent cement paint including cleaning the surfaces, watering etc. complete as directed by EIC

Water proof cement paint Snowcem or equivalent quality shall be of approved brand and manufacture and shall be applied on surface as per manufacturer's specifications. Prior to applying the paint the surface shall be cleaned, brushed and all loose adherences, mortar dropping, grease, etc. shall be removed. Surface shall be wetted with water before application of paint. Paint shall be mixed with water in such quantity that can be utilized within an hour. The paint shall be mixed with water in such proportion and by such method as recommended by the manufacturer. During application of the mix to the surface, it shall be stirred well. It shall be applied such that direct heat of sun is avoided during application. Next coat is applied after previous coat has set for 24 hours. Next coat shall be applied without wetting of surface, 2 coats of paint shall be applied as specified in the item to get uniform shade.

Painted surface shall be cured for 7 days by sprinkling water and keeping it wet.

Rate quoted shall be including of cleaning of surface before application of paint, cleaning area after application including stain removal, scaffolding, curing, etc. complete.

Providing & laying 75 mm thick built up spray grout base course double layer using tack coat at the rate of 5 kg of asphalt of required grade per 10 sq. mt. for first

layer and 15 kg. of asphalt of required grade per 10 sq. mt. For grouting for second layer as per requirement and spreading grit at the surface using 0.13 cmt. of key aggregates of size 40 to 50 mm. (black trap metal) per 10 sq. mt. Area over existing surface including rolling & consolidating with 8 to 10 tonnes power roller for each layer etc., complete as per specification and as directed by EIC.

The surface shall be cleaned with wire brush and coir brush to remove the dust and foreign materials. 75 mm thick built up spray grout base course shall be provided in single layer as directed by Engineer-in-charge.

Asphalt of 60/70 or 80/100 grade satisfying the requirement of I.S.702 and grade as decided by Engineer-in-charge should be used. The binder shall be heated to optimum temperature in boiler. Aggregate of size 40 mm to 50 mm (black trap metal) of approved quality shall be used.

Payment shall be made on Sq. Mt. basis.

Supplying and pouring of 'Pidiproof' of PIDILITE brand or equivalent as waterproofing admixtures as per manufacturer's specifications in cement concrete during casting of concrete as directed by the Engineer - in - Charge.

Pidiproof waterproofing admixture manufactured by M/S Pidilite shall be mixed with concrete mix before laying the same in manner and 200ml per one cement bag or as recommended by the manufacturer. This admixture shall be used during concreting of slabs and all other water retaining structures

Providing and fixing broken glass pieces on top of compound wall coping. This item should be executed immediately after the casting of coping.

Broken glass pieces obtained from soda bottles shall be fixed during concreting of the top coping of compound wall in close proximity of each other at about 20 to 25 mm c/c and shall project from the top of coping by about 25 to 40 mm and shall be embedded in the concrete to a depth of 25mm and as per instruction of Engineer - in - Charge.

The payment for this item in running metre and shall include providing of glass and labour charges irrespective of the thickness of coping.

Conducting and carrying out verticality test as per ISS (The contractor shall have to submit the certificate of verticality test from reputed firms who are carrying out such tests.) If the verticality test is not satisfactory or not conforming to IS specifications the amount maximum upto 20 % of contract i.e. total value of work done will be recovered from contractor's bill.

Verticality test as per IS standard shall be carried out as instructed in the item with all necessary arrangement and materials. The results observed shall be noted for various depths and submitted with certificate as desired in the item. The test shall be carried out in the presence of Engineer – in – Charge or his authorized agent.

Rate shall be quoted for lump sum for the job.

Developing and cleaning and giving yield test for bore well, by required size of compressor and pump running for 12 hours with necessary pipes, lowering and removing the pipes in well etc., with all equipments etc. complete.

Bore well drilled shall be first developed by suitable compressor for 12 hours and observation of water coming out, shall be made for, sand particles in water shall be noted. Arrangement of "V" notch weir shall be made for measuring the water flow for yield with marking on the same. A chart showing the discharge with various depth of flow from V notch shall be submitted.

After compressor test is over, pump for running test yield test shall be arranged for 12 hours pumping for desired yield and the flow shall be measured with V notch weir. Results observed may be submitted. Draw down level for water in each case be noted and submitted and time

taken for equipment shall be also noted and submitted. All observation shall be made and noted in presence of representation from GETCO. Due to pumping any difference in gravel packing level shall be observed, and qty, required to bring to top shall be also noted & informed & filled up.

Rate quoted shall be lump sump for above tests with all necessary equipments, tools, tackles, machineries etc. complete required for the job.

Providing water logging test with electro logging equipment and arranging for water potability test including defining the water availability test, chemical and bacteriological analysis of water sample as per parameters for drinking water sample from PH engineering lab or any Government body, etc. complete as directed.

Water logging test, with electro logging equipment, may be carried out in presence of authorized agent of Engineer-in-charge. Potability of water shall be got tested in Government, public health laboratory or other recognized laboratory approved by Engineer-in-charge. Results obtained shall be submitted. Total availability of water from bore and maximum discharge available, type of pump with it's capacity recommended shall be also obtained from authorized agency experienced in the work of from recognized institute as approved by Engineer-in-charge. Details of all test carried out with their observations and inference shall be informed.

Payment shall be made after completion of entire job on the basis of each job work completed.

Providing and fixing top cap for 200mm Ø pipe, clamps and socket and other accessories required for completing for completing the job.

The cap for 200mm Ø socket shall be provided on the well drilled so that pipe do not get choked with foreign materials and no one can play mischief. One clamp for supporting the pipe line lowered in the well shall be provided at floor level/ground level so that pipe may not run down in the well due to any accident, Socket shall be provided on the top of pipe. All the work shall be carried out as directed by Engineer-in-charge.

Rate quoted shall be lump sump for all above providing and fixing including welding, fabrication etc., necessary.

Supplying and Lowering the Kalama or KSB Kalama/ Jyoti / Kirloskar / Amrut make submersible pump of 4 HP X 12 stage in bore well etc., completed as directed including ISI approved MEI type oil immersed auto transformer starter commissioning and testing to required delivery head. (ALL OTHER ACCESSORIES WILL BE PAID SEPERATELY.)

4.0 H.P. 12 stage submersible pump with motor of I.S.I. mark and approved make shall be supplied and installed as directed. Rate quoted shall be for supplying, installing with all labour, materials, tools, tackles etc. and giving test to required delivery head as directed by Engineer-in-charge with manufacturers guarantee for satisfactory performance of pump and motor for minimum period of one year.

Extra for one H.P. additional capacity mortar.

Rate shall be quoted for additional one H.P. capacity of the motor specified in the above noted item.

Extra for one stage additional capacity for pump.

Rate shall be quoted for additional one stage of the pump specified in the above noted item no. 101.

Providing & Fixing panel BOARD of metal box with a main fuse connection, Ampere meter, Voltmeter 30 Amp, 3 phase switch single phase preventor cum water level

guard and male and female type socket 3 phase indicator lamps and toggle switch etc., including all wiring / earthing complete as directed by E.I.C.

A panel BOARD of T.W. 20mm thick shall be of the specified dimension required for the all the assessorial described in the item. All the accessories shall be as per I.S. specifications and shall be of approved make. All the accessories shall be as per I.S. specification and shall be of approved make. All accessories shall be connected with copper wire/cable suitable for 30 Amp. load, connected with indicator lamps etc., as directed by Engineer-in-charge. Payment shall be for BOARD with all accessories, wiring, etc., on lump sum basis.

Providing and joining 4mm flat copper sufficient for 7.5 H.P. pump set etc. complete as directed.

4mm flat copper cable suitable for 20 H.P. pump shall conform to I. S. specification and to approved make. Cable shall be jointed or fixed by licensed electrical supervisor only with necessary precaution and materials required for connection and joining. Payment shall be made in running meter of the cable supplied and fixed.

Providing & fixing and lowering Ashirvad make required dia uPVC column pipe (standard pipe) with coupling and wire lock, O ring, rubber gasket, APPL marked bottom and top adaptor and pump guard with flange set as per requirement and specification, closing, clamping, etc. with required bend, plug etc. complete as directed by E.I.C. The pump shall be additionally supported by 2 nos. of 4mm dia GI HT wires along the entire length of column pipes and shall be taken out of the borewell and fixed with casing pipe etc. complete as directed by the Engineer – in – Charge.

uPVC Ashirvad make required dia square threaded column pipe with coupling and wire lock, O ring, rubber gasket, APPL marked bottom and top adaptor and pump guard with flange set shall be provided and installed in the well as directed. Pipe shall be lowered slowly so that drilled well is not damaged or collapsed on some portion. Pipes shall be joined by screwing male and female end as per manufacturer's instruction and specifications and couplers shall be locked with special wire lock system to ensure that during installation and removal of the pumps the coupler does not come out resulting in column slippage. Necessary arrangement for lowering pipe shall be made by the contractor. After the pipe line is lowered completely and cleaned it shall be covered at top.

The pump fixed at the bottom of the pipe shall be supported additionally on 2 nos. of 4mm dia GI HT wires passed along the entire length of the column pipes and taken out of the casing pipe and fixed with casing pipe top so that pump is restricted from falling inside the drilled borewell.

Rate shall be quoted for the diameter of pipe specified with all the operations and materials required with plant, machinery, tools and tackles etc., for completing the item. Payment shall be made on pipe lowered as above on Rmt basis.

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

Cutting shall be done in proper grade and camber as per measurements given. Care must be taken that the tall 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 the contractor the same shall be refilled with approved quality of materials duly consolidated to the satisfaction of the Engineer – in – Charge (without any extra cost). Box cutting for soling and metalling in required width and the depth shall be done.

The stuff received from the cutting shall be utilized for filling cuts and correcting side slopes of band with all lead and lift as directed. Useful stuff shall be carefully stacked separately as directed.

The measurement shall be taken as per cross sectional measurement of the cutting based on length, breadth, depth measured with tape at every 25 metres interval.

The payment shall be made on Cmt. basis.

Providing & laying cement sealing work for the drilled bore-well hole to stop entry of upward salty water including clay packing as required in proper manner or suggested by geologist to required depth at site as directed by Engineer-in-charge etc. completed.

Specification for the item shall be as per item description.

Payment will be done on the basis of job work after completion of entire job.

Providing cement pointing in C.M.(1:1) including racking out of joints, scaffolding, curing finishing etc., completed as directed by E.I.C.

Before pointing work is taken up joints, if not racked shall be racked out for proper bondage. Surface shall be wetted with water and joints cleaned. Sand and cement are mixed in equal proportion. The mortar shall be pressed in the joints just sufficient to cover up the joint only. Horizontal and vertical impression shall be made with nail or M.S. flat piece. The impression shall be 6mm wide and 6mm deep freely horizontal and vertical. Pointed surface shall be kept wet for minimum 10 days. Sample of pointing to be got approved from Engineer in charge before starting work.

Rate quoted shall be inclusive of scaffolding and working at all levels. Payment shall be made for actual sq. metres of area provided with pointing.

Uncoursed rubble masonry with hard stone of approved quality in foundation and plinth in cement mortar 1:6(1 cement : 6 course sand) including levelling up etc complete

1.0 Materials :

The cement mortar shall conform to M-11. stones shall conform to M-16.

2.0 Workmanship :

2.1 Dressing of stones :

Stone used for uncoursed rubble masonry work shall be hammer dressed on the sides, and beds in such a way as to close up with the adjacent stone in the masonry work as strongly as possible. The face stone shall be dressed in such a manner as to give a specified pattern such as blygonal tucing etc. the face of the stones shall be so dressed that bushing on the exposed face shall not project by more than 40mm from the general wall surface and on the face to be plastered. It shall not project by more than 19mm nor shall have depressions more than 10mm from the average wall surface.

2.2 Laying :

All the stone shall sufficiently wetted before laying to prevent absorption from mortar. The wall shall be built true to plumb (or true to required batter when so specified). All connected walls in a structure shall normally be raised up uniformly and regularly. However, if for any specific reason, one part of masonry is required to be left behind, the wall shall be racked back at an angle not steeper than 45°. Vertical toothed joints in masonry shall not be allowed. The work shall be carried out regularly and masonry of any day will not be raised by more than 1 metre in height.

2.3 The stone shall be laid in an uncoursed fashion or random facing etc. However the masonry is required to be brought to level at various stages viz. plinth level, window sill level, roof level and any other level specifically shown in the drawings. This may be done by first adjusting the laying of stones to one level and then providing leveling course of cement

concrete 1:6:12 (1 cement : 6 sand : 12 graded stone aggregate 20mm nominal size) or as otherwise specified.

2.4 Proper bonding shall be achieved by closely filling in adjacent stones as well as by using bond stones or through stones as described herein below. Face stone shall extend back sufficiently and bond well with the masonry. The stone shall be carefully set so as to break joints and avoid formation of vertical joints. The depth of stone from face of the wall inwards shall not be less than width or breadth at the face. The hearting or interior filling of the wall shall consist of rubble stones which may be of any shape. Neither the face stone nor the hearting stone shall be so small to pass through circular ring of 150mm internal diameter in any direction nor shall any of them shall have minimum thickness 100mm.

2.5 All stone shall be carefully laid, hammered down by a wooden mallet into position and solidly embedded in mortar, chips and spawls of stone may be used wherever necessary to avoid thick mortar beds or joints at the same time ensuring that no hollow space is left anywhere in the masonry. The chips shall not be more than 20% of volume of masonry. The hearting shall be laid nearly level with face stones except that at about one metre intervals vertical bond stone or plums projecting about 150 to 200 mm shall be firmly embedded to form vertical bonding in masonry.

2.6 Bond Stones :

Bond stones or through stones running right across the thickness of wall shall be provided in walls upto 600mm thick. In thicker walls two stones overlapping each other by at least 150mm shall be provided across the thickness of the wall to form bond stones. There shall be atleast one bond stone for every 0.5 sq. m. of wall surface. The bond stone shall be marked by a distinguishing letter during construction for subsequent verification and shall be laid staggered in subsequent layers.

2.7 Quoins :

The quoins or corners stone shall be selected stone nearly dressed with hammer and / or chisel to form the required corner angle and laid header and stretcher alternatively. The bed and top surface of quoins shall be chiseled dressed to give horizontal joints. The quoins shall have a uniform chisel draft of at least 25mm width at four edges of each exposed face, all the edges of the same face being in one plane. No quoins stone shall be smaller than 0.025 cum. in volume.

2.8 Jamb stones :

The jamb stone shall be made with stone specified for quoins, except that the stone provided on the jambs shall have their length equal to thickness of wall upto 600mm and a line of headers shall be provided for walls thicker than 600mm as specified for bone.

2.9 Joints :

All the joints shall be completely filled with mortar and their width shall not exceed 25mm. When plastering or pointing is not required to be done, the joints shall be struck flush and finished simultaneously while laying the stone. Otherwise the joints shall be raked to a minimum depth of 20mm by a racking tools during progress of laying while mortar is still green.

2.10 Scaffolding :

Single or double scaffolding shall be used. The scaffolding shall be strong and sound. The holes left in masonry for supporting scaffolding shall be filled and made good before plastering.

2.11 Curing :

Green work shall be protected from rains by suitably covering the same. Masonry shall be kept constantly moist on all the faces for a period of at least 7 days. The top of masonry shall be flooded at the close of the day.

3.0 Mode of measurement and payment :

3.1 All work shall be measured on the basis of finished dimensions and measured net except where otherwise specified. Only specified dimensions shall be allowed. Anything extra shall be ignored. The masonry work in foundation and plinth shall be measured under this item. No deduction shall be made nor extra payment made for the following :

- (a) Ends of joints, beams, posts, girders, rafters, purlins, trusses, corbels, etc. each upto 500 sq. cm. In section.
- (b) Opening each upto 0.1 sq. cm.
- (c) Wall plates and bed plates bearings of chhaja and like upto 10 cm. Depth (bearing of floor and roof slabs shall be deducted from masonry).

- (d) Drain holes and recesses for cement concrete blocks to embed hold fasts for doors, windows, etc.
 - (e) Building in the masonry iron fixtures, pipes upto 300mm dia hold fasts of doors and windows.
 - (f) Forming chases in masonry upto section of 350 sq. cm.
- 3.2 The rate shall be for a unit of one cubic metre.

Providing & fixing approved quality FRP door having FRP frame of size 100x50mm & 28mm thick FRP shutter with Depressed Panel shutter having extra reinforcement on side and edges and in Gel coat finish. The core of the shutter is to be filled up with injected fiber extinguishing grade polyurethane foam done in situ along with embedded wooden pieces for stiffening and also for fixing hinges and fixtures. The whole FRP frame and shutter is to be water proof, weather proof, termite proof and resistance to mild acid/Alkali resistance including SS hinges with necessary screws and aluminum fixture and fastenings etc complete. 28mm th. shutter & 100x50mm frame.

Specification shall be as per item description.

Payment shall be given on the basis of sq. m. and shall be measured out to out of the door shutter and shall not include wastage, if any and will be inclusive of tools, tackles, labour, transportation, etc. required to complete the item.

Providing & fixing approved quality FRP door having FRP frame of size 125x65mm & 35mm thick FRP shutter with Depressed Panel shutter having extra reinforcement on side and edges and in Gel coat finish. The core of the shutter is to be filled up with injected fiber extinguishing grade polyurethane foam done in situ along with embedded wooden pieces for stiffening and also for fixing hinges and fixtures. The whole FRP frame and shutter is to be water proof, weather proof, termite proof and resistance to mild acid/Alkali resistance including SS hinges with necessary screws and aluminum fixture and fastenings etc complete. 35mm th. shutter & 125x65mm frame.

Specification shall be as per item description.

Payment shall be given on the basis of sq. m. and shall be measured out to out of the door shutter and shall not include wastage, if any and will be inclusive of tools, tackles, labour, transportation, etc. required to complete the item.

Providing and fixing 30mm thick factory made PVC rigid foam paneled door shutters manufactured by Rajshri or its equivalent made from MS tube of 19 gauge thickness, size 19 x 19mm for styles and 15 x 15mm for top and bottom rails, covered with heat moulded PVC "C" channel of 6mm thick sheet and 30 x 50mm wide to form styles and 5mm thick and 75mm wide PVC sheets for top rail, lock rail and bottom rail on either side and 5mm thick, 20mm wide cross PVC sheet as gap insert for top rail and bottom rail, paneling of 5mm thick PVC sheet fitted in MS frame welded/sealed to the styles and rails with 5 x 30mm PVC sheet beading on either side and joined together with solvent cement adhesive etc. complete as per manufacturer's specification and direction of EIC fixed to frames with 4 nos. of powder coated butt hinges. (For W.C. and bathroom shutters)

Specification shall be as per item description.

Payment shall be given on the basis of sq. m. and shall be measured out to out of the door shutter and shall not include wastage, if any and will be inclusive of tools, tackles, labour, transportation, etc. required to complete the item.

Providing and fixing factory made PVC door frame manufactured by M/s. Rajshri or its equivalent of size 50 x 47 mm with a wall thickness of 5mm made out of extruded 5mm rigid PVC foam sheet mitred at corners and joined with 2 nos. of 150mm long brackets of 15 x 15 mm MS square tube, the vertical door profiles to be reinforced with 19x19mm MS square tube of 19 gauge, EPDM rubber gasket weather seal to be provided throughout the frame. the door frame to be fixed to the wall using MS screws of 65/100mm size complete as per manufacturer's specifications etc. complete as directed.

Specification shall be as per item description.

Payment shall be made on the basis of running metre of the frame fixed and shall not include wastage, if any and will be inclusive of tools, tackles, labour , transportation, etc. required to complete the item.

Providing B.B. Masonry chamber for earthing pit of approved size and drawing including 40 mm thick. PSC cover with 25mm dia. hole in centre for watering, necessary excavation bottom concreting of 150mm thick BBCC (1:4:8) below RCC 1:2:4 lintel beam only, with 2 Nos. of lintel beam of size 1.52 x 0.23 x 0.15 and 2 Nos. of lintel beam of size 1.06 x 0.23 x 0.15 out to out with 5 Nos. of 8 mm dia. bars & 6mm dia., 11 Nos. rings, and 4 Nos. of 8mm dia. bars & 6mm 5 Nos. rings respectively, 225mm thick B.B. masonry in CM (1:6), 12mm thick. Cement plaster in CM (1:3) inside as per requirement (without bottom) and to all exposed faces upto 300mm below, including disposal of excavated earth within or outside s/s premises for any lead including making groove at top of masonry wall for fixing 40mm thick PSC cover flush to top of man hole, 3 coats of white or colour wash to all exposed finished surface & green colour oil paint to PSC cover etc. complete as directed
by E.I.C.

A 600 x 600 clear size with BB masonry upto 1000mm depth.

B.B. masonry inspection chamber (manhole) of specified size, item shall be constructed at location shown with base concrete of (1:4:8) B.B.C.C. 150mm thick, 225mm thick. Brick masonry wall in c.m. (1:6) shall be constructed of width as per drawing or as per details furnished on site. Plastering inside including bottom and outside 300mm below final ground level shall be provided in c.m. (1:3) 12mm thick. Curing the cement work, fixing P. S. C. manhole cover as per size of the chamber including necessary excavation, backfilling, disposed off surplus earth etc., complete, necessary chamber shall be provided with slope in bottom P. S. C. cover shall be painted with 3 coats of green colour oil paint of approved make.

Specification of earth work and backfilling of section B, specification of brick masonry of section C, specification of concrete of section D, and plastering section E shall be followed.

Payment shall be made on number of chamber constructed of the size specified in the tender with all operations as per item.

Providing and fixing galvanized chain link jali 2" 10 x 10 gauge inserting 2 nos. of 4mm dia GI HT wire at top and bottom along the length in alternate links and fixing the same with angle supports using GI wires of appropriate size or GI 'U' pin approved by EIC including transportation, cutting, wastage. Joints shall be aligned at angle supports only.

Galvanized chain link jali having 2" (50mm) 10x 10 gauge wire and 2 metre height shall be used for execution of this item. The chain link jali shall be fixed with angle supports using 4mm dia GI HT wire at top and bottom passed through alternate links. To give sufficient fixity with angle supports extra GI wire shall be wound through links and along the supports

or GI 'U' pins shall be used to fix the jali with angle supports as directed by the engineer – in – Charge.

Joints shall be aligned at the supports and an overlap of minimum 300 mm shall be given where jali ends.

Payment shall be made on the basis of running metre.

Supplying & Stacking rubble stone of approved quality for road soling of about 200 to 250 mm. size including transportation, stacking rubble close in rectangular stack etc., complete as directed by E.I.C. (FOR VOIDS 25% WILL BE DEDUCTED.)

Rubble of approved quality and size specified shall be supplied. Rubble shall conform to material specification M-16. Only rubble of required size shall be supplied and no undersize rubble shall be accepted. Rubble shall be stacked at the place shown in regular stacks of the size approved by the engineer – in – Charge.

Payment shall be made on stack measurement basis on cubic metre. 25 % of the quantity arrived at shall be deducted for voids.

Labour charges for laying rubble in 225 mm. thick layer for soling with required grade & camber & filling the voids with small size of chips and earth & watering consolidating by 8 to 10 tonnes power roller etc., complete as directed by E.I.C.

The rubble collected and stacked on site shall be used for soling work. Soling shall be done in such a manner that the required thickness of 225mm is obtained after the rolling. The rubble shall be provided close so as to leave minimum voids. All the voids shall be filled with small size chips of the same quality of rubble, when soling and filling is completed it shall be got checked and finally the yellow earth shall be spread over it. The surface shall be rolled dry with 8 to 10 tonnes roller and the voids shall be filled up by brooming. The surface shall be watered and rolled again and broomed so that all the voids are filled up. Due care shall be taken to see that the required grade and camber are maintained. The rolling shall be done as instructed by the Engineer-in-charge so that no undulation or wavy surface is obtained. The rolling operation shall be repeated for required final surface is obtained as desired.

The rate quoted shall be for all labour, tools, tackles, machineries etc. The measurements shall be paid on actual Sq. Meter of the work carried out.

Providing and laying 50-75mm thick Grouting with Non Shrink Grouting material of CONBEXTRA- GP2 ,POLYGROUT-NS or equivalent, having the minimum compressive strength of 45 N/Sqmm mixing as per manufacturer's specification including necessary shuttering, tool tackles labour etc completed as directed by Engineer In Charge

Preparation

Foundation surface

The substrate surface must be free from oil, grease or any loosely adherent material. If the concrete surface is defective or has laitance, it must be cut back to a sound base. Bolt holes and fixing pockets must be blown clean of any dirt or debris.

Pre-soaking

Several hours prior to placing, the concrete substrates should be saturated with fresh water. Immediately before grouting takes place any free water should be removed with particular care being taken to blow out all bolt holes and pockets.

Base plate

It is essential that this is clean and free from oil, grease or scale. Air pressure relief holes should be provided to allow venting of any isolated high spots.

Levelling shims

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Formwork

The formwork should be constructed to be leakproof. This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints. In some cases it is practical to use a sacrificial semi-dry sand and cement formwork. The formwork should include outlets for pre-soaking.

Mixing and placing

Mixing as per manufacturer's specification or as under.

For best results a mechanically powered grout mixer should be used. When quantities up to 50kg are used, a heavy duty slow speed drill (400-500 rpm) fitted with a paddle is suitable.. Larger quantities will require a heavy duty mixer. To enable the grouting operation to be carried out continuously, it is essential that sufficient mixing capacity and labour are available. The use of a grout holding tank with provision to gently agitate the grout may be required.

Consistency of grout mix as per manufacturer's specification

The quantity of clean water required to be added to a 25kg bag to achieve the desired consistency is given below :

Pourable : 4.125 litres

Flowable : 4.500 litres

The selected water content should be accurately measured into the mixer. The total content of the GP2 grouting bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency.

Placing

At 30C place the grout within 20 minutes of mixing to gain full benefit of the expansion process.

GP2 grouting can be placed in thicknesses up to 100mm in a single pour when used as an under plate grout. For thicker sections it is necessary to fill out GP2(T) grouting with well graded silt free aggregate to minimize heat buildup. Typically, a 10mm aggregate is suitable. 50 - 100% aggregate weight of GP2 grouting can be added. Any bolt pockets / below base plate must be grouted prior to grouting between the substrate and the base plate. Continuous grout flow is essential. Sufficient grout must be prepared before starting. The time taken to pour a batch must be regulated to the time to prepare the next one.

Curing

On completion of the grouting operation, exposed areas should be thoroughly cured by continuous application of water and/or wet hessian up to specified time as per manufacturer's specification.

Mode of measurement

Payment shall be made on actual square meter of work carried out Rate quoted shall be inclusive of all materials, tools, tackles required for complete of item.

Boring holes in ordinary soil, sand, clay soft murrum, hard murrum and soft rock (for cast in situ piles) under ream piles of 350 MM diameter up to 4.0 M depth from GL with two bulbs in each pile as per dimension and position, as per drawing including using the Bentonite as per requirement during drilling including all tools and tackles, labours and drilling equipment, manually or mechanically etc. complete as directed include disposing the stuff to a lead of 500 Mtr. radius as directed by E.I.C. (The concreting & reinforcement will be paid separately in respective items).

1.0 Workmanship :

1.1 The ground shall be roughly leveled and after marking the position of piles, the holes shall be bored with aspiral angle to the 4.0m depth and specified diameter using boring guide.

1.2 The bore holes shall be truly vertical and uniform bore throughout of specified diameter. After boring to the required depth, the bore shall be cleared off the loose soil and disposal of surplus excavated stuff as directed up to a lead of 500 metres.

1.3 The bore shall be enlarged at two places at the specified depth by an under reamer 2 to 2 ½ times the diameter of the bore to make a bulb as directed. It shall be ensured that the bore for the pile shall be enlarged to the correct diameter.

2.0 Mode of measurement and payments :

2.1 The rate of boring holes shall include :

(a) Roughly leveling the ground in positions where piles are to be provided.

(b) Marking the position of piles by pegs and boring guide and also for shifting of boring guide.

(c) Making of two nos. of bulbs.

(c) Bailing out water, if any met with during boring.

(d) Disposal of surplus excavated soil within a lead of 50m and

(e) All tools, plants, equipments and labour, materials like Bentonite, etc. required for satisfactory completion of work.

2.2 The rate shall be for a unit of one running metre.

Providing & Fixing special G.I. 'R' brand or I.S.I. approved quality fittings including cutting the pipe, threading, making water tight joints etc., complete as directed by E.I.C. 50mm dia bend

All the fittings shall be heavy type 'R' brand or as per ISI standard for drinking water supply line. Fittings shall be fixed to the line with threading of pipe etc. and joint shall be made water tight as described in general specifications.

Payment shall be made for number supplied and fixed in line as per drawing or as instructed.

Disposing off the excavated stuff of the items of excavation for lead of 400 to 500 metres. For any lead less than the above, rate shall be reduced as per R&B SOR

Unsuitable materials obtained from clearing site and excavation shall be disposed off within the lead specified and as directed beyond the building area using necessary tools, tackles, equipments etc.

Payment shall be made on the cu. Metre basis for the material disposed off for specified lead. If required contractor may be asked to dispose off the stuff at a lesser lead for which rate will be reduced as per **R&B SOR year 2023-24 for** district. The rate is inclusive of all labour, tools, tackles, equipments, etc.

Drilling of bore of 300mm & 400 mm diameter as per approved design in all type of strata approximately upto 10-12metre depth (from excavated GL) for bore of RCC cast-in-situ type bored piles including procurement and using bentonite and/ or other equivalent compound as required. (no extra payment shall be made for empty bore i.e. from bed level to platform) with all plants and equipments.

1.0 Workmanship :

1.1 The ground shall be roughly leveled and after marking the position of piles, the holes shall be bored with aspiral angle to the 4.0m depth and specified diameter using boring guide.

1.2 The bore holes shall be truly vertical and uniform bore throughout of specified diameter. After boring to the required depth, the bore shall be cleared off the loose soil and disposal of surplus excavated stuff as directed up to a lead of 500 metres.

1.3 The bore shall be enlarged at two places at the specified depth by an under reamer 2 to 2 ½ times the diameter of the bore to make a bulb as directed. It shall be ensured that the bore for the pile shall be enlarged to the correct diameter.

2.0 Mode of measurement and payments :

2.1 The rate of boring holes shall include :

- (a) Roughly leveling the ground in positions where piles are to be provided.
- (b) Marking the position of piles by pegs and boring guide and also for shifting of boring guide.
- (c) Making of two nos. of bulbs.
- (c) Bailing out water, if any met with during boring.
- (d) Disposal of surplus excavated soil within a lead of 50m and
- (e) All tools, plants, equipments and labour, materials like Bentonite, etc. required for satisfactory completion of work.

METAL SPREADING AND ANTI-WEED TREATMENT

The layout of the area, where anti-weed treatment and stone spreading is to be done, shall be developed by the Contractor during detailed engineering and the same shall be submitted to the employer for approval. The Contractor shall arrange all labour, equipment and materials required for complete performance of the work in accordance with the drawings, specification and direction of the Employer.

Stone spreading over cement concrete layer shall be done in the areas of the switchyard under scope of work.

The material required for site surfacing/stone filling shall be free from all types of organic materials and shall be of standard quality, and as approved by the Employer.

The material to be used for stone filling/site surfacing shall be stone aggregate of 40mm nominal size (ungraded single size) conforming to Table 2 of IS:383 – 1970. Hardness, flakiness shall be as required for wearing courses are given below:

- i) Sieve Analysis limits (Gradation) (IS: 383 – Table
– 2) Sieve Size % passing by weight
63mm 100
40mm 85–100
20mm 0–20
10mm 0–5
- ii) Hardness: Abrasion value (IS:2386 Part–IV) – not more than 40% Impact value (IS: 2386 Part–IV) – not more than 30%.
- iii) Flakiness Index: As per IS: 2386 Part – I maximum value is 25%.
- iv) Frequency of test shall be conducted for sieve analysis, Hardness & Flakiness index as per latest FQP Plan.

After all the structures/equipments are erected, antiweed treatment shall be applied in the switchyard where ever cement concrete is to be done and the area shall be thoroughly de-weeded including removal of roots. The recommendation of local agriculture or horticulture department may be sought where ever feasible while choosing the type of chemical to be used.

The antiweed chemical shall be procured from reputed manufacturers. The doses and application of chemical shall be strictly done as per manufacturer's recommendation. Nevertheless, the effectiveness of the chemical shall be demonstrated by the Contractor in a test area of 10MX10M (appx) and shall be sprinkled with water at least once in the afternoon every day after forty-eight hours of application of chemical. The treated area shall be monitored over a period of two to three weeks for any growth of weeds by the Engineer – in– charge. The final approval shall be given by Engineer – in –charge based on the results.

Engineer–in–charge shall decide final formation level so as to ensure that the site appears uniform devoid of undulations. The final formation level shall however be very close to the formation level indicated in the approved drawing.

After antiweed treatment is complete, the surface of the switchyard area shall be maintained, rolled/compacted to the lines and grades as decided by Engineer-in-charge. The sub grade shall be consolidated by using half ton roller/surface vibrator with suitable water sprinkling arrangement to form a smooth and compact surface. The roller shall run over the sub grade till the soil is evenly and densely consolidated and behaves as an elastic mass.

In areas that are considered by the Engineer-in-Charge to be too congested with foundations and structures for proper rolling of the site surfacing material by normal rolling equipments, the material shall be compacted by hand rammer, if necessary. Due care shall be exercised so as not to damage any foundation structures or equipment during rolling / compaction.

The sub grade shall be in moist condition at the time the cement concrete is placed. If necessary, it should be saturated with water for not less than 6 hours but not exceeding 20 hours before placing of cement concrete. If it becomes dry prior to the actual placing of cement concrete, it shall be sprinkled with water and it shall be ensured that no pools of water or soft patches are formed on the surface.

Over the prepared sub grade, 75mm thick base layer of cement concrete in 1:5:10 (1 cement: 5 fine aggregate: 10 graded stone aggregate 40mm nominal size) shall be provided in the area excluding roads, drains, cable trenches as per detailed engineering drawing. For easy drainage of water, the slope of 1:1000 is to be provided from the ridge to the nearest drain.

The ridge shall be suitably located at the centre of the area between the nearest drains. The above slope shall be provided at the top of base layer of cement concrete in 1:5:10. A layer of cement slurry of mix 1:6 (1cement: 6 fine aggregate) shall be laid uniformly over cement concrete layer. The cement consumption for cement slurry shall not be less than 150 kg for every 100 sq.m.

A final layer of 100mm thickness of stone aggregate of 40mm nominal size shall be spread uniformly over cement concrete layer after curing is complete.

GSB (Granular Sub-Base)

Providing and laying 150 mm thick Granular sub-base in two layers by providing coarse graded material Grading- I using B.T.M.C. (Black Trap Machine Crushed) metal 53 mm to 26.5 mm at 35 % , crushed stone aggregate 26.5 mm to 4.75 mm at 45% and below 2.36 mm at 20% ,having C.B.R. not less than 30%, as per table 402 of MORTH gradation including leveling the material at site of work ,mixing and spreading into grade and camber , watering and consolidation at OMC with roller including cost of material ,labour etc complete – GSB.

Specification shall be as per item description, drawing and as per directed by EIC.

The measurement shall be taken as per cross sectional measurement based on length, breadth, depth measured with tape.

The payment shall be made on Cmt. basis.

WMM (Wet Mix Macadam)

Providing and laying spreading and compacting machine crushed black trap stone aggregate(53 mm to 22.4 mm at 30 % , crushed stone aggregate 22.4 mm to 2.36 mm at 40% and below 2.36 mm at 30%), 150mm thick Wet Mix Macadam in two layers the material with water to OMC in mechanically mix (pug mill) carriage of mix material by tipper to site laying, spreading and compacting in sub base, base course on well prepared under base of compacting with roller to achieve the desired density etc completed as directed by Engineer in charge (Mechanically laid) WMM

Specification shall be as per item description, drawing and as per directed by EIC.

The measurement shall be taken as per cross sectional measurement based on length, breadth, depth measured with tape.

The payment shall be made on Cmt. basis.

M20 Trimix RCC

Providing and Laying Controlled cement concrete M20 for trimix RCC road to require line, level, slope including of (1) Providing 125 micron polythene sheet at base of concrete, (2) Mixing approved quality polyester fibre (12mm) @125 gm per bag or as per manufacturer's specification during concreting (3) Shuttering form work of M.S. C Channel sections of required length & height as per drawing including connection, bracing pins or stake to require line, level, slope etc. (4) Concreting compaction with using needle Vibrator, Double beam screed vibrator, dewatering/Vacuum pump and finishing the surface with Power Trowel Cum Floater including any low or high spots shall be made up by adding or removing concrete and refinished to required line level and slope.(5) Providing light brooming on the surface and edging carefully finished with an edger of 6 mm radius.(6) Providing construction joint using Concrete Groove Cutter machine of size 10 mm wide & 25 mm deep in transverse direction @ 4.5 M C/C and sealing with approved quality grade B bitumen sealant (7) Providing Contraction (Dummy) joint using Concrete Groove Cutter machine of size 5 mm wide & 25 mm deep in Longitudinal direction and sealing with approved quality grade B bitumen sealant(8) Providing expansion joints of size 25 mm width and upto through depth of concrete using 25 mm thick Dura Board HD-100 of approved quality and sealing 25x20 MM top with approved quality bitumen sealant at 40 Meter C/C with 63 MM Dia P.V.C pipe cap filled with compressible material for dowel bar. (For 6m wide road longitudinally at the centre expansion joint to be provided)The Item rate is including with all necessary equipments, machinery, tools, tackles, Labours & Pond / Jute bag Curing etc. complete as per Drawing and as directed by E.I.C. (Minimum cement content for Concrete is 370 Kg/Cmt & Excluding the cost of reinforcement and Dowel bar.)

Specification shall be as per item description, drawing and as per directed by EIC.

The measurement shall be taken as per cross sectional measurement based on length, breadth, depth measured with tape.

The payment shall be made on Cmt. basis

Rolling, consolidation and Levelling of soil

Rolling of Earthwork in layers with power roller including filling in depressions which occur during the process and watering of earth work as directed by engineer in charge.

Specification shall be as per item description, drawing and as per directed by EIC.

The measurement shall be taken as per cross sectional measurement based on length and breadth measured with tape.

The payment shall be made on Smt. basis

CONTROL ROOM INDUSTRIAL ELECTRIFICATION (if applicable) :

Specification shall be as per item description in Schedule-B and as per directed by EIC.

SUPPLY OF FURNITURE (if applicable) :-

Specification shall be as per item description in Schedule-B and as per directed by EIC.

CONTRACT AGREEMENT

(Non judicial stamp paper of Rs. 300/-)

This agreement is made at Jamnagar, the _____ day of _____ in the
Christian _____ year 20____ between _____
(herein after
referred to as "THE CONTRACTOR" which expression shall unless excluded by or repugnant
to context include its successors or permitted assigns) of the one part and the Gujarat Energy
Transmission Corporation Limited, having their Corporate Office at Race course Vadodara,
(hereinafter called "Corporation" which expression shall unless excluded by or repugnant to
the context include its successors or assigns) of the other part.
"WHEREAS" the aforesaid Corporation has accepted the tender of the aforesaid contractors
for _____ work _____ of

_____ as per Corporation's Order
No. _____ hereinafter called "The
works" and more particularly described enumerated or referred to in the specification, terms
and conditions prescribed in the order letter, covering letter and other letters and schedule
of price which for the purpose of identification have been signed by Shri
_____ on behalf of the Contractors and by
GETCO, Ranavav TR Division on behalf of the Corporation, a list where of is made out in the
schedule hereunder written and all of which said documents are deemed to form part of this
contract and included in the expression 'The Works' wherever herein used, upon the terms
and subject to the conditions hereinafter mentioned. AND WHEREAS THE GETCO has
accepted the tender of the contractor for the work of _____
_____ of Gujarat
State for the sum of Rs. _____ (Rupees
upon the terms and subject to the conditions herein mentioned.

NOW THIS AGREEMENT WITNESSES AND IT IS HEREBY AGREED AND DECLARED THAT:

1. The contractors shall do and perform all works and things in this contract mentioned
and described or which are implied therein or there from respectively or are reasonably
necessary for the completion of the works as mentioned and at the times, in the manner and
subject to the terms conditions and stipulations contained in this contract, and in
consideration of the due provision, executions, construction and completion of the works
agreed to by the contractors as aforesaid, the Corporation doth hereby covenant with the
contractor to pay all the sums of money as and when they become due and payable to the
contractors under the provisions of the contract. Such payment to be made at such times
and in such manner as is provided by the contract.

2. The conditions and covenants stipulated hereinbefore in this contract, are subject to
and without prejudice to the rights of the Corporation to enforce penalty for delays and / or
any other rights whatsoever including the right to reject and cancel on default or breach by
the contractors of the conditions and the covenants as stipulated in the general conditions,
specifications, forms, or tender schedule, drawing, etc. attached with Corporation's Order
No. _____.

The contract value, extent of works / supply, completion / delivery dates, specifications and
other relevant matters may be altered by mutual agreement and if so altered shall not be
deemed or construed to mean or apply to affect or alter other terms and conditions of the
contract and the general conditions and the contract so altered or revised shall be and shall
always be deemed to have been subject to and without prejudice to said stipulation.

SCHEDULE List of documents forming part of the contract:

1. GETCO's Tender Specification No. _____
2. GETCO order No. _____
3. Contractor's acceptance of order vide letter no. _____.
4. Contractor's Partnership Deed Dtd. _____.
5. Contractor's Power of Attorney / Board Resolution authorizing person to sign on behalf of
Firm.

In witness whereof the parties hereto have set their hands and seals this day and month year first above written.

Signed, Sealed and Delivered by

for and on behalf of M/s. _____

In the presence of, signature with names and
Address:

1. _____

2. _____

SAFETY CUM INDEMNITY BOND
(Non-judicial Stamp paper of value not less than Rs. 300.00)

KNOW ALL MEN BY THESE PRESENTS that we, _____ by this SAFETY CUM INDEMNITY BOND Executed on this _____ Day of _____ 2022. I/We Having Registered Office _____ (herein after called "THE CONTRACTOR" which expression shall mean and includes my /our heirs, executors, administrators and legal representatives, successors and permitted assigns) do hereby binds myself/ourselves and also our company/firms after having the power to bind by this promise and undertaking in favour of the Gujarat Energy Transmission Corporation Limited (GETCO), Vadodara a State Transmission Utility under The Electricity Act, 2003 having its registered office at Sardar Patel Vidyut Bhavan, Race course, Vadodara.(hereinafter called as GETCO, which expression shall mean and include its legal representative, administrators assigns) has agreed under the terms and conditions of the contract no. _____ dated _____ made between _____ and _____ for the contract of the _____ value of Rs. _____ interalia on production of Safety Cum Indemnity Bond.

We do hereby undertake and agree to Indemnify and keep Indemnified GETCO from time to time to the extent of Rs. _____ Rupees _____ only against any losses or damages, costs, charges and expenses caused to or suffered by reason of the CONTRACTOR while Project, R&M, O&M work including work carried out by outsourcing agency, failing to take proper care or not complying the guidelines given hereunder as per Annexure-A and instructions which may be given from time to time during the continuance of the contract and we further undertake to unconditionally pay the amount claimed by the GETCO on demand and without demur to the extent aforesaid.

Whereas the CONTRACTOR has/have been awarded to execute the job/works under order no. _____, dated _____ for _____ issued by the GETCO after having observing necessary formalities, the details of which is described in the order no. _____ dated _____ and whereas the said job/works will be /likely to be done in places covered under Employees' State Insurance Act, 1948 (ESI) and /or the Workmen Compensation Act, 1923 and /or other laws relating to the Labour Management and Welfare Act. (Respective Amendments)

And whereas according to the condition of the Contract the CONTRACTOR is under obligation to execute this Safety cum Indemnity Bond before the commencement of actual execution of work.

Now the indenture witnesses that I/We the CONTRACTOR do hereby undertake to follow the guidelines as per Annexure-A prepared by the GETCO.

Further we the CONTRACTOR agree that the GETCO shall be sole judge of and as to whether there has been any breach of the guidelines as per Annexure-A of this bond and as to the extent of the loss, damages, costs, charges and expenses caused to or suffered by the GETCO.

We the CONTRACTOR further agree that our liability under this bond shall not be discharged because of the change in the constitution of the GETCO or for the extension of the time limit or for any other reason.

We the CONTRACTOR further agrees to the given terms and conditions:

- a. That the CONTRACTOR undertakes /undertake to indemnify and keep harmless the GETCO from all claims, actions, proceedings and risk, damage danger to any person whether belonging or not belonging to the. CONTRACTOR.
- b. That the CONTRACTOR shall keep harmless the GETCO from all claims, compensation, damages any proceedings in respect of any of its employee / workmen under the Workmen Compensation Act or any other laws for the time being in force.
- c. That, if during the course of execution of work as stated in the contract order mentioned hereinabove issued by the OBLIGEE, it is found that the CONTRACTOR has not complied with

guidelines as per Annexure-A or terms and conditions / formalities within the meaning of Employees' State Insurance Act, 1948 (ESI) or Workmen Compensation Act 1923 or any other laws relating to the Labour Welfare for the time being in force, and also has not observed the safety norms in accordance with the law prevailing at the place of work/job to the satisfaction of the GETCO, the GETCO shall have the right to stop the execution of work/job and the period of such stoppage shall not be taken into account for the calculation of the total period of completion of work for which the CONTRACTOR is responsible to complete the work/job and it will be deemed that discontinuance was due to default of the CONTRACTOR.

d. That, if any time, due to exigency, GETCO as the Principle Employer, becomes liable to pay any such compensation mentioned hereinabove, whether on failure of the CONTRACTOR or for any other reason, the GETCO shall have the right to recover the said amount from any amount receivable by GETCO or any bank guarantee deposited or anything payable whether in connection with this contract or other contract by the CONTRACTOR to the OBLIGEE.

e. That the CONTRACTOR is/are aware and accept that for the persistent or repeated violation of any guidelines as per Annexure-A and terms and conditions mentioned in this Safety cum Indemnity Bond, GETCO shall have right to terminate the contract of work issued to the CONTRACTOR .

f. In case if any safety related fatal Electrical / Mechanical accident occurred to any employee of agency or outsider due to negligence or non-compliance of GETCO safety norms then in addition to the compensation and liability as per statutory requirement, contractor / agency is hereby agreed to pay the penalty amount as given below:

SN	Amount of contract in Rs.	Penalty amount
1	Up to 1 Lac	Rs. 5000/- plus Taxes if applicable
2	Above 1 Lac to 10 Lacs	Rs 40000/- plus Taxes if applicable
3	10 to 100 Lacs	Rs. 100000/- plus Taxes if applicable
4	> 100 Lacs	1.0% of contract value plus Taxes if applicable

g. I/We the CONTRACTOR hereby confirm that in case of any dispute/difference for settlement of claims under this Safety Cum Indemnity bond the courts in Gujarat State wherever job/work is performed or as per GETCO norms shall have the jurisdiction to decide the rights & liabilities of the parties while adjudicating the matter of claims under this Safety Cum Indemnity Bond.

h. This Safety cum Indemnity Bond shall continue and hold good until it is released by the GETCO in Writing on the CONTRACTOR's application after the Contractor has discharged all his obligations under the order mentioned hereinabove and submitted a "NO DEMAND CERTIFICATE" from the GETCO under the said order. The Safety cum Indemnity Bond shall be valid for a CONTRACT PERIOD and renewable thereof (Claim Period).

i. This Safety cum Indemnity Bond and the guidelines as per Annexure-A herein contained are in addition to And not by way of limitation or substitution for any other guarantee, indemnities Hereto before given to the GETCO by the CONTRACTOR and this indemnity does not Revoke or limit such indemnities or guarantees. IN WITNESS WHEREOF the Parties hereto have executed this indenture the day the year First hereinabove written.

j. GST as applicable on Penalty amount shall be borne by the contractor and the contractor agrees to pay/ reimburse the same. (TO BE INCORPORATED IN SAFETY CUM INDEMNITY BOND)

(Signature with seal of The CONTRACTOR)

In the presence of:

- 1.
- 2.

Date:
(Signature of Contractor)
Address:
Seal:

Superintending Engineer
Transmission Circle
Jamnagar

BG Draft for Civil Department

NON JUDICIAL STAMP PAPER OF RS. 300/- (Stamp Paper Validity Six Months):

To,
The Superintending Engineer(TR)
Gujarat-Energy. Transmission Corporation Ltd
Transmission Circle Office,
Indira-Marg,
Jamnaagr-361006

BG. No.
Issue Date
Expiry Date
Amount

BANK GUARANTEE FOR SECURITY DEPOSIT

In consideration of the M/s _____ Address at [Insert name of the Supplier / Contractor / Agency, Address] who have entered into a contract for the supply/works specified below:

L.O.I. No. _____ dated- _____ with Gujarat. Energy Transmission Corporation Limited (herein after referred to as GETCO), We [Insert name and address of the bank issuing the guarantee and address of the Registered office] (hereinafter referred to as "Guarantor Bank) hereby agrees unequivocally, irrevocably and unconditionally to pay to the GETCO at Indira-Marg, Jamnaagr-forthwith on demand in writing from the GETCO or any Officer authorized by it in this behalf, any amount up to and not exceeding Rupees _____ only [Insert the amount of the bank guarantee].

This Bank Guarantee shall be valid and binding on the Guarantor Bank up to _____ (Date of Expiry of BG) with a right to seek encashment for a period up to 30 days from the said Date and shall in no event be terminable by notice or any change in the constitution of the Bank or the term of the Agreement or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our Knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rupees _____. Our Guarantee shall remain in force until [Insert Date of Expiry of BG]. The GETCO shall be entitled to invoke this Guarantee any time up to thirty (30) days of the last date of the validity of this Guarantee i.e. _____ [Date of Expiry of BG + 30 days] by issuance of a written demand to invoke this guarantee.

The BANK GUARANTEE can also be presented at the(obtain detail postal address of Jamnagar's local branch) of the (issuing Bank of BG) for its invocation

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from the GETCO, in any format, raised at the above mentioned address, in order to make the said payment to the GETCO at Jamnagar.

The Guarantor Bank shall make payment hereunder on first demand without demur and without raising any restriction or conditions and notwithstanding any objection by, [Insert name of Contractor/Supplier/Agency] and/or any other person.

The Guarantor Bank shall not require the GETCO to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against the GETCO in respect of any payment made hereunder.

This BANK-GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly the GETCO shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the _____ (Name of party) to make any claim against or any demand on the _____ (Name of party) or to give any notice to the M/s _____ (Name of party) or to enforce any security held by GETCO or to exercise, levy or enforce any distress, diligence or other process against (Name of party)

This BANK GUARANTEE shall be interpreted in accordance with the laws of India and the courts at Jamnagar shall have exclusive jurisdiction.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Guarantor Bank.

The Guarantor bank hereby agrees and acknowledges that the GETCO shall have a right to invoke this bank guarantee either in Part or in Full, as it may deem fit.

Any demand made by GETCO on the Guarantor Bank **Jamnaagr** shall be conclusive and binding notwithstanding any difference between GETCO and _____ [Name of Supplier/Contractor/Agency] or any dispute pending before any Court, Tribunal, Arbitrator or any other Authority.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rs. _____ (Rupees _____ only) and it shall remain in force until [Insert date of validity of BG], with an additional claim period of thirty (30) days of the last date of the validity of this Guarantee i.e. _____ [Date of Expiry of BG + 30 days]. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if the GETCO serves upon us a written claim or demand.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this..... day of at

Witness:

1.....

Name and Address

2.....

Name and Address

Signature(s) of

Constituted Attorney with POA No. and
round seal of Bank

OR

Signature of Two Bank officials with their
sign, sign code nos. & round seal of Bank

SECTION :E
APPENDICES

(E) APPENDICES
Gujarat Energy Transmission Corporation Ltd.

ANNEXTURE –I

TENDERER'S EXPERIENCE

A List of Similar jobs executed by the Contractor & Name with address of a Person whom reference can be made, by the Corporation, if required necessary.

[Tenderers shall submit the information in the Format detailed here under]

Sr No	Description of Work	Value Of Work Executed Rs.	Construct ion Period as per Contract	Actual Constructi on Period for the Completi on of the work	Date Of Completi on	Clie nt	Persons to whom Reference may be made	Principal Features
1	2	3	4	5	6	7	8	9

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company

Date & place:

Gujarat Energy Transmission Corporation Ltd.

ANNEXTURE – II WORKS TENDERED / IN HAND

Details of other Works, tendered for & in hand , as on the date of the Submission of this tender [Tenderers shall submit the information in the Format detailed here under]

Sr . No	Name of work with location and address	Work in hand			Work Tender for			Remarks
		Tender Cost	Cost of Remaining work	Anticipated Date of Completion	Estimated Cost	Date when decision Is Expected	Stipulated Date or period Of Completion	
1	2	3	4	5	6	7	8	9

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company Date & place:

Gujarat Energy Transmission Corporation Ltd.

ANNEXTURE-III

TENDERER'S DETAILS OF PERSONNEL

The List of Technical Personnel intended to be placed at the Work by the Contractor.
[Tenderers shall submit in the Format detailed here under]

Sr. No.	Description &Details of position	Name	Qualification	Professional Experience & details of works carried out	Remarks
1	2	3	4	5	6

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company

Date & place: _____

Gujarat Energy Transmission Corporation Ltd.

ANNEXTURE-IV

TENDERER'S DETAILS OF MACHINERY

The List of Technical Personnel intended to be placed at the Work by the Contractor.
[Tenderer shall submit in the Format detailed here under.

Sr. No.	Description & Details machinery	Capacity	Numbers	Make	Remarks
(a)	(b)	(c)	(d)	(e)	(f)

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company

Date & place: _____

Gujarat Energy Transmission Corporation Ltd.

ANNEXTURE-V

PERFORMA, SHOWING THE DETAILS OF SITE VISIT DONE BY AGENCY BEFORE QUOTING THE TENDER.

[Tenderers shall submit in the Format detailed here under]

Sr. No.	Name of firm	Name of Authorized representative of firm who has visited the site.	Qualification	Designation / post holding in company.	Remarks.
(a)	(b)	(c)	(d)	(e)	(f)

Contractor's Representative legible signature: _____

Name of the person: _____

Seal of the company

Date & place: _____

Gujarat Energy Transmission Corporation Ltd.

ANNEXTURE – VI

Qualification Requirement.

Contractor must fill up below details & should place at the top of the Technical Bid.

Sr No:	List of Documents	
1	Registration	Class – with valid up to
2	P.F. No.	GJ/
3	Partnership deed/Proprietor (Notarized copy)	
4	Power of Attorney (Notarized copy)	
5	Bl. Sheet / P&L A/C, Statement of last three years.	
6	Latest Solvency certificate.	Rs. Lacs issued by Bank, branch dtd.
7	GST Registration No.	
8	PAN NO	
9	Experience certificate – form 3A of last 5 years (minimum value of similar work done should be equal to or more than 50% of estimated cost	

Signature of Tenderer
Date :
Place

Company's Round Seal

Gujarat Energy Transmission Corporation Ltd.

ANNEXTURE – VII

Qualification Requirement.

1.	PRICES: [FIRM ONLY] (Please Specify YES / NO.)	
2.	PENALTY TERMS AGREED (Please Specify YES / NO.)	
3.	SECURITY TERMS AGREED: (Please Specify YES / NO.)	
4.	TERMS AGREED: (Please Specify YES / NO.)	
5.	VALIDITY Of the offer for 180 DAYS From the date of opening of the Technical Bid: AGREED: (Please Specify YES / NO.)	
6.	PAYMENT TERMS AGREED: (Please Specify YES / NO.)	
7.	MOBILE NOS., TELEPHONE NOS., Email & FAX NO:	
8.	Authorized person of the firm :	
9.	Name of the proprietor, partners, directors [as the case may be], along with address, telephone, Email, fax no. etc.	

Contractor must fill up above details

Signature of Tenderer

Date :

Place

Company's Round Seal

Placing Vendors/Contractors for Purchase/Works in a Stop deal/Banned for business dealing / blacklisting:

- 1.1. Stop deal / banned for business dealing / blacklist means debarment of parties from participating in the tendering process.
 - 1.1.1. Firm will mean Bidder / Licensor / Tendered / Consultant / Vendor / Contractor.
 - 1.1.2. Reasons for Putting a Firm on Stop deal / banned for business dealing / Blacklisting is to protect the GUVNL and its subsidiary Companies from dealing with an undesirable firm.
- 1.2. The list of indicative reasons for placing the firm in a Stop deal / banned for business dealing / Blacklist are as under.

A Firm will be placed in a Stop deal / banned for business dealing / blacklist, if the Firm-

- 1.2.1. Has submitted fake, false or forged documents / certificates,
 - 1.2.2. Has revised / withdrawn price bid after opening of Techno – commercial bid, until and unless it is sought for,
 - 1.2.3. Has tampered with the stipulated tendering procedure.
 - 1.2.4. Has refused to accept letter of Acceptance / purchase Order / Work Order after the same is issued by the Company within the validity period and as per agreed terms and conditions,
 - 1.2.5. Has committed breach of contract or has failed to perform a contract or has abandoned the contract,
 - 1.2.6. Has failed to provide suitable expertise for the work as per per-scheduled Program.
 - 1.2.7. Has failed to submit all the necessary tests reports / documents within time schedule / as per company's time limit, as mentioned in the LOI, if the letter of Acceptance (LOA) is placed subject to submission of type reports / documents to the firm.
 - 1.2.8. Has indulged in construction and erection of defective works.
 - 1.2.9. Has supplied inferior quality / defective materials and refused to replace with stipulated time frame, as specified by the company,
 - 1.2.10. Has substituted materials in lieu of materials supplied by the company or has not returned or has short returned or has unauthorisely disposed of materials / documents / drawings / tools or plants or equipment supplied by the Company,
 - 1.2.11. Has involved in malpractices such as bribery, corruption, fraud, canvassing and pilferage,
 - 1.2.12. Has unauthorisely obtained official company information or copies of documents, in relation the tender / Contract.
 - 1.2.13. Has failed to follow the stipulated mode of communication, if specified by the tendering authority / purchaser.
 - 1.2.14. Has parted with, leaked or provided confidential / proprietary information of the Company given to the firm only for its use (in discharge of its obligation against an order) to any third party without prior consent of the Company,
 - 1.2.15. Any other ground for which in opinion of the company makes it undesirable to deal with the Firm
 - 1.2.16. In case the State Government directs the Company to place a firm in stop dealing / banned for business dealing / banned for business dealing / blacklisting.
- 1.3. Every bidder should at the time of submission of bid, give a declaration that bidder and / or proprietor / partner / Director of the firm has not been placed on stop dealing / banned for business dealing / blacklisting by GUVNL and It's any subsidiary Companies as per **ANNEXURE-VIII (as per attached format).**

(On the letter head of the firm/company)

ANNEXTURE – VIII

(UNDERTAKING IN REGARD TO STOP DEAL / BANNED FOR BUSINESS DEALING/ BLACK LIST THEREOF)

Sub: Undertaking in regard to Stop Deal/ Banned for Business dealing/ Black List thereof

Ref: Tender Notice No

All bidders will have to furnish the following undertaking dully filled in, signed and stamped for each quoted item of the tender along with the Technical Bid.

I/We _____ authorized signatory of M/S
_____ here by certify that M/S
_____ and their proprietor / any partner /
any directors of the firm are not stop deal and / or banned for business dealing and / or black
listed by GUVNL and / or their any subsidiary company viz. GSECL / GETCO / DGVCL / MGVL
/ UGVCL / PGVL.

Seal of the Firm

Signature of the Tenderer

Application for refund of EMD

To,
The Superintending Engineer,
Transmission Circle,
GETCO, Jamnagar.

Sub : Application for refund of EMD.

Respected Sir,

I request your good self to refund my EMD for the tender mentioned below as soon as the price bids are opened and if i/we am/are not the L1 for the same. The details are as under :

Tender No.	
Tender ID	
Name of Work/Subject	
EMD Amount	
EMD DD No., Date & Name of Bank	
Name of Bidder	
Contact No.	
E-mail address	
Bank detail for RTGS into which EMD is required to be refunded.	

Thanking you,
Faithfully Yours,

(Name & Seal of Bidder)

CA Certificate

To,
EE / SE
GETCO,
(Location Address)

Sub.: -CA Certificate for payment of GST and uploading of the invoice details on GSTN portal.

This is to certify that M/s (Name of the Party and Address) have completed the work / supply of (Nature of Work) against (Work Order No. and date). It is further certified that the GST charged on the bills of the said work order are paid to Government and accurate & correct details of such invoices are also uploaded on the GSTN portal within the stipulated time. It is further certified that GST charged from GETCO has neither been refunded nor is refund claim pending with GST Department. The details of invoices are as under :-

Sr No	Order No	Invoice No	Invoice value	GST Paid	GST Paid in the month	Division Name & Circle Name

Name of the Firm

Name of the CA

Designation

M. No.

Firm Registration No.
UDIN(Compulsory)

Date:

Place:

ON STAMP PAPER OF Rs. 300 (Duly Notarized)
(TO BE OBTAINED EACH CONTRACT WISE YEAR WISE)

Date :

To,
Addl. Chief Engineer (Proc.)/Superintending Engineer/Executive Engineer
Corporate Office/Circle Office/Division Office

Respected Sir,

I,.....(Name of the Authorized Signatory) aged aboutyears, in
my capacity as(Designation)of M/s.
.....(Name of the seller with address) having PAN..... (10 Digits)
do hereby state that GETCO has awarded the order of(Description of
supply order/EPC order) having(Order No and Date) and we hereby
declare that we, M/s Have aggregate annual turnover of more than/less
than (Strike out whichever is not applicable) Rs. 05 Crores in the current financial year
and the provisions of e-invoicing under GST Acts are applicable/Not applicable to M/s.
.....

We hereby undertake to comply with all the applicable provisions of e-invoicing under
GST Acts and indemnify GETCO for any financial/non-financial loss that GETCO may
suffer due to non-compliance of e-invoicing provisions under GST Acts and rules
thereunder including non-availability of input tax credit (ITC) of GST to GETCO within
the prescribed time limit. (Strike out if not applicable).

For,
(Name of Authorized Signatory)
Designation: