

Name of Work : Construction of D Type -01 unit at Lalpur Dist: Jamnagar.

EXTRA SPECIFICATION

Item No. 17 Providing Thermo Mechanical treated bar FE-500D Steel Reinforcement for R.C.C. work including bending, binding and placing in Position complete for all floor.

The work includes providing and laying in position Thermo Mechanically treated Corrosive Resistance Steel (500D) bars of the following grade.

Grade Designation	Bar type confirming to Governing IS Specification.	Characteristics strength by Mpa	Elastic modulus Gpa
S 500D	IS 1786 High yield strength deformed bar	500	200
S 240	Is 432 Part II	240	

TMT 500D BARS

500 TMT 500D bar shall conform to min 500 MPa yield strength. Tensile Strength of min 500 MPa and elongation percentage min 22. The Chemical composition of bars shall be below.

	% Max.
Carbon	0.25
Sulphur	0.05
Phosphorus	0.05
Sulphur & Phosphorus	0.01

All steel shall be procured from original producers, no re-rolled steel shall be incorporated in the work. Only new steel bars shall delivered to the site. Every bar shall be inspected before assembling in the work and defective brittle or burnt bar shall be discarded cracked ends of bars shall be discarded.

1.0. GENERAL

This work shall consist of furnishing and placing coated, or uncoated or high strength deformed reinforcement, bars (intentioned) of the shape and

dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

2.0. MATERIAL

2.1. CRS/TMT Bars

Reinforcements may be either CRS/T.M.T. tensile steel, [confirms to IS 1786-2008 bars](#). They may be uncoated or coated with epoxy or with approved protective coatings.

2.2. 500D/T.M.T. bars reinforcement for R.C.C. work shall conform IS 432 (Part II) 1982 (Reaffirmed 1995) and shall be of tested quality. It shall also comply with relevant part of IS 456-2000.

2.3. All reinforcement shall be clean and free from dirt, paint, grease or oil, all scale or loose or thick rust at the time of placing.

2.4. All steel shall be procured from original producers no re-rolled steel shall be incorporated in the work.

2.5. Only new steel shall be delivered to the site every bar shall be inspected before placing to its position and defective brittle or burnt bar shall be discarded cracked ends of bars shall be discarded.

3.0. Pitch

3.1. Distance between bars shall be as specified in drawings and as directed by the Engineer in charge all bars shall be placed at an accurate distance from each other and shall be bind tightly to maintain the desired pitch Suitable means shall be provided for holding bars securely in position.

4.0. Binding wire

4.1. Mild steel binding wire shall be of 1.63 mm or 1.22 mm (16 to 18 gauge diameter and shall conform IS 280-2006.

4.2. The use of black wire will be permitted for binding reinforcement bars. It shall be free from dirt, paint, grease or oil, oil scale or loose or thick rust and

any other undesirable coating which may prevent adhesion of cement mortar at the time of binding.

- 4.3.** Only new binding wire shall be delivered to the site all binding wire shall be inspected before binding to its position and defective brittle, rusted, used wire, shall be discarded.

5.0. PROTECTION OF REINFORCEMENT

- 5.1.** Uncoated reinforcing steel shall be protected from rusting or chloride contamination. Reinforcements shall be free from rust, mortar, loose mill scale, grease, oil or paints. This may be ensured either by using reinforcement fresh from the factory or thoroughly cleaning all reinforcement to remove rust using any suitable method such as sand blasting, mechanical wire brushing, etc. as directed by the Engineer. Reinforcements shall be stored on bricks, racks or platforms and above the ground in a clean and dry condition and shall be suitably marked to facilitate inspection and identification.
- 5.2.** Portions of uncoated reinforcing steel and dowels projecting from concrete shall be protected within one week after initial placing of concrete with a brush coat of neat cement mixed with water to a consistency, of thick paint. This coating shall be removed by lightly tapping with a hammer or other tool not more than one week before placing of the adjacent pour of concrete. Coated reinforcing steel shall be protected against damage to the coating. If the coating on the bars is damaged during transportation or handling and cannot be repaired, the same shall be rejected.

6.0. Workmanship

- 6.1.** The work shall consist of furnishing and placing reinforcement to the shape and dimensions shown as on the drawings or as directed by The Engineer in charge.
- 6.2.** Reinforcing steel shall conform accurate to the dimensions given in the bar bending schedules shown on relevant drawing

7.0. BENDING OF REINFORCEMENT

- 7.1.** Bar bend g schedule shall be furnished by the Contractor and got approved by the Engineer before start of work.
- 7.2.** Reinforcing steel shall conform to the dimensions and shapes given in the approved bar bending Schedules.

- 7.3.** Bars shall be bent cold to the specified shape and dimensions or directed by the Engineer using a proper bar bender operated by hand power to obtain the correct radius of bends and shape.

Bars shall not be bent or straightened in a manner that will damage parent material or the coating bars bent during transport or handling shall, be straightened before being used on work and shall not be heated to facilitate straightening.

8.0. PLACING OF REINFORCEMENT

- 8.1.** The reinforcement cage should generally be fabricated in the yard at ground level, and then shifted and placed in position. The reinforcement shall be placed strictly, in accordance with the drawings and shall be assembled in position, only when structure is otherwise ready for placing of concrete. Prolonged time gap, between assembling of reinforcements and casting of concrete, which may result in rust formation on the surface, shall not be permitted.
- 8.2.** Reinforcement bars shall be placed accurately in position as shown on the drawings. The bars, crossing one another shall be tied together at every intersection with binding wire (annealed), conforming to IS:280 to make the skeleton of the reinforcement rigid such that the reinforcement does not get displaced during placing of concrete, or any other operation. The diameter of binding wire shall not be less than 1 mm.
- 8.3.** Bars shall be kept in position usually by the following methods:
In case of beam and slab construction, industrially produced polymer cover blocks of thickness equal to the specified cover shall be placed between the bars and formwork subject to Satisfactory evidence that the polymer composition is not harmful to concrete and reinforcement. Cover blocks made of concrete may be permitted by the Engineer, provided they have the same strength and specification as those of the member.
- 8.4.** In case of dowels for Columns and walls the vertical reinforcement shall be kept in position by means of timber templates with slots in them accurately, or with cover blocks tied to the reinforcement timber templates shall be removed after the concreting has progressed up to a level just below their location.
- 8.5.** Layers of reinforcements shall be separated by spacer bars at approximately One meter intervals. The minimum diameter of spacer bars shall be 12 mm or: equal to maximum size of main reinforcement or maximum size of coarse

aggregate, whichever is greater. Horizontal reinforcement shall not be, allowed to sag between supports.

- 8.6. Necessary stays, blocks, metal chairs, spacers, metal hangers supporting wires etc, or other subsidiary, reinforcement shall be provided to fix the reinforcements firmly in its correct position.
- 8.7. Use of pebbles, broken stone, metal pipe, brick, mortar or wooden blocks etc as devices for positioning reinforcement shall not be permitted.
- 8.8. Bars coated with epoxy or any other approved protective coating shall be placed on supports that do not damage the coating. Supports shall be installed in a manner such that planes of weakness are not created in hardened concrete. The coated reinforcing steel shall be held in place by use of plastic or plastic coated binding wires especially manufactured for the purpose.
- 8.9. Placing and fixing of reinforcement shall be inspected and approved by the Engineer before concrete is deposited.

9.0. Lapping

- 9.1. All reinforcement shall be furnished in full lengths as indicated on the drawing. No splicing of bars, except where shown on the drawing; will be permitted without approval of the Engineer. The lengths of the splice shall be as indicated on drawing or as approved by the Engineer. Where practicable, overlapping bars shall not touch each other, and shall be kept apart by 25 mm or 1 1/4 times the maximum size of coarse aggregate, whichever is greater, If this is not feasible, overlapping bars shall be bound with annealed steel binding wire, not less than 1 mm diameter and twisted tight in such a manner as to maintain minimum clear cover to the reinforcement from the concrete surface. Lapped splices shall be staggered or located at points, along the span where stresses are low.

10.0. Welding

- 10.1 Splicing by welding of reinforcement will be permitted only if detailed on the drawing or approved by the Engineer. Weld shall develop an ultimate strength equal to or greater than that of the bars connected.
- 10.2. While welding may be permitted for 500D/T.M.T. reinforcing bars conforming to IS:432, welding of deformed bars conforming to IS: 1786 shall in general be prohibited. Welding may be permitted in case of bars of other than S 240 grade including special. Welding grade of S 500D grade bars conforming to IS:1786, for which necessary chemical analysis has been secured and the carbon equivalent (CE) calculated from the chemical composition using the formula:

$$CE = C + \underline{Mn} + \underline{Cr + Mg + V} + \underline{Ni + Cu}$$

is 0.4 or less.

- 10.3.** The method of welding shall conform to IS:2751 and IS:9417 and to any supplemental specifications to the satisfaction of the Engineer
- 10.4.** Bars shall be bent cold to the specified shape and dimensions or as directed by Engineer in charge using the proper bender tool, operated by hand or power to attain proper radius of bends. Bars shall not be bend or straightened in a manner that will injure the material. Bars bent during transport or handling shall be straightened before being used in the work. Bars shall not be heated to facilitate bending
- 10.5.** Unless otherwise specified a 'U' type hook at the end of each bar shall invariably be provided to main reinforcement. The radius of the bane shall not be less then twice the diameter of the round bar and the length of the straight part of the bar beyond the end of the curve shall be at least four times of the diameter of the round bar. In case of bars which are not round and in case of deformed bars, the diameter shall be taken as the diameter of circle having an equivalent effective area. The hooks shall be suitably encased to prevent any spiting of the concrete
- 10.6.** All reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and by using say blocks or metal chairs spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals, Bars shall not be allowed to sag between supports not displaced during concreting or any other operations of the work All devices used for positioning shall be of not corrodible material wooden and metal supports shall not extended to the surface of the concrete, except where shown in drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden blocs shall not be used Layers of bars shall be separated by spacer bars pre-cast mortar blocks or other approved devices. Reinforcement after bending placed in position shall be maintained in a clean condition until completely embedded in concrete, Special care shall be exercised to prevent any displacement of reinforcement in concrete already placed. To prevent reinforcement form corrosion, concrete cover shall be provided as indicated on drawings. All bars protruding from concrete and to

which other bars are to be sliced and which are likely to be exposed for a period exceeding 10 days shall be protected by a thick coat of neat cement grout

- 10.7.** Bars crossing each other where required shall be secured by binding wire (annealed) of size not less than 1 mm in such a manner that they do not slip over at the time of fixing and concreting

As far possible bars of full length shall be used in case this is not possible, overlapping of bars shall be done as directed by the Engineer in charge When practicable overlapping bars shall not touch each other, but be kept apart by 25 mm Where no feasible overlapping bars shall be bound with annealed wires not less than 1 mm thick twisted tight The overlaps shall be staggered for different bars and located at points along the span where neither sheer not bending moments is maximum.

- 10.8.** Whenever indicated on drawing or desired the Engineer in charge bars shall be jointed by coupling which shall have a cross section sufficient to transmit the full stresses of bars The end of the bars that are jointed by coupling shall be upset for sufficient length so that the effective cross section at the base of threads is not less than the normal cross section of the bar. Threads shall be standards threads Steel for coupling shall conform to IS 226

- 10.9.** When permitted or specified on the drawings joints of reinforcement bars shall butt-welded so as to transmit their full stresses Welded joints shall preferably be located at points when steel will not be subject to more than 75 percent of the maximum permissible stresses and welds so staggered that at any one section not more than 20 percent of the rods are welded Only electric arc welding using a process which excludes air from the molten metal and conforms to any or other special provisions for the work shall be accepted Suitable means shall be provided for holding bars securely in position during welding It shall be ensured that no voids are left in welding and when welding is done in two or three stages previous surface shall be cleaned properly Ends of bars shall be cleaned of all loose scale rust stages paint and other foreign matter before welding Only competent welders shall be employed on the work. The M S electrodes used for welding shall conform IS 814 Welded pieces of reinforcement shall be tested. Specimen shall be taken from the actual site and their number shall frequency to test shall be as directed by the Engineer in charge

11.0 MODE OF MEASUREMENTS & PAYMENT

11.1. For the purpose of payment the bar shall be measured correct up to 10 mm length and weight payable works out at the rate specified below

Sr. No	Diameter of steel	weight of steel per running meter	Sr. No	Diameter of steel	weight of steel per running meter
1	6 mm	0.22 Kg / Rmt	8	20 mm	2.47 Kg / Rmt
2	8 mm	0.39 Kg / Rmt	9	22 mm	2.98 Kg / Rmt
3	10 mm	0.62 Kg / Rmt	10	25 mm	3.85 Kg / Rmt
4	12 mm	0.89 Kg / Rmt	11	28 mm	4.83 Kg / Rmt
5	14 mm	1.21 Kg / Rmt	12	32 mm	6.31 Kg / Rmt
6	16 mm	1.58 Kg / Rmt	13	36 mm	7.99 Kg / Rmt
7	18 mm	2.00 Kg / Rmt	14	40mm	9.86 Kg / Rmt

11.1. Excess consumption over 5% will be charged at penal rate.

11.2. Reinforcement shall be measured in length including hooks, if any, separately for different diameters as actually used in work, excluding overlaps. From the length so measured, the weight of reinforcement shall be calculated in tonnes on the basis of IS: 1732. Wastage, overlaps, couplings, welded joints, spacer bars, chairs, stays, hangers and annealed steel wire or other methods for binding and placing shall not be measured and cost of these items shall be deemed to be included in the rates for reinforcement..

11.3. The contract unit rate for coated/uncoated reinforcement shall cover the cost of material, fabricating, transporting, storing, bending, placing, binding and fixing in position as shown on the drawings as per these specifications and as directed by the Engineer, including all labour, equipment, supplies, incidentals, sampling, testing and supervision.

The unit Rate for coated reinforcement shall be deemed to also include cost of all material, labour, tools and plant, royalty, transportation and expertise required to carry out the work. The rate shall also cover sampling, testing and supervision required for the work.

11.4. The rate shall be for a unit of **One Kg**.

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- Item No. 35** Providing and fixing sandwich type platform of 75cm wide and 75cm high from finished floor level using 25mm thick kotah stone slab as a base and 18mm thick mirror polished full round edged granite slab on top , 25mm thick mirror polished /kotah stone supports of 75cm wide at 45cm C/C or as directed including providing /Granite side 'Patta' of 30cm wide on three sides of the platform and S.S. Kitchen Sink of size 610x460x200mm of Nirali or equilant brand as per detailed drawing and as directed.

(A) GENERAL :

The work shall be carried out in general as per relevant specification of P.W.D. hand book Volume-I & II and as per I.S.S. and as per N.B.C. of India and as instructed by Engineer-in-Charge unless and otherwise specified with the following addition.

(B) MATERIALS :

1) Kotah Stone :

The polish kotah stone be confirm to standard specification booklet P. No. 23, M-49 having 25mm thickness with polishing on both side and edge of stone shall be machine cut having length and width in one piece as per requirement of platform or its support.

2) C.P. Brass waste :

The C.P. brass waster shall be of best quality and make as approved by the Engineer-in-Charge.

3) Pillar Cock :

The pillar cock shall confirm to M-57 & It Shall be long body Jaquar or Equivalent Quality.

4) Granite Stone :

The granite stone sheet be confirm to standard specification booklet P. No.23, M-52 having 18mm thickness with polishing of sides and edges of stone shall be machine cut having length and width as per requirement in single piece.

5) P.V.C. Waste Pipe :

The P.V.C. waste pipe shall be of 32mm dia. and of best quality and make and as approved by the Engineer-in-charge.

6) Kitchen sink (S.S.):

The stainless steel sink shall be of size 610x460x200mm of Nirali or equilant brand as per approved by the Engineer-in-charge.

(C) WORKMANSHIP :

The work shall be carried out in line and level and edge of kotah stone shall be machine cut with polishing on both the side. The stone shall be fixed for platform as directed by the Engineer-in-charge by making grooves in walls on as per

requirement. The support shall be to double kotah stone sandwich type with necessary grooves for hoisting. The platform wall shall be made good to its original surface by filling the grooves using cement mortar 1:2 with floating coat. The granite top shall be fixed on polished kotah stone slab. The curing shall be carried out 7 days to cement mortar work.

For kitchen sink the works shall be carried out by fixing granite stone bottom and sides. The top of kotah stone shall be cut in line and dimension as per requirement. The necessary cut shall be out to rest over the top edge of sink. After fixing the sink necessary cement slurry shall be filled in the sides of cuts gaps etc. and finished to match with the existing. The well polished rounded granite pani pattidouble Gola type shall be fixed to front of platform.

The C.P. brass waste shall be connected with a sink with necessary rubber washer.

The P.V.C. waste pipe of 32mm dia. shall be connected with the waste.

(D) MODE OF MEASUREMENT AND PAYMENTS :

The item shall be paid on Sqm basis with the clear dimension between wall to wall and wall to edge of stone.

- i) The rates includes all materials kotah stone for sand witch type supports kotah stone top granite top and sink, labours, tools, plants & pillar tap including making grooves in masonry and making good the same as directed. The rate includes cost of granite pani putti.
- ii) The payment shall be made on Sqm. basis of work done for completed item.

Item No. 36 Providing and fixing sandwich type platform of 75cm wide and 75cm high from finished floor level using 25mm thick kotah stone slab as a base and 18mm thick mirror polished full round edged granite slab on top, 25mm thick mirror polished /kotah stone supports of 75cm wide at 45cm C/C or as directed including providing / Granite side 'Patta' of 30cm wide on three sides of the platform as per detailed drawing and as directed.

(A) GENERAL :

The work shall be carried out in general as per relevant specification of P.W.D. hand book Volume-I & II and as per I.S.S. and as per N.B.C. of India and as instructed by Engineer-in-Charge unless and otherwise specified with the following addition.

(B) MATERIALS :

1) Kotah Stone :

The polish kotah stone be confirm to standard specification booklet P. No. 23, M-49 having 25mm thickness with polishing on both side and edge of stone shall be machine cut having length and width in one piece as per requirement of platform or its support.

2) Granite Stone :

The granite stone sheet be confirm to standard specification booklet P. No.23, M-52 having 18mm thickness with polishing of sides and edges of stone shall be machine cut having length and width as per requirement in single piece.

(C) WORKMANSHIP :

The work shall be carried out in line and level and edge of kotah stone shall be machine cut with polishing on both the side. The stone shall be fixed for platform as directed by the Engineer-in-charge by making grooves in walls on as per requirement. The vertical support shall be to double kotah stone sandwich type with necessary grooves for hoisting. The platform wall shall be made good to its original surface by filling the grooves using cement mortar 1:2 with floating coat. The granite top shall be fixed on polished kotah stone slab. The curing shall be carried out 7 days to cement mortar work.

The well polished rounded granite pani pattidouble Gola type shall be fixed to front of platform.

(D) MODE OF MEASUREMENT AND PAYMENTS :

The item shall be paid on Sqm basis with the clear dimension between wall to wall and wall to edge of stone.

- iii) The rates includes all materials kotah stone for sand witch type supports kotah stone top granite top, labours, tools, plants including making grooves in masonry and making good the same as directed. The rate includes cost of granite pani putti.
- iv) The payment shall be made on Sqm. basis of work done for completed item.

Item No. 39 Providing and laying broken China Mosaic Flooring for Terrace using 12mm to 20mm broken pieces of glazed tiles to be laid over cement mortar 1:3 to plain or slope and to be tempered to bring mortar crème out upto surface using white cement including rounding off junctions and extending them up to 15cm. along the wall, clearing with water and oxalic acid etc. as directed.

1.0 MATERIAL :-

Water shall be conform to M-1. Cement mortar shall conform to M-3. China mosaic tiles pieces in random size shall conform to M-55 sand shall be conform M-6. and water proofing material of approved quality.

2.0 WORKMANSHIP :-

- 1 The grooves are made at height of 150mm on parapet from finished roof. surface all along vertical parapet.
- 2 The Roof Surface shall be cleaned, wetted and mopped. The bedding shall then be laid evenly over the surface tamped and corrected to desired level and allowed to harden enough to offer a rigid cushion to tiles and to enable the mason to place wooden planks across and squat on it.
- 3 The China Mosaic tiles shall be laid on cement mortar bedding 20mm thick in C.M. 1:3. The mortar shall have sufficient plasticity for laying and there shall be no hard lumps that would interfere with the evenness of bedding. The base shall than the spread in thickness not less than 20mm at any place and average 20mm thickness. The proportion of the cement mortar shall be as specified in the item.

2.2 Fixing tiles :

- 2.2.1 The tiles before laying shall be soaked in water for atleast two hours. Neat grey cement grout of honey like consistency shall be over the mortar bedding as directed. Uneven size of the tiles shall be smeared with neat cement slurry. The tiles shall be well pressed and gently tapped with a wooden mallet till they are properly bedding and in level with the adjoining tiles. Then shall be no hollows in bed or joints. The joints between the tiles shall be as thin as possible in as per pattern and work shall be carried out in ture in line and level direction of Engineer-in-Charge.
- 2.2.2 The joints shall be filled with grey cement grout with wire brush or trowel to a depth of 5mm and loose material removed. White cement shall be used for pointing the joints. After fixing the tiles finally in an even plane the flooring be kept wet and allowed to nature undisturbed for 7 Days.

2.3 Cleaning :-

The surplus cement grout that may have come out the joints shall be cleaned off before its sets. Once the floor has set, it shall be carefully washed, cleared by dilute acid and dried. Proper precautions and measures shall be taken to ensure that the tiles are not damaged in any way till the completion of the construction.

After finishing the whole terrace shall flooded with water for a period of two weeks.

3.0 GUARANTEE FOR THREE YEARS :-

The contractor shall produce Guarantee Bond equivalent to 5% of this item for Guarantee for leakage. The Guarantee shall be produced on Non Judicial Stamp Paper of Rs. 100/- as prescribed below :

FORM OF GUARANTEE BOND :

I / We _____ (Contractor) here by give the guarantee that work shall remain unleakage for three years not be found leakage or become moisture for a period of 3 - Years after completion of work as per terms and condition of contract. And it will be guarantee to re-do the effective work without claiming any extra cost of guarantee shall be remain binding the contractor for the period of 3-years from the completion of the work under contract.

The deposit at the rate of 5% of the cost of this item from the running and final bill shall be recovered and retained for the guarantee period and shall be refund only after the completion of the guarantee period.

4.0 MODE OF MEASUREMENT & PAYMENT :-

4.1 The work done shall be measured in Sqmt. for visible area of work done. The length and width of the following shall be measured between the faces of skirting or dedos or plastered face of wall as the case may be. The paving under dedo or skirting shall not be measured. No deduction shall be paid nor extra paid for any opening in the floor of area to 0.1 Sqmt. nothing extra shall be paid for laying the floors at different levels in the same rooms.

The rate shall be for a unit for a one Sqmt. for Plan area only.

Item No. 40 **Providing and fixing 35mm thick flush door of standard quality with both side laminated including all heavy type S.S. fixture & fastenings with mortise lock etc complete.**

GENERAL:

The work shall in general be carried out as per relevant specification of P.W.D. Hand book volume I & II and as per the relevant specification No. 10.1.A & 10.30 of general technical specification with the following addition and alteration.

- MATERIAL :**
- The Flush door shall confirm to M-30 and of ISI quality.
 - All heavy type fixtures and fastening shall be of standard quality.
 - The mortise lock shall be of ISI quality.

SHUTTER:

The 35mm thick ISI quality flush door with factory made 1.00mm thick pre/post laminated shutter shall be used all faces shall be finished with wooden beading. The shutter shall be fixed to marble frame with S.S. hinges and S.S./Metal screws as directed by Engineer-in-charge.

The work shall in general be carried out as per relevant specification No.10.30 of general technical specification.

FIXTURES AND FASTENINGS :

All fixtures and fastenings shall be of heavy type S.S. of standard quality are shall be as per annexure-II of general technical specification book. The mortise lock over and above the required fixtures and fastenings shall be provided of ISI quality as approved by Engineer-in-charge.

MODE OF MEASUREMENT AND PAYMENT :

The work included cost of all labour material fixtures , fastenings , tools and plants required to complete the work.

The measured shall be taken i/i of frame & bottom of shutter to bottom of frame nearest to 1 Cm. and the payment shall be made for completed item on Sqmt basis.

FORM OF GUARANTEE BOND

GUARANTEE BOND

I/We(Contractor Name) here by given that work shall remain unaffected & all member of Flush door will not shrink , wrap or bow & fixtures and fastenings & screw will not be found displaced on became loose for a period of 3 (three) years after completion of work as per terms and condition of contract. It shall be guarantee to re-do the effective work without cleaning any extra cost of guarantee shall be remain binding the contractor for the period of 3 (three) years from the completion of the work under contract.

The Deposit at the rate of 10% of the cost of the this item from the running & final bill shall be recovered & retained for the 1st (first) one year after completion of the work & 5% shall be retained for the balance of guarantee period & shall be refund only after the completion of the guarantee period.

Contractor's Signature

Item No. 41 Providing and fixing decorative T.W. Door 30mm thick with existing granite or Marble Frame with style of size 100x30mm bottom rail 100x30mm lock rail 150x30mm of top rail of 150x30mm size with partly 12mm thick water proof plywood and 1mm thick lamination to both side including 20mmx20mm teak wood and top panel with 2mm dia S.S. hollow pipe as safety bar and PVC mosquito net with Velcro fitting including heavy type S.S. fixtures and fastening including French polishing etc complete.

General: The work shall in general be carried out as per relevant specification of PWD hand book and as per general technical specification with the following addition and alteration.

Material :

- T.W. shall confirm to M-29
- Plywood shall conform to M-37
- Lamination sheet shall be of standard quality without cracks, bubbles etc. with 1.00 mm thickness.
- S.S. safety pipe shall be of standard quality.

Workmanship:

The work shall be carried out as per technical specification booklet P. No. 68 I No. 10.1.A & P. No. 70 I. No. 10.12.(A) III with the following addition.

The door shutter with thickness 30mm size shall be made with style of size 100x30mm, bottom rail 100x30mm, lock rail 150x30mm and well designed top rail shall be overall size of 150x30mm. The bottom panel shall be made of 12mm thick waterproof plywood and shall be laminated with 1.00mm thick laminated shall and fixed with rail & style by tongue and groove joints the 20mm x 20 mm size decorative architrave shall be fixed in line and level.

The upper panel of shutter shall be made with 12mm safety pipe joint to style. The upper panel shall be covered with PVC mosquito net of standard quality and fixed with Velcro joint to the style & rail of shutter. All fixtures and fastenings made of heavy type stainless steel shall be fixed as per schedule.

All wood work shall be french polished as per general technical specification P. No. 143 I. No. 19.87.

Mode of Measurement and Payment:

The work includes all material, labour, tools and plants, required for complete operation. The measurement shall be taken for out to out of frame and floor to upper side of frame.

The payment shall be made for complete items as Sqm. basis.

Item No. 41 Providing and fixing 35mm thick factory made moulded Door shutter consisting of solid core single leaf Flush Door of 30mm thickness, lipped with 15mm (5mm x 3) thick x 30mm width on stiles and top rails & 10mm (5mm x 2) thick x 30mm width on other stiles & bottom rails. The inner panel laminated with 2mm thick termite proof water proof and fire resistant moulded PVC Sheet with 2,4,6 raised panel design in different plain and/or prelaminated colour on one side after routing the Moulded design on Flush Door & 2mm plain and/or prelaminated PVC Sheet on other side using rubber adhesive on flush door & solvent cement adhesive on the PVC lipping etc as per direction of engineer in charge , Manufacture's specification and drawing including cost of heavy type fixtures and fastenings.

GENERAL:

The work shall be general carried out as per PWD hand book volume I & II and as per relevant specification 10.30.A with the following addition and alteration as directed by engineer – in – charge.

MATERIAL:

Wood in frame shall conform to M-29 fixtures and fastening shall conform to M-43 and shall be high quality SS fixing of Kitch as equivalent quality. The flush door shall be fastening made of prelaminated flush door of approved design and color.

WORKMANSHIP:

The Flush door shutter to be fix to Granit frame with all Heavy type SS fixtures and fastening as per table of P. No. 188 & 189 shall be provided to shutter. Shutter shall be fixed in line and level .

GUARANTEE FOR THREE YEARS:

The contractor shall produce Guarantee bond equivalent of the 5% of this item for Guarantee of Flush door. The Guarantee shall be produced on Non –Judicial Stamp of Rs. 100/- as prescribed below.

MODE OF MEASUREMENT AND PAYMENT:

The work includes cost of all materials like flush door, SS fixtures and fastening, tools plants, screws etc. required to complete the work.

The payment shall be made for complete items on Sqm basis. The width shall be measured out to out of shutter and height shall be measured to top of floor to top of shutter.

FORM OF GUARANTEE BOND

GUARANTEE BOND

I/We(Contractor Name) here by given that work shall remain unaffected & all member of Flush door will not shrink , wrap or bow & fixtures and fastenings & screw will not be found displaced on became loose for a period of 3 (three) years after completion of work as per terms and condition of contract. It shall be guarantee to re-do the effective work without cleaning any extra cost of guarantee shall be remain binding the contractor for the period of 3 (three) years from the completion of the work under contract.

The Deposit at the rate of 10% of the cost of the this item from the running & final bill shall be recovered & retained for the 1st (first) one year after completion of the work & 5% shall be retained for the balance of guarantee period & shall be refund only after the completion of the guarantee period.

Contractor's Signature

Item No. 43 Providing and fixing colour anodized aluminum sliding Four track window having frame bottom section size 124mm x 51mm Of Jindal Section 21203 & side and top section size 124 x 41mm of Jindal section 20837 including shutter frame size 71 x 30mm of Jindal section 20993 with sliding type three shutters with 5mm thick transparent tinted float glass and one shutter for mosquito net of wire gauge including rubber beading PVC virgin, heavy type handle, bearing, fixture and fastening etc. including all labour and material etc. complete.

The Work in General shall be carried out as per following specification as described in Item or as per directive of Engineer-in-charge and as per detailed drawing supplied by Architect Gandhinagar.

The coating of standard aluminium shall be uniform & smooth as per Std. & Approved by Engineer in Charge.

The shutters of windows shall be sliding three track window as per the detailed architectural drawing.

1.0 Frames and Shutters

The shutter of windows shall be fabricated from the following anodized aluminium extrusions.

For Frame : Confirm to M-31 P. No. 17 of Gen. Bldg. Specification Book.

- (i) Four track vertical and bottom & top Outer 124 x 51.00 , 2.073 Kg/Mt
Hori. 124.00 x 41.00 , 1.197 Kg/Mt

- (ii) For Shutter 71 x 30.00mm Wt. 0.839 Kg/Mt.

2.0 Glazing

The windows should be fully coloured anodized aluminium sliding shutter with partly fixed glazing to be fabricated from approved anodized quality aluminium extrusion of HE 9 WP is 133 with minimum 50 / 90 micron anodized coating, and glazing with 5.0mm thick transparent coloured glass. Glass shall be confirm to M-38 of general specification. All glass shall be of the best quality, free from specks, bubbles, smokes, veins and other detects. It shall have clear undisturbed vision and reflection. Glazing to be done by natural quality rubbed extrusion section. Standard glazing clips and rubber bedding shall be used.

3.0 Workmanship

The handle of window shall be specified design and suitable locking system for the window operated either from outside or inside shall be provided. In double

shutter, the first closing shutter shall have concealed aluminium alloy bolt at top and bottom.

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

The aluminium sliding windows shall be fixed with 5mm thick transparent glass of copper tint and fixed glass ventilators on top as per detailed drawing shall be fixed in the sliding window.

The one aluminium sliding shutter shall be fixed with Mosquito net of Stainless steel having width 1.00 mt as per detailed drawing shall be fixed in the sliding window.

4.0 Fixtures and fastening

The sample of fixtures and fastening shall be got approved as regards quality and shape, and coloured anodized aluminum fixture and fastening shall be bright finished.

The fixture and fastenings as per schedules attached in schedule of dimension of windows as per annexure-II of General specification book P. No. 188 to 191.

The size shall have to be supplied as per the actual dimension available on site for a particular windows and properly fixing shall be done with hold fast to masonry walls and coach bolts in R.C.C. members.

5.0 Mode of Measurement and payments.

- 1.0 The rate shall include the cost of all materials, aluminum sections, glass, hold fast. coat bolts etc. and labour and scaffolding etc. involved in the operation said above. It shall also inclusive the cost of anodizing, coloured, and work shall be carried out for all floor.
- 2.0 The windows shall be measured in sqMt correct to a centimeter of outer edge of frames.
- 3.0 The rate shall be for a unit of One SqMt.

- Item No. 44** Providing and fixing colour anodized aluminum sliding three track window having frame bottom section size 124mm x 51mm Of Jindal Section 21203 & side and top section size 124 x 41mm of Jindal section 20837 including shutter frame size 71 x 30mm of Jindal section 20993 with sliding type three shutters with 5mm thick transparent tinted float glass and one shutter for mosquito net of wire gauge including rubber beading PVC virgin, heavy type handle, bearing, fixture and fastening etc. including all labour and material etc. complete.

The Work in General shall be carried out as per following specification as described in Item or as per directive of Engineer in charge and as per detailed drawing supplied by Architect Gandhinagar.

The coating of standard aluminium shall be uniform & smooth as per Std. & Approved by Engineer in Charge.

The shutters of windows shall be sliding three track window as per the detailed architectural drawing.

2.0 Frames and Shutters

The shutter of windows shall be fabricated from the following anodized aluminium extrusions.

For Frame : Confirm to M-31 P. No. 17 of Gen. Bldg. Specification Book.

- (i) Three track vertical and bottom & top 124.00 x 51.00 mm of 2.073 Kg. Per Rmt
124 x 41.00 mm and of 1.197 Kg /Rmt
- (ii) For Shutter : 71 x 30mm and weight of 0.839 Kg/Mt.

2.0 Glazing

The windows should be fully coloured anodized aluminium sliding shutter with partly fixed glazing to be fabricated from approved anodized quality aluminium extrusion of HE 9 WP is 133 with minimum 50 / 90 micron anodized coating, and glazing with 5.0mm thick transparent coloured glass. Glass shall be confirm to M-38 of general specification. All glass shall be of the best quality, free from specks, bubbles, smokes, veins and other defects. It shall have clear undisturbed vision and reflection. Glazing to be done by natural quality rubbed extrusion section. Standard glazing clips and rubber bedding shall be used

3.0 Workmanship

The handle of door / window shall be specified design and suitable locking system for the window operated either from outside or inside shall be provided.

In double shutter, the first closing shutter shall have concealed aluminium alloy bolt at top and bottom.

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

The aluminium sliding windows shall be fixed with 5mm thick transparent glass of copper tint and fixed glass ventilators on top as per detailed drawing shall be fixed in the sliding window.

4.0 Fixtures and fastening

The sample of fixtures and fastening shall be got approved as regards quality and shape, and coloured anodized aluminum fixture and fastening shall be bright finished.

The fixture and fastenings as per schedules attached in schedule of dimension of doors as per annexure-II of General specification book P. No. 188 to 191.

The size shall have to be supplied as per the actual dimension available on site for a particular door / windows and properly fixing shall be done with hold fast to masonry walls and coach bolts in R.C.C. members.

5.0 Mode of Measurement and payments.

- 1.0 The rate shall include the cost of all materials, aluminum sections, glass, hold fast, coach bolts etc. and labour and scaffolding etc. involved in the operation said above. It shall also inclusive the cost of anodizing, coloured, and work shall be carried out for all floor.
- 2.0 The windows shall be measured in sqMt correct to a centimeter of outer edge of frames.
- 3.0 The rate shall be for a unit of One SqMt.

Item No. 45 Providing & fixing coloured anodized aluminium sectional louvered ventilator with frame size 63x38.10mm & 1.80mm thick ground glass and coloured anodized aluminium louvers fixtures and hold fastings etc. complete.

1.0 General technical specification of volume-I shall also apply.

2.0 MATERIAL

2.1 Aluminum standard section

Aluminum alloy used in the manufacture of extruded section shall confirm to IS designation HEA-WP of IS 733-1975 and also Designation WVG –WP of I S 1285-1975 section shall be coloured powdered coated as specified in the drawing and design.

All sections shall be Free from any scratches or holes or any damages on surface. All section shall have finished luster surface on all sides

2.1.1 size of the frame shall be 63.5mmx38.10mmx1.95 mm of Jindal section No.4605 size having minimum Wt 1.094 Kg per meter

2.2 Glass

The glass shall be of approved make having thickness of 4 mm thick transparent bronze colour tinted float glass of copper tint fixed with transparent silicon gasket The glass shall be clear and free from scratches and cracks The glass shall be provided on the top

2.3 Louvered mechanism

The Alluminium section openable standard quality hinged. Louvered mechanism shall be fixed to frame work if required.

2.0 WORKMANSHIP

The work shall be carried out for fixed glass ventilator with openable ground glass louvers with 4mm thick glass. The work of alluminium ventilator shall be of extreme finishing. The frame size shall be of approved size and quality. The glass shall be fixed with louvered . The louvers shall be open able system as directed by Engineer – in – charge. All fixtures and fastenings shall be fixed to its right places.

3.0 Mode of Measurement & payment :

3.1. The unit rate of aluminum louvers shall include the cost of all materials, cost of anodizing, cost of all necessary fixtures and fastenings, labour charges for fixing frames, in wall at the place shown in drawing and as instructed by Engineer in charge, all tools and plant required for assembling and fixing in position, finishing as per direction of the Engineer-in-charge, and all other incidental expenses for preparing frame and louvers of specified size to complete the louvers structure or its components as shown on the drawings and

according to these specifications. They shall also include the cost of making, fixing and making walls good by plaster patch colour etc as required

3.2. The louvers shall be measured for its width and height, limiting dimensions to those specified on plan or as directed.

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

Item No.47 Providing and fixing Colour coated corrugated /semi corrugated Galvalume sheet 0.50 mm thick roofing fixed with GI "J" or "L" hooks bolts and nates 8mm dia with bitumen washer filled with white lead complete excluding cost of purlins, rafters and trusses as directed.

GENERAL :

The work in general shall be carried out as per relevant specification of Item No. 15.1 P. No. 104 of corrugated GI sheet roofing with the following addition and alteration.

MATERIAL :

The material shall be 0.50mm galvalium sheet of manaksia, CRIC, Ganga as equivalent brand with the following specification.

Base Metal	:	High tensile steel
Coating mass	:	120 GSM
Coated Std.	:	IS : 277/JIS : 3302
Yield stranger	:	240 Mpa
Thickness	:	0.50mm & 0.60mm
Tolerance	:	± 0.03 as per IS 513

The stainless steel base shall be coated with base coat conversion coating, epoxy primer coating and top coating.

WORKMANSHIP :

The workmanship shall be followed as in specification No. 15.1 P. No. 104 and as per the manufacture guideline.

MODE OF MEASUREMENT & PAYMENT :

The measurement of steel roof shall be taken for finished work in specification area in general plane (not girthed to roof) the laps bet sheets both at train each and along the sides edges shall not be measured. The overlap sheets over valleys pipes and their underlap under the ridges, hips and finishing pipe shall be included in the measurement & the payment shall be made on sqmt basis for the visible area only.

Item No. 53 Applying Two Coats of Birla or Asian Acrylic Lappy (Putty) and two coats of primer of approved brand and manufacture on New Wall Surface to give an even shade including thoroughly brushing the surface free from mortar dropping and other foreign matter and sand papered smooth.

1.0 MATERIALS :

The Lapi paste shall be of birla putty shall conform to I.S. 712-1973. The turpentine shall confirm to I.S.712-1973. The turpentine shall confirm to I.S. 3536-1966. The enamel Paints & Primer shall confirm to I.S. 1932-1964 manufacturer brand of each material of Lapi paste shall be as per instruction of Engineer-in-charge.

2.0 WORKMANSHIP :

The surface to be finished lapi shall be thoroughly cleaned , dusted . All rust, dirt "Loose plaster Papadi" shall removed Horizontally& Vertically by sand paper all un. Necessary nails, shall be removed, the holes, cracks, patches etc shall made good with pali paste in perfect trus line level and smooth just like a glassed surface . The mixing of Different components of lapi like chowk powder, turpentine, Varnish, enemal paint, primer shall be done strictly according to instruction of Engineer-in-charge.

3.0 MODE OF MEASUREMENTS AND PAYMENTS.

3.1 The rates shall includes the cost of all materials containing in Lapi paste, including mixing, applying, carting and scaffolding for apply of lapi . The protective measurement for application of work shall be included.

3.2 For detail mode of measurements relevant specification of plaster work shall be followed.

3.3 Rates shall be for a unit of one Sq. meter. for whole item.

Item No. 56 Providing and fixing 90 cm high Stainless steel railing made from anticorrosive 316 grade S S pipe of 50 mm dia (16Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia (16Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16Gauge) at equal distance fixed by 18.75 mm dia (16Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete.

General :

The work shall in general be carried out as per PWD handbook volume I & II and as specified in general technical specification of building work with the following addition and alteration.

Material :

The stainless steel shall be of 304 grade and 18 gauge pipe and shall be of standard quality with required chemical properties. The fittings like coach bolts, staples, paddles shall be of standard quality. All material shall be free from loose mill scale, rustpits or other defect affecting the strength and durability work. The steel section supplied by the contractor shall be with test certificate of the manufacturer for SS 304 grade and other relative Indian standard.

Workmanship :

The pipe and other member shall be install in good manner with required scaffolding or as per direction given by engineer in charge. Necessary bolting shall be done in sharp technical manner, SS anchor bolts shall be fitted as per structural details. The erection of whole structure shall be in good technical manner, complete in line, level and plans.

90 cm high Stainless steel railing made from anticorrosive 316 grade S S pipe of 50 mm dia (16Gauge) as hand rail with S S 316 grade Baluster of 38 mm dia (16Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 25 mm dia (16Gauge) at equal distance fixed by 18.75 mm dia (16Gauge) S S pipe with baluster including accessories as per detailed drawing as directed etc. complete by Engineer-in-charge.

Mode of measurement and payment :

All work shall be measured in Rmt. basis at length parallel to 50mm dia hand rail. No vertical pipe shall be measured which provided at initial stage of railing. The payment shall be made on Rmt. basis.

Item No. 57 Providing and fixing stainless steel SS 316 type railing at 850mm height and of 50mm dia SS pipe with wall support at 1.5mt center to center pipe as 15mm dia at required spacing as per design and SS having 316 grade and 15 guage pipe including fastening, hold fast, clumps, coach bolts for fixing to wall including touching finishing to wall etc complete.

General :

The work shall in general be carried out as per PWD handbook volume I & II and as specified in general technical specification of building work with the following addition and alteration.

Material :

The stainless steel shall be of 304 grade and 18 guage pipe and shall be of standard quality with required chemical properties. The fittings like coach bolts, staples, paddles shall be of standard quality. All material shall be free from loose mill scale, rustpits or other defect affecting the strength and durability work. The steel section supplied by the contractor shall be with test certificate of the manufacturer for SS 304 grade and other relative Indian standard.

Workmanship :

The pipe and other member shall be install in good manner with required scaffolding or as per direction given by engineer in charge. Necessary bolting shall be done in sharp technical manner, SS anchor bolts shall be fitted as per structural details. The erection of whole structure shall be in good technical manner, complete in line, level and plans.

Providing and fixing stainless steel SS 316 type railing at 850mm height and of 50mm dia SS pipe with wall support at 1.5mt center to center pipe as 15mm dia at required spacing as per design and SS having 316 grade and 15 guage pipe including fastening, hold fast, clumps, coach bolts for fixing to wall including touching finishing to wall etc complete by Engineer-in-charge.

Mode of measurement and payment :

All work shall be measured in Rmt. basis at length parallel to 50mm dia hand rail. No vertical pipe shall be measured which provided at initial stage of railing. The payment shall be made on Rmt. basis.

Item No. 58 Providing and fixing frame type CB shutter of 18mm thick water proof plywood with 1.00mm ISI quality 1.0mm lamination for outside of frame and cupboard and 0.80mm thick lamination to inside of cupboard including necessary , hydraulic type S.S. hinges , fixtures , fastenings of standard quality S.S. with locking arrangement etc complete as per detail drawing and as directed by Engineer-in-charge.

GENERAL :

The work shall be carried out in general as per relevant specification as PWD hand book volume I & II and as per ISS and NBC of India and as instructed by Engineer in charge with the following addition and alteration.

MATERIALS :

Ply Wood : Plywood shall be water proof and conform to M-37.
Lamination Sheet : 1mm/0.80mm thick lamination sheet shall be of standard (IS) quality and shall be free from bubbles, cracks etc.
Fixtures and fastenings : The all fixtures and fastening shall be of heavy type and of stainless steel material and shall be of standard quality.

WORKMANSHIP :

The work shall be carried out as frame type cupboard in following manners.
The water proof plywood frame with top horizontal and vertical member and shall be fixed to wall with screws.
The one side of CB shall be covered with 18mm thick water proof plywood and laminated with 1.00mm laminated sheet for outside and 0.80mm thick lamination sheet instead of the shutter with teakwood beading for sides of plywood with necessary locking arrangements for each shutter.
All necessary fixtures and fastening shall be fixed to frame and shutter in respect all the work shall be given a good architectural view.

GUARANTEE BOND:

The contractor shall produce Guarantee bond for Guarantee of C/B shutters & fixtures & fastening . The Guarantee shall be produced on Non-Judicial stamp paper of Rs. 100/- as prescribed below.

MODE OF MEASUREMENT AND PAYMENT :

The work includes cost of all material, labour, tools and plants, required for complete operation.
The measurement shall be carried out as out to out of frame or bottom of shutter to top of frame and payment shall be made on Sqm. basis.

FORM OF GUARANTEE BOND

GUARANTEE BOND

I/We(Contractor Name) here by given that work shall remain unaffected & all members of cupboard shutters i.e. Hydraulic type S.S. hinges , fixtures and fastenings , channels , S.S. baskets , locking arrangements will not be found displaced or become loose & shutter it shelf will not shrink , warp or bow for a period of 3 (three) years after completion of work as per terms and condition of contract. It shall be guarantee to re-do the effective work without cleaning any extra cost of guarantee shall be remain binding the contractor for the period of 3 (three) years from the completion of the work under contract.

The Deposit at the rate of 10% of the cost of the this item from the running & final bill shall be recovered & retained for the 1st (first) one year after completion of the work & 5% shall be retained for the balance of guarantee period & shall be refund only after the completion of the guarantee period.

Contractor's Signature

Item No. 59 Providing and fixing cupboard with aluminum pipe frame of size 50x25mm filled with non-teak wood and 18mm thick water proof plywood shutter with 6 nos of SS basket two of size 18" x 20" x 4" , two of size 18"x 20" x 6" and two of size 18" x 20" x 8" with necessary intranal arrangement front plywood necessary telescopic channels for drawers and remaining part of two shutter including 1.00mm thick laminated sheet for outer face and 0.8mm sheet for inner face and with 20x20cm teak wood beading including necessary S.S. hinges and S.S. fixtures etc complete.

GENERAL :

The work shall be carried out in general as per relevant specification as PWD hand book volume I & II and as per ISS and NBC of India and as instructed by Engineer in Charge.

PLYWOOD :

Plywood shall be water proof and confirm to M-37.

ALLUMINIUM FRAME :

Alluminium pipe shall confirm to M-31

LAMINATION SHEET :

1mm thick for outer face & 0.8mm thick sheet for inner face shall be of standard (ISI) quality and shall be free from bubbles, cracks etc.

OIL PAINT :

The oil paint shall confirm to M-44.

BASKET :

The S.S. wire basket shall be of approved quality and as per required size and type as suggest in item description & directed by Engineer in Charge.

FIXTURES AND FASTENINGS :

The all fixtures and fastening shall be of heavy type and of stainless steel material and MS powder coated sliding channel shall be of standard quality.

WORKMANSHIP :

The work shall be carried out as frame type cupboard in following manners.

The alluminium pipe frame of size 50x50mm for top horizontal and vertical member and shall be fixed to Kotah stone / wall with screws.

The one side of CB shall be covered with 19mm plywood and laminated with 1.00mm laminated sheet with teakwood beading for sides of plywood. Other side of CB shall be made with 0.80mm thick lamination sheet catelery basket two of size 38x50x20 cm and one of size 38x50x10 cm with plywood front and fixed to side plywood / kotah stone by heavy type sliding channel both sides of drawer for every 3.00 meter length.

All necessary fixtures and fastening shall be fixed to frame and shutter in respect all the work shall be given a good architectural view.

GUARANTEE BOND :-

The contractor shall produced Guarantee bond for Guarantee of shutter, basket, channels , fixtures & fastenings etc. The Guarantee shall be produced on Non judicial Stamp paper of Rs. 100/- as prescribed below.

MODE OF MEASUREMENT AND PAYMENT :

The work includes cost of all material, labour, tools and plants, required for complete operation.

The measurement shall be carried out as out to out of frame or bottom of shutter to top of frame and payment shall be made on Sqm. Basis.

FORM OF GUARANTEE BOND

GUARANTEE BOND

I/We(Contractor Name) here by given that work shall remain unaffected & all members of cupboard shutters i.e. Hydraulic type S.S. hinges , fixtures and fastenings , channels , S.S. baskets , locking arrangements will not be found displaced or become loose & shutter it shelf will not shrink , warp or bow for a period of 3 (three) years after completion of work as per terms and condition of contract. It shall be guarantee to re-do the effective work without cleaning any extra cost of guarantee shall be remain binding the contractor for the period of 3 (three) years from the completion of the work under contract.

The Deposit at the rate of 10% of the cost of the this item from the running & final bill shall be recovered & retained for the 1st (first) one year after completion of the work & 5% shall be retained for the balance of guarantee period & shall be refund only after the completion of the guarantee period.

Contractor's Signature

Item No. 60 Providing and fixing box type cupboard for wardrobe including frame work with 19mm thick water proof plywood rear side with 8mm thick water proof plywood and shutter with 19mm plywood with necessary drawers of same materials with 1.00mm thick lamination sheet for outside and 0.80mm thick laminated sheet for inside work. including cost of all heavy type stainless steel fittings, sliding channels , locking arrangements for shutter and drawers including teak wood beading etc complete as per design and drawings.

The work shall in general be carried out as per relevant specification of technical specification P No. 71 & Item No. 10.16.A.1 with the following addition and alteration.

The work shall be carried out for box type cupboard with 19mm thick waterproof plywood for box of required thickness and 8mm thick plywood for rear side and partition and shelves shall be made of 19mm water proof plywood and the drawers shall be made of 19mm plywood. All work shall be carried out in line and level and as designed by the department.

The necessary door shall be made of 19mm waterproof plywood with necessary SS hinges and locking arrangement for doors and drawers.

All exterior face of plywood shall be covered with teakwood beading for edges and 1.00 mm lamination for exterior face and 0.80mm thick lamination for all interior surface. All lamination shall be carried out with IS adhesives.

GUARANTEE BOND :-

The contractor shall produced Guarantee bond for Guarantee of Cupboard & fixtures & fastenings etc. The Guarantee shall be produced on Non judicial Stamp paper of Rs. 100/- as prescribed below.

The work includes all materials labour stainless steel fixtures and fastening locking arrangement, lamination sheet and all equipment required to complete the operation.

The payment shall be made for complete item on Sqm. Basis.

FORM OF GUARANTEE BOND

GUARANTEE BOND

I/We(Contractor Name) here by given that work shall remain unaffected & all members of cupboard shutters i.e. Hydraulic type S.S. hinges , fixtures and fastenings , channels , S.S. baskets , locking arrangements will not be found displaced or become loose & shutter it shelf will not shrink , warp or bow for a period of 3 (three) years after completion of work as per terms and condition of contract. It shall be guarantee to re-do the effective work without cleaning any extra cost of guarantee shall be remain binding the contractor for the period of 3 (three) years from the completion of the work under contract.

The Deposit at the rate of 10% of the cost of the this item from the running & final bill shall be recovered & retained for the 1st (first) one year after completion of the work & 5% shall be retained for the balance of guarantee period & shall be refund only after the completion of the guarantee period.

Contractor's Signature

Item No. 61 Providing and fixing 5mm thick glass mirror machine cut belveled edge mounted on wall with special type wall touch SS mirror bracket fixing with necessary plugs.

The work shall in general be carried out as per relevant specification of technical specification P.No.150 item No.23.143 with the following addition and alteration.

The work shall be carried out with Modiguard or equivalent quality mirror of 6mm thick. The fixing of mirror shall be as directed by engineer in charge on plywood or PVC sheet with studs. The edges shall be rounded as directed by engineer in charge.

The work includes all cost of materials labour, rounding to edges etc. complete and the payment shall be made for complete item on Sqm. basis.

Item No. 62 Providing and fixing wash down water closet (European type Wall hung) Jaquar Vignette wall hung size of 615 x 400 x 363mm with Hydraulic seat cover with inlet & outlet gasket, CI chair brackets including concealed type Metropole flush valve 40mm concealed body 100mm square plate of Jaquar or equivalent quality with Health flow set etc. complete.

The work shall in general be carried out as per relevant specification of technical specification. P. No. 146 It. No. 23.112.A.1, 23.115.A & 23.120 with the following addition and alteration.

The European type wall hung with hydraulic seat cover and hinges set shall be of Jaquar Vignette series size of 570 x 390 x 360mm or equivalent quality.

The angular stop cock with wall flange shall be of Jaquar or equivalent quality.

Concealed Metropole flush valve 40mm dia with 100mm square plate shall be of JAQUAR or equivalent quality.

Hydraulic seat cover with inlet and outlet gasket with CI chair brackets shall be of JAQUAR or equivalent good or approved quality.

Health faucet with 1.2mt long flexible tube shall be of JAQUAR AID 573 or equivalent quality.

All the work shall be carried out as specified with above specification.

The work shall be carried out with above material and specified or selected by Engineer in charges.

The payment shall be made for complete item on No. Basis.

Item No. 64 Providing and fixing special type wash basin on counter top of size 610x460mm of CERA or equivalent quality including pillar tap, Stop cock etc. complete.

The work shall in general be carried out as per relevant specification of technical specification. P. No. 167 to 171 item No. 23.127, 23.135.A, 23.136.A, 23.95.A and 23.96.A with the following addition and alteration.

The wash basin shall be Cera 1009 or equivalent quality.

The pedestal shall be Cera 1108 or equivalent quality.

Pillar tap & Angle cock shall be Jaquar ORM series or equivalent quality.

The CP bottle trap shall be of standard quality.

CI bracket shall be of standard quality.

The work shall be carried out with above material and specified by equivalent in charges.

The payment shall be made for complete item on No. basis.

Item No. 65 Providing erecting and fixing Tripal layer ISI water tank of required capacity each with all necessary fittings , tank cover and as required connection etc. complete on terrace

1.0 MATERIAL

1.1.PVC Water tank

PVC Water tank of specified capacity and of I.S.I. mark of approved in liters of approved make and quality

Net capacity shall be net volume of water stored between the lowest level of overflow and lowest specified level.

1.2. Nipple

Galvanize pipe nipple shall be of approved make and of best quality

1.3. Ball valve

Ball valve shall be of approved make and of best quality

1.4. Connections

Connections shall be of approved make and of best quality

2.0 WORKMAN SHIP

2.1. Tank shall be approved quality and as per IS standard make. Material used in manufacturing tank shall be confirmed to relevant IS code. The material of tank and lead and fittings which may come in contact of water should be such that it does not impart any taste, colour or odour. It does not have any toxic effect and it does not contaminate the water. Thereby making it unpotable.

2.2. The tank shall be fixed properly in a level position and making all required necessary correction like inlet outlet flushing overflow and air vent. Tank shall be satisfying the standards of public health.

3.0 MODE OF MEASUREMENT & PAYMENT :

3.1. The unit rate PVC tank shall include the cost of all materials, tools and plant required for lifting to required height with all lead and lift, placing & fixing in position, all required specials and jointing adhesive compound, finishing as per

direction of the Engineer-in-charge, and all other incidental expenses for producing PVC water tank work of specified diameter to complete the structure or its components as shown on the drawings and according to these specifications. They shall also include the cost of making, fixing and removing of all scaffolding and forms required for the work.

3.2. The PVC water tank work shall be measured for its number limiting to specified capacity to those specified on plan or as directed. The rate shall be for a unit of one number.

3.3. The payment will be made one Liter basis of the finished work.

Item No. 68 Providing and fixing Jaquar single lever high flow diverter with concealed body and expose parts kit of alive or equivalent model and bath tube spout with button attachment for hand shower and shower arm 400 x 25 x 25mm square shape for wall mounted and hand shower for ABS plats with flexible tube 8mm dia and 1.5Mt long with nuts and wall outlet with shower hook and over head shower 200x300mm stainless steel with rubbit system complete as directed by EIC.

GENERAL

The work shall in general be carried out as per PWD handbook volum I & II and as per relevant specification of building work with the following addition as directed by engineer in charge.

MATERIAL

- Single lever high flow diverter with concealed body shall be Jaquar ALD 079 or equivalent.
- Single lever expose parts kit for high flow diverter shall be Jaquar ALI 85079K or equivalent.
- Bath tub spout with button attachment for hand shower shall be Jaquar SPJ 85463 or equivalent.
- Shower arm 400 x 25 x 25mm square shape for wall mounted shall be Jaquar SHA455L400 or equivalent.
- Hand shower for ABS plate shall be confirm to Jaquar ALIVE series HSH85537 or equivalent.
- Flexible tube 8mm dia and 1.5mt long with nuts shall be confirm Jaquar SHA549D8 or equivalent.
- Wall outlet with shower hook with square plate shall be confirm Jaquar SHA566S or equivalent.

- Over head shower 200x300mm S.S. with rubbit system shall be confirm to Jaquar ALIVEOHS85859 or equivalent.

WORKMANSHIP

The single lever high flow diverter concealed body shall be fixed as directed with required materials and above items .

MODE OF MEASUREMENT AND PAYMENT :

The work includes cost of high flow diverter , single lever expose parts kit , bath tub spout with button attachment for hand shower , shower arm square shape for wall mounted , Hand shower for ABS plate , flexible tube 8mm dia and 1.5mt long with nuts , wall outlet with shower hook with square plate, Over head shower SS with rubbit system etc. labour, tools and plants to complete the work.

The payment shall be made for complete item on SET basis.

Item No. 69 Providing and fixing Stainless steel Heavy Type Brass Towel Rack 600mm considering & 12mm dia rod and one 20mm dia rod including 3 to 4 pegs including C.P. Brass Brackets etc complete

GENERAL :

The work shall in general carried out as per PWD hand book volume I & II and as per standard Technical specification of Building work with the following addition and alteration.

MATERIALS :

The stainless steel grade 304 Heavy Type Brass Towel Rack of 600mm considering & 12mm dia rod and one 20mm rod including 3 to 4 pegs including CP brass brackets and of approved quality and make by an ISO company as approved by Engineer - in - charge.

WORKMANSHIP :

The Heavy Type Brass Towel Rack of above quality shall be fixed to wall with wooden/PVC plugs with C.P. brass screw in true line and level as directed by Engineer in Charge.

MODE OF MEASUREMENT AND PAYMENT :

The work includes cost of all material, labour, tools and plants to complete the work. The payment shall be made for completed item on Number basis.

**Item No. 70 Providing and fixing Stainless steel Heavy Type Napkin Ring etc
complete**

GENERAL :

The work shall in general carried out as per PWD hand book volume I & II and as per standard Technical specification of Building work with the following addition and alteration.

MATERIALS :

The stainless steel grade 304 Napkin Ring of 6" to 8" outer dia. in size and of approved quality and make by an ISO company as approved by Engineer - in - charge.

WORKMANSHIP :

The Napkin ring of above quality shall be fixed to wall with wooden/PVC plugs with C.P. brass screw in true line and level as directed by Engineer in Charge.

MODE OF MEASUREMENT AND PAYMENT :

The work includes cost of all material, labour, tools and plants to complete the work. The payment shall be made for completed item on Number basis.

Item No. 82 Supplying and fixing standard quality (Kranti or equivalent) 50mm dia water meter with flange, nut bolt etc. complete.

GENERAL

The work shall in general be carried out as per PWD handbook volum I & II and as per relevant building specification No. 23.99 with following addition and alteration and as directed by engineer in charge.

MATERIAL

The water meter shall be of standard quality of Kranti or equivalent make.

WORKMANSHIP

The standard quality 50mm dia water meter shall be fixed to the pipe line with the help of flange, not bolts, rubber gasket etc. The work shall be carried out by approved plumber and testing shall be carried out after completion of work.

A guarantee / warranty shall be furnished as per the manufacturer guideline.

MODE OF MEASUREMENT AND PAYMENT :

The work includes cost of all labour, material tools required to complete the work. The payment shall be made for complete item on No. basis.

- Item No. 86 Providing and fixing Pre-Cast Rubber Dye Inter locking concrete Block 60mm thick with grade of concrete M-200 pneumatic compressed by mechanically pressed and as per approved design including 75mm sand layer for levelling and filling the joint with sand in proper line and level.**

1. Material :-

- 1.1 The rubber moulded paver block shall be approved and best quality and thickness as specified in description of item.
- 1.2 The sand shall confirm to M-6.

2. Workmanship :-

- 2.1 The work shall be carried out as per IS : 1443-1972.
- 2.2 Before the sand bedding the ground shall be in proper line and level as directed.
- 2.3 The sand bedding shall be laying as per proper line and level.
- 2.4 After laying sand bedding should be proper watering and ramming as per instructed by Engineer-in-charge.
- 2.5 The sand bedding layer shall be not less then 30mm and Average thickness of bedding shall be 75mm.
- 2.6 The pre cast blocks are fixed on bedding as per proper line and level.
- 2.7 The joint shall be of uniform thickness and in straight line as per pattern.
- 2.8 The colour and design of Precast block shall be as per directed by Engineer-in-Charge.
- 2.9 In places where full block cannot be fixed the block shall be cut of the size and smooth and at edges to give straight and line joints.
- 2.10 If any block is disturbed or damage it shall be refitted or replaced properly jointed.
- 2.11 The joints or edges where there is no possibility provide to fix the paver block it should be finished or locked with cement concrete of same strength.

3.0 Mode of Measurements & payments.

- 3.1 Precast Inter locking paved flooring shall be measured in Sqmt. for visible area of work done.
- 3.2 The rate shall include the cost of all materials, labour involved in all the operations as described above.
- 3.3 The rate shall be for a Unit of one Sqmt.

Item No. 87 Providing and fixing Pre-Cast Concrete Kerb Stone of gray cement based concrete block 30cm. length, 30cm. height and 15cm. thick of M-250 Grade concrete as per approved design and including excavation for fixing in proper line and level, filling the joint with C.M. 1:3 (1-Cement : 3-Fine Sand) etc. complete

Kerbstones shall be of C.C. M-250 & best quality, as approved by the EIC and shall be obtained from reliable source. The make will be approved by the EIC. The stone shall be without any veins, cracks and flaws. The kerbing stones shall be even, sound, durable and regular in shape and of uniform colour.

The size of the Kerbstone shall be as specified in the detailed drawing as approved by the EIC. The thickness of the stones shall be as specified in the manufacturer's description, with permissible tolerance of +2mm.

The stone shall have finish depending upon its use and as specified in the item or detailed drawing. The Kerbstones are to be used alongside walkways, parking, floors, docks, landscaping etc. as per requirement.

This shall include for necessary excavation. Refiling, pointing with cement mortar etc. complete for completed items of work.

Mode of Measurement :-

The rate shall be for a unit of one Running meter for completed items of works.

Item No. 88 Providing and constructing and junction chamber of size 0.45x0.45x0.45 mt. including necessary excavating 23 Cum. brickwall, bedding CC 1:2:4, top RCC slab, 15mm thick plaster and connection of rain water pipes as per detail drawings and as directed by engineer – in – charge.

Junction Chamber shall be constructed of the size as per drawing supplied by the department. Whole work shall be carried out with following detailed specifications.

(1) Excavation:

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 removed as directed. The materials so obtained shall be property of the Government and be conveyed and stacked as directed within 50 M. lead. The roots of the trees coming in the sides shall be cut and coated with a hot asphalt,

2.2. The rate of site 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 center 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 labourers, 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 levelled both longitudinally and transferely as directed by removing and watering as required. No earth filling will be allowed for bringing it to level, if by mistake or any other reason excavation is made deeper or, wider 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 upto 1.5 in. 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 levelling 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 upto 50 M. and all lift.

(2) Masonry:

2.1. Proportion:

2.1.1. The proportion of the cement mortar shall be 1:5 (1 cement : 5 fine sand) by volume.

2.2. Wetting of bricks: **2.2.1.** 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 through wetting of bricks.

2.3. laying :

2.3.1. 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 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 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 joints shall be fully filled from the top with mortar.

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

2.3.4. the brick shall be laid with frog upwards. A set of tools comprising of wooden straight edges. Mason's spirit level square half metre rub. And pins. String and plumb shall be kept on the site of work for frequent checking during the progress of work.

2.4.1. Bricks shall be so laid that all joints are quite flush with mortar. Thickness of joints shall not exceed 12 mm. the face joints shall be ranked out as directed by taking tools dail during the progress of work. When the mortar is still green so as to provide key for plaster or pointing to done.

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

2.5. Curing.

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

2.6. Preparation of foundation bed : **2.6.1.** if the foundation is to be laid directly on the excavated bed. The bed shall be leveled. Cleared of all loose materials, cleaned and wetted before starting masonry. If masonry is to be laid on concrete footing, the top of

concrete shall be cleaned and moistened. The contractor shall obtain the engineer's approval for the foundation bed. Before foundation masonry is started. When puccas 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) IPS - CC 1:2:4 (50mm thick in Floor)

2.0. The cement concrete flooring of 50 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 may however be allowed for smaller quantities of 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 1/2 to 2 minutes. The quantity of water shall be just sufficient to produce a dense concrete of required workability for the purpose. Flooring of specified thickness shall be laid in accordance with approved pattern or as directed. Finishing operation shall start shortly after the cessation of beating and shall be spread over a period one to six hours depending upon the temperature and atmospheric conditions. 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 and 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 B.R.C. fabric nail or make the surface non-slippery as and when directed. The junction of floors with Wall plaster, dado or skirting shall be rounded off where so required upto 25 mm radius. Flooring in lavatories and bath rooms 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 to water supply or sanitary fittings during execution of 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 mortar as directed.

(4) Plaster:

2.4.1 Scaffolding : Wooden ballies bamboos, planks treatles 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.

2.4.2. Preparation of back-ground:-

2.4.2.1 The surface shall be declared of all dust, loose mortar droppings, traces of alage, 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 retarder 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 retarders is left on the surface. Trimming of projections on brick/concrete surface where necessary shall be carried out to get an even surface.

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

2.4.2.3 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.

2.4.2.4 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.

2.4.3 Application of plaster:-

2.4.3.1 The plaster about 15 x 15 cms. shall be first applied horizontally and vertically at not more than 2 metres intervals over the entire surface to serve as gauge. The surfaces of these gauges shall be fruly 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 gauge 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 trowel ling or overworking the float shall be avoided. All corners, arrises, angles and junctions be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering corners, arise junctions etc. shall be carried out with proper templates to the size required.

2.4.3.2. 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.

2.4.3.4 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 recommending 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 wall and nearer then 15 cm. to any corners of 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.

2.4.3.5. 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 handing mattings or gunny bags on the outside of the plaster and keeping them wet.

(5) Precast C.C. Cover

C.I. Manhole cover of 0.60 x 0.45 cms. size shall be of best quality. The weight of C.I. cover and frame shall not be less than 35 Kg. The C.I. manhole cove shall be of light duty and conform relevant I.S.

The cover slab of R.C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mirr. nominal size) 15 cms. thick reinforced with 10 mm. brass at 15 cms C/C bothways, surface and edges finished fair. Full bearing equal to the width of wall shall be to the slab on all sides. The frame of manhole cover shall be embedded firmly in R.C.C. Slab so that the top of the frame remains flush with the top of R.C.C. slab.

(6) Mode of Payment:

Payment shall be made on "Number" basis for completed item and rate is inclusive of all materials, tools, labour, plant, machineries, equipments and connection with rainwater pipes to filter chamber etc. complete.

- Item No. 89 Providing filter chamber of brick work in C.M. 1:5 of size 2.06mt X 1.21 mt x 1.20mt and excavation dimension of 2.66x1.81x1.35mt including C.C. 1:2:4 bed concrete of 0.15mt thick including brick work in C.M. 1:5 for 23cm thick wall including 15mm thick cement plaster inside and out side and 10 cm thick RCC 1:2:4 top over with CRS steel and manhole cover with frame of minimum weight of 35 Kg and filling filter material Kapchi and sand as per detailed Drawing.**

MATERIALS :

1. Kapachi shall be confirm to M-12 of General Specification.
 2. Sand shall be confirm to M-6 of General Specification.
 3. Brick bat shall be confirm to M-14 of General Specification.
 4. Water shall be confirm to M-1 of General Specification.
 5. Cement shall be confirm to M-3 of General Specification.
 6. Grit shall conform to M-8.
- 2. Workmanship :**
- 2.1 The excavation shall be done true to dimensions and level so on the plans or as directed.
 - 2.2 Bed concrete shall be of 10 cms. thick C.C. 1:2:4 (1 cement : 2 sand : 4 Coarse sand aggregate 20mm nominal size) the projection of bed concrete beyond the masonry wall shall be 7.5 cms.
 - 2.3 Brick masonry shall be laid in English bond or as directed in side dimensions of filter chamber shall be 2.06 x 1.25 mt. and 1.20 mt. depth.
 - 2.4 15mm thick plaster work in C.M. 1:4 shall be carried out as per relevant specification of general of building work.

2.5 Precast C.C. Cover

The cover slab of R.C.C. 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mirr. nominal size) 15 cms. thick reinforced with 10 mm. brass at 15 cms C/C bothways, surface and edges finished fair. Full bearing equal to the width of wall shall be to the slab on all sides. The frame of manhole cover shall be embedded firmly in R.C.C. Slab so that the top of the frame remains flush with the top of R.C.C. slab.

(3) Mode of Payment:

Payment shall be made on "Number" basis for completed item and rate is inclusive of all materials, tools, labour, plant, machineries, equipment and connection with rainwater pipes to filter chamber etc. complete.

Item No. 90 Providing recharging pit of size 1.20mt dia and 1.20mt Depth of water logging with excavation filling the pit with brick bats & sand in layer including making 300mm dia bore depth of 4.5mt & filling bricks bats as per drawing as directed.

GENERAL :

The work shall in general be carried out as per PWD handbook volume I & II and as per relevant technical specification of building work with the following addition and alteration.

MATERIAL :

Brick bats shall conform to M-14, Coarse aggregate shall conform to M-8, Coarse sand shall conform to M-6, Casing pipe shall be of SMR and of ISI quality.

WORKMANSHIP :

Excavation work for required fill in size and depth as per description i.e. 1.20 mt. in dia and 1.20 mt. in depth shall be carried out in all type of strata as per relevant specification item No.4.00.A, B of general technical specification.

The bore of 300mm dia & 45 mt. depth shall be carried out in center of fill.

The drilling work shall be carried out at the site shown by the department. The dimension of the hole shall be 300mm in over burden & rocky strata upto over all specified depth 45.00 Rmt.

If further drilling can not be done upto depth due to encountering over burden strata beyond the specified limit, the drilling will be stopped in consultation with Engineer in charge and payment shall be made for the actual drilling work carried out.

The contractor should be sealed by coupling of frame of required design for 300mm dia before casing pipe.

- 1) All the tools and plants, such as drilling machine, Air-compressor and other suitable plants required for drilling, gauging etc. for the tube well shall be provided by the contractor at his own cost at the site of the work.
- 2) The contractor will not be hold responsible for Hydraulic or chemical failure of tube well, but for mechanical failure, the contractor will be responsible for losses the Dept.
- 3) The contractor shall have to carry out the work in all types of rocky or sandy formation at the rate quoted in the tender.

- 4) The contractor shall have to arrange for diesel, and water and all consumable materials at his own cost on the site of the work.
- 5) A perforated cessingof pipe of SWR. 200mm dia with ISI quality shall be put into the bore and the surrounding portion of cessing pipe shall be filled with the gravel.
- 6) The brick but course aggregate & sand shall be filled upto the depth shown in drawing and the recharging pit is sealed with rubble or gunny bags as directed.
- 7) The inlet pipe of the water logged area shall be put in to the pit.

MODE OF MEASUREMENT & PAYMENT :

The work includes cost of all labour, material, hire charges of DTH required, cessing pipe and all mechanism required to complete the work.

The payment shall be made for completed item on No. basis for completed work.

Item No. 91 Providing and fixing Sign board on Alluminium Composite Pannel 4 mm thick and letter with sticker sheet including fixing etc complete.

GENERAL :

The work shall in general be carried out as per PWD handbook volume I & II and as specified in relevant specification of standard technical specification of building work with the following addition and alteration.

MATERIALS :

The Alluminium composite pannel sheet shall be 5mm thick without any scratch bubble and shall be of colour as approved by engineer in charge.

WORKMANSHIP :

The work shall be carried out for name board, quarter No., block No., office name or as directed. The board shall be made with radium letters fixed on acrylic sheet and shall be laminated as directed and shall be fixed with screws and plugs as and where directed.

MODE OF MEASUREMENT & PAYMENT :

The work include cost of all labour materials required to complete the work. The payment shall be made for complete item on Sqm. basis.

Item No.92, 93, 94 Providing and fixing special type clamping system made out from C patti, Z patti, L Clamp , U clamp with Nut/ Bolt and washer as suitable arrangement for water supply and plumbing system like Drainage Line , Rain Water line and supply line for Hot and Cold water etc line fitting from GF to 2nd Floor required as per site condition for fixing etc complete. (A) 15 to 40mm dia Pipe (B) 50 to 65mm dia pipe (C) 75 to 110mm dia pipe

1.0 GENERAL :

All fixing devices for proper fixing arrangement, nuts, bolts, screws as required to complete the item in working condition, even if the same is not specifically mentioned in the Bill of Materials, Specifications or shown on the drawings shall be provided by the Contractor.

- 1.1 All fixtures required for clamping system like 'C' patti, 'Z' patti, 'U' clamp shall be slotted and of required size and standard quality. The 'U' bolts 'J' bolts shall be of galvanized rod of 6mm dia.
- 1.2 Fixing screws shall be half round head steel wood screws or bolts with G.I. steel washers. Rusty iron screws will not be permitted.
- 1.3 All fittings and fixtures shall be fixed in a neat workmanlike manner true to level and heights shown on the drawings and in accordance with the manufacturer's recommendations. Care shall be taken to fix all inlet and outlet pipes at correct positions. Faulty locations shall be made good and any damage to the finished floor, tiling or terrace shall be made good at Contractor's cost.
- 1.4 Contractor shall provide poly-supplied sealant appropriate for its use for all fixtures fixed near wall, marble and edges at no extra cost.

- 2.1 All vertical pipes shall be fixed by galvanized clamps and galvanized angles, bracket truly vertical. Branch pipes shall be connected to the stack at the same angle as that of the fittings.
- 2.2 Horizontal pipes running along ceiling shall be fixed on galvanized structure adjustable clamps of special design shown on the drawings or as directed. Horizontal pipes shall be laid to uniform slope and the clamps adjusted to the proper levels so that the pipes fully rest on them.
- 2.3 All pipe clamps, supports and hangers shall be galvanized. Factory made prefabricated clamps shall be preferred.
- 2.4 M.S. (Galvanized) clamps shall be of standard design and fabricated from M.S. flat 40x3mm thick. They shall be painted with two coats of black bitumen paint before fixing.

- 2.5 Where M.S. clamps are to be fixed on RCC columns or slotted angles, walls or beam they shall be fixed with 40x3mm flat iron "U" type clamps with anchor fasteners of approved design or 6mm nuts and bolts.
- 2.6 Structural clamps shall be fabricated from M.S. structural members e.g. rods, angles, channels flats as per detailed drawing or as directed. Contractor shall provide all nuts, bolts, welding material and paint the clamps with one coat of red oxide and two or more coats of black Enamel paint. Wooden saddles, where required shall be provided free of cost.
- 2.7 Slotted angle/channel supports on walls shall be provided wherever shown on drawings. Angles/channels shall be fixed to brick walls with bolts embedded in cement concrete blocks and to RCC walls with suitable anchor fasteners. The spacing of support bolts horizontally shall not exceed 1 m.
- 2.8 Wherever M.S. clamps are required to be anchored directly to brick walls, concrete slabs, beams or columns, nothing extra shall be payable for clamping arrangement and making good with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 stone aggregate 20mm nominal size) as directed by the Engineer in charge.
- 2.9 Cast Iron/UPVC pipes clamps spacing :
- a. Clamps should be fixed at 1.5 mtr c/c. one clamp should be fixed at 1.5 mtr c/c.
 - b. For horizontal pipe clamps, spacing of clamp should be 0.90 mtr c/c.

MODE OF MEASUREMENTS AND PAYMENT:

The work includes cost of all clamping, device, machineries, tools and plants required to complete the work.

The payment shall be made for complete item on number basis for the diameter of pipe as shown in Bill of Quantity.

Item No.95 Construction of Septic Tank of size 3.50 x 2.00 x 1.80 including excavation , BBCC, RCC, Reinforcement , Brick Masnory , finished by 15mm plaster in cement mortar (1:3) etc complete as per drawing.

The work carried out as per standard building specification book page no 24
item No. 4.0.0 C for excavation

The work carried out as per standard building specification book page no 32
item No. 5.3.3 A for CC 1:4:8

The work carried out as per standard building specification book page no 48
item No. 6.19 B for Brick masonry

The work carried out as per standard building specification book page no 48
item No. 6.30 I A for Half brick masonry

The work carried out as per standard building specification book page no 106 &
108 item No. 17.58(I) & 17.69 for 15mm Plaster

The work carried out as per standard building specification book page no 34
item No. 5.3.13 for CC 1:2:4

The work carried out as per standard building specification book page no 163
item No. 24.35 for Manhole

The work carried out as per standard building specification book page no item
No. 5.4.11 for TMT FE 500D

The payment will be made one No. basis of the complete item.

- Item No. 96 Drilling of 215mm dia bore hole in over burden strata (alternative layer of lime stone and yellow stridly formation) by DTH regi. up to required depth including fixing of 175/180 dia ERW/PVC pipe if required drilling by 165mm dia bore hole in hard rock strata DTH drilling method up to all depth.**

The drilling work shall be carried out at the site shown by the Department
The dimension of the hole shall be 215MM in over burden strata & 175 mm rocky strata upto over all specified depth of 0 to 150 mt. Rmt.

The drilling of 215 mm dia work shall be carried out in over burden strata and next drilling of 175 mm dia shall be done in all type of rocky strata. If further drilling can not be done upto depth due to encountering over burden strata beyond the specified limit, the drilling will be stopped in consultation with H.Y.D./ Engineer-in –charge and payment shall be made for the actual drilling work carried out.

The discharge of the successful bore should be measured by V-Notch or any other means approved by the Engineer-in –charge. The Contractor should be sealed by coupling of frame of required design for 215 MM dia before casing pipe.

- 1) All the tools and plants, such as drilling machine, Air-compressor and other suitable plants required for drilling, gauging etc. for the tube well shall be provided by the contractor at his own cost at the site of the work.
- 2) The contractor shall prepare the strata of the bore collected at different levels and such samples with the necerrary data and strata chart shall be submitted to the department.
- 3) If further drilling can not be done due to encountering, more over burden strata, the decision of Engineer-in-charge shall be binding to the contractor as finalized by the Engineer-in-charge.
- 4) The contractor will not be hold responsible for Hydraulic or chemical failure of tube well, but for Mechanical failure, the contractor will be responsible for looses the Deptt.
- 5) The Contractor will not be held responsible for the quality of water met from the tube well.
- 6) The contractor should preserve in record, the strata met during the drilling, developing, pipes, lowered, yield available etc. and same should be produced to the Engineer-in-charge.
- 7) In case of dispute for unforeseen or overlooked item, the decision of the Executive Engineer,(R&B) Deptt, will be final and binding to the contractor.

- 8) The Contractor should maintain all items at the site property and looked after by qualified responsible representative with full authority to work on behalf of the contractor.
- 9) The contractor shall clear the site before starting the work and also after completion of work.
- 10) The bore shall redeveloped with the help of high-pressure compressor machine which is used for drilling purpose, for sufficient time as directed by the Engineer-in-charge if the work.
- 11) After developing is completed, the bore shall be tasted for its field by means of a suitable compressor and Yield shall be gauged with by V-notch.
- 12) In case of any item not covered by the specification, stated herein of any unforeseen item coming up such work shall be carried out by the contractor strictly according to the written instructions of the Engineer-in-charge will be binding to the contractor and shall have to carryout such works at De/Art,Cmt, Schedule of rates pr. If such rates are not in Schedule, the rate shall be as mutually agreed to both the parties.
- 13) During the drilling operation if the water bearing strata are found at a depth, lesser than the estimates depth the depth at which the Engineer-in-charge shall instruct, the contractor shall stop the work as per actual work done.
- 14) The contractor shall not be eligible for any compensation for such reduction in the qty.of work.
- 15) The whole of the works specified and provided for in detailed specifications or as may be necessary to be done in order to carry out this contract shall be executed in good substantial workman like manner and materials of good quality shall be used full liberty to Inspect, examine or test the materials and workmanship from time to time at the time period to this Deptt. Or installation in a well or at a well site. This will be carried out in such a manner as not unnecessarily to delay the work. The cost for all normal tests shall be paid by the contractor.
- 16) The contractor shall have to give vertically test of the bore at his own cost, as per the specification given below. The vertically of the tube well shall be tasted by using plums of plunger 7MM seller in diameter with the inside dia or well casting. The plumb should be made from the pieces of set or a short piece of pipe, whichever is used it shall be heavy, enough to keep the plumb line straight. The plumb of ring shall not be solid and the water shall pass thorough as it is lowered in the well, the hole from which the plumb line passes, shall be in the exact center of ring. Note marks shall be made over

3.00 Mts. On the plumb could be at least 3.00 Mts. above the Top of the well. The guide pulleys as fixed on a triploid or frame. The vertical centers of the pulley shall be so located For this purpose 10% payment will be deducted from the bill. This payment will be released only after installation of required capacity pump in the bore hole.

- 17) If a well is reject on account of faulty workmanship, or the negligence on the part of the contractor as well as if the vertically is not within the permissible limit, the bore shall be rejected and the contractor shall have to be drill a new bore with necessary pipes etc. at his own cost.
- 18) The contractor shall have to carryout the work in all types of rocky or sandy formational the rate quoted in the tender.
- 19) The strata will be verified by the Engineer-in-charge, Hydrologist or any other Govt. representative and the decision will be binding to the contractor.
- 20) If further drilling cannot be done due to encountering, the strictly clay like black sticky clay or due to extremely very hard rock, or boulders the decision of the formation will be binding to the contractor as finalized by the Engineer-in-charge or Hydrologist will be final and binding to the contractor.
- 21) Cleaning of bore shall have to be carried out of 8 hours or till the water becomes and free, which ever is more. The decision of the Engineer-in-charge of Hydrologist will be final and binding to the contractor.
- 22) The contractor shall have to arrange for diesel, and water and all consumable materials at his own cost on the site of the work.

MODE OF MEASUREMENT AND PAYMENT

1. The rate shall include the cost of all materials and labour, hire charges of all machinery, tools, plants to complete the work. It also include scaffolding, water charge etc. required for this work. The casing pipe shall be paid separately.
2. The depth of bore shall be measured in Rmt after completion of all testing. The rate shall be a unit of One Rmt.

Item No.97 **Providing and Fixing Curtain make with 100% poly fil fabric of 85 GSM (\pm 0.05) thickness selected by architech & stitching and fixing with required size of Channels arrangement and required nos of S.S. finished support of approved shape & quality inclusive of all necessary fixtures, fasteners and fitting, material & all labour charges etc. complete or as directed by EIC.**

1 Material:

Trinity Blackout	Technical Detail
Composition of Fab.	100% Polyester
Visibility	Blackout
Weight	Approx 180 g/m ² (\pm 5%)
Thickness	0.48mm (\pm 0.05)
Width	2.75 Mtr
Tearing Strength	Very High
Sheer and Vale Box	120 X 80 mm

2 . Workmanship

The work shall be carried out with the best practice followed in the industry. The contractor shall make sure that the item to be installed is in its perfect state as per the standards established by its manufacturer. Additionally, the items installed shall not be damaged and shall be free from any kind of damages. It is the duty of the contractor to make proper arrangements for protection of the items during stacking, transporting, loading/unloading till handover. The contractor shall get the items inspected and approved by the architect and/or EIC before installation. Any claim, upon rejection of any item by the EIC will not be entertained.

The contractor shall install the items directed by EIC at all floors/all heights and all levels.

3 . Mode of Measurement

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc& labour charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons. The rate shall be for an unit of sqmtr.

Item No.98 Providing and Fixing Wooden VIP T.V. Unit with using 19mm thick W.P. plywood in sandwiched pattern to make the edges of the unit to be 37mm thick with 1.0mm thick imported decorative laminate & as per design veneer clading with groove pattern with as required width platform 50mm thick made of ply and finished with 1mm thick full core white laminate and as required drawers made by 19mm thick W.P. plywood telescopic channels with other necessary fixtures and fastening incl. of melamine polishing work etc. complete with necessary electric point and cable arrangements as per drawing /photos and instruction of engineer-in charge.

1 Materials

All materials shall be as per item description as approved by EIC and specified item's Manufacturer's specifications.

Indian Teak wood shall be confirm to M-29

2 Workmanship:

Wooden VIP T.V. Unit with using 19mm thick W.P. plywood in sandwiched pattern to make the edges of the unit to be 37mm thick with 1.0mm thick imported decorative laminate & as per design veneer clading with groove pattern with as required width platform 50mm thick made of ply and finished with 1mm thick full core white laminate and as required drawers made by 19mm thick W.P. plywood telescopic channels with other necessary fixtures and fastening incl. of melamine polishing work etc. complete complete with necessary electric point and cable arrangements as per drawing /photos and instruction of engineer-in charge.

3 Made of measurement

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc & labor charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons. The rate shall be for an unit of Number basis.

Item No.99 **Providing and Supplying Wooden King Size Double Bed of size 1.96 x 1.80 x 0.35 mtr height with using teak wood size in outer framing and internal framing with 19mm thick W.P. plywood & both side of 1mm thick laminate on top and back side Head board panelling with done by venner finish dark polishing with groove design as per drawing or EIC. Fixing in Back side wall with necessary fixtures and fastening inclusive of melamine polishing work inclusive of two nos of side box of required size with 1 nos of drawer in each box with telescopic channel with necessary fixtures etc. complete or as directed as per drawing and as per instruction of architect and engineer in charge.**

1 Materials

All materials shall be as per item description as approved by EIC and specified item's Manufacturer's specifications.

Indian Teak wood shall be confirm to M-29

2 Workmanship

Wooden King Size Doube Bed of size 1.96 x 1.80 x 0.35 mtr height with using teak wood size in outer framing and internal framing with 19mm thick W.P. plywood & both side of 1mm thick laminate on top and back side Head board panelling with done by venner finish dark polishing with groove design as per drawing or EIC. Fixing in Back side wall with necessary fixtures and fastening inclusive of melamine polishing work inclusive of two nos of side box of required size with 1 nos of drawer in each box with telescopic channel with necessary fixtures etc. complete or as directed as per drawing and as per instruction of architect and engineer in charge.

3 Made of measurement

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc & labor charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons. The rate shall be for an unit of Number basis.

Item No.100 Providing and Supplying Mattress of 150mm thickness of size 1.96 x 1.80mt made of Kurlon primary construction with bonnel spring core with anti corrosive and high carbon wire finished with super soft HR form top most layer with 100 GSM cotton felt layer on top covered with premium knitted fabric with edge support system with reinforce spring support and foam encasing to avoid sagging and edge roll off of branded manufacturer etc. complete or as directed with Bombay Dying double Bed Sheet 1 No, Relince Recon pillow of size 24" x 16" 2 nos with pillow cover, double bed Blanket with cotton cover and bed runner of Polyester & Polyester Blend etc. complete.

Materials:

- The Materials shall be used as per the general specifications.
- The Materials shall be used as per description of item given and as directed by the engineer in charge.
- Design of item shall be approved by engineer and architect in charge.

Workmanship:

Mattress of 150mm thickness of size 1.96 x 1.80mt made of Kurlon primary construction with bonnel spring core with anti corrosive and high carbon wire finished with super soft HR form top most layer with 100 GSM cotton felt layer on top covered with premium knitted fabric with edge support system with reinforce spring support and foam encasing to avoid sagging and edge roll off of branded manufacturer etc. complete or as directed with Bombay Dying double Bed Sheet 1 No, Relince Recon pillow of size 24" x 16" 2 nos with pillow cover, double bed Blanket with cotton cover and bed runner of Polyester & Polyester Blend etc. complete.

Mode of Measurement and Payment.

- The rate shall includes cost of all materials and labor required for satisfactory Completion of this item as described above.
- The Work shall be measured for the finished work.
- The Rate shall be for a unit of Set

Item No.101 Pro. And fixing Nylon Pigeon net by fixing with SS hook in Balcony, OTS, Stair etc.

Material: All materials shall be as per item description as approved by EIC and specified item's Manufacturer's specifications. Pigeon net hexagonal or as required pattern shall be confirm to Good quality.

Workmanship : Providing and fixing Pigeon net hexagonal or as require pattern in ventilator, opening not more than 50mm and fixing on provided grill with using aluminium wire as directed by Engineer in charge.

Mode of measurement and payments :

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc & labor charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons.

The rate shall be for an unit of Sqm basis.

Item No.102 Pro. And fixing single layer water proof gypsum board 12.5 mm thick sections using water proof board of size 1220 mm x 1830 mm x 8.0 mm suspended by GI suspender channel of size 25 mm x 3 mm with intermediate channel of size 18 mm x 40 mm x 0.8 mm at 1220 mm center to center ceiling section of size 40 mm x 35 mm x 0.55 mm at 457 mm c/c and perimeter channel A of size 20 mm x 27 mm x 30 mm x 0.5 mm at edges & drops incl.paper tap sand soffit cleat, anchor fastener, screw bolt connecting cleat,joining compound top coat on ceiling incl.making ney opening for light fitting, diffuser etc. comp. as per detail drawing as directed

Material :

Plaster of paris board false ceiling shall be of Hilux, Elephant, Gypsumindia or equivalent of approved by Engineer in Charge conform of approved quality. Steel T,C and L and steel angel shall confirm to m. 22 & 23.

Workmanship :

1. Providing and fixing suspended false ceiling of fiber reinforced plaster of paris board of 12 to 19 mm thick as required work as per detail and drawing supported by frame work as press formed elements made from 24 gauge thick G.I. sheet consisting "C" section runners of size 30 x 50 x 30 mm at 0.90mt center to center or closer at necessary to derive required shape of ceiling cross furring channel of size 70 x 10 mm fixed to "C" runner at 0.45mt centre to centre or closer as necessary by C.I. "L" angle of size 19 x 19 mm of 6 mm dia. M.S. bars to the ceiling at 0.90 mt. etc. or closer as necessary the whole work carried out as directed. Including painting with linseed oil.
2. All galvanized steel section grid shall be conformed suspended from soft cleat by angle of size 15x45x0.9 mm gauge of every 610 mm c/c.
3. The perimeter channels of size 20 x 27 x 30 x 0.5 mm gauge shall be fixed to the wall of 610 mm centres.
4. Intermediate channels shall be set 1220 mm apart 80 x 26 x 0.5 mm gauge M/F ceiling sections fix at 457 mm centre at right angle to the under side of intermediate channels using connecting clips.
5. After completing underside of suspended grid, 12.5 mm gyp board shall be fixed with the help of screws. The joining between sheets are to be covered with paper liner.

Mode of Payment :

The payment shall be made on sqmt of finished work. Rate includes all material and labour to complete the item as per instruction of engineer in charge.

Item No.103 Making Any Size of hole or as required on site in RCC beam with core cutting for passing of drainage pipe.

WORKMANSHIP :

The core cutting work shall consist of cutting RCC beam or slab in one or more parts of the building as and where specified or shown in the drawings.

The core cutting work shall always be planned before execution and shall be done in order to requirement. This scheme shall be got approved from the Engineer in charge before starting the work.

Necessary propping, staging and under pinning shall be provided for the safety of the person doing the work.

Wherever required, temporary enclosures or partitions shall also be provided. Necessary precautions shall be taken to keep the dust nuisance down as and where necessary.

Core cutting shall be commenced in a systematic manner without any damages to RCC/other structure. All materials which are likely to be damaged by dropping from a height shall be carefully removed first. The cutting materials shall be properly stacked as directed.

On completion of work, the site shall be cleared of all debris rubbish and other unserviceable materials and cleaned as directed.

MODE OF MEASUREMENTS AND PAYMENT :

Measurements of all holes shall be in nos specified irrespective of depth & diameter.

The reate shall include cost of all labour, electricity, water involved and tools, plants used in cutting including scaffolding, The rate shall also include the charges for separating out and stacking the serviceable materials properly and disposing the unserviceable materials with all lead and lift.

The rate shall be for a unit of one no.

Item No.104 Providing and supplying premium quality 3 seater Sofas size of 1610 x780 x 810mm made out frame constructed with teakwood frame and 19mm thick premium commercial plywood structure. Seat & back & arm rest shall be finished by required thickness high density foam (density not less than 45) this should be again covered with 30kg/sqm density 14mm thick HR foam with Madarpat cover on it and up holstered fabric of suggested shade and finish on eat, back and all visible side as per drawing.Sofas shall be complete with all lining material like fevicol, nails etc. with labour & providing and fixing of leatherite/ tapestry. Legs shall be out of wooden. Fixing of system by machine stitches and spray gluing system. Leatherite/ Tapestry shall be as per approved colour/ shade/ texture by the Engineer in charge. Sofa shall be finished with melamine polish and completed as per Design detail drawings and/or given by the Engineer -in charge.

1 Materials

All materials shall be as per item description as approved by EIC and specified item's Manufacturer's specifications. Indian Teak wood shall be confirm to M-29

2 Workmanship

Premium quality 3 seater Sofas size of 1610 x780 x 810mm made out frame constructed with teakwood frame and 19mm thick premium commercial plywood structure. Seat & back & arm rest shall be finished by required thickness high density foam (density not less than 45) this should be again covered with 30kg/sqm density 14mm thick HR foam with Madarpat cover on it and up holstered fabric of suggested shade and finish on eat, back and all visible side as per drawing.Sofas shall be complete with all lining material like fevicol, nails etc. with labour & providing and fixing of leatherite/ tapestry. Legs shall be out of wooden. Fixing of system by machine stitches and spray gluing system. Leatherite/ Tapestry shall be as per approved colour/ shade/ texture by the Engineer in charge. Sofa shall be finished with melamine polish and completed as per Design detail drawings and/or given by the Engineer -in charge.

3 Made of measurement

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc & labor charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons. The rate shall be for an unit of Number basis.

Item No.105 Providing and supplying premium quality 2 seater Sofas size of 1100x780x810mm made out frame constructed with teakwood frame and 19mm thick premium commercial plywood structure. Seat & back & arm rest shall be finished by required thickness high density foam (density not less than 45) this should be again covered with 30kg/sqm density 14mm thick HR foam with Madarpat cover on it and up holstered fabric of suggested shade and finish on eat, back and all visible side as per drawing.Sofas shall be complete with all lining material like fevicol, nails etc. with labour & providing and fixing of leatherite/ tapestry. Legs shall be out of wooden. Fixing of system by machine stitches and spray gluing system. Leatherite/ Tapestry shall be as per approved colour/ shade/ texture by the Engineer in charge. Sofa shall be finished with melamine polish and completed as per Design detail drawings and/or given by the Engineer -in charge.

1 Materials

All materials shall be as per item description as approved by EIC and specified item's Manufacturer's specifications.

2 Workmanship

Premium quality 2 seater Sofas size of 1100x780x810mm made out frame constructed with teakwood frame and 19mm thick premium commercial plywood structure. Seat & back & arm rest shall be finished by required thickness high density foam (density not less than 45) this should be again covered with 30kg/sqm density 14mm thick HR foam with Madarpat cover on it and up holstered fabric of suggested shade and finish on eat, back and all visible side as per drawing.Sofas shall be complete with all lining material like fevicol, nails etc. with labour & providing and fixing of leatherite/ tapestry. Legs shall be out of wooden. Fixing of system by machine stitches and spray gluing system. Leatherite/ Tapestry shall be as per approved colour/ shade/ texture by the Engineer in charge. Sofa shall be finished with melamine polish and completed as per Design detail drawings and/or given by the Engineer -in charge.

3 Made of measurement

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc & labor charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons. The rate shall be for an unit of Number basis.

Item No.106 Providing and Arranging Rectangle Center table made from 1180mm x 600mm x 419mm C.P. teakwood leg and 19mm thick plywood structure and finished with 1mm thick laminate & top part of table covered with 18mm thick Granite top with edge finish All exposed sedges shall be covered with 8mm thick teak wood beading patti & exposed wooden & veneer faces to be finished with matt finish melamine polish & non visible faces & edges shall be painted with enamel paint of matching shade of other finished surfaces including all materials and labours etc. complete as per drawing and instruction of engineer-in charge.

1 Materials

All materials shall be as per item description as approved by EIC and specified item's Manufacturer's specifications. Indian Teak wood shall be confirm to M-29

2 Workmanship

Providing and Arranging Rectangle Center table made from 1180mm x 600mm x 419mm C.P. teakwood leg and 19mm thick plywood structure and finished with 1mm thick laminate & top part of table covered with 8mm thick toughened glass with edge finish to be placed properly with 4pcs 54x10mm aluminium Disc glass table top adapter or rubber suction cup. Surface. All exposed sedges shall be covered with 8mm thick teak wood beading patti & exposed wooden & veneer faces to be finished with matt finish melamine polish & non visible faces & edges shall be painted with enamel paint of matching shade of other finished surfaces including all materials and labours etc. complete as per drawing and instruction of engineer-in charge.

3 Made of measurement

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc & labor charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons. The rate shall be for an unit of Number basis.

Item No.107 Providing and Arranging Corner table made from 900mm x 900mm x 419mm C.P. teakwood leg and 19mm thick plywood structure and finished with 1mm thick laminate & top part of table covered with 18mm thick Granite top with edge finish All exposed sedges shall be covered with 8mm thick teak wood beading patti & exposed wooden & veneer faces to be finished with matt finish melamine polish & non visible faces & edges shall be painted with enamel paint of matching shade of other finished surfaces including all materials and labours etc. complete as per drawing and instruction of engineer-in charge.

1 Materials

All materials shall be as per item description as approved by EIC and specified item's Manufacturer's specifications. Indian Teak wood shall be confirm to M-29

2 Workmanship

Providing and Arranging Corner table made from 900mm x 900mm x 419mm C.P. teakwood leg and 19mm thick plywood structure and finished with 1mm thick laminate & top part of table covered with 8mm thick toughened glass with edge finish to be placed properly with 4pcs 54x10mm aluminium Disc glass table top adapter or rubber suction cup. Surface. All exposed sedges shall be covered with 8mm thick teak wood beading patti & exposed wooden & veneer faces to be finished with matt finish melamine polish & non visible faces & edges shall be painted with enamel paint of matching shade of other finished surfaces including all materials and labours etc. complete as per drawing and instruction of engineer-in charge.

3 Made of measurement

The rate shall be consolidated for all above items. The rate shall include cost of all materials, fixtures, joineries , hardware's etc & labor charges for all height to complete the work satisfactorily including supplying and arranging as per layout plan at site of work and as per the instruction of Engineer-in-charge.

No Extra charge will be paid for any other reasons. The rate shall be for an unit of Number basis.

Item No. 108 Earthwork for embankment including watering and consolidation with breaking clods, dressing with an all lead and lift.

1. The land width on which the earth earthwork is to be done shall be cleared of all tree having a girth of 30 cm and less. Loose stones, vegetation bushes, stumps and all other objectionable materials All the materials cleared will be the property of Government. Useful material shall be arranged in convenient stacks along the road boundary or as directed at places within 50 metres lead. and handed over to the department in convenient section Unsuitable material shall be burnt or otherwise disposed off by the contractor at his own cost without causing any nuisance inconvenience or damage to the works property or people in the neighborhood. In all cases, the materials shall be disposed off in a neat manner.
2. After clearing the site, the alignment of the road shall be properly set out true to line, curves, grades and sections as shown on the plan or directed by the Engineer-in-charge. The contractor shall provide all lab ours and materials such as lime, strings pegs nails stone mortar concrete etc required for setting out establishing. Bench Marks and giving profiles, the contractor shall be responsible for maintaining the B. Ms. profiles alignments and marks as long as they are required for the work in the opinion of the Engineer-in-charge. If the contractor defaults in this respect they may be restored by the department at the cost of the contractor.
3. When an existing embankment is to be widened. Continuous, horizontal benches, each at least 0.3 metre wide shall be cut into the existing slope for ensuring adequate bond with the fresh embankment of the embankment. The dumping of material from trucks for widening operations shall be avoided except in difficult circumstances when the extra width is too narrow to permit the movement of any other type of hauling equipment.
4. The soil to be used for embankment shall be free from trees, stumps, roots rubbish or any other objectionable materials. Only material considered suitable by the Engineer-in-charge. shall be used for the construction and that considered unsuitable other disposed off as directed by him. The selection of the materials to be used in the construction of embankment shall be made after soil surveys and investigations carried out by the Department. The embankment shall consist of earth available from road side borrow pits on either side with all

lead and all lifts and within land width in the manner specified para 11 below. The road, if any required for the purpose of haulage of earth by men, animals or vehicles will be constructed (if not existing) and maintained by the Contractor at his own cost.

5. Department will extend all necessary co-operation in helping contractor to get borrow area from nearby Govt. or panchayat land, if available. However, if such area is not made available to the contractor and in the case, contractor will have to make his own arrangement to get borrow area for borrowing earth of the quantity even by making temporary arrangement with the private land owners.
6. The embankment shall be constructed in uniform layers not exceeding 250 mm in loose. The soil shall be spread uniformly over the entire width of the embankment, unless otherwise directed by the Engineer-in-charge. The consolidation including watering and rolling of earth work shall be carried out by the Department. The operation of laying the successive layer of earth shall have to be suitably. All clods or hard lumps of earth shall be broken to have maximum size of 15 cm. when being placed in the embankment and a maximum of size 5 cm when being placed in the top 45 cm of the embankment. The work of next layer shall be allowed only after the first layer below it has been thoroughly compacted.
7. Where an embankment is to be placed on sloping ground, the surface of the ground shall be benched in the steps of trenches or broken up in such a manner that the new material shall have perfect bond with the existing surface. Where the embankment is to be placed over an existing road surface, the surface shall be scarified to minimum depth of 5 cm so as to provide ample bond between the old and new material. However, when the embankment is to be placed over an old concrete pavement and lies within 1 metre of new sub grade level the pavement shall be broken up in pieces not to exceed 0.1 m. and may be left under the new embankment. If the existing road surface is of granulate or bituminous type and lies within 1 m. of the new sub grade level, the same shall be scarified to a depth of minimum 50 mm. so as to provide ample bond between the old and the new material.
8. To avoid interference with construction of abutments, wing walls of culverts/bridge structures, the contractor shall, at point to be determined by the

Engineer-in-charge, suspend work on embankments forming approaches to such structures, until such structures, until such time as the construction of the latter is sufficiently advanced to permit the completion of approaches without the risk of interference of damage to the bridge work. Unless directed otherwise the filling around culverts, bridge and other structures up to a distance of twice the height of the embankment from the back of the embankment shall be carried out independent of the work on the main embankment. The fill materials shall not be placed against any abutment or wing wall unless permission has been given by the Engineer-in-charge. but in any case not until the concrete or masonry has been in position for 14 days. The embankment shall be brought up simultaneously in equal layers on each side of the structure to avoid displacement and unequal pressure. The sequence of work in this regard shall be got approved from the Engineer-in-charge. Where the provision of any filter medium is specified behind the abutment, the same shall be laid in layers simultaneously with the laying of fill material the material used for the fill shall confirm to the requirements for filler medium and will be paid extra in the relevant item.

9. The embankment shall be finished in conformity with the alignment, level, cross sections and dimensions shown on the plans or as directed by the Engineer-in-charge. Where the alignment of the road is in a curve, the top of the embankment shall be formed with the super elevation and the increased width shown on the drawings or as the Engineer-in-charge. may direct. Finishing operations shall the work of shaping and dressing the shoulder, road bed and the slopes to conform to the cross section.
10. The earthwork measurements shall be paid on cross sectional measurements and computing the volumes of earthwork in cubic by average area method. the contractor shall sign day leveling work and also ordinal cross sections in token of his acceptance. The working sections both longitudinal and cross of the ground shall be taken by the Engineer-in-charge before the actual earthwork is started. The contractor or his authorized representative shall attend day to day leveling work and sign with date the field book daily, in token of this acceptance. If there is any disagreement the contractor shall inform of it in writing to the officer concerned of any complaint shall be taken. Merely not signing of the level book shall not be deemed as disagreement. The Executive Engineer shall also verify leveling work to the extent of 5% before commencement of earthwork and on finalization. The contractor shall maintain the embankment by filling in ruts,

rain cuts depression due to shrinkage etc. to proper formation and grads till this item is finally measured and accepted by the Department. The measurement shall be taken on compacted earthwork. on deduction for shrinkage shall be made from gross measured quantity of compacted earth work. However the contractor shall have to bear loss of quantity due to all settlement as well as other types of deformations etc. if any that might have taken place at the time of taking the final measurement of this item. If the department does not do the compaction as stipulated in para -10 in that case shrinkage from such earthwork quantity shall be deducted as per norms. i.e. 10% after monsoon and 15% before monsoon. However the contractor shall have to bear loss of quantity due to all settlements as well as other types of deformations etc. if any that might have taken place at the time of taking the final measurement of this item.

11. if usable approved materials within the land width of road, the same shall be permitted for use in the road embankment subjects to the following conditions.
 - (i) The borrow pits will be so excavated as to from a road longitudinal gutter to drain the water, interrupted by such gutter.
 - (ii) The width of the drain shall be restricted to 1.5mts. only depth will restricted to such grade so as to drain the water efficiently. All balance of earth shall be brought from distant borrow areas only.
 - (iii) If there is top layer of black cotton or other objectionable soils, the shall be removed and disposed off elsewhere and usable materials found at the lower will be used in the earthen embankment, if the contractor choose to utilize this materials.
 - (iv) The drain should be aligned the boundary of the width if the road. Not pit, other than this drain shall be dug within 5 metres of the toe to the final section of the road embankment.
 - (v) No borrow pits shall be allowed in the length in which earth obtained from cutting from cutting is specified to be used in embankment.
12. The rate of earthwork includes clearing jungles. Door belling. Fixing profiles, erecting necessary pillars or stones for bench mark for leveling. Purpose. Excavating earth from borrow pits breaking clods, conveying and spreading earth in layers with all lead lift. Finishing the entire embankment to the proper profile camber, grads and slopes. The rate also includes all labour, materials tools equipment and incidentals necessary to complete the work according to the specifications. Cutting stuff of cutting in ordinary soil, soft rock hard murrum and rock shall be utilized in embankment construction under this item within the

lead specified in that particular item. No payment shall be made under this item for the cutting stuff used in the embankment but labour for cutting will be paid as per specifications in the particular item and only balance quantity brought from borrow pits will be paid in this item.

- Item No. 109** Providing and laying compacted W.B.M. 150mm thick of grade-II in two layers each of 75mm thick of machine crushed BT metal of size 40mm to 63mm with using 13% stone screenings of 13.2mm size and 7% stone dust as filler including spreading watering and consolidation by vibratory roller etc. comp. in single layers.

Scope :-

This work consist of clean, crushed aggregate mechanically interlocked by rolling and bounding together with screening, binding material where necessary and water laid on a properly prepared subgrade/sub-base/base of existing pavement, as the case may be and finished in accordance with the requirement of these Specifications and in close conformity with the lines, grades, cross sections and thickness as per approved plans or as directed by the Engineer.

It is however, not desirable to lay water bound macadam on an existing thin black topped surface without providing adequate drainage facility for water that would get accumulated at the interface of existing bituminous surface and water bound macadam.

Materials :-

Course Aggregates :-

Coarse aggregate shall be either crushed stone of B.T. type only. The aggregates shall conform to the physical requirements set forth in Table 400-6. The type and size range of the aggregate shall be specified in the Contract or shall be as specified by the Engineer. If the water absorption value of the coarse aggregate is grater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS : 2386 (Part-5).

Crushed Stone :-

The crushed stone shall be hard, durable and free from excess flat, elongated, soft and disintegrated particles, dirt and other deleterious materials

TABLE 400-6 PHYSICAL REQUIREMENTS OF COARSE AGGREGATES FOR WATER BOUND MACADAM FOR SUB-BASE- COURSES.

Test	Test Method	Requirement
1. * Los Angle Abrasion Value OR * Aggregate Impact Value	IS : 2386 (Part-4) IS : 2386 (Part-4) or IS : 5640	40 Percent (Max.) 30 Percent (Max)
2. Combined Flakiness and Elongation Indices (Total)***	IS : 2386 (Part-I)	30 Percent (Max)

* Aggregate may satisfy requirements of either of the two tests.

- ** Aggregate like brick metal, kankar, laterite etc. which get softened in presence of water shall be tested for impact value under wet conditions in accordance with IS : 5640.
- *** The requirement of flakiness index and elongation index shall be enforced only in the cast of crushed broken stone and crushed slag.

Grading Requirement of course aggregates :-

The coarse aggregates shall conform to one of the Gradings given in Table 400-7. as specified, provided, however, the use of Grading No. 1 shall be restricted to sub-base course only.

TABLE : 400-7 GRADING REQUIREMENTS OF COARSE AGGREGATES :

Grading No. Weight	Size Range	IS Sieve Designation	Percent by weight passing
1	90mm to 45mm	125mm 90mm 63mm 45mm 22.4mm	100 90-100 25-60 0-15 0-5
2	63mm to 45mm	90mm 63mm 53mm 45mm 22.4mm	100 90-100 25-75 0-15 0-5
3	53mm to 22.4mm	63mm 53mm 45mm 22.4mm 11.2mm	100 95-100 65-90 0-10 0-5
4	Grading for Screening 13.2mm	13.2mm 11.2mm 5.6mm 18 Micron	100 95-100 15-35 0-10

Screenings :-

Screenings to fill voids in the coarse aggregates shall consist of Sand for which relevant MOST Specification shall be followed. grading shall be conform as per above table.

Preparation of Base :-

The surface of the subgrade/sub-base to receive the water bound macadam course shall be prepared to the specified lines and crossfall (camber) and free of dust and other extraneous material. Any turs or soft yielding places shall be corrected in an approved manner and rolled until firm surface is obtained if necessary by sprinklings water-Any sub-base/base/surface irregularities, where

predominant, shall be made good by providing appropriate type of profile corrective course (levelling course).

As far possible, laying water bound macadam course over an existing thick bituminous layer may be avoided since it will cause problems of internal drainage of the pavement at the interface of two courses. It is desirable to completely pick out the existing thin bituminous wearing course where bound macadam is proposed to be laid over it. However, where the intensity of rain is low and the interface drainage facility is efficient, water bound macadam can be laid over the existing thin bituminous surface by cutting 50mm x 50mm furrows at an angle of 45 degrees to the centre line of the pavement at one metre intervals in the existing road. The directions and depth of furrows shall be such that they provide adequate boundage and also serve to drain water to the existing granular base course beneath the existing thin bituminous surface.

Spreading Coarse Aggregates :

The coarse aggregates shall be spread uniformly and evenly upon the prepared subgrade/ sub-base/base base to proper profile by using templates placed across the road about 6m. apart, in such quantities that the thickness of each compacted layer is not more than 75mm. Wherever possible, approved spread the aggregates uniformly so as to minimize the need for manual rectification afterwards aggregates placed at locations which are inaccessible to the spreading equipment, may be spread in one or more layers by any approved means so as to achieve the specified results.

The spreading shall be done from stock piles along the side of the roadways or directly from vehicles. No. segregation of large or fine aggregates shall be allowed and the coarse aggregate as spread shall be of uniform gradation with no pockets of fine materials.

The surface of the aggregates spread shall be carefully checked with templates and all high or low spots remedied by removing or adding aggregates as may be required. The surface shall be checked frequently with a straight edge while spreading and rolling so as to ensure a finished surface as per approved drawing.

The coarse aggregates shall not normally be spread more than 3 days in advance of the subsequent construction operations.

Rolling :-

Immediately following the spreading of the coarse aggregate, rolling shall be started with rollers of 80 to 100 KN capacity tandem or vibratory rollers of 80 to 100 KN static weight. The type of roller to be used shall be approved by the Engineer based on trial run, except on super elevated portions where the rolling shall proceed from inner edge to the outer, rolling shall begin from the edges

gradually progressing towards the inter. First the edge / edges shall be compacted with roller shall then move inward parallel to the center line of the road, in successive passes uniformly lapping, preceding tracks by at least one half width.

Rolling shall be discontinued when the aggregates are partially compacted with sufficient void space in them to permit application of screenings, However, where screenings are not to be applied as in the case of crushed aggregate like brick metal, laterite and kanker, compaction shall be continued until the aggregates are thoroughly keyed, During rolling, slight sprinkling of water may be done, if necessary Rolling shall not be done when the subgrade is soft or yielding or when it causes a wave-like motion in the subgrade or sub base course.

The rolled surface shall be checked transversely and longitudinally, with templates and any irregularities corrected by loosening the surface, adding or removing necessary amount of aggregates and re-rolling until the entire surface conforms to desired crossfall (camber) and grade. In no case shall the use of screening be permitted to make up depressions.

Material which gets crushed excessively during compaction or becomes segregated shall be removed and replaced with suitable aggregates.

It shall be ensured that shoulders are built up simultaneously along with water bound macadam course.

Application of Screenings :-

After the coarse aggregate has been rolled, screenings to completely fill the interstices shall be applied gradually over the surface. These shall not be damp or wet at the time of application. Dry rolling shall be done while the screenings are being spread so that vibrations of the roller cause them to settle into the voids of the coarse aggregate. The screenings shall not be dumped in piles but be spread uniformly in successive thin layers higher by the spreading motions of hand shovels or by mechanical spreading arrangement. Tipper operating for spreading the screenings shall be so driven as not to disturb the coarse aggregate.

The screening shall be applied at a slow and uniform rate so as to ensure filling of all voids. This shall be accompanied by dry rolling and brooming with mechanical brooms, hand brooms or both, In no case shall the screenings be applied so fast and thick as to form cakes or ridges on the surface in such a manner as would prevent filling of voids or prevent the direct bearing of the roller on the coarse aggregate.

Sprinkling of water and grouting :-

After the screenings have been applied, the surface shall be copiously sprinkled with water, swept and rolled, Hand brooms shall be used to sweep the wet screening into voids and to distribute them evenly. The sprinkling, sweeping and rolling operation shall be continued, with additional screening applied as necessary until the coarse aggregate has been thoroughly keyed, well-bounded and firmly set in its full depth and a grout has been formed of screening, Care shall be taken to see that the base or subgrade does not get damaged due to the addition of excessive quantities of water during construction.

In case of lime treated soil sub base construction of water bound macadam on top of it can cause excessive water to flow down to the lime treated sub base before it has picked up enough strength (is still "Green") and thus cause damage to the sub-base layer. The layer of water bound macadam layer in such cases shall be done after the sub-base attains adequate strength, as directed by the Engineer.

Setting and Drying :-

After the final compaction of water bound macadam course, the pavement shall be allowed to dry overnight, Next morning hungry sports, shall be filled with screenings or binding materials as directed, lightly sprinkled with water if necessary and rolled. No traffic shall be allowed on the road until the macadam has set. The Engineer shall be the discretion to stop hauling traffic, from using the completed water bound macadam course, if in his opinion it would cause excessive damage to the surface.

The compacted water bound macadam course should be allowed to completely dry and set before the next pavement course is laid over it.

Surface Finish and Quality Control of work :-

The surface finish of construction shall conform to the requirements of Clause 902 Control on the quality of materials and works shall be exercised by the Engineer in accordance with Section 900.

The water bound macadam work shall not be carried out when the atmospheric temperature is less than 0.C. in the shade.

Reconstruction of defective macadam. The finished surface of water bound macadam shall conform to the tolerance of surface regularity as prescribed in Clause 902. However where the surface irregularity of the course excess the tolerances or where the course is otherwise defective due to subgrade soil mixing with the aggregates, the course to its full thickness shall be scarified over the affected area, reshaped with added material or removed and replaced with fresh material as applicable and recompacted. In no case shall decossions be filled up with screenings or binding materials.

Arrangement for Traffic :-

During the period of construction, the arrangement of traffic shall be done as per Clause 112.

Measurements of Pavement :-

Water bound macadam shall be measured a finished work in position on cross sectional measurements and computing the volume of WBM in cubic metres by average area method.

Rate :-

The contract unit rate for water bound macadam sub-base course shall be payable in full for carrying out the required operation including full compensation for all components listed below.

- (i) Making arrangements for traffic to clause -112 except for initial treatment to verges, shoulders and construction of diversions.
- (ii) Furnishing all materials to be in-corporated in the work including all royalties, fees, rents where necessary and all leads and lifts.
- (iii) All labours, tools, equipment and incidentals to complete the work to the specifications.
- (iv) Carrying out the work in part widths of road where directed, and Carrying out the required tests for quality control.

Item No. 110 Providing and casting in situ controlled trimix cement concrete M-250 for average 200mm thick road work laid as directed including adding super platisizer admixture of IS make and providing and laying M.S. side rail of road thickness with necessary nut bolts plates fixing as per width applying plate vibrator (electric or diesel) on channel compressor with vacuum dewatering system by using all necessary equipments and materials and machinery such as running screed vibrator on pre-laid M.S. channel for leveling ,Vacume pump, floating and power towelling etc with filling the joints with bitumen as directed etc complete.

[I] 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 and coarse aggregate shall conform to M-12.

Super plastisizer shall be of approved quality.

[II] WORKMANSHIP :-

- (i) Cutting for sub-base shall be done in proper grade and camber as directed by Engineer-in-Charge. Care must be taken that all slopes are evenly and truly dressed. Cutting shall be done to the exact depth required and shall be as per formation level proper grade and camber as per instruction. Useful stuff shall be carefully stacked separately as directed. The stuff received from the cutting shall be utilized for filling cuts and correcting side slopes with all lead and lifts as directed.
- (ii) Sub-base with Crushed Metal or PCC shall be prepared as directed by Engineer-in-Charge.
- (iii) 20 CM thick M-250 grade concrete is being placed over the prepared sub-base. The relevant Specification of Item No. 5.8.2 (General Specification for building) shall be followed for M-250 mix concrete and relevant specification No. 9.1 (A) shall be followed for work required for concreting. Also the super plastisizer shall be added during mixing of concrete as recommended by manufacturer.
- (iv) Leveling of the surface is done using TRIMIX surface vibrator. The vibrator runs over channels, placed as per required level and slope and simultaneously level surface of the concrete.
- (v) Vacuum dewatering follows the leveling of concrete. The purpose of vacuum processing is to provide quicker setting and high early strength by removing surplus water from the concrete. The process is followed as per instruction of site Engineer-in-Charge & attached guide line.

- (vi) Immediately after dewatering, the surface is floated with a skim power floater as per instruction of Engineer-in-Charge. The surface shall be prepared as per requirements and instructions. For smoother surface requirement, the surface is trowelled with same machine mounted with trowelling blades.
- (vii) Construction joints upto $\frac{1}{4}$ of the slab depth are cut after wards. They give clear and straighter theoretical cracking line in the case of unexpected stresses. Groove cutting is done within 48 hour from casting at the floor.
- (viii) After surface vibrator and finishing the surface with power floater and trowel light brooming on the surface, expansion joints size 20 x 115mm shall be provided with filling the expansion joint having size 20 x 20mm by using bitumen as per manufacturers specification and directed by Engineer-in-Charge.
- (ix) Making a construction joints by cutting of joints of size 3mm x 20mm by using of concrete cutter machine construction joint are filled with Bitumen or an elastomeric cold applied joint sealant, which ensures performance of expected functions at the joints.
- (x) Concrete should be cured in normal way (Water pending) or the surface is covered with a plastic sheet or gunny bags. In any method, the surface should be always kept wet with water. Curing must be done for atleast 7 days or as per directed by Engineer-in-Charge.
- (xi) The machineries used for the above process shall be of standard technical specification attached separately herewith. (i.e. Surface vibrator, vacuum pump, suction mat top cover, filter pad, skin floater etc.)
- (xii) The Workmanship and process for vacuum dewatering, water cement ratio, concrete placing, surface vibration, vacuum processing, floating, Trowelling and curing shall be carried out as per specification and as per instruction of Engineer-in-Charge.

[III] MODE OF MEASUREMENT :

- (I) The rate shall be include all materials, formworks, machineries and labour charges.
- (II) The rate shall be for a unit of one Cum.

Item No. 111 Painting lines, dashes, arrows, letters etc on roads, Air fields and like in two coats with road marking paint, brushing including cleaning the surface of all dirt, dust and other foreign matter for all width.

1.0 Material

1.1 The road marking paint shall conform to IS 164-1951.

2.0 Workmanship

2.1 The letters and figures shall be to the heights and widths as per approved drawing or as directed. These shall be stenciled or drawn in pencil and got approved before painting. They shall be of uniform size and finished neatly. The edges shall be straight or in pleasant smooth curves. Painting lines, dashes arrows and letter on roads, air fields and like shall be carried out with road marking paint in two coats : over 10 cms. In width.

3.0 Mode of measurement and payment.

3.1 The rate for line, dashes letters etc. shall be paid in Sqm. basis.

Item No. 112 Distance Informatory / Destination Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 180x120 cms. rectangular as per design of IRC-67-2012. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ; reflectorised with High Intensity Prismatic Grade retro reflectivesheeting of Type-4 as per ASTM D-4956 and latest M.O.S.T.Specifications; 4.0mtr (2 Nos.) long stand post of Iron Angle 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 50 x 50 x 5mm; painted with bestquality epoxy coatings in black and white bends. The details of symbol for each board shall be as per the instruction of engineer in charge. The fixing at site shall be in 1:2:4 CC blockof size 45 x 45 x 60 Cms. for each leg including excavation, curing etc.complete under the supervision of engineer in charge. A warranty for 7 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (B) Class-B Type-4 Retro Reflective sheeting

General

801.1.1. The colour, configuration, size and location of all traffic signs for highways other than Expressways shall be in accordance with the Code of Practice for Road Signs,-IRC: 67 or as shown on the drawings. For Expressways, the size of the signs, letters and their placement shall be as specified in the Contract drawings and relevant Specifications. In the absence of any details or for any missing details, the signs shall be provided as directed by the Engineer.

508.4.6 The signs shall be either reflectories or non-reflectarised as shown on the drawings or as directed by the Engineer. When they are of reflectories type, they shall be of retro-reflectorised type and made of encapsulated lens type reflective sheeting vide Clause 801.3, fixed over aluminum sheeting as per these Specifications.

508.4.6 In general, cautionary and mandatory signs shall be fabricated through process of screen printing. In regard to informatory signs with inscriptions, either the message could be printed over the reflective sheeting, or cut letters of non-reflective black sheeting used for the purpose which must be bonded. well on the base sheeting as directed by the Engineer.

Materials

The various materials and fabrication of the traffic signs shall conform to the following requirements:

508.4.6 **Concrete** : Concrete shall be of the grade shown on the Contract drawings or otherwise as directed by the Engineer. The fixing at site shall be in 1:2:4 C.C. block of size 45x45x60cms. for each leg including excavation curing complete

under the supervision of Engineer in charge -

801.2.2. Reinforcing steel : Reinforcing steel shall conform to the requirement of IS:1786 unless otherwise shown on the drawing. 3.1m long (2 Nos) stand post and frame fabricated from suitable size iron angle of 50x50x5mm

508.4.6 Bolts, nuts, washers: High strength bolts shall conform to IS : 1367 whereas precision bolts, nuts, etc., shall conform to IS: 1364.

508.4.6 Plates and supports : Plates and support sections for the, sign posts shall conform -to IS: 226 and IS: 2062 or any other relevant IS Specifications.

508.4.6 Aluminum: Aluminum sheets used for sign boards shall be of smooth, hard and corrosion resistant aluminum alloy conforming to IS : 736-Material designation 24345 or 1900. 2mm alluminium sheet size 90x60cm, rectangle as per design of IRC-67-1977

508.4.6 Signs with a maximum side dimension not exceeding 600 mm shall not be less than 1.5 mm thick. All others shall be at least 2 mm thick. The thickness of the sheet shall be related to the size of the sign and its support and shall be such that it does not bend or deform under the prevailing wind and other loads.

508.4.6 In respect of sign sizes not covered by IRC:67, the structural details (thickness, etc.) shall be as per the approved drawings.

Traffic Signs Having Retro-reflective Sheeting

508.4.6 General requirements: The retro-reflective sheeting used on the sign shall consist of the white or colored sheeting having a smooth outer surface which has the property of retro-reflection over its entire surface. It shall be weather-resistant and show color fastness. It shall be new and unused and shall show no evidence of cracking, scaling, pitting, blistering, edge lifting or curling and shall have negligible shrinkage or expansion. A certificate of having tested the sheeting for these properties in an unprotected outdoor exposure facing the sun for two years and its having passed these tests shall be obtained from a reputed laboratory, by the manufacturer of the sheeting. The reflective sheeting shall be either of Engineering Grade material with enclosed lens or of High Intensity Grade with encapsulated lens. The type of the sheeting to be used would depend upon the type, functional hierarchy and importance of the road.

508.4.6 High intensity grade sheeting : This sheeting shall be of encapsulated lens type consisting of spherical glass lens, elements adhered to a synthetic resin and encapsulated by a flexible, transparent water-proof plastic having a smooth surface. The retro-reflective surface after cleaning with soap and water and in dry condition

shall have the minimum co-efficient -of retro-reflection (determined in accordance with ASTM Standard E : 810) as indicated in Table 800-1.

**TABLE 800-1. ACCEPTABLE MINIMUM COEFFICIENT OF RETRO.
REFLECTION FOR HIGH INTENSITY GRADE SHEETING
(CANDELAS PER LUX PER SQUARE METRE)**

Observation angle (in degrees)	Entrance Angle Red (in degrees)	White	Yellow	Orange	Green	Blue
0.2	-4	250	170	100,	45	20
0.2	+30	150	100	60	25	11
0.5	-4	95	62	30	15	7.5
0.5	+30	65	45	25	10	5.0

When totally wet, the sheeting shall not show less than 90 per cent of the values of retro-reflectance indicated in Table 800-1. At the end of 7 years, the sheeting shall retain at least 75 per cent of its original retro-reflectance.

508.4.6 Engineering grade sheeting : This sheeting shall be of enclosed lens type consisting of microscopic lens elements embedded beneath the surface of a smooth, flexible, transparent, water-proof plastic, resulting in a non-exposed lens optical reflecting system. The retro reflective surface after cleaning with soap and water and in dry condition shall have the minimum coefficient of retro-reflection (determined in accordance with ASTM Standard : E-810) as indicated in Table 800-2.

**TABLE 900-2. ACCEPTABLE MINIMUM COEFFICIENT OF RETROREFLECTION
FOR ENGINEERING GRADE SHEETING (CANDELAS PER LUX PER SQUARE METRE)**

Observation	Entrance	White	Yellow		Orange Green		Red
Blue							
angle In		angle in					
degree		degree					
0.2	-4	70	50	25	9.0	14.5	4.0
0.2	+30	30	22	7.0	3.5	6.0	1.7
0.5	-4	30	25	13.5	4.5	7.5	2.0
0.5	+30	15	13	4.0	2.2	3.0	0.8

When totally wet, the sheeting shall not show less than 90 per cent of the values, of retro-reflection indicated in Table 800-2. At the end of 5 years, the sheeting shall retain at least 50 per cent of its original retro-reflectance.

801.3.4. Messages/borders: The messages (legends, letters, numerals etc.) and borders shall either be screen-printed or of cut-outs. Screen printing shall be processed and finished with materials and in a manner specified by the sheeting manufacturer. Cut-outs shall be of materials as specified by the sheeting manufacturer and shall be bonded with the sheeting in the manner specified by the manufacturer.

508.4.6 For screen-printed transparent coloured areas on white sheeting, the co-efficient of retro-reflection shall not be less than 50 per cent of the values of corresponding colour in Tables 800-1 and 800-2, as applicable.

508.4.6 Cut-out messages and borders, wherever used, shall be made out of retro-reflective sheeting (as per Clause 801.3.2 or 801.3.3 as applicable), except those in black which shall be of non-reflective sheeting.

508.4.6 Colour: Unless otherwise specified, the general colour schbm6 shall be as stipulated in IS 5 "Colour for Ready Mixed Paints", viz.

Blue	-	is	ColourNo. 166: French Blue
Red	-	is	ColourNo. 537: Signal Red
Green	-	is	ColourNo. 284: India Green
Orange	-	IS	ColourNo. 591: Deep Orange.

The Colours shall be durable and uniform in acceptable hue when viewed in day light or under normal headlights at night.

801.3.8. Adhesives : The sheeting shall either have a pressure sensitive adhesive of the aggressive-tack type requiring no heat, solvent or other preparation for adhesion to a smooth clean surface, or a tack free adhesive activated by heat, applied in a heat-vacuum applicator, in a manner recommended by the sheeting manufacturer. The adhesive shall be protected by an easily removable liner (removable by peeling without soaking in water or other solvent) and shall be suitable for the type of material of the base plate used for the sign. The adhesive shall form a durable bond to smooth, corrosion and weather resistant surface of the base plate such that it shall not be possible to remove the sheeting from the sign base in one piece by use of sharp instrument. In case of pressure sensitive adhesive sheeting, the sheeting shall be - applied in accordance with the manufacturer's Specifications. Sheetting with adhesives requiring use of solvents or other preparation for adhesive shall be applied strictly in accordance with the manufacturer's instructions.

Refurbishment: Where existing signs are specified for refurbishment, the sheeting

shall have a semi-rigid aluminum backing pre-coated with aggressive-tack type pressure sensitive adhesive. The adhesive shall be suitable for the type of material used for the sign and should thoroughly bond with that material.

801.3.10. Fabrication

Surface to be refectories shall be effectively prepared to receive the retro-reflective sheeting. The aluminium sheeting shall be degreased either by acid or hot alkaline etching and all scale,/dust removed to obtain a smooth plain surface before the application of retro reflective sheeting. If the surface is rough, approved surface primer may be used. After cleaning, metal shall not be handled, except by suitable device or clean canvas gloves, between all cleaning and preparation operation and application of reflective sheeting/primer. There shall be no opportunity for metal to come in contact with grease, oil or other contaminants prior to the application of retro-reflective sheeting.

Complete sheets of the material shall be used. on the signs except where it is unavoidable; at splices, sheeting 'with pressure sensitive adhesives shall be overlapped not less than 5 mm. Sheeting with heat-activated adhesives may be spliced with an overlap not less than 5 mm or butted with a gap not exceeding 0.75 mm. Where screen printing with transparent colours is proposed, only butt jointing shall be used. The material shall cover the sign surface evenly and shall be free from twists, cracks and folds. Cut-outs to produce legends and borders shall be bonded with the sheeting in the manner specified by the manufacturer.

801.3.11. Warranty and durability : The Contractor shall obtain from the manufacturer a seven-year warranty for satisfactory field performance including stipulated retro-reflectance of the retro-reflective sheeting of high intensity grade and a five year warranty for the adhesive sheeting of engineering grade, and submit the same to the Engineer. In addition, a seven year and a five year warranty for satisfactory in-field performance of the finished sign with retro-reflective sheeting of high intensity grade and engineering grade respectively, inclusive of the screen printed or cut out letters/legends and their bonding to the retro-reflective sheeting shall be obtained from the Contractor/supplier and passed on to the Engineer. The Contractor/supplier shall also furnish a certification that the signs and materials supplied against the assigned work meets all the stipulated requirements and carry the stipulated warranty.

Processed and applied in accordance with recommended procedures, the reflective material shall be weather resistant and, following cleaning, shall show no appreciable discoloration, cracking, blistering or dimensional change and shall not have less than 50 per. cent of the specified minimum reflective *intensity values (Tables 800-1 and

800-2) when subjected to accelerated weathering for 1000 hours, using type E or EH Weatherometer (AASHTO Designation M 268).

801.4. Installation

801.4.1. Sign posts, their foundations and sign mountings shall be so constructed as to hold these in a proper and permanent position against the normal storm wind loads or displacement by vandalism. Normally, signs with an area up to 0.9 sq. in. shall be mounted on a single post, and for greater area two or more supports shall be provided. Sign supports may be of mild steel, reinforced concrete or galvanized iron (G.I.). Post-end(s) shall be firmly fixed to the ground by means of properly designed foundation. The work of foundation shall conform to relevant Specifications as specified.

801.4.2. All components of signs and supports, other than the reflective portion and G.I. posts shall be thoroughly discaled, cleaned, primed and painted with two coats of epoxy paint. Any part of mild steel (M.S.) post below ground shall be painted with three coats of red lead paint.

The signs shall be fixed to the posts by welding in the case of steel posts and by bolts and washers of suitable size in the case of reinforced concrete or G.I. posts. After the nuts have been tightened, the tails of the bolts shall be furred over with a hammer to prevent removal.

Measurements for Payment

The measurement of standard cautionary, mandatory and information signs shall be in numbers of different types of signs supplied and fixed,

801.6. Rate

The Contract unit rate shall be payment in full for the cost of making the road sign, including all materials, installing it at the site and incidentals to complete the work in accordance with the Specifications.

Item No.113 Providing and fixing cattle trap of required size and design by providing GI pipes 50mm dia at 10 cm c/c including providing "c" channels 100x50x6x6mm size including necessary excavation 10 CM thick CC 1:2:4 for foundation complete CC wall of CC 1:2:4 with cement plaster 15mm thick in CM 1:4 etc. complete as directed by Engineer – in – Charge.

General : The work shall in General be carried out as per relevant Specification of building work with following addition and alteration.

Excavation : The excavation work shall be carried out as per General technical specification booklet P. No. 24 It No. 4.0.0 for all type of strata.

Cement concrete : The C.C. work in CC 1:2:4 shall be carried out as per Genral Technical specification page No 40 I No. 5.3.13 A

Form work : The Formwork shall be carried out as per General Technical specification Page No 65 I No. 9.1 C

Plaster Work: The Plastering work shall be carried out as per General Technical specification Page No. 1210,121 I no. 17.58 II & 17.69

G.I. Pipe: GI Pipe work shall be carried out as per General Technical Specification Page No. 160 I No. 23.2 F

Structural Steel Work : The Structure steel work shall be carried out as per General Technical Specification P./ No. 80 I No. 11.2 D

Workman Ship: The Excavation work shall be carried out in all sorts of soil for required size and depth . The foundation concrete work with C.C. 1:2:4 (1-cement:2-Coarse sand:4-Graded stone aggregate 20mm nominal size) shall be carried out with 15cm thickness.
The C.C. 1:2:4 walls for all four sides and intermediate walls for resting of channels shall be carried out with required height and 30 Cum. width of wall. The plaster work with 15mm cement plaster with neat cement slurry shall be carried out for bottom and sides of walls. The Cattle trap made with "C" channels framing for all sides and supports at 60cm C/C or as directed by Engineer-in-charge shall be

welded and provided with 50mm GI Pipe @ 10cm C/C shall be placed above concrete wall the remaining side shall be fixed with plain concrete 1:2:4 for fixing the frame of Cattle Trap.

Made of
measurement
& Payment.

The work includes all cost of excavation , concrete work , formworks , steel work including all materials, labours and tools and plants required to complete the work .

The Payment shall be made for completed works in Sqm. Mt basis and measurement shall be taken for out to out of "C" channel.

Item No.114 Providing and fixing RBT fencing with punched tape concertina upto 3 m height of wall with angle iron 'Y' shaped 40 x 40 x 5mm placed 2.4 m or 3.00 m apart and with 6 horizontal R.B.T. reinforced barbed wire,stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre. (Cement concrete for fixing angle will be paid under seperate item)

(A) GENERAL :

The work shall be carried out in general as per relevant specification of P.W.D. hand book Volume-I & II and as per I.S.S. and as per N.B.C. of India and as instructed by Engineer-in-Charge unless and otherwise specified with the following addition.

(B) MATERIALS :

(1) Water Shall confirm to M-1 (2) Cement shall be conform to M-3 (3) Sand shall be conform to M-6 (4) Oil paint shall conform to M-44 (6) Galvanised steel concertina Razor blade wire shall be approved quality approved by engineer in charge.

(C) WORKMANSHIP :

The RBT fencing with punched tape concertina upto 3 m height of wall with angle iron 'Y' shaped 40 x 40 x 5mm placed 2.4 m or 3.00 m apart and with 6 horizontal R.B.T. reinforced barbed wire,stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre.

(D) MODE OF MEASUREMENT AND PAYMENTS :

- (1) The work shall be measured for the finished work from center to center of the posts.
- (2) The rate shall include the cost of all labour and materials involved in the operations described above.
- (3) The rate shall be for a unit of one Running meter.

Item No.115 Preparing the existing land /soil and removal of unserviceable soil, stone ,unwanted vegetation and disposing of the same as directed.

The work shall in general be carried out mechanically or manually as directed by Engineer in charge.

The top layer of existing soil shall be ploughed by means of tractor and remove from the area. The work includes removal of unwanted vegetation, stones, and soils and earth and disposing of same out of Jamnagar Municipal Corporation limit as directed by Engineer in charge.

The work includes cost of machineries, labour, tools & plants required for the operation.

The rate shall be paid on Sqm. Basis of prepared land.

Item No.116 Preparing the land by filling fertile/ selected garden soil, including leveling & fine dressing and mixing manure/bio tech fertilizer/ fertilizer and termite treatment as per requirement.

MATERIAL

The fertile soil shall be river kamp or equivalent.

The fertilizer shall be of standard quality.

The manure shall be of good quality without unwanted materials.

Pesticize shall be of standard quality.

WORKMANSHIP

The work shall be carried out for preparing land for gardening by filling with selected garden soil in a layer sufficient to provide a bed for gardening. The necessary quality of manure / fertilizer and poeticized shall than be added to the soil and the soil surface shall be fine dressed by breaking clods.

MODE OF MEASUREMENT AND PAYMENT

Work includes cost of materials, labours, machineries, tools & plants required for all operation.

The payment shall be made on Sqm. Basis of prepared land.

Item No.117 Plantation of carpet type lawn including labour materials , watering and growing etc. as per instruction of EIC.

MATERIAL

Carpet type lawn shall be best quality.

WORKMANSHIP

The dibbling of carpet type lawn shall be carried out on prepared surface at SCM 5-Cum. Ok on either direction after dibbling necessary watering shall be carried out for growth of carpet during the growth necessary weeding shall be carried out.

The spray of pesticide shall also be carried out during operation.

The lawn shall be grown to have a thick coverage like carpet.

MODE OF MEASUREMENT AND PAYMENT

The work includes cost of labour, materials, pesticides, tools, plants etc and the work also includes the maintenance cost up to six months.

The payment shall be made on Sqm. Basis of area of green carpet.

Item No.118 Plantation of flower bed with selected flower plant including planting the same at 45 CM apart and growing the same including as per instruction of EIC.

MATERIAL

Flower plant like lantana (Red & Yellow) verbena (White, pink or red) or other decorative plant approved by Engineer in charge.

WORKMANSHIP

The work shall be carried out as per item of lawn. The decorative approved plant shall be planted instead of lawn. The plant shall be planted at 45cm apart.

MODE OF MEASUREMENT AND PAYMENT

Work includes cost of plant, labour etc. required for complete operation and maintaining the same up to six months.

The payment shall be made on Sqm. Basis of flower bed.

Item No. 119 Planting of hedge with selected hedge plant like Golden , Duranta, Red Bhaji or selected plant @ 45 CM apart as per instruction of EIC.

MATERIAL

The plant shall be golden Duranta, red bhaji are equipment hedge plant.

The fertilizer / nanure shall be of good quality.

WORKMANSHIP

The work shall be in general be carried out as per the Item No. 3 with the following addition. The pit of size 30x30x30cm. and 45 compart shall be prepared for plantation. Healthy well grow hedge plant like golden Duranta, red bhaji or equivalent shall be plated or 45cm center to center.

The pit shall be filled with garden soil with necessary fertilizer/manuar etc.

MODE OF MEASUREMENT AND PAYMENT

Work includes cost of labour, materials, peticised manurs, tools and plants required for the operation and cost of maintaining the same uip to six months. The payment shall be made on Rmt. Basis of work done.

Item No.120 **Planting of selected shrubb trees like Ticoma, Nerium or other selected plant including preparing pit of size 30 x 30 x 30 CM and filing with selected garden soil including manure, fertilizer and as per instruction of EIC.**

MATERIAL

The selected shrub plant shall be Ceasalpina, Eranthemam, Ticoma, Nerium, Hibiscuss for deferent colour or other equivalent ornamented shrub plant.

Manure / fertilizer shall be of good quality.

WORKMANSHIP

The work shall be in general be carried out as per the Item No. 3 with the following addition. The pit of size 30x30x30cm. and 45 compart shall be prepared for plantation. Healthy well grow hedge plant like golden Duranta, red bhaji or equivalent shall be plated or 45cm center to center. The pit shall be filled with garden soil with necessary fertilizer/manuar etc.

The work shall be carried out for shrub plant and pit shall be of size 30x30x30cm and 60 to 90cm apart.

MODE OF MEASUREMENT AND PAYMENT

The work includes cost of labour materials, fertilizer/manure and loose and plants required during the operation and cost of weeding, cutting & poeticized spray required for maintain upto six months.

The payment shall be made on No. basis of healthy and grew trees only.

- Item No. 121** Providing Three plants having minimum 2.00 mt. height and healthy growth of various kinds as like peltroform, Gulmahore, Karanj, Ambla, Rain tree, Sapparni, Cherry, Cryjeliya, Spethodiya, Paras Pipala, Garmali, Neem, Borsalli, Kadam, Buch, Chanpo, Asopalav and as suggested etc.

1.0 MATERIALS

Plant of various category of minimum 2.00 mt. height and healthy grown plants like peltroform, Gulmahore, Karanj, Ambla, Rain tree, Saptarni, Cherry, Cryjeliya, Spethodiya, Paras Pipala, Garmalo, Neem, Borsalli, Kadam, Buch, Champo, Asopalav and as suggested etc. shall be supplied by the contractor as per requirement of department including fertilizer of approved quality.

2.0 WORKMANSHIP

The size of pits is 45 x 45 x 45 cm carried out as per instruction of department. Black cotton soil shall be spread in to the pits plantation of tree shall be done in the centre of pits. Necessary fertilizer shall be spread in the pits. Finally black cotton soil is spreads as required surrounding to plant upto 15 cm down from original ground for store of water surrounding plants. Care should be taken to plants during the execution of work and shall be prevents from cow, buffalo, got etc. The planted tree shall be maintained and watering upto three month. It essential it shall be replanted at free of cost.

3.0 MODE OF MEASUREMENT AND PAYMENTS

- 3.1 The rate inclusive of any cost of all materials and all labours for complete items. The rate also include cost of organic fertilizer, plants or trees.
- 3.2 The rate shall be for a unit of One No.

Item No.122 Providing tree plants having minimum 2.00 mt height and health growth of bottle palm tree, Cycus palm and other palm tree planting including 30 x 30 x 30 Cm. pit filling with selected garden soil including manure, fertilizer as per instruction of EIC.

1.0 MATERIALS

Plant of bottle Palm tree or Cycus palm and other palm tree of minimum 2.00 mt. height and healthy grown plants and as suggested etc. shall be supplied by the contractor as per requirement of department including fertilizer of approved quality.

2.0 WORKMANSHIP

The size of pits is 45 x 45 x 45 cm carried out as per instruction of department. Black cotton soil shall be spread in to the pits plantation of tree shall be done in the centre of pits. Necessary fertilizer shall be spread in the pits. Finally black cotton soil is spreads as required surrounding to plant upto 15 cm down from original ground for store of water surrounding plants. Care should be taken to plants during the execution of work and shall be prevents from cow, buffalo, got etc. The planted tree shall be maintained and watering upto three month. It essential it shall be replanted at free of cost.

3.0 MODE OF MEASUREMENT AND PAYMENTS

3.1 The rate inclusive of any cost of all materials and all labours for complete items. The rate also include cost of organic fertilizer, plants or trees.

3.2 The rate shall be for a unit of One No.

Item No.123 Providing and fixing 1.25 x 0.65 granite Top and 0.45cm Ht Kota stone sandwich type seating benches with Molding , edge as per Design drawing including fixing on site as directed.

General : The work shall in General be carried out as per relevant specification of PWD Hand book Volume I&II and as per the relevant specification no 14.36(A) with the following addition and alteration .

Materials: Water shall confirm to M-1
Cement mortar confirm to M-10
25mm thick Polish Kotah stone slab shall be confirm to M-49
18mm thick Granite Stone shall be confirm to M-52

Workmanship: The work shall be carried out for as per specification no 14.36 (A) except that the work shall be carried out for seating benches work instead of flooring. The single piece of 18mm thick black Granite stone with mirror polishing with 25mm thick Kotah stone sandwich type finishing as directed by Engineer-in-charge shall be cut to a required length and width in single pieces . One piece of required length with 1.25mt width shall be 0.65mt fixed by means of standard adhesive material. The height of benches shall be 45.00 cm from finished ground level Top of granite shall be full molding edge with required length and width shall be fixed or stucked on the inner plate to form a sandwich type benches with a recess to provide the necessary material.

Mode of measurement and payment The work includes cost of all labour , material , tools and plants formwork etc required to complete the work. The payment shall be made for completed item for visible work done on No. Basis.

Dy. Executive Engineer
Jamjodhpur (R&B.) Sub Division.
Jamnagar.

Executive Engineer
Jamnagar (R&B) Division
Jamnagar.