

# ***THE AGRICULTURE PRODUCE MARKET COMMITTEE***

## **UNJHA**

**NAME OF WORK :- CONSTRUCTING SHOPS CUM  
GODOWN & WAREHOUSE OF A.P.M.C. UNJHA SUB  
MARKET YARD BRAHMANVADA. AT RS NO 613 OF  
BRAHMANVADA, TA. UNJHA, DISTRICT: MEHSANA.**

**ESTIMATED COST ₹. 269234384.53**



## **SPECIFICATION**

**CHAIRMAN  
THE AGRICULTURE PRODUCE AMRKET COMMITTEE  
UNJHA**

## INDEX OF SPECIFICATION AND DETAIL SPECIFICATION

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
1	Excavation for foundation up to 1.50 mt depth including sorting out and stacking of useful materials and disposing the excavated stuff up to 50 mt lead (A) Loose or soft soil (EXECUTED WITH MECHANISED EFFORTS MACHINARIES)	22	4.0.0 (A)	
2	Excavation for foundation 1.50 mt to 3.00 mt depth including sorting out and stacking of useful materials and disposing the excavated stuff up to 50 mt lead (A) Loose or soft soil (EXECUTED WITH MECHANISED EFFORTS MACHINARIES)	22	4.0.0 (A)	
3	Filling in foundation and plinth with murrum or selected soil in layers of 20 cm Thickness including watering, ramming and consolidating etc. complete	28	4.004	
4	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
5	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labor and material consistent with I.S.I specification. Using Chlordane and Chiorpurfiles 20 EC. As Per 6131_paret-II Concentration Weight one percent is recommended i.e., one liter 20 EC chemical emulsion with 19 liter give 1 % concentration inclusive of one-liter chemical emulsion application at the rate of 5 Liter chemical / Sqm of surface is recommended as per I.S	139	20.009	
6	Providing and laying controlled cement concrete M-100 RMC and curing complete including the cost of formwork with sheathing steel sheets to give a fair finish and reinforcement for reinforced concrete work in : (a) Foundations, footings Bases of columns and the like and Mass concrete.	32 55	5.3.13 9.1 (A)	
7	Providing and laying controlled cement concrete M-300 RMC and curing complete including the cost of formwork with sheathing	32 55	5.3.13 9.1 (A)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in foundation footings, base of columns and mass concrete.			
8	Providing and laying controlled cement concrete M-300 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
9	Providing and laying controlled cement concrete M-300 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in foundation footings, base of columns and mass concrete. (PEDESTAL)	32 55	5.3.13 9.1 (A)	
10	Providing and laying controlled cement concrete M-300 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts G. FLOOR	40 56	5.8.3(D) 9.1 (G)(i)	
11	Providing and laying controlled cement concrete M-300 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts G. FLOOR	40 56	5.8.3(D) 9.1 (G)(i)	
12	Providing and laying controlled cement concrete M-300 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts F. FLOOR	40 56	5.8.3(D) 9.1 (G)(i)	
13	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for	40 56	5.8.3(D) 9.1 (G)(i)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	reinforced concrete work in BEAMS Ground Floor			
14	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in BEAMS Ground Floor	40 56	5.8.3(D) 9.1 (G)(i)	
15	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in BEAMS First Floor	40 56	5.8.3(D) 9.1 (G)(i)	
16	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in SLABS for Ground Floor	40 56	5.8.3(C) 9.1 (H)(i)	
17	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in SLABS for FIRST Floor	40 56	5.8.3(C) 9.1 (H)(i)	
18	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in STAIRCASES Ground Floor	38 58	5.8.2 (E) 9.1 (M)	
19	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Lintels Ground Floor	40 56	5.8.3 (C) 9.1 (H) (I)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
20	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Lintels First Floor	40 56	5.8.3 (C) 9.1 (H) (I)	
21	Providing Thermo Mechanically Treated bar (T.M.T.) (I.S.I. Mark) conforming to I.S. - 1786 Fe - 500D for R.C.C. work including bending, binding and placing in position complete. All floor Level			As per Attached Sheet
22	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In foundation and plinth in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional	46	6.13 (B)	
23	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In super structure above plinth level up to floor two level in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional {Ground Floor}	43 46	6.12 (B) 6.19 (B)	
24	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In super structure above plinth level up to floor two level in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional {First Floor}	43 46	6.12 (B) 6.19 (B)	
25	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In super structure above plinth level up to floor two level in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional {Second Floor}	43 46	6.12 (B) 6.19 (B)	
26	Half brick masonry in common brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In cement mortar 1:3 (1cement: 3 coarse sand) with 2 Nos. of 6 mm. Diameter mild steel round bars after every three coarse embedded in cement mortar in super structure above plinth level FIRST FLOOR	48	6.30 (IV) (B) 6.33 (B)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
27	Providing and fixing 35 mm thick shutters for Doors, windows and clerestory windows including Indian teak wood frames 12 cm x 7 cm. size including anodized aluminum fixtures and fastenings including Polishing with French polish on new wood and wood-based surface to give an even surface including cleaning, the surface of all dirt, dust and sand papering smooth and including a coat of wood filler (ii) Fully Paneled	58 61	10.1.A 10.13.A I	
28	Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement: 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement: 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. GROUND FLOOR	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	
29	Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement: 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement: 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. FIRST FLOOR	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	
30	Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement: 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement: 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. SECOND FLOOR	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	
31	Providing 10 mm. thick cement plaster in single coat for plastering on ceiling and soffits of stairs up to floor two level and finished even and smooth in: (I) Cement mortar 1:3 (1 cement: 3 sand) Ground Floor	105 106	17.58 (I)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
32	Providing 10 mm. thick cement plaster in single coat for plastering on ceiling and soffits of stairs above floor two level and finished even and smooth in: (I) Cement mortar 1:3 (1 cement: 3 sand) First Floor	105 106	17.58 (I)	
33	Providing 10mm thick cement plaster in single coat on brick/concrete walls for interior plastering above floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement:3-sand) First Floor	105 106	17.58 (I)	
34	20 mm. thick sand faced GUTAKA FINISHED cement plaster on walls up to All height above ground level consisting of 12 mm. thick backing coat of c.m. 1:3 (1 cement: 3 sand) and 8 mm. thick finishing coat of c.m. 1:1 (1 cement: 1 sand) including making groove 6 mm wide and 8 mm deep as approved pattern etc. complete as directed.	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	
35	Providing and fixing HEXAGONAL chicken mesh jali with square of 12.50 x 12.50 mm of 25 gauge at junction the Brick. masonry and reinforcement cement concrete member including fixing materials scaffolding labor etc. complete			As per Attached sheet
36	Providing cement vata (10cm. x 10 cm. size) quarter round in cement mortar 1:1 including neat cement finishing, watering etc. complete	109	17.0.00I	
37	Providing and laying damp proof course 25mm thick cement concrete 1:2:4 (1-Cement: 2 coarse sands: 4 stone aggregate 10 mm nominal size) and curing complete	32	5.7.1	
38	Providing and laying controlled cement concrete M-100 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish and reinforcement for reinforced concrete work in: (a) Foundations, footings Bases of columns and the like and Mass concrete.	32 55	5.3.13 9.1 (A)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
39	Providing and laying cement concrete flooring M-200 RMC by using TREMIX system laid in one layer as per required level, slop and thickness of 100 mm with 32kg of RCH per/CMT concrete to be laid in alternate panels size approx. 3.5m x5.0m with steel channel foam work leveling with surface vibrator finish the surface with power float and dowels' Dewatering the floor with vacuum pump. light blooming on the surface as per directed and making construction join of size 10x40 mm by using of concrete cutter machine and ready-mix bituminous filler of Shalimar tar products.			Separate sheet attached
40	Providing and laying white glazed tiles 6mm thick in flooring treads of steps and landing laid on a bed of 12mm thick cement mortar 1:3 (1-cement: 3-coarse sand) finishing with flush pointing in white cement.	84	14.32	
41	Providing and laying 600 mm x 600mm vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 (1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismantling of existing flooring and jointed with color cement slurry including finished with flush pointing & cleaning the surface etc. complete for light shade	14.32	84	Specification follows as per Item of ceramic tile using vitrified tile 600 x 600 mm
42	Providing and laying Marbo Granite tiles 9 mm thick, 600 x 600 in skirting risers of steps and dado on 10mm thick cement plaster 1:3 (1-cement: 3-coarse sand) and jointed with white cement slurry	14.32	84	Separate sheet attached
43	Providing and fixing Rubi red Granite of 20 mm thick of uniform size and color for staircases in treads & risers, dado or fascia etc. any length including necessary machine cut edges (uniform thickness) rounded edges, nosing, grooves in risers and treads laid in combination of different marble as pattern and instructions of Architect, necessary cement mortar bedding in C.M.1:6 of required thickness. Cement joints and pointing as specified with polishing (with oxalic acid) curing, with water and kerosene as directed for			As per attached sheet



Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	at least 15 days or up to the satisfaction of the Architect & Engineer in charge etc. complete.			
44	Providing and laying water proofing treatment with China mosaic tiles flooring over avg 40 mm C.C. 1:2:4 { 1 Cement : 2 sand : 4 Kapachi / Grit 6 to 12 mm size } bedding for maintaining slope for plain and curve surface & 12 mm to 20 mm of broken piece of ceramic / glazed tiles ( one for more color as directed ) to be laid over cement mortar bedding of C M 1:3 ( 1 cement : 3 sand ) contain one Kg of water proofing materials per bag of O P C at plain or / and slops and to be tempered to bring mortar ceramic up to surface with using white cement and color pigment including rounding of junctions and extending them up to 15 cm along the wall and curing with bends any patterns or design as per drawing and cleaning by using oxalic acid etc. complete.			As per separate sheet
45	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.			As per separate sheet
46	Providing and applying on wall exterior/ interior of Heritage surface texture granules finish of Bakelite Hylam Limited (No.21-3005, 3006, 3007, 3008, 3013, 3014, 3015 and 3016) troweled over 20 mm thick sand faced cement plastered (Two coat of 12 mm in CM 1:3 & 8 mm coat in CM 1:1) sub strata to get an average finish coat thickness of 0.08 to 1.2 mm comprising of three components viz. Dry granules, Granules, bonding agent and top coat of glossy finish (Dry granules shall be made from Silica sand, pigments, chiefly inorganic) homopolymer emulsion mix etc., of Bakelite Hylam product banding agent made of acrylic copolymer emulsion, broad spectrum fungicide			As per attached sheet

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	of Bakelite Hylam product etc. and top coat made from solvent based acrylic polymer of Bakelite Hylam product including scaffolding.			
47	Providing and fixing window having extruded aluminum Color anodized section frame main outer size 95mm x 24mm x 1.17mm (of Jindal Section no:2459 @ wt. Of 0.738 Kg/mt), horizontal Three track member size 92mm x 31.75mm x 1.30mm (of Jindal Section no:8688, @ Wt.1.07 Kg/mt), vertical member of size 92mm x 31.75mm x 1.50mm (of Jindal Section no:8933, @ Wt. 1.06 Kg/mt) with sliding shutters of horizontal member size 40 mmx18mm x1.29mm (of Jindal Section no:8947@ wt. Of 0.456 Kg/mt), vertical member of size 40mm x 18mm x 1.29 mm (of Jindal Section no:8949 @ wt. Of 0.456Kg/mt/ with 5 mm thick transparent bronze color tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc.			As per attached
48	Providing and fixing window having extruded aluminum Color Powder Coated section frame main outer size 63.50 x 38.10 x 1.95 mm (of Jindal Section no:4605, @ Wt. 1.094 Kg / Rmt), horizontal two track member size 61.85 mm x 31.75 mm x 1.20mm (of Jindal Section no: 8687 @ wt. Of 0.695 Kg/mt), vertical member of size 61.85 mm x 31.75mm x 1.30 mm (of Jindal Section no:8758 @ wt. Of 0.0.659 Kg/mt) with sliding shutters of horizontal member size 40mm x 18mm x 1.29mm (of Jindal Section no:8949 @ wt. Of 0.456Kg/mt), vertical member of size 40mm x 18mm x 1.29mm (of Jindal Section no:8947 @ wt. Of 0.456Kg/mt/ Section 8948, @ Wt. 0.457 Kg/mt) with 5 mm thick transparent bronze color tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc. complete for window.			As per attached sheet

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
49	Providing and fixing standard extruded of aluminum section of size 63.50 x 38.10 x 1.95 mm (of Jindal Section no:4605, @ Wt. 1.094Kg / Rmt with color Powder Coated aluminum frame with 5 mm thick transparent bronze color tinted float glass with color anodized aluminum frame for ventilation with 5 mm thick frosted glass as details etc. complete for. Window			As per attached sheet
50	Supplying fabricating, erecting, aligning & fixing in proper position Asian make 14-gauge hollow mild steel, 50mm x25mm and 14gauge metal sheet as per design on both side outer frame with 75 x 37.5 x 4mm MS angle equal for shutters opening two on both side complete at site. Rate shall include for supplying all materials such as ISI mark welding rods, bolts, nuts, etc. and like labor for the work of straightening, cutting, drilling holes, necessary plants / equipment for assembling, bolting welding, erecting, etc. complete as directed. Rate shall include for one coat of red oxide and two coats of approved epoxy enamel paint after thorough cleaning of surfaces. Measurement of steel shall be on the basis of length of the sections as per drawings and standard weight as per ISI code.	10	32	As per attached sheet
51	Finishing wall with weather proof exterior emulsion paint on wall surface (two coast) to give a required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials etc. Complete			As per attached sheet
52	Providing & applying three coats (First two coats are with brush and final coat is with roller) of plastic emulsion paint of desired shade, of approved make, brand and manufacture, on any surface, at all heights, to give an even shade, including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth. The paint shall be applied after applying a coat of primer and putty.	120	18.57	As per Item description and direction of in charge Engineer

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
53	Providing 30 mm thick FACTORY MADE SOLID BOTH SIDE PRELAM PANEL PVC DOOR SHUTTER consisting of frame made out of M.S frame covered with 5mm thick heat moulded prelam PVC 'c' channel of size 30mm thickness,70mm width of which 50mm shall be flat and 20mm shall be tapered in 45 degree angle on either side of the panel.10mm(5mmx2) thick 20 mm wide cross pvc sheet shall be provided as a gap inserted for top rail and bottom rails. Paneling of 5mm thick both side prelam PVC sheet to be fitted in MS frame welded, sealed to the stiles and rails with 7mm thickx15mm wide PVC sheet beading on inner side of the 'c' channel using PVC solvent adhesives etc complete as per direction of Engineering in charge manufacture's specification and drawing.			As per Item Description & instruction of incharge Engineer and payment shall be made on Sq.M basis
54	Supplying fabricating, erecting, aligning & fixing in proper position 14 gauge metal sheet to EZ-7 section doors/window frame and outer frame with 75x37.5x4mm M.S angle and M.S grill of 12 mm MS bars as per required spacing welded to outer frame complete at site. rate shall include for suppling all materials such as ISI mark welding rods, bolts, nuts, etc and like labour for the work of erecting etc. complete as directed. Rates shall include for one coat of red oxide and two cots of approved epoxy enamel paint after thorough cleaning of surface. measurement of steel shall be on the basic of length of the section as per drawings and slandered weight as per ISI code			As per Item Description and drawing & instruction of incharge Engineer and payment shall be made on Sq.M basis
	<b>SANITARY FIXTURES &amp; FITTINGS</b>			

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
55	<p>Providing and fixing wash down wall mounting EWC-P of approved shade, conforming to Pattern 2 of IS: 2556 (Part -II), with SWR Selfit Soil PVC pipe and plug bend as per specifications; glazed vitreous / Colored European Water Closet with Cistern (IS-2326), with grouting the CI chair inside the floor/wall, rubber gaskets, connecting PVC 110mm diameter soil pipe with PVC coupling, nuts, mounting cistern on WC., and solid verity heavy duty plastic seat cover as per IS-2548, of approved make; cutting and making jari work etc. complete.</p> <p>EWC-P: (CERA, HINDWARE, PARRYWARE Make)</p> <p>CONCEALED CISTERN Twin Flush Type: (Jaquar, Gabrit, Veiaga Make)</p> <p>SEAT COVER: (CERA, HINDWARE, PARRYWARE Make)</p>	146 147 148	23.112 (A)(I) 23.115 (A)(I) 13.112.0	
56	<p>Providing and fixing White glazed vitreous Wash Basin wall mounting type, size 550x400 mm dia., with supporting M.S. or C.I. Brackets, 1 no, 32 mm CP Bottle trap with extension piece to wall flange with rubber adopter for waste connection and waste coupling. comp. etc. WALL MOUNTING BASIN: (CERA, HINDWARE, PARRYWARE Make)</p> <p>WASTE COUPLING: (HALF THREAD)</p> <p>JAQUAR ALLIED SERIES MAKE</p> <p>BOTTLE TRAP: (With Internal Partition)</p> <p>JAQUAR/ ALLIED SERIES MAKE</p>	148 149 149 151 151	23.127 23.135(A) 23.136(A) 23.95(A) 23.96(A)	Work shall be carried out as per item description and quality app by in charge Engineer
57	<p>Providing and fixing central hole basin Pillar Tap cock, with required braided pipes from basin pillar tap to angular stop cock etc. complete.</p> <p>BASIN PILLAR COCK: (JAQUAR CONTINENTAL SERIES)</p>	151	23.92 (B)(I)	Work shall be carried out as per item description and quality app by in charge Engineer
58	<p>Providing &amp; fixing of Flush cock with wall Flange 32mm with lever knob complete in all respects including cutting and making good the walls etc. METROPOLE FLUSH COCK: - (JAQUAR CONTINENTAL SERIES)</p>	152	23.00.1	Work shall be carried out as per item description and quality app by in charge Engineer

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
59	Providing & fixing of wall mixer 3 in 1 system with provision for both telephone shower and overhead shower complete with bend pipe. MIXER UNIT: (JAQUAR CONTINENTAL SERIES) OVERHEAD SHOWER (JAQUAR CONTINENTAL SERIES). TELEPHONE SHOWER- (JAQUAR CONTINENTAL SERIES)	149	23.141	Work shall be carried out as per item description and quality app by in charge Engineer
60	Providing & fixing in position 15 mm C.P. brass bib cocks of best quality (as approved by the Engineer-in-Charge). 2-way BIB COCK: (JAQUAR CONTINENTAL SERIES)	111	23.96	Work shall be carried out as per item description and quality app by in charge Engineer
61	Providing & fixing 15mm C.P. brass angle valve with C.P. copper connecting pipe 450 mm long and nuts, washer, and brass flange complete, including cutting and making good the wall where required. ANGLE VALVE: (JAQUAR CONTINENTAL SERIES) COPPER PIPE: (JAQUAR CONTINENTAL SERIES)	152	23.99	Work shall be carried out as per item description and quality app by in charge Engineer
62	Providing & fixing stainless steel sink, R.S. or C.I. Painted brackets painted, 40mm dia. C.P. waste, C.P. brass chain and rubber plug, strainer with necessary C.P. brass unions complete including painting the fittings and cutting and making good the walls wherever required, with CP sink cock with raised "J" shaped swinging spout. NIRALI - GRACE - PLAIN - 510 X 432 MM (JAQUAR/ MAKE) SINK HOT & COLD MIXER WIT J - SHAPED SWINGING SPOUT (JAQUAR/ MAKE)	139	23.130(C)	Work shall be carried out as per item description and quality app by in charge Engineer
63	Providing & fixing white vitreous China flat back urinal of size 590x375x390mm as per IS-2556 (Part-2) with C.I. hangers and 15mm dia. C.P. spreader, 32mm diameter CP bottle trap and pipe to wall with C.P. flange complete including cutting and making good the walls and floors wherever required. FLAT BACK LARGE URINAL: (CERA, HINDWARE, PARRYWARE MAKE)	152	23.122 (A)	Work shall be carried out as per item description and quality app by in charge Engineer

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	<b>WASTE COUPLING (FULL THREAD) (JAQUAR ALLIED SERIES)</b>			
64	Providing & fixing of concealed stop cock with wall flange and complete., for the following sizes.25mm dia. (JAQUAR CONTINENTAL SERIES)	151	23.96 A	Work shall be carried out as per item description and quality app by in charge Engineer
		149	23.92 A I	Work shall be carried out as per item description and quality app by in charge Engineer
65	Providing & fixing in position 15 mm C.P. brass bib cocks of best quality (as approved by the Engineer-in-Charge). <b>BIB COCK: (JAQUAR CONTINENTAL SERIES)</b>	149	23.141 A	Work shall be carried out as per item description and quality app by in charge Engineer
66	Providing & fixing of Hand Shower (Health Faucet), with 8mm Dia,1Rmt Long PVC Tube and Wall Hook accessories to complete the item <b>HAND SHOWER: (JAQUAR, ALLIED SERIES MAKE)</b>			
	<b>INTERNAL &amp; EXTERNAL DRAINAGE (SOIL, WASTE, VENT AND WATER PIPES &amp; FITTINGS)</b>			
67	Providing fixing, testing and commissioning of SWR PVC PIPE TYPE-B(6Kg/cm2.) Ring fit/selfit pipe conforming to IS:13592 including all fittings such as bends, junctions, inspection doors, offsets, cowl, access pieces/plugs etc. jointing with PVC Adhesive joints including cutting holes in RCC or brick walls, floor and making good the same. (Inside Toilet & Kitchen and Wash Area Works) (Supreme/ Finolex/ Astral MAKE) <b>SOIL &amp; WASTE &amp; VENT PIPE: -160 mm diameter</b>			
68	Providing fixing, testing and commissioning of SWR PVC PIPE TYPE-B(6Kg/cm2.) Ring fit/selfit pipe conforming to IS:13592 including all fittings such as bends, junctions, inspection doors, offsets, cowl, access pieces/plugs etc. jointing with PVC Adhesive joints including cutting holes in RCC or brick walls, floor and making good the same. (Inside Toilet & Kitchen	154	23.8(E)	Work shall be carried out as per item description and quality app by in charge Engineer

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	and Wash Area Works) (Supreme/ Finolex/ Astral MAKE) SOIL & WASTE & VENT PIPE: -110 mm diameter.			
69	Providing fixing, testing and commissioning of SWR PVC PIPE TYPE-B(6Kg/cm2.) Ring fit/selfit pipe conforming to IS:13592 including all fittings such as bends, junctions, inspection doors, offsets, cowl, access pieces/plugs etc. jointing with PVC Adhesive joints including cutting holes in RCC or brick walls, floor and making good the same. (Inside Toilet & Kitchen and Wash Area Works) (Supreme/ Finolex/ Astral MAKE) SOIL & WASTE & VENT PIPE: -75 mm dia.	154	23.8(E)	Work shall be carried out as per item description and quality app by in charge Engineer
70	Providing & fixing PVC Floor Trap OR multi floor trap of 75mm diameter, with necessary distance piece of 75mm diameter pipe and 150x150mm grating S.S. three piece, making necessary trap chamber all around the trap with complete water proofing treatment inside and outside of the chamber, the work is including necessary SLAB /WALL RCC or Brick holes and cutting and refinishing of the junction with necessary treatment etc. complete. (Supreme/ Finolex/ Prince/ Astral MAKE) 110mm x 75mm	154	23.8(E)	Work shall be carried out as per item description and quality app by in charge Engineer
71	Providing and fixing PVC Pipe ISI marked brand as per IS:4985 (6 kg.) complete with PVC Fittings & clamps & hinges including cutting and making good the walls & ceiling for waste pipes, connections & as directed by the Engineer-in-Charge. (Supreme/ Finolex/ Prince/ Astral MAKE) 50 mm nominal bore (For Kitchen Water: Wash out)	146	23.87	Work shall be carried out as per item description and quality app by in charge Engineer
72	As above for ----40mm nominal bore (For Wash basin Water: Wash out)	154	23.8 E	Work shall be carried out as per item description and quality app by in charge Engineer
73	As above for ----40mm nominal bore (For AC Drain piping in Shaft with insulation as required.)	154	23.8 E	Work shall be carried out as per item description and quality app by in charge Engineer



Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
74	Providing and fixing M.S. holder-bat clamps of approved design to PVC pipe embedded in and including cement concrete blocks 10x10x10cm of 1:2:4 mix (1 cement: 2 coarse sands: 4 graded stone aggregate 20mm nominal size For 160 mm diameter pipe) (Chilly. /Intellotech or Eq. Approved Make) for 160 mm diameter pipe	154	23.8 E	
75	As above for 110 mm dia. pipe			Work shall be carried out as per item description and quality app by in charge Engineer
76	As above for 75 mm dia. pipe			
77	As above for 50 mm dia. pipe			
78	As above For 40 mm dia. pipe			
	<b>EXTERNAL SEWER NETWORK</b>			
79	Providing and Laying & Jointing ECO-drain PVC pipe as per IS-15328 class SN-4 pipes to the specified invert level and slope and full leak proof joining with rubber ring click ring jointing etc., complete with testing. complete with PVC Fittings & RCC support of 450mm x 450mm size as required at every 6mtr distances also including cutting and making good the walls & floors for waste pipes, connections & as directed by the Engineer-in-Charge. (Supreme/ Finolex/ Astral MAKE) 160 mm			
80	As above for 200MM	154	23.8 E	Work shall be carried out as per item description and quality app by in charge Engineer
81	Excavating trenches in soil of required width for pipes etc. including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 2.0 m including getting out the excavated soil, and then refilling the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering etc. and disposing of surplus excavated soil as directed, within a lead of 1000 mtr:0 to 1.5mtr depth	154	23.8 E	
82	Providing and spreading graded sand feeling below, around, and above PVC pipe for support as per the typical section shown in drawing with a lead of 10 Kilometer. Minimum 300mm feeling required all around the pipe.	22	4.0.0 (A)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
83	Constructing masonry inspection/ manhole Chamber inside with 75 second class designation brick work in cement mortar 1:5 (1 cement :5 fine sand) for drainage, with FRP surface heavy duty chamber cover with RCC top slab 1:2:4 mix (1 cement:2 coarse sand : 4 graded stone aggregate 20mm nominal size) necessary excavation foundation concrete 1:4:8 (1 cement :4 fine sand : 8 graded stone aggregate 40 mm nominal size) and inside and outside plastering with cement mortar 1:3 ( 1 cement :3 coarse sand) 12mm thick finished with a floating coat of neat cement complete including using waterproofing compound as per standard design FRP. foot rests including fixing in 20 x 20 x 10 cm cement concrete blocks 1:3:6 (1 cement :3 coarse sand :6 graded stone aggregate 20 mm nominal size): (Sewerage drain chamber) (Note: Cost shall include dewatering & water proofing of chambers as directed at site).	28	4.24	
84	600 x 600 mm size 0 to 1.0mtr depth	163	24.44 (II)	Work shall be carried out as per item description and quality app by in charge Engineer
85	900 x 800 mm size 1.0 to 1.5mtr depth	163	24.44 (II)	
86	1200 x 900mm size 1.5 to 3.0mtr depth	163	24.44 (II)	
87	Providing and fixing square mouth PVC gully trap grade 'A' complete with C.I. grating brick masonry chamber with first class bricks and water tight double seal C.I. cover with frame of 300 x 300 mm internal size. The weight of cover to be not less than 4.5 kg and frame to be not less than 2.70 kg. as per standard design. (Note: Cost shall include dewatering & water proofing of chambers as directed at site). 300 x 300 mm chamber with 160 x 110 mm size 'P' trap.	156	24.19	Work shall be carried out as per item description and quality app by in charge Engineer
88	Providing and fixing of PVC sewer trap of 200mm sizes, the trap should be installed at the last manhole. Making connection of sewage line from last manhole to septic tank including excavation, dewatering, making RCC or masonry wall pipe holes complete work			Work shall be carried out as per item description and quality app by in charge Engineer
89	Providing and fixing to the inlet mouth of rain water pipe FRP medium duty grating 15cm	99	15.87	Work shall be carried out as per item

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	diameter or square size of cutting holes and making good the walls all complete.			description and quality app by in charge Engineer
90	Providing fixing, testing and commissioning of SWR PVC PIPE TYPE-B(6Kg/cm2.) self-fit pipe conforming to IS:13592 including all fittings such as bends, junctions, inspection doors, offsets, cowl, access pieces/plugs etc. jointing with PVC Adhesive joints including cutting holes in RCC or brick walls, floor and making good the same. (TERRACE RAIN WATER DOWN TAKE) 160 mm diameter	99	15.87 A	Work shall be carried out as per item description and quality app by in charge Engineer
91	110 mm diameter. (Vertical Drops	99	15.87 A	
92	75 mm diameter.	99	15.87 A	
	<b>INTERNAL &amp; EXTERNAL COLD / HOT /DRINKING WATER SUPPLY:</b>			
	<b>INTERNAL WATER SUPPLY WORK:-</b>			
93.0	Providing and fixing UPVC-SCH-80 pipes with UPVC SCH-80 fittings UV stabilized and UPVC solutions adhesive joints, having thermal stability for cold water supply including all UPVC plain joints and brass threaded joints fittings including fixing the pipe clamps at 1.0mtr in necessary with testing of all joints and pipes comp. as per Eng. in charge. (External Vertical Shaft Works + Terrace & Under Ground main line work) (Astral/Supreme/Ashirwad Make)	154	23.8 (E)	Quality & Brand as instructed by in charge Engineer
	<b>DOMESTIC / FLUSHING WATER SUPPLY:-</b>			
	-			
93	As above for 15 mm diameter	154	23.8 (E)	
94	As above for 20mm diameter	154	23.8 (E)	
95	As above for 25 mm diameter	154	23.8 (E)	
96	As above for 32 mm diameter	154	23.8 (E)	
97	As above for 40 mm diameter	154	23.8 (E)	
98	As above for 50 mm diameter	154	23.8 (E)	
99	As above for 65 mm diameter	154	23.8 (E)	
100	As above for 80 mm diameter	154	23.8 (E)	
101	As above for 100 mm diameter	154	23.8 (E)	
	<b>INTERNAL TOILET PIPING HOT AND COLD-WATER SUPPLY WORK:</b>			

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
0	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC)SDR-11 pipes, having thermal stability for hot & cold-water supply including all CPVC plain & brass threaded fittings including fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of engineer in charge. (Astral/ Ashirwad Make)	154	23.8(A)	
102	As above for 5 mm diameter	154	23.8(A)	
103	As above for 20 mm diameter	154	23.8(A)	
104	As above for 25 mm diameter	154	23.8(A)	
105	As above for 32 mm diameter	154	23.8(A)	
106	As above for 40 mm diameter	154	23.8(A)	
107	Supply, Installation, Testing and Commissioning of 25 mm dia. air release valve. (Zoloto/ Audco/ R.B./ Spirex)			
108	Providing and fixing float valve with pressure type (Copper) float of approved make. (Zoloto/ Audco/ R.B./ Spirex) 25mm dia.			
109	Supply, installation, testing and commissioning of Domestic Water meters horizontal inferential, single or multi jet, dry dial, suitable for 50 deg. C, duly sealed against tampering, complete with coupling conforming to Class B, IS 779-1994 (latest edition) or ISO 4064, readings in metric system. 40 mm dia.			Separate sheet attached
<b>ELECRICAL INTERNAL SHOP CUM GODOWN-102 NOS</b>				
110	Point wiring for Light / Bell with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multistrand copper wires, in following type of pipe to be erected concealed in/ on surface on wall/ceiling complete with 6A Modular type switch / bell push & accessories and earth continuity of following type, erected on PVC / Metallic box, single mounting base frame covered with textured/metallic front plate modules erected on / in wall / ceiling as per pipe	As per Electrical specification Book and quality as described company in tender or equivalent	Electrical Item No 109 to 138	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	erected, with necessary Lamp holder/ceiling rose / H.D. Connector as directed.			
111	Point wiring for FAN with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of .ISI marked 1.1 KV Grade FRLS PVC insulated multistrand copper wires, in following type of pipe to be erected concealed in / flushed on wall/ceiling complete with 6A Modular type switch and hum free EME four or more step type electronic fan regulator with separately mounted and accessories with earth continuity of following type erected on PVC / Metallic box, single mounting base frame covered with textured/metallic front plate modules erected on / in wall / ceiling as per pipe erected. with necessary ceiling rose / H.D. Connector as directed. (a) with medium class Rigid PVC pipe and accessories			
112	Point wiring for Two Way Controlled Light Point with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (green) both are of. ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires erected in below type of pipe with 6A Modular type switches and following type of accessories erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate modules erected on / in wall / ceiling as per pipe erected. with necessary batten/angle holder or ceiling rose or H.D. Connector as directed. (a) with medium class Rigid PVC pipe and accessories erected flushed on wall/ceiling complete			
113	Point wiring for Individual Plug with & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multistrand copper wires, in following type of to be erected concealed in / on surface of wall / ceiling complete with Modular type switch & 5 pin Plug erected on PVC / Metallic box covered with appropriate front plate modules erected on / in wall / ceiling as per pipe erected with following type of accessories.[II] For 16A Plug with 2-1.5 sq.mm Cu. Wire (a) with medium class Rigid PVC pipe and accessories Cat III			

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
114	Point wiring for Individual Plug with & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multistrand copper wires, in following type of to be erected concealed in / on surface of wall / ceiling complete with Modular type switch & 5 pin Plug erected on PVC / Metallic box covered with appropriate front plate modules erected on / in wall / ceiling as per pipe erected with following type of accessories.[II] For 16A Plug with 2-4.0 sq.mm Cu. Wire (a) with medium class Rigid PVC pipe and accessories Cat III			
115	Point wiring for Individual Plug with & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multistrand copper wires, in following type of to be erected concealed in / on surface of wall / ceiling complete with Modular type switch & 5 pin Plug erected on PVC / Metallic box covered with appropriate front plate modules erected on / in wall / ceiling as per pipe erected with following type of accessories.[II] For 16A Plug with 2-4.0 sq.mm Cu. Wire (a) with medium class Rigid PVC pipe and accessories Cat III			
116	Point wiring for Looped Plug with 6A Modular type switch & 5 pin socket erected on PVC / Metallic box, single mounting base frame covered with textured / metallic front plate modules erected on / in wall / ceiling with following type accessories Cat. III			
117	Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected concealed in /flushed on wall/ceiling, with 1.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green color for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 1.5 sq. mm			
118	Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected concealed in /flushed on wall/ceiling, with 1.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green color for earth continuity			

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm			
119	Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected in / on wall / ceiling with 2.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green color for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (a) 2 wire 4 sq. mm			
120	Mains with ISI marked, 1.5KV grade electrolyte multi stranded, annealed copper conductor with heat resistant PVC insulated conforms to IS 694, IEC - 227 erected in existing pipe of following size (Specifically for control panel, relays, power switchgears, motor starters & control wiring) with required size of copper lugs, nuts and bolts if required. (g) One wire 6.00 sq. mm			
121	Providing & Erecting approved make following size of TV Co-axial flexible cable comprising inner conductor of solid bare copper insulated with Foam PE & Secondary conductor made of poly - Aluminum film bonded Al. Braids @ suitable coverage overall sheathed with black PVC insulation. e). RG-11			
122	Providing and erecting ISI mark medium class RIGID PVC PIPES of following size complete to be erected on/in wall or ceiling erected with necessary PVC fittings & Junction boxes fixed with adhesive solution & Clamps with following dia of pipes, in approved manner as directed (a)20 mm			
123	Providing and erecting ISI mark medium class RIGID PVC PIPES of following size complete to be erected on/in wall or ceiling erected with necessary PVC fittings & Junction boxes fixed with adhesive solution & Clamps with following dia of pipes, in approved manner as directed (b) 25 mm			
124	Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with			

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	single mounting base frame covered with textured/metallic /white front plate, modules erected with necessary connections as directed 1 no. 6A/16A universal plug-switch combined. 3 nos. 6A Switch 3 nos. 6A 5 pin Plug for Modular Type Accessories			
125	Providing following type of Modular Type Accessories mounted with PVC / metallic box, single mounting base frame covered with textured / metallic front plate, modules erected with necessary connection. As desired by Engineer In charge (4) TV Co-axial Socket outlet			
126	Providing following type of Modular Type Accessories mounted with PVC / metallic box, single mounting base frame covered with textured / metallic front plate, modules erected with necessary connection. As desired by Engineer In charge (3) Two Pin/RJ-11 Telephone Socket One Gang			
127	Providing following type of Modular Type Accessories mounted with PVC / metallic box, single mounting base frame covered with textured / metallic front plate, modules erected with necessary connection. As desired by Engineer In charge (8) Modem Jack for Computer Open RJ-45			
128	Providing following type of Modular Type Accessories mounted with PVC / metallic box, single mounting base frame covered with textured / metallic front plate, modules erected with necessary connection. As desired by Engineer In charge (7) Blank Plate Single			
129	Providing and erecting Sheet Steel powder coated MCB distribution board - flush / surface mounted fitted with busbar, neutral link, earth bar and DIN rail, confirming to IS 13032 and BS 5486-1986 without MCB to house appropriate nos. of MCBs. (The DBs should be used of same company of MCB to be used) (A) single phase 21. incoming and horizontal single-phase outgoing (b) sheet steel double door (IP-43) (iv)12 way			



Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
130	Providing and erecting Sheet Steel powder coated MCB distribution board - flush / surface mounted fitted with busbar, neutral link, earth bar and DIN rail, confirming to IS 13032 and BS 5486-1986 without MCB to house appropriate nos. of MCBs. (The DBs should be used of same company of MCB to be used) (B) three phase incoming and single-phase horizontal type outgoing Per phase isolation type (PPI) (b) sheet steel double door (iii) 8 way			
131	Supplying & erecting Sheet Steel powder coated Cable end termination Box to be mounted on Top or Bottom of the MCB Distribution Box for housing/covering Extra wires & Cables, suitable for following size of MCB DB Box. (G) Three Phase 8 Way			
132	Approved make ELCBs / RCCBs conforming to IS: 12640 and having sensitivity of 30 mA and Short Circuit withstand capacity of 6 KA and suitable for operation on single phase 240 V. having characteristic of quick action & tripping with all advance feature & do not incorporate any electronic component. for following Max. rating erected as directed (ii) 40Amps. DP			
133	Providing and erecting Miniature circuit breaker single pole 6A to 25A suitable to operate on 240 V A.C. system and having breaking capacity 10 KA to be erected in existing box. confirming to IS 8828/1996 with ISI Mark			
134	SITC FP MCB Enclosure of IP65 Water Tight Junction Box with 32A DP MCB With necessary clamp for mounting of the J.B. J. B. Should be provided with cable Connectors + IP65 Glands + IP65 Grommets. connectors to connect 2 nos. of 6 sq. mm. x 4 core cables+ Earthing wires. of Legrand, Schneider, C&S make			
135	Supplying & erecting fan hook box of 10 mm M.S. round bar bounded to the RCC bars up to 50mm length each side and pierced through a 16 Gauge M.S. box / Heavy Duty PVC box complete erected concealed in Ceiling with necessary finishing.			

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
136	Providing 2. 5mm.thick laminated acrylic sheet to cover the fan hook or Fan box.			
137	Providing & Erecting following Shockproof tissino type accessories erected on 3 mm thick PC (Polycarbonate) sheet in PVC/ Metal/Wooden Box. erected on wall/ ceiling. (8) Bakelite lamp holder			
138	Providing & Erecting following Shockproof tissino type accessories erected on 3 mm thick PC (Polycarbonate) sheet in PVC/ Metal/Wooden Box. erected on wall/ ceiling. (7) Bakelite ceiling, rose			
139	Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate, modules erected with necessary connections as per site situation directed by Engineer In charge. (8) Computer RJ-45 socket			
	<b>CIVIL WORK-WAREHOUSE</b>			
140	Excavation for foundation up to 1.50 mt depth including sorting out and stacking of useful materials and disposing the excavated stuff up to 50 mt lead (A) Loose or soft soil (EXECUTED WITH MECHANISED EFFORTS MACHINARIES)	22	4.0.0 (A)	
141	Excavation for foundation 1.50 mt to 3.00 mt depth including sorting out and stacking of useful materials and disposing the excavated stuff up to 50 mt lead (A) Loose or soft soil (EXECUTED WITH MECHANISED EFFORTS MACHINARIES)	22	4.0.0 (A)	
142	Filling foundation and plinth with murrum or selected soil in layer of 20 cm in thickness including ramming watering and consolidating etc. complete	28	4.004	
143	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
144	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labor and material consistent with I.S.I specification. Using Chlordane and	139	20.009	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	Chiorpurfiles 20 EC. As Per 6131_paret-II Concentration Weight one percent is recommended i.e. one liter 20 EC chemical emulsion with 19 liter give 1 % concentration inclusive of one liter chemical emulsion application at the rate of 5 Liter chemical / Sqm of surface is recommended as per I. S			
145	Providing and laying controlled cement concrete M-100 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish and reinforcement for reinforced concrete work in: (a) Foundations, footings Bases of columns and the like and Mass concrete.	43 46	6.12(B) 6.19(B)	
146	Providing and laying controlled cement concrete M-250 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in foundation footings, base of columns and mass concrete.	43 46	6.12(B) 6.19(B)	
147	Providing and laying controlled cement concrete M-250 and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in foundation footings, base of columns and mass concrete.	43 46	6.12(B) 6.19(B)	
148	Providing and laying controlled cement concrete M-250 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in foundation footings, base of columns and mass concrete.	43 46	6.12(B) 6.19(B)	
149	Providing and laying controlled cement concrete M-250 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts G. FLOOR (up to new GL)	40 56	5.8.3(D) 9.1 (G)(i)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
150	Providing and laying controlled cement concrete M-250 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts G. FLOOR (up to new PL)	40 56	5.8.3(D) 9.1 (G)(i)	
151	Providing and laying controlled cement concrete M-250 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts G. FLOOR (up to 3 mtr)	40 56	5.8.3(D) 9.1 (G)(i)	
152	Providing and laying controlled cement concrete M-250 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts F. FLOOR (up to 3 to 6 mtr)	40 56	5.8.3(D) 9.1 (G)(i)	
153	Providing and laying controlled cement concrete M-250 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts F. FLOOR (Above 6 mt ht)	40 56	5.8.3(D) 9.1 (G)(i)	
154	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in BEAMS Ground Floor (GL)	40 56	5.8.3(D) 9.1 (G)(i)	
155	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in BEAMS Ground Floor (GL)	40 56	5.8.3(D) 9.1 (G)(i)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
156	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in BEAMS First Floor (LINTEL LEVEL)	40 56	5.8.3(D) 9.1 (G)(i)	
157	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in BEAM (truss bottom level)	40 56	5.8.3(D) 9.1 (G)(i)	
158	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in STAIRCASES Ground Floor	38 58	5.8.2 (E) 9.1 (M)	
159	Providing Thermo Mechanically Treated bar (T.M.T.) (I.S.I. Mark) conforming to I.S. - 1786 Fe - 500D for R.C.C. work including bending, binding and placing in position complete. All floor Level			As per Attached Sheet
160	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In foundation and plinth in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional	46	6.13 (B)	
161	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In super structure above plinth level up to floor two level in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional {Ground Floor up to 3 mt ht)	43 46	6.12(B) 6.19(B)	
162	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In super structure above plinth level up to floor two level in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional {First Floor (3 to 6 mt)	43 46	6.12(B) 6.19(B)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
163	Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sq.cm. In super structure above plinth level up to floor two level in cement mortar 1:6 (1cement: 6 fine sand) (b) Conventional {Second Floor} (gable wall)	43 46	6.12(B) 6.19(B)	
164	Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement: 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement: 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. GROUND FLOOR (up to plinth level)	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	
165	Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement: 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement: 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. GROUND FLOOR (up to 3 mtr ht)	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	
166	Providing 20 mm thick double coat mala cement plaster on interior brick / concrete work for plastering comprising of base coat of 12 mm thick cement plaster in cement mortar (1 Cement: 4 coarse sand) in rough finishing and 8 mm thick top coat of cement mortar 1:2 (1 Cement: 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. FIRST FLOOR (above 3 mt ht)	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	
167	Providing 10 mm. thick cement plaster in single coat for plastering on ceiling and soffits of stairs up to floor two level and finished even and smooth in: (I) Cement mortar 1:3 (1 cement: 3 sand) Ground Floor	105 106	17.58 (I)	
168	20 mm. thick sand faced GUTAKA FINISHED cement plaster on walls up to All height above ground level consisting of 12 mm. thick backing coat of c.m. 1:3 (1 cement: 3 sand) and 8 mm. thick finishing coat of c.m. 1:1 (1 cement: 1	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	sand) including making groove 6 mm wide and 8 mm deep as approved pattern etc. complete as directed.			
169	Providing and fixing chicken mesh jali with square of 12.50 x 12.50 mm of 25 gauge at junction the Brick. masonry and reinforcement cement concrete member including fixing materials scaffolding labor etc. complete			As per Attached sheet
170	Providing and laying controlled cement concrete M-100 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish and reinforcement for reinforced concrete work in: (a) Foundations, footings Bases of columns and the like and Mass concrete (below trimix floor).	32 55	5.3.13 9.1 (A)	
171	Providing and laying cement concrete flooring M-200 RMC by using TREMIX system laid in one layer as per required level, slop and thickness of 150 mm with 32kg of RCH per/CMT concrete to be laid in alternate panels size approx. 3.5m x5.0m with steel channel foam work leveling with surface vibrator finish the surface with power float and dowels' Dewatering the floor with vacuum pump. light blooming on the surface as per directed and making construction join of size 10x40 mm by using of concrete cutter machine and ready-mix bituminous filler of Shalimar tar products			As per Attached sheet
172	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.			As per Attached sheet
173	Supplying fabricating, erecting, aligning & fixing in proper position Asian make hollow mild steel, 50mm x50x0.26mm Framing as per design with 25x25x3mm G I jali complete at site. Rate shall include for supplying all materials such as ISI mark welding rods, bolts, nuts, etc. and like labor for the work of straightening, cutting, drilling holes, necessary plants / equipment for assembling, bolting	70 121 122	11.4 D 19.11 19.7	The fabrication of Grill shall be carried out as per detailed drawing. The grill shall be painted with approved paint two coats

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	welding, erecting, etc. complete as directed. Rate shall include for one coat of red oxide and two coats of approved epoxy enamel paint after thorough cleaning of surfaces. on pipe. Measurement shall be on the Total Smt Area.			followed by red lead primer. Payment shall be made on Kg. basis of complete item.
174	Providing and fixing rolling shutter of approved make made of 80mm wide M. S laths inter locked together throw their entire length joined together lengths and joined locks mounted on specially designed pipe shaft with brackets plates. guide channels and arrangements for inside, and outside locking with push-pull operation including the cost of hood cover and spring etc. complete (A) shutter having width below 3.5M	10	32	Work shall be carried out for Complete Item Measured & Paid on the basis of Sqmt
175	Providing and laying polished Kota stone slab 25mm thick in risers of steps, skirting dado and pillars laid on 10mm thick cement mortal 1.3(1-cement :3 coarse sand) and joined with gray cement slurry mixed with pigment to match the shad of slab including rubbing and polishing etc. complete	87	14.44	
176	Finishing wall with weather proof exterior emulsion paint on wall surface (two coast) to give a required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials etc. complete			Separate shet attached
177	Providing & applying three coats (First two coats are with brush and final coat is with roller) of plastic emulsion paint of desired shade, of approved make, brand and manufacture, on any surface, at all heights, to give an even shade, including thoroughly brushing the surface free from mortar droppings and other foreign matter and sand papered smooth. The paint shall be applied after applying a coat of primer and putty.	120	18.57	As per Item description and direction of in charge Engineer
178	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in weather shed	36	5.4.4	Using M 200 Concrete mix by RMC Plant



Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
179	Providing and laying controlled cement concrete M-200 RMC and curing complete including the cost of formwork with sheathing steel sheets so as to give a fair finish but excluding the cost of reinforcement for reinforced concrete work in lintel	40 56	5.8.3 (C) 9.1 (H) (I)	
180	Supplying fabricating, erecting, aligning & fixing in proper position 14-gauge metal sheet to EZ-7 section doors/ window frame and outer frame with 75x37.5x4mm M.S angle and M.S grill of 12mm M.S bars as require spacing welded to outer frame complete at site. Rate shall include for suppling all materials such as ISI mark welding rods, bolts, nuts, etc. and like labour for the work of erecting etc. complete as directed. Rate shall include for one coat of red oxide and two cots of surface. Measurement of steel shall be on the basic of length of the section as per drawing and standard weight as per ISI code			As per Attached sheet
181	PEB Roof structure-73.31mt x 38.48 mt Specification 1.Frame type length 72.81mt 2.Width 38.25mt 3.clear height 6.097 from plinth level 4.Roof Slope-1:10 5.Bay spacing 10@ 7.331 6.And Wall column Spacing -7.10 7.Type of and frames non expandable 8.Wind bracing pipe bracing for roof and side wall 9.Roof cladding -0.47mm thick JSW / Bhusan make bare galvalume sheet roof liner panel 10.Wall Cladding – Full height wall brick 11.Gutter- Galvalume Gutter -0.50 mm thick 12.Flashings –PPGL 345 MPa color galvalume 0.50 mm thick 13.Down spout up to GL –PPGL 345 MPa color galvalume off white color 0.50 mm thick 14.Canopy – 1 mt canopy on side walls 15.primary members (frames and build up members) minimum thick 6 mm – Shot Blasting, epoxy DTM paint total DFT 90 to 100 microns			As per item description and instruction of in charge Engineer Payment shall be made on Sq M Basis of finished work

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	16. Secondary members (purlin and girt) minimum thick 2.0 mm – galvanized 120 gsm 17.anchor bolts and templets black painted			

## **Detail Specification**

### **Item No 21/159**

**Providing Thermo Mechanically Treated bar (T.M.T.) (I.S.I. Mark) conforming to I.S. - 1786 Fe - 500D for R.C.C. work including bending, binding and placing in position complete. All floor Level**

#### **1.0. GENERAL**

This work shall consist of furnishing and placing coated, T.M.T. 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. The T.M.T. FE-500/500D bar shall be TATA, SAIL, RINL, Barnala, SSR or equivalent brand as directed by Engineer-in-charge.

#### **2.0. MATERIAL**

**2.1. TMT Bars** Reinforcements may be either TMT/medium tensile steel or high strength deformed bars. They may be coated with epoxy or with approved protective coatings.

**2.2.** TMT bars reinforcement for RCC work shall conform to IS 1786 FE-500/500D and shall be of tested quality. It shall also comply with relevant part of IS 456-1966

**2.3.** All reinforcement shall be clean and free from dirt, paint, grease or oil, oil 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 280-1972

**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.** 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 25mm or  $1.1 \times \frac{1}{4}$  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 TMT. 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 500/500D 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:  $CE = C + Mn + Cr + Mg + V + Ni + Cu$  6 5 15 are 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 bending 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 bend shall not be less than 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 spitting 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 blocks 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.

**10.7.** 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 joined by coupling which shall have a cross section sufficient to transmit the full stresses of bars The end of the bars that are joined 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.

**10.8.** 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 form 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 form 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

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.	40 mm	9.86 Kg. /Rmt.

**11.1.** Reinforcement shall be measured in length including overlaps, separately for different diameters as actually used in the work. Where welding or coupling is resorted to, in place lap joints, such joints shall be measured for payment as equivalent length of overlap as per design requirement. From the length so measured, the weight of reinforcement shall be calculated in Kg. on the same basis of as per table given above. Length shall include hooks at the ends. Wastage and annealed steel wire for binding shall not be measured and the cost of these items shall be deemed to be included in the rate for reinforcement.

**11.2.** The rate for reinforcement includes cost of steel binding wires, cutting, bending, placing in position, binding and fixing in position as shown on the drawings and as directed. It shall also include all devices for keeping reinforcement in approved position, cost of joining as per approved method and all wastage and spacer bars.

**11.4.** The contract rate shall be for a unit of one kilogram for completed item as directed. The Item shall be measured & paid as finished work in kg.

**Item No 35**

**Providing and fixing HEXAGONAL chicken mesh jali with square of 12.50 x 12.50 mm of 25 gauge at junction the Brick. masonry and reinforcement cement concrete member including fixing materials scaffolding labor etc. complete**

**&**

**Item No 169**

**Providing and fixing chicken mesh jali with square of 12.50 x 12.50 mm of 25 gauge at junction the Brick. masonry and reinforcement cement concrete member including fixing materials scaffolding labor etc. complete**

**MATERIALS**

Chicken wire mesh jali (12.5 x 12.50mm) of 25 Gauge approved make or as directed.

**WORKMANSHIP**

Chicken wire mesh jali shall approved by Engineer in charge. It shall be fixed with necessary fixtures & fastenings between Masonry & R.C.C. work before carrying out the work of Plaster. Chicken mesh jali shall be cut to size and same shall be fixed at the junction of concrete and brick wall with nails in such a manner that it stick to wall surface.

**MODE OF MEASUREMENTS & PAYMENT**

The unit rate of fixing Chicken wire mesh jali 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 finishing as per direction of the Engineer-in-charge.

The Chicken wire mesh jali work shall be measured for its width and height limiting to specified capacity to those specified on plan or as directed.

**The rate shall be for a unit of Square meter.**

**Item No 39**

**Providing and laying cement concrete flooring M-200 RMC by using TREMIX system laid in one layer as per required level, slop and thickness of 100 mm with 32kg of RCH per/CMT concrete to be laid in alternate panels size approx. 3.5m x5.0m with steel channel foam work leveling with surface vibrator finish the surface with power float and dowels' Dewatering the floor with vacuum pump. light blooming on the surface as per directed and making construction join of size 10x40 mm by using of concrete cutter machine and ready-mix bituminous filler of Shalimar tar products.**

**&**

**Item No 171**

**Providing and laying cement concrete flooring M-200 RMC by using TREMIX system laid in one layer as per required level, slop and thickness of 150 mm with 32kg of RCH per/CMT concrete to be laid in alternate panels size approx. 3.5m x5.0m with steel channel foam work leveling with surface vibrator finish the surface with power float and dowels' Dewatering the floor with vacuum pump. light blooming on the surface as per directed and making construction join of size 10x40 mm by using of concrete cutter machine and ready-mix bituminous filler of Shalimar tar products**

1. In the designation of a concrete mix letter 'M' refers to the mix and the number to the specified 28 days works cubs compressive strength of that mix on 150mm cubes, expressed in kg/cm<sup>2</sup> where Ordinary Portland cement conforming to IS : 269 or Portland blast furnace cement conforming to IS : 455 is used, the compressive strength requirements for various grades of concrete shall be as give below on the next page :-

Grade of concrete	Compressive works test strength in kg/cm <sup>2</sup> on 150 mm cubes, conducted in accordance with IS : 516
-------------------	--

	Min. at 7 days	Min. at 28 days
M 100	70	100
M 150	100	150
M 200	135	200
M 250	170	250
M 300	200	300
M 350	235	350
M 400	270	400
M 450	300	450

NOTE : In all cases the 28 days compressive strength specified in the above Table shall alone be the criterion for acceptance or rejection of the concrete.

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

3. Concrete mix shall be designed on the basis of preliminary tests so as attain strength at least 33 per cent higher than that required on work tests. The proportions for ingredients choose shall be such that concrete has adequate workability for conditions prevailing on the work in question and can be properly compacted with the means available. Except where it can be show to the satisfaction of the Engineer-in-charge that supply of properly graded aggregate of uniform quality can be maintained till the completion of work, grading of aggregate should be controlled by obtaining the coarse aggregates in different sizes and bleeding them in the right proportions as required. Aggregates of different sizes shall be stocked in separate stock piles. Required quantity of material shall be stock piled several hours, preferably a day before. Grading of coarse and fine aggregate shall be checked as frequently as possible, frequency for a given job being determined by the Engineer-in-charge to ensure that the suppliers are maintaining the uniform grading as approved for samples used in the preliminary tests.

4. In proportioning concrete, the quantity of both cement and aggregate shall be determined by weight. Where the weight of cement is determined by accepting the marker's weight per bag a reasonable number of bags shall be weighed separately to check the net weight. Where cement is weighed from bulk stocks at site and not by bags, it shall be weighed separately from the aggregates. Water shall either measure by volume in calibrated tanks or weighed. All measuring equipment shall be maintained in a clean and serviceable condition. Their accuracy shall be periodically checked.

5. It is most important to keep the specified water cement ratio constant and at is correct value. To this end moisture contain both fine and coarse aggregates shall be determined by the Engineer-in-charge according to the weather conditions. The amount of mixing water shall then be adjusted to compensate for variations in the moisture cement .For the determination of moisture content in the aggregates IS : 2386 (Part-III) shall be referred to. Suitable adjustments shall also be made in the weights of aggregates to allow for the variation in weights of aggregates due to variation in their moisture content. Minimum quantity of cement to be used in controlled concrete shall not be less than 210 kg. Per cubic metre in plain concrete and not less than 300 kg/per cubic metre in reinforced concrete structural member. The Minimum quantity of cement for prestressed concrete work shall not less than 360 kg/per cubic metre of concrete nor shall it be more than 540 kg/per cubic meter of concrete.

6. Following shall be the maximum nominal size of coarse aggregate for the different items of work :

Sr.No.	Item of construction	Maximum nominal size of coarse aggregate



i	RCC well curb, RCC well staining and RCC piles.	40 mm
ii	PCC well staining	63 mm
iii	Well cap or pile cap; solid type piers, abutments and wing-walls their pier caps	40 mm
iv	RCC works in cross girders, deck slab, wearing coarse, kerb, light posts, blast walls approach slab etc., and hollow type piers, abutments wing walls and their pier caps.	20 mm
v	RCC bearings	20 mm
vi	For any other item of construction not covered by items (i) to (v) above	As specified on the drawing or as desired by the Engineer in charge in case it is not specified on drawing.

For heavily reinforced concrete members as in the case of ribs of main beams, nominal maximum size of aggregate shall usually be restricted to 5 mm. less than the minimum internal clear distance between the main bars or 5 mm less than the minimum cover to the reinforcement whichever is the smaller.

7 Fine aggregate shall be clean, hard, coarse sand. It shall be free dust and such other substances. The sand be get approved by the Engineer in charge.

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

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

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

11. For all work concrete shall be mixed in fully automatic computerized mechanical mixer which along with other accessories shall be kept in first class working condition and so maintained throughout the construction mixing shall be continued till materials are uniformly distributed and uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of mortar containing its proportionate amount of cement. In no case shall the mixing be done for less than 2 minutes after all ingredients have been put into the mixer.

12. Mixer which has been out of use more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to be the Engineer in charge, the first batch of concrete from the mixer shall contain only two thirds of normal quantity of coarse aggregate. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

13. The method of transporting and placing concrete shall be approved by the Engineer in charge. Concrete shall be so transported and placed that no contamination, segregation or loss of its constituent material takes place. All form work and reinforcement contained in it shall be cleaned and made free from standing water, dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer in charge has been obtained.

14. If concreting is not started within 24 hours of the approval being given. It shall have to be obtained again from the Engineer in charge. Concreting then shall proceed continuously over the area between construction joints. Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a proper construction joint is formed. Concrete shall be compacted in its final position within 30 minutes of its discharge from the mixer unless carried in properly design agitators, operating continuously when this time shall be within 3 hours of the addition of cement to the mix an within 30 minutes of its discharge from the agitator. Except where otherwise agreed to be the Engineer in charge. Concrete shall be deposited in horizontal layers to a compacted depth of not more than 0.45 metre when internal vibrator is used not exceeding 0.30 metre in all other cases.

15. Unless otherwise agreed to be the Engineer in charge concrete shall not be dropped in to place from a height exceeding 2 metres. When trunking or chutes are used they shall be kept clean and used in such a way as to avoid segregation. When concreting has to be reused on a surface which has hardened, it shall be roughened, swept clean, thoroughly wetted and cover with a 10 mm. thick layer of mortar composed of cement an sand in the same ratio as in the concrete mix itself. This 13 mm layer of mortar shall be freshly mixed and placed immediately before placing of new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particles of coarse aggregate. The surface shall then be thoroughly wetted, all free water removed and then coated with neat cement grout. The first layers of concrete to be placed on this surface shall not exceed 150 mm. In thickness and shall be well rammed against old particular attention being given to corners and close sports.

16. All concrete shall be compacted to produce dense homogeneous mas with the assistance of Vibrators, unless otherwise permitted by the Engineer in charge for exceptional cases, such as concreting under water, where vibrators cannot be used. Sufficient vibrator in serviceable condition shall be kept at site so that spare equipment is always available in the event of break downs.

17. Immediately after compaction, concrete shall be protected against harmful effects of weather including rain, running water, shocks, vibration, traffic, rapid temperature changes, frost and drying out process. It shall be covered with wet sucking, Hessian or other similar, absorbent material approved by the Engineer in charge soon after the initial set, and shall be kept continuously wet for a period of not less than 14 days from the date of placement. Masonry work over the foundation concrete may be started after 48 hours of its laying but the curing o concrete shall be continued for a minimum period of 14 days.

18. Form work shall include all temporary or permanent forms required for forming the concrete, together with all temporary construction required for their support. Form work shall however be delivered into following two district categories:-

(1) Shuttering i.e. form work required for forming the concrete.

(2) Scaffolding i.e. form work required for supporting shuttering.

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

19. Forms shall be mortar tight and shall be made sufficiently rigid by the use of ties and bracings to prevent any displacement or sagging between supports. They shall be strong enough to with stand all pressure, ramming and vibration, without deflection from the prescribed lines occurring during and after placing the concrete. Screw jacks or hardwood wedges where required shall be provided to make up any settlement in the form work either before or during the placing of concrete. Suitable camber shall be provided in horizontal members of structure especially in long span to counter the effects of any deflection. The form

work shall be so fixed as to provide for such camber. Forms shall be so constructed as to be removable in sections in the desired sequence. Without damaging the surface of concrete or disturbing other sections.. Unless otherwise specified or directed, chamfers or fillets of sizes 25 mm x 25 mm shall be provided at all angles of form work to avoid sharp corners.

20. The inside surface of shuttering shall except in the case of permanent form work or where otherwise agreed to be the Engineer in charge, be coated with an approved material to prevent adhesion of concrete to the form work. Release agents shall be applied strictly in accordance with the manufacture's instruction sand shall not be allowed to come into contact with any reinforcement. Or pre stressing tendons and anchorages. Different release agent shall not be used in form work for concrete which will be visible in the finished works.

21. Special measures shall be taken to ensure that the form does not hinder the shrinkage of concrete because without these cracking could occur before the form work is removed. Wherever applicable arrangements must be made to ensure that the form work does not restrain the shortening and hogging of the beams or slabs during tensioning of the tendons. The formwork should take due account of the calculated amount of positive or negative camber so as to ensure the correct final shape of the structure having regard to the deformation due of false work, scaffolding or propping and the instantaneous or deferred deformation due to various causes affecting pre stressed structure. Where they are reentrant angles in the concrete has set in order to avoid cracking due to shrinkage of concrete. Form work shall be tight enough to prevent any appraisable loss of cement during vibrations. Suitable tolerance should be provided in the form work. Immediately before concreting all forms shall be thoroughly cleaned. Contractor shall give the engineer in charge due notice before placing any concrete in the forms to permit him to inspect and accept the false work and forms as to their strength, alignment and general fitness, but such inspection shall not relieve the contractor of his responsibility for safety of men, machinery, material and for results obtained.

22. The Engineer in charge shall be informed in advance by the contractor of his intention to strike any form work. While fixing the time for removal of form work, due consideration shall be given to local conditions that influence the setting of concrete and of concrete and of the materials used in the mix. Where field operators are controlled by strength tests of concrete the removal of the load supporting of soffit forms may commence when concrete has attained strengthen props including the effect or any further additional of loads. When field operations are not controlled by strength tests of concrete the vertical forms of beams, columns and walls may be removed after 2 days. The props of slabs and beams may be removed after 14 days respectively. All form work shall be removed without causing any damage to the concrete. Centering shall be gradually and uniformly lowered in such a manner as to permit the concrete to take stresses due to its own weight uniformly and gradually. Where internal metal ties are permitted, they or their removable parts shall be extracted without causing any damage to the concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm. cover to the finished concrete surface. Where it is intended to cleaned and made good to the satisfaction of the Engineer in charge.

23. Immediately after the removal of forms, all exposed bars or bolts passing through the cement concrete member to a depth of at least 25 mm. below the surface of the concrete and the resulting holes be filled by cement mortar. All fins caused by form joints, all cavities produced by the removal of form ties and all other holes and depressions, honeycomb spots, broken edges or corners and other defects, shall be thoroughly cleaned, saturated with water and carefully pointed and rendered true with mortar of cement and fine aggregated mixed in the proportions used in the grade of concrete that is being finished and of as dry a consistency as is possible to use. Considerable pressure shall be applied in filling and pointing to ensure through filling in all voids. Surfaces which have been pointed shall be kept moist for a period

of twenty four hours. If rock pockets/honey combs, in the opinion of the Engineer in charge are of such an extent or character as to affect the strength of the structure materially or to endanger the life of the steel reinforcement he may declare the concrete defective and require the removal and replacement of the portions of the structure affected.

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

Sr.No.	Type of work	Where vibrators are used	Where vibrators are not used
		Slumps	
i	Mass concrete in RCC foundations, footings and retaining walls	10 mm to 25 mm	80 mm
ii	Beams, slabs and columns simply reinforced	25 mm to 40 mm	100 mm to 120 mm
iii	Thin RCC section or section with congested steel	40 mm to 50 mm	125 mm to 150 mm

25. For controlled concrete preliminary tests shall consist of three sets of separate tests and in each set, tests shall be conducted on six specimens. Not more than one set of six specimens shall be made on any particular day of the six specimen in each set, three shall be tested at seven days and the remaining three at 28 days. The preliminary tests at 27 days are intended only to indicate the strength likely to be attained at 28 days. Work strength tests shall be made in accordance with IS : 516 EACH test shall be conducted on ten specimens five of which shall be tested at seven days and the remaining five at 23 days. The samples of concrete shall be taken on each day of concreting and cubes shall be made at the rate of one for every 5 cubic metre of concrete or a part thereof. However if concreting done in a day Is than 15 cubic metre the minimum number of cubes can be reduced to 6 with the specific permission of the Engineer in charge. Similar works tests shall be carried out whenever the quality and grading of materials is changed irrespective of the quantity of concrete poured. The number of specimens may be suitably increased as deemed necessary by the Engineer in charge when procedure to tests given above reveals a poor quality of concrete and in other special cases.

26. The average strength of the group of cubes cast for each day shall not be less than the specified works cube strength. 20 per cent of the cubes cast each day may have values les than the specified strength, provided the lowest value is not less than 85 per cent of the specified strength.

27. RCC work shall have exposed concrete surface. Centering design and its erection shall be approved by the Engineer in charge. One carpenter with helper will invariably be kept throughout the period of concreting. Movement of labour and other persons shall be totally prohibited over reinforcement laid in position. For access to different parts, suitable mobile platforms shall be provided so that steel reinforcement in position as not disturbed. For ensuring proper cover, mortar blocks of suitable size shall be cast and tied to the reinforcement. Timber, kapachi or metal pieces shall not be used for this purpose. Concreting of important structural members shall always be done in the presence and under the supervision of departmental person not below the rank of Asstt.Engineer / Add.Asstt.Engineer / Overseer or as instructed by the Engineer in charge. After removal of form work and shuttering the executive Engineer shall inspect the work and satisfy by random checks that

concrete produced is of good quality. Plastering shall not be allowed to the exposed faces of concrete.

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

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

30. The payment will be made on cmt. Basis of the finished work. for concrete work

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

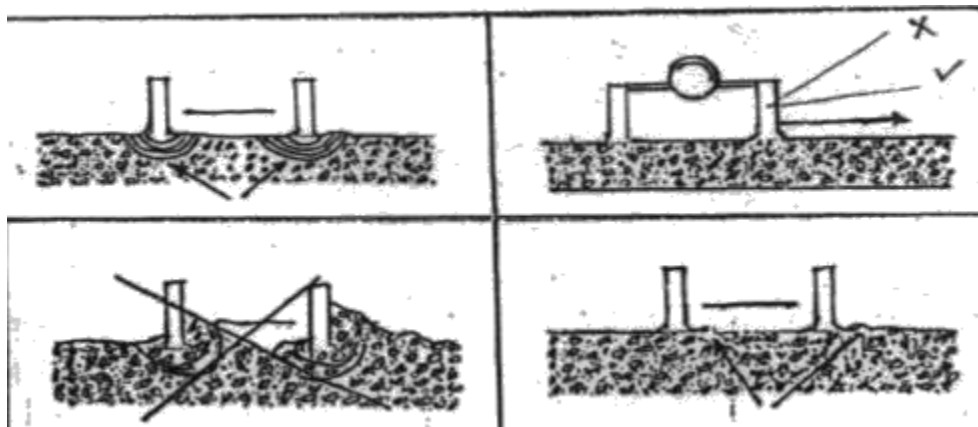
## 1. Working Method

### Concrete Placing

Concrete can be placed & distributed by transit mixer and also sufficient man power is required. It is important to distributed the concrete evenly & as near the final level as possible.

## 2. Poker Vibration :

As a first step, concrete is vibrated with an immersion vibrator in order to remove entrapped air & voids & make the concrete homogeneous, please ensure that the areas close to channels & stop and carefully vibrated. Do not distribute the concrete with the poker vibration along with the surface vibration

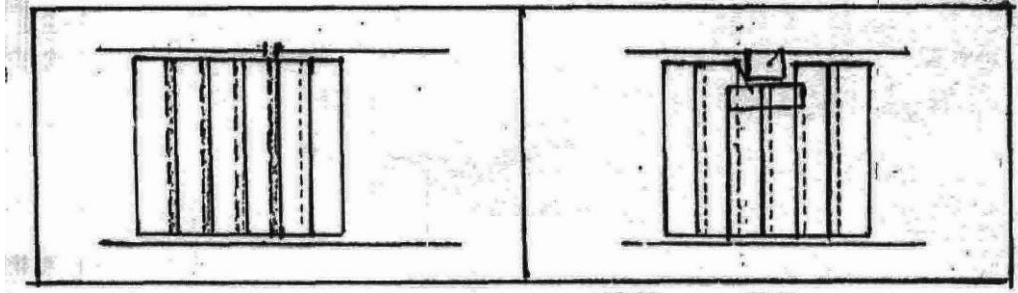


## 3. Surface Vibration :

Surface Vibration should always start as soon as there is enough concrete in front of surface vibrator. Two passes with the surface vibrator are required. During, the first pass, concrete must be distributed evenly in front of surface vibrator. There should be a roll of concrete of about 10-20 mm in front of leading beam along the entire length of the vibrator when the concrete has been placed and vibrated to a length of about 5 mm, the second pass is carried but. The machine should be pulled at a speed of maximum 1 mtr./min and without interruption 'avoid linings' on the surface. Keep the surface of the channel. Clean from concrete

#### 4. Vacuum Processing :-

Place the filter pads as soon as the sufficient concrete surface is vibrated. Please note that the vacuum dewatering process must start within 30 minutes from the: time of starting concrete pouring, Filter pads are placed in such away that there is at least 100 mm fresh concrete visible around the fitter pads on all four sides. Filter should be overlapped with each other by at least 250 mm. (all filter pads are marked with black line .to ensure proper overlapping.)



The recesses or other obstacles within the area to be vacuum processed must be covered & sealed using polyethylene sheet before the filter pads are placed. If the obstacles are flush with the surface level or above, filter pad must be folded.

The rolled up top cover is placed centrally on the filter pads. It is rolled out in such a way that it covers all filter pads & exposed concrete on the sides of the filter pads. Please note that this exposed concrete will ensure perfect sealing for the cover from laying top

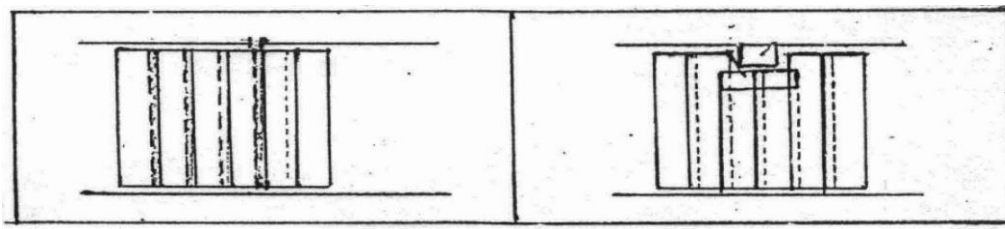
Connect the central pipe of top cover to the suction hose, which is connected to the vacuum pump. When the pump is started vacuum will be created between the top cover & filter pads. Excess water will be taken in to the vacuum pump's tank & discharged. Normal suction cycle is 1 -1.5 min. per 10 mm. of concrete thickness. Guidelines for selecting dewatering time @ normal condition are shown in the following table.

Thickness		Dewatering Time {Min}
MM	Inch	
50	2	7
100	4	15
125	6	20
150	8	30
200	10	40
250	12	45

Please note that dewatering time largely depends upon ambient conditions viz. Temperature, humidity, etc. During the course of dewatering, the concrete surface gradually hardens & can be felt from the top of the top cover. The extent of hardness achieved by the concrete decides when to stop dewatering process.

When the vacuum processing is over, the cover is rolled up, to 100 mm so that the filter pads are visible. This will remove the water, that may have remained on the concrete surface, filter pads & in the suction hose. After about 30 seconds, the top cover is rolled completely & vacuum pump is switched off. Simultaneously, the suction hose & the top cover pipe are disconnected. Do not run the pump while the ball valve is open as likely that small aggregate are sucked into the pump due to vacuum. The entire process is repeated on the next concrete pane .

After first patch in any / given panel is dewatered, care should be taken while placing filter pad on the concrete surface next to the dewatered concrete. First filter pad should start from the edges of last filter pad of the previously dewatered concrete. The remaining filter pads than shall be placed as explained above.

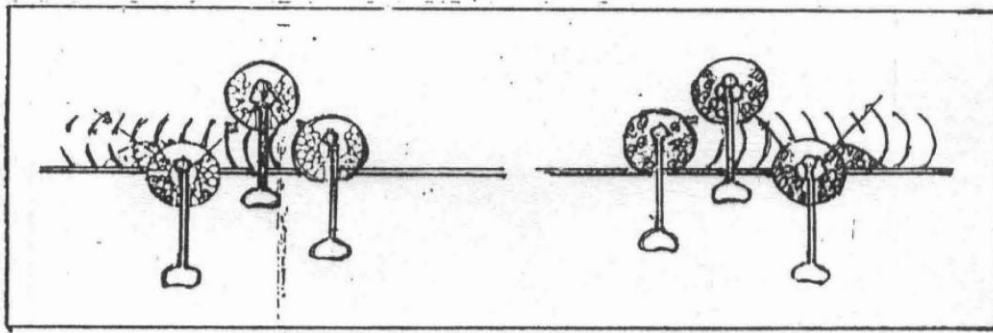


While repeating dewatering process subsequently, in order that top cover should get proper scaling against the side already vacuum processed, it should be rolled out at least 300 mm over the vacuum dewatered area. Before spreading the top cover on the dewatered area, it is essential to give on pass of skim floater (with disc) along the edges of the dewatered concrete. The concrete surface will become wet as some will be come on the top surface. This will provide the necessary sealing. Subsequently roll out the top cover completely. Check that there are no wrinkles on the top ewer.

##### 5. Floating :

The first finishing operation is floating where floating disc is used. that can not be reached by skim floater floated by hand. Care should be taken while floating near channels & edges. The skim floater is run over the channel up to disc center in order to avoid unevenness at the joint. All four sides of dewatered panel must be floated first central area is to be floated later. Any corrections, if required are to be carried out at

this stage with the concrete at the time of raking only. Never use any cement paste, mixtures of cement & sand or fresh concrete for patchwork. Such materials will be pill off, will leave patches after the concrete floor is brought to use.



Normally two passes with disc with the skim floater operating at higher speed are sufficient for the skid free surfaces. This pass of skim floater should be given perpendicular to the previous pass. please note that the floating operation brings up certain amount of water to the surface. This moisture helps in carrying out finishing operation.

## **6 Troweling:-**

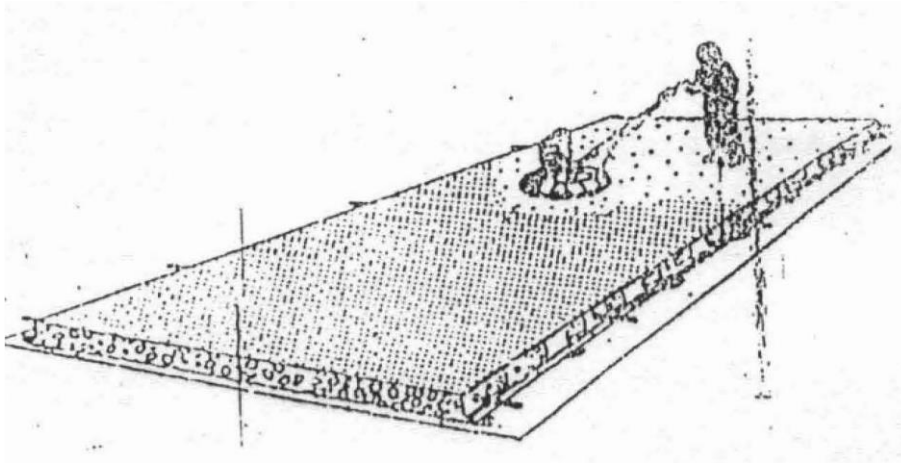
Troweling is carried out with the same machine running on troweling blades. Normally, two pass of troweling blades are required for the smooth surface finish. However, the number of passes can be decided depending upon the surface finish required. The first troweling operation can start after the about 30 minutes after the final floating operation & surface is sufficiently dry. This pass is to be made using low speed & minimum blade angle. Please also use the lower speed when troweling near the channels, from the edges, obstacles etc. Blade angle & the speed can be increased for subsequent passes to achieve smoother surface finish.

## **7. Curing**

Concrete has to be protected from rapid drying which may result in cracking. Curing can be done by ponding, covering with plastic sheet or gunny bags. In any method, the surface should be always kept wet with water. Curing can also be done by application of curing compound. Curing must be done for at least 7 days.

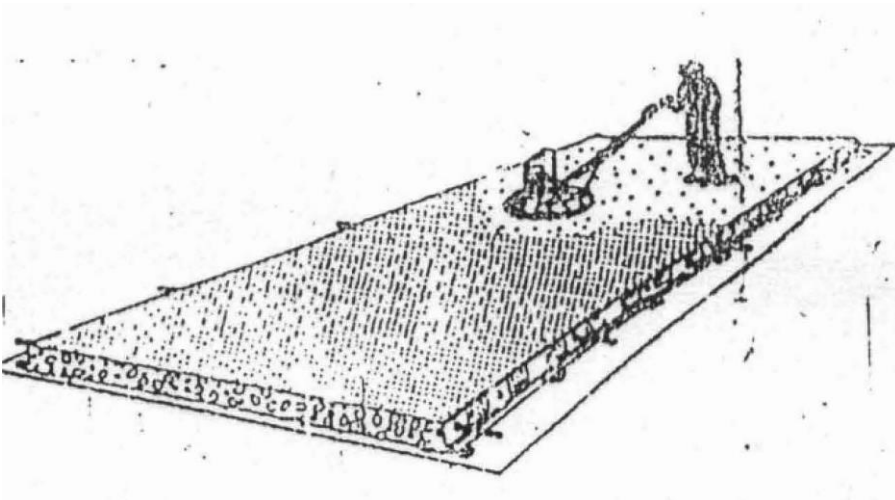
### **Intermixing of topping First Pass**





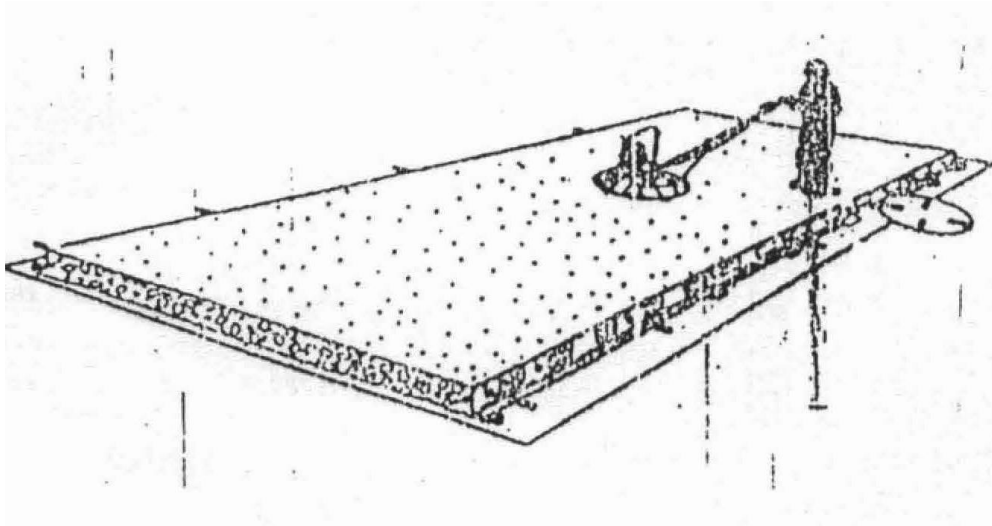
You can start the work when topping has darkened because the moisture under the concrete. The topping material is worked with care into concrete surface with a skim floated equipped with disc.

### **Intermixing of Topping Second Pass**



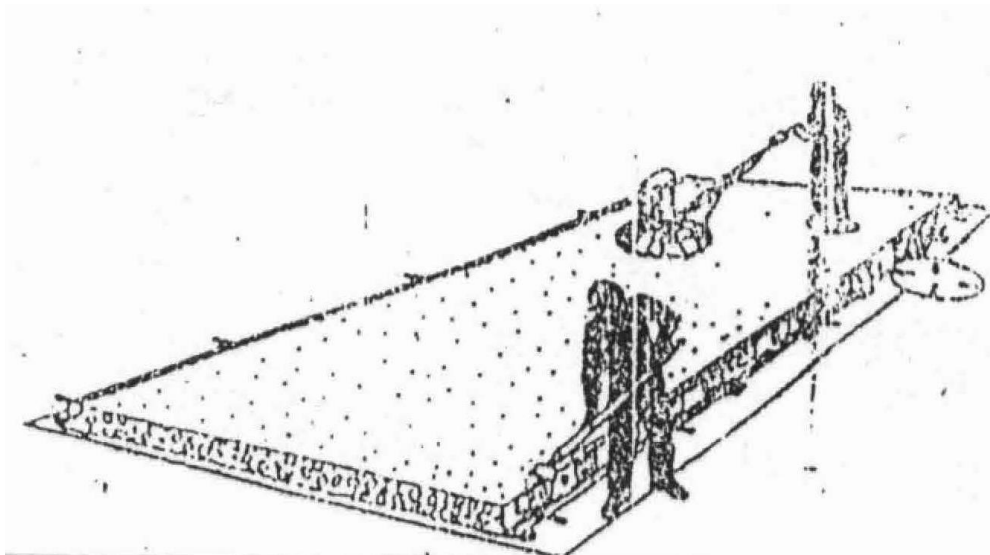
Check the surface flatness with straight edge and work the topping material into concrete the first time.

### **Power Troweling First Pass**



The first power troweling is carried out as a normal power troweling.

### **Power Troweling Final Pass**



At the time of final power -troweling, surplus concrete must be off from the rails and stop ends., There must not be any damage at the rails when the floor is finished.

After the finished the surface, the groove shall be made using concrete cutter with appropriate spacing as directed by Engineer in Charge. The groove shall be filled up by bitumen. The edges of panels shall not be damaged during the process of making grooves.

The payment shall be made on Cu.M.. basis of complete item. The rate includes the cost of all kind of labour, materials, tools & plant required to complete the item

### **Item No 42**

**Providing and laying Marbo Granite tiles 9 mm thick, 600 x 600 in skirting risers of steps and dado on 10mm thick cement plaster 1:3 (1-cement: 3-coarse sand) and jointed with white cement slurry**

#### **General**

This work shall consist of providing and fixing machine cut free edges machine polished Marbo Granite stone tiles 9 mm thick (Single piece not more than 60 cm) for steps, threads and risers as per design of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

#### **1.0 MATERIAL**

Water shall confirm to M-1. Cement Mortar shall confirm to M-11. Granite slab shall confirm to M-52. Sand shall conform to M-6.

#### **1.0 MARBO GRANITE SLAB**

**1.1.** Marbo Granite slab shall be hard even sound, and regular in shape and generally uniform in colour. The colour of the stone shall generally be green. Only approved coloured shall not be allowed for use. They shall be without any soft veins cracks or flaws Granite slab shall be hard, even, and regular in shape and it should without fault.

**1.2.** The size of the Granite slab to be used for flooring shall be of size 600 mm x 600 mm size or as approved by Engineer in charge or Architect. However smaller sizes will be allowed to be used to the extent of maintaining required pattern. Thickness shall be as specified. For stair steps & risers the Granite slab shall be in single piece.

**1.3.** Tolerance of minus 30 mm. on accounts of chisel dressing of edges shall be permitted for length as well as breadth. Tolerance in thickness shall be +3 mm.

**1.4.** The edges of Granite slab shall be truly chiselled and table rubbed with coarse sand before paving. All angles and edges of the stones shall be true, square and free chipping and surface shall be true and plain.

**1.5.** The Granite slab shall have machine cut free edges with half round pipe moulding mirror polished surface. When brought on site. The stones to be used for flooring dado, skirting, sink, veneering, sills, steps, etc.

#### **2.0 WORKMANSHIP**

**2.1** Marbo Granite slab shall be of approved quality shall be laid evenly to level and slope as directed by Engineer in charge over a bed of a base layer consisting of cement mortar 1:6 (1 cement: 6 coarse sand by volume) or Lime Mortar 1:1.5 (1 lime : 1.5 lime putty by volume).

**2.2** Marbo Granite slab shall be laid evenly as per detailed drawing or as directed by Engineer in charge. Width, length and shape of stone shall be as per pattern shown in detailed drawing.

**2.3.** Cement and sand for base layer shall be mixed in proportions of 1:6 (1 cement : 6 coarse sand by volume). Cement and sand shall be proportioned by volume after making due allowance for bulking. The required quantity of water shall then be added and the mortar mixed to produce workable consistency before mixing platform shall be thoroughly cleaned before changing from one type of cement to another.

**2.4.** The mixing for base layer shall be done intimately. The operation shall be carried out on clean water tight platform, and cement sand shall be first mixed dry in the required proportion to obtain uniform colour and then the mortar shall be mixed for at least two minutes after addition of water. In case of cement mortar, that has suffered because of evaporation of water the same shall be re-tempered by adding water as frequently as needed to restore the requisite consistency but its re-tempering shall be permitted only within thirty minute from the time of addition to water at the time of initial mixing.

**2.5.** Cement and sand for base layer shall be mixed in proportion as specified in the item, Cement and sand shall be proportioned by volume after making due allowance for bulking. The required quantity of water shall then be added and the mortar mixed to produce workable consistency.

**2.6.** Curing shall be started as soon as the mortar used for finished has hardened sufficiently no to be damaged when watered. It shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages;

**2.7.** During hot weather, all finished or partly finished work shall be covered or wetted in such manner as will prevent rapid drying of the flooring work.

**2.8.** Joints of Granite slab flooring shall be through and continuous throughout the building as directed by Engineer in charge.

**2.9.** Joints shall be filled with a stiff mixture of gray cement slurry.

**2.10.** The Marbo Granite slab flooring work shall be finished by rubbing and mirror polishing after the work of flooring is set properly.

### **3.0 MODE OF MEASUREMENT & PAYMENT :**

**3.1.** The unit rate Narbo Granite stone slab flooring shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying & placing stones in position, finishing, curing etc. flooring all over the length of walls and corners and sill of doors etc. and all other incidental expenses for producing flooring work 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. The rate includes cost of mirror polishing of flooring and dado work.

**3.2** The rate shall include the cost of all materials and labours involved in all the operations described above. The granite stone slab flooring shall be measured in Square meter correct to 2 places of decimal. Length and breadth shall be measured to correct to a centimeter and between the finished the finished face of the skirting, dado or wall plaster and no deduction shall be made nor extra paid for any opening in floors or areas up to 0.1 square meter.

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

### **Item No 43**

**Providing and fixing Rubi red Granite of 20 mm thick of uniform size and color for staircases in treads & risers, dado or fascia etc. any length including necessary machine cut edges (uniform thickness) rounded edges, nosing, grooves in risers and treads laid in combination of different marble as pattern and instructions of Architect, necessary cement mortar bedding in C.M.1:6 of required thickness. Cement joints and pointing as specified with polishing (with oxalic acid) curing, with water and kerosene as directed for at least 15 days or up to the satisfaction of the Architect & Engineer in charge etc. complete**

#### **General**

This work shall consist of providing and fixing machine cut free edges machine polished Granite stone slab 20 mm thick for steps, threads and risers as per design of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by the Engineer in charge.

#### **1.0 MATERIAL**

Water shall confirm to M-1. Cement Mortar shall confirm to M-11. Granite slab shall confirm to M-52. Sand shall conform to M-6.

#### **1.0 GRANITE SLAB**

**1.1.** Granite slab shall be hard even sound, and regular in shape and generally uniform in colour. The colour of the stone shall generally be green. Only approved coloured shall not be allowed for use. They shall be without any soft veins cranks of flaws Granite slab shall be hard, even, and regular in shape and it should without fault.

**1.2.** The size of the Granite slab to be used for flooring shall be of size as approved by Engineer in charge or Architect. However smaller sizes will be allowed to be used to the extent of

maintaining required pattern. Thickness shall be as specified. For stair steps & risers the Granite slab shall be in single piece.

**1.3.** Tolerance of minus 30 mm. on accounts of chisel dressing of edges shall be permitted for length as well as breadth. Tolerance in thickness shall be +3 mm.

**1.4.** The edges of Granite slab shall be truly chiselled and table rubbed with coarse sand before paving. All angles and edges of the stones shall be true, square and free chipping and surface shall be true and plain.

**1.5.** The Granite slab shall have machine cut free edges with half round pipe moulding mirror polished surface. When brought on site. The stones to be used for flooring dado, skirting, sink, veneering, sills, steps, etc.

## **2.0 WORKMANSHIP**

**2.1** Granite slab shall be of approved quality shall be laid evenly to level and slope as directed by Engineer in charge over a bed of a base layer consisting of cement mortar 1:6 (1 cement: 6 coarse sands by volume) or Lime Mortar 1:1.5 (1 lime: 1.5 lime putty by volume).

**2.2 Granite** slab shall be laid evenly as per detailed drawing or as directed by Engineer in charge. Width, length and shape of stone shall be as per pattern shown in detailed drawing.

**2.3.** Cement and sand for base layer shall be mixed in proportions of 1:6 (1 cement: 6 coarse sands by volume). Cement and sand shall be proportioned by volume after making due allowance for bulking. The required quantity of water shall then be added and the mortar mixed to produce workable consistency before mixing platform shall be thoroughly cleaned before changing from one type of cement to another.

**2.4.** The mixing for base layer shall be done intimately. The operation shall be carried out on clean water tight platform, and cement sand shall be first mixed dry in the required proportion to obtain uniform colour and then the mortar shall be mixed for at least two minutes after addition of water. In case of cement mortar, that has suffered because of evaporation of water the same shall be re-tempered by adding water as frequently as needed to restore the requisite consistency but its re-tempering shall be permitted only within thirty minute from the time of addition to water at the time of initial mixing.

**2.5.** Cement and sand for base layer shall be mixed in proportion as specified in the item, Cement and sand shall be proportioned by volume after making due allowance for bulking. The required quantity of water shall then be added and the mortar mixed to produce workable consistency.

**2.6.** Curing shall be started as soon as the mortar used for finished has hardened sufficiently so as not to be damaged when watered. It shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages;

**2.7.** During hot weather, all finished or partly finished work shall be covered or wetted in such manner as will prevent rapid drying of the flooring work.

**2.8.** Joints of Granite slab flooring shall be through and continuous throughout the building as directed by Engineer in charge.

**2.9.** Joints shall be filled with a stiff mixture of Gray cement slurry.

**2.10.** The Granite slab flooring work shall be finished by rubbing and mirror polishing after the work of flooring is set properly.

## **3.0 MODE OF MEASUREMENT & PAYMENT :**

**3.1.** The unit rate **Granite stone slab** flooring shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying & placing stones in position, finishing, curing etc. flooring all over the length of walls and corners and sill of doors etc. and all other incidental expenses for producing flooring work 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. The rate includes cost of mirror polishing of flooring and dado work.

**3.2** The rate shall include the cost of all materials and labours involved in all the operations described above. The **granite stone slab** flooring shall be measured in Square meter correct to 2 places of decimal. Length and breadth shall be measured to correct to a centimetre and between the finished the finished face of the skirting, dado or wall plaster and no deduction shall be made nor extra paid for any opening in floors or areas up to 0.1 square meter.

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

#### **Item No 44**

**Providing and laying water proofing treatment with China mosaic tiles flooring over avg 40 mm C.C. 1:2:4 {1 Cement : 2 sand : 4 Kapachi / Grit 6 to 12 mm size} bedding for maintaining slope for plain and curve surface & 12 mm to 20 mm of broken piece of ceramic / glazed tiles ( one for more color as directed ) to be laid over cement mortar bedding of C M 1:3 (1 cement : 3 sand ) contain one Kg of water proofing materials per bag of O P C at plain or / and slops and to be tempered to bring mortar ceramic up to surface with using white cement and color pigment including rounding of junctions and extending them up to 15 cm along the wall and curing with bends any patterns or design as per drawing and cleaning by using oxalic acid etc. complete.**

#### **1.0 Material**

##### **WATER**

1.1 Water shall not be salty brackish and shall be clean reasonably clear and free objectionable quantities of silt and traces of oil injurious alkalis salts organic matter and other deleterious material which will either weaken the mortar of concrete or cause efflorescence or attack the steel in R C C container for transport storage and huddling of water shall be clean, Water shall confirm to the standard specified in I S 455 -1978

1.2 If required by the Engineer in charge it shall be tested by comparison with distilled water compression shall be made by means of standard cement tests for soundness time of setting and mortar strength as specified in I S 269-1976 Any indication of unsoundness change in time of setting by 30 minutes or more or decrease of more than 10 percent strength of mortar prepared with distilled water sample when compared with the result obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3 Water for curing mortar concrete or masonry should not be too acidic or too alkaline

1.4 It shall be free of elements which significantly affect the hydration reaction or otherwise interface with the hardening of mortar or concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces

1.5 Hard and bitter water shall not be used for curing

1.6 Potable water will generally found suitable for curing mortar or concrete

##### **2.0 CEMENT**

2.1 Cement shall be ordinary Portland slag cement as per IS 1624 -1974 or Portland slag cement as per IS 455-1976

2.2 Cement shall be stored above the ground level in perfectly dry and water tight sheds. Wherever bulk storage containers are used, their capacity should be sufficient to cater to the requirements at site and should be cleaned at least once every 3 to 4 months. The aggregate shall be stored in such a way as to prevent admixture of foreign materials. Different size of fine or coarse aggregate shall be stored in separate stock-piles sufficiently away from the each other to prevent inter mixing the materials.

##### **3.0 SAND**

3.1 Sand shall be natural sand, clean well graded, hard strong durable and gritty particular free from immures amounts of dust, clay, kankar odules, soft: or flaky particles shall alkali salts, organic matter, learn mica or other deleterious substance and shall be got approved from the Engineer-in-charge. The sand shall not contain more than 8 percent of slit as determined

by field test. if necessary the sand. Coarse Sand: The fineness modules of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand be as under:

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

**3.2 FINE SAND:** The fineness module shall not exceed 1.0 the sieve analysis of fine sand be as under:

IS. Sieve Designation	% by wt. passing
4.75 mm	100
2.3 6mm .	100
1.18 mm	75 to 100
600 MC	40 to 85
300 MC	05 to 50
150 MC	00 to 10

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

#### 1.4. water proofing compound

Water proofing compound shall be of approved quality and make as approved by Engineer in charge

#### 1.5. brick bats

Brick bat aggregates shall be broken form well burnt or slightly over burnt and dense bricks it shall be homogeneous in texture roughly cubical in shape clean and free from dirt or any other foreign material brick bats shall be of 40 to 50 mm nominal size unless otherwise specified in the item the under burnt or over burnt bricks bats shall not be used

#### 1.6. china mosaic tile pieces

China mosaic tiles pieces shall be of 50 mm to 90 mm nominal size. tile pieces shall be made from hard and good quality of tiles.

#### 1.7. WHITE CEMENT

White cement shall be of approved make it shall confirm definition of I S 8042 –E- 1978 the sample of white cement shall be approved by Engineer in charge

#### WORKMAN SHIP

A. First of all surface of the entire terrace shall be cleaned by thoroughly brooming and then by wire brushes All the loose material dust and derbies shall be removed thoroughly for the entire surface of the terrace All joints and cracks shall be racked off and cut in v trench which shall be filled by neat cement slurry admixed with water proofing compound The joints with parapet shall be racked up to 30 cm height and shall be applied by neat cement slurry admixed with water proofing compound Neat cement slurry shall be prepared and a water proofing compound of approved make shall be mixed with the slurry in proportion specified by the manufacturer of the compound and shall be laid throughout the surface of the terrace by the use of brushes mala etc Cement slurry shall be prepared by adding adequate quantity of water so as to spread it uniformly on the surface.

B. cement concrete 1:5:10 ( using 50% of cement mortar 1:5 1part of cement and 5 part of coarse sand by volume admixed with water proofing compound of approved make in specified proportion) of specified thickness shall be laid (specification of cc 1:5:10 shall be followed



for the execution of this layer) all over the surface of the terrace in true level and required slope including rounding of junctions of walls and slab

C. After two days of proper curing applying a second coat of cement slurry on entire surface of the terrace

D. the entire surface shall be finished with 20 mm thick C M 1:4 and china mosaic tilling in true level and slope as directed by Engineer in charge & finally finishing the surface with trowel with white cement slurry (specification of white glaze tiles flooring shall be followed for the execution of this item.)

E. finishing the surface with 20 mm thick C M 1:4 and china mosaic tilling & finally finishing the surface with trowel with white cement slurry

F. After two days proper curing the terrace shall be flooded for 15 days.

#### **7.0 MODE OF MEASUREMENT & PAYMENT:**

7.1. The unit rate flooring shall include the cost of all materials, tools and plant required for mixing, laying of base layer in true level and slope as required applying & placing stones in position, compacting, finishing, curing mirror polishing, providing treatment of 30 cm high all over the length of parapets and corners and sill of doors etc, and all other incidental expenses for producing flooring work 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. The rate of plastering shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.

7.2. The plaster work shall be measured for its length and width, limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

7.3. The payment will be made on square Meter basis of the finished work.

#### **Item No 45/172**

**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**

1.1. Lappy (putty) and primer shall be of approved brand and manufacture. The lappy (putty) and primer shall be of required colour and shade and the same shall conform to I.S. : 4281969.

##### **2.0. Workmanship**

###### **2.1. Scaffolding**

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

###### **2.2. Preparation of surface :**

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

2.2.2. All unnecessary nails shall be removed. Pitting in plaster shall be made good with plaster again with a fine grade sand paper and made smooth. A coat of distemper shall be applied over the patches. The surface shall be allowed to dry thoroughly before the regular coat of distemper is allowed. The surface affected by moulds, moss, fungi, algae lichens, efflorescence etc. shall be treated in accordance with I.S; 2395 (Part 01) 1966. Before



applying distempering, any unevenness shall be made good by applying putty made of plaster of paris mixed with water on entire surface including filling up the undulation and then sand papering the same after it is dry.

### **2.3. Priming coat :**

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

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

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

### **3.0. Mode of measurements and payment**

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

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

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

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

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

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

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

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

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

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

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

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

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

**Item No 46**

**Providing and applying on wall exterior/ interior of Heritage surface texture granules finish of Bakelite Hylam Limited (No.21-3005, 3006, 3007, 3008, 3013, 3014, 3015 and 3016) troweled over 20 mm thick sand faced cement plastered (Two coat of 12 mm in CM 1:3 & 8 mm coat in CM 1:1) sub strata to get an average finish coat thickness of 0.08 to 1.2 mm comprising of three components viz. Dry granules, Granules, bonding agent and top coat of glossy finish (Dry granules shall be made from Silica sand, pigments, chiefly inorganic) homopolymer emulsion mix etc., of Bakelite Hylam product banding agent made of acrylic copolymer emulsion, broad spectrum fungicide of Bakelite Hylam product etc. and top coat made from solvent based acrylic polymer of Bakelite Hylam product including scaffolding.**

**1.1** Water shall conform to M-1 cement mortar shall conform to M-11, Dolomite powder, White or colour chips grade No. 0 to 2 shall be as its require standard.

**2.0 Workmanship**

**2.1** The work shall be carried out in the coats. The backing coat (base coat) shall be 20 mm thick in C.M.1:4. The relevant specifications of 20 mm plaster shall be followed except that the thickness of back coat shall be 20 mm. average. Before the first coat hardens its surface shall be beaten up by edges of wooden tappers and close dents shall be made on the surface. The subsequent coat shall be applied after this coat has been allowed to set for 3 to 5 days, depending upon the weather conditions. The surface shall not be allowed to dry during this period.

**2.2** The second coat shall be completed to 10 mm thickness in C.M. 1:1 in white cement and gray cement and role poser mix in proportion 1:1 i.e. equal proportion with dolomite power, white or colour chips of grade No. 0 to 2 required by volume and pigment mixed as specified plaster as described above, including washed out as directed with drip mould, pattern grooved as approved pattern. The whole work shall be carried out uniformly as per sample approved.

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

**3.0 Mode of measurements and payment**

**3.1** The relevant specifications of item 4 shall be followed except that the stone wash plaster on outside for all heights above ground level shall be measured under this item.

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

**Item No 47**

**Providing and fixing window having extruded aluminum Color anodized section frame main outer size 95mm x 24mm x 1.17mm (of Jindal Section no:2459 @ wt. Of 0.738 Kg/mt), horizontal Three track member size 92mm x 31.75mm x 1.30mm (of Jindal Section no:8688, @ Wt.1.07 Kg/mt), vertical member of size 92mm x 31.75mm x 1.50mm (of Jindal Section no:8933, @ Wt. 1.06 Kg/mt) with sliding shutters of horizontal member size 40 mmx18mm x1.29mm (of Jindal Section no:8947@ wt. Of 0.456 Kg/mt), vertical member of size 40mm x 18mm x 1.29 mm (of Jindal Section no:8949 @ wt. Of 0.456Kg/mt/ with 5 mm thick transparent bronze color tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc.**

**1.0 MATERIAL****1.1 Aluminium standard section****1.1.1 Color anodized Aluminium Three track sliding window**

aluminium alloy used in the manufacture of aluminium four track sliding window section shall confirm to I.S. designation HEA-WP of I.S. 733-1975 and also designation WVG-WP of I.S. 1285-1975 section shall be as specified.

The works shall consist of standard extruded aluminium window having extruded aluminium colour anodized section frame main outer size 95 mm x 24 mm x 1.17 mm (of Jindal section No. 2459 @wt. 0.738 Kg/mt.), horizontal The works shall consist of standard extruded aluminium window having extruded aluminium colour anodized section frame main outer size 92 mm x 31.75 mm x 1.50 mm (of Jindal section No. three track member size 92 mm x 31.75 mm x 1.50 mm (of Jindal section No. 8688 @wt. 1.07 Kg/mt.), vertical member of size 40 mm x 18 mm x 1.29 mm (of Jindal section No. 8949 @wt. 0.456 Kg/mt.) with sliding shutters of horizontal member size 40mm x 18mm x 1.29mm (of Jindal section No. 8947 @wt. 0.456 Kg/mt., section No. 8948 @wt. 0.456 Kg/mt.) as directed by Engineer in charge.

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

**1.1 Glass:** The transparent bronze colour tinted float glass shall be of approved make having thickness of 5mm. The glass shall be clear and free from scratches and cracks. The glass shall be provided on wall panel and fixed with transparent silicon gasket

**1.2 Glazing clips:** Glazing clips (structural glass) shall be of size as directed by the Engineer in charge around the glass all over shall be free from any scratches or holes or any damage of on surface all section shall have finished lustre surface on all sides.

**1.3 Rubber Gasket:** Rubber gasket shall be of approved make shall be free from any scratches or holes or any damages on surface, and shall have finished lustre surface on all sides.

**1.4 Fixtures:** Hinges shall be of approved make shall be free from any scratches or holes or any damages on surface and shall have finished lustre surface on all sides.

**1.5 Handles:** Handles shall be of approved make shall be free from any scratches or holes or any damages on surface, and shall have finished lustre surface on all sides.

**1.6 Bolts:** All Bolts shall be of approved make shall be free from any scratches or holes or any damages on surface and shall have finished lustre surface on all sides. Product is from reputed company having ISO 9001-2000 certificate and with three years performance guarantee.

## **2.0 WORKMANSHIP**

The work of standard extruded aluminium window shall be done with extreme finishing the partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge, using glazing clips and rubber gaskets as required. All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge floor spring shall be fitted properly so as to align the window properly and shall be given trial of opening and closing properly.

## **3.0 Mode of Measurement & Payment**

3.1. The unit rate of standard extruded aluminium window shall include the cost of all materials, cost of anodizing, cost of all necessary fixtures and fastenings, labour charges for fixing frames, shutters and fixing the window 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 shutter of specified size 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 making walls good by plaster patch colour etc as required.

3.2. The Window shall be measured for its improvising and fixing standard extruded aluminium window having bracket, stoppers, 5mm thick transparent glass panel of approved make with S.S. fixtures and transparent silicon glass fixings to from as detail including PVC T in frame silicon-based linings handles, locks two nos. PVC gasket screws aluminium joints special runner etc. complete.

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

**Item No 48**

**Providing and fixing window having extruded aluminum Color Powder Coated section frame main outer size 63.50 x 38.10 x 1.95 mm (of Jindal Section no:4605, @ Wt. 1.094 Kg / Rmt), horizontal two track member size 61.85 mm x 31.75 mm x 1.20mm (of Jindal Section no: 8687 @ wt. Of 0.695 Kg/mt), vertical member of size 61.85 mm x 31.75mm x 1.30 mm (of Jindal Section no:8758 @ wt. Of 0.659 Kg/mt) with sliding shutters of horizontal member size 40mm x 18mm x 1.29mm (of Jindal Section no:8949 @ wt. Of 0.456Kg/mt), vertical member of size 40mm x 18mm x 1.29mm (of Jindal Section no:8947 @ wt. Of 0.456Kg/mt/ Section 8948, @ Wt. 0.457 Kg/mt) with 5 mm thick transparent bronze color tinted float glass with powder coated aluminum fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc. complete for window.**

## **1.0 MATERIAL**

### **1.1 Aluminium standard section**

#### **1.1.1 Powder coated Aluminium Two track sliding window**

aluminium alloy used in the manufacture of aluminium four track sliding window section shall confirm to I.S. designation HEA-WP of I.S. 733-1975 and also designation WVG-WP of I.S. 1285-1975 section shall be as specified.

The works shall consist of standard extruded aluminium window having extruded aluminium colour anodized section frame main outer size 63.50mm x 38.10mm x 1.95mm (of Jindal section No. 4605 @wt. 1.094 Kg/mt.), horizontal four track member size 61.85 mm x 31.75 mm x 1.20mm (of Jindal section No. 8687 @wt. 0.695 Kg/mt.), vertical member of size 61.85 mm x 31.75mm x 1.30mm (of Jindal section No. 8758 @wt. 0.659 Kg/mt.) with sliding shutters of horizontal member size 40mm x 18mm x 1.29mm (of Jindal section No. 8947 @wt. 0.456 Kg/mt., section No. 8948 @wt. 0.457 Kg/mt.) as directed by Engineer in charge.

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

**1.1 Glass:** The transparent bronze colour tinted float glass shall be of approved make having thickness of 5mm. The glass shall be clear and free from scratches and cracks. The glass shall be provided on wall panel and fixed with transparent silicon gasket

**1.2 Glazing clips:** Glazing clips (structural glass) shall be of size as directed by the Engineer in charge around the glass all over shall be free from any scratches or holes or any damage of on surface all section shall have finished lustre surface on all sides.

**1.3 Rubber Gasket:** Rubber gasket shall be of approved make shall be free from any scratches or holes or any damages on surface, and shall have finished lustre surface on all sides.

**1.4 Fixtures:** Hinges shall be of approved make shall be free from any scratches or holes or any damages on surface and shall have finished lustre surface on all sides.

**1.5 Handles:** Handles shall be of approved make shall be free from any scratches or holes or any damages on surface, and shall have finished lustre surface on all sides.

**1.6 Bolts:** All Bolts shall be of approved make shall be free from any scratches or holes or any damages on surface and shall have finished lustre surface on all sides. Product is from reputed company having ISO 9001-2000 certificate and with three years performance guarantee.

## **2.0 WORKMANSHIP**

The work of standard extruded aluminium window shall be done with extreme finishing the partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge, using glazing clips and rubber gaskets as required. All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge floor spring shall be fitted properly so as to align the window properly and shall be given trial of opening and closing properly.

### **3.0 Mode of Measurement & Payment**

3.1. The unit rate of standard extruded aluminium window shall include the cost of all materials, cost of anodizing, cost of all necessary fixtures and fastenings, labour charges for

fixing frames, shutters and fixing the window 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 shutter of specified size 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 making walls good by plaster patch colour etc as required.

3.2. The Window shall be measured for its improvising and fixing standard extruded aluminium window having bracket, stoppers, 5mm thick transparent glass panel of approved make with S.S. fixtures and transparent silicon glass fixings to from as detail including PVC T in frame silicon-based linings handles, locks two nos. PVC gasket screws aluminium joints special runner etc. complete.

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

**Item No 49**

**Providing and fixing standard extruded of aluminum section of size 63.50 x 38.10 x 1.95 mm (of Jindal Section no:4605, @ Wt. 1.094Kg / Rmt with color Powder Coated aluminum frame with 5 mm thick transparent bronze color tinted float glass with color anodized aluminum frame for ventilation with 5 mm thick frosted glass as details etc. complete for. Window**

## **1.0 MATERIAL**

### **1.1 Aluminium standard section**

#### **1.1.1 colour anodized Aluminium window / ventilator**

aluminium alloy used in the manufacture of aluminium four track sliding window section shall confirm to I.S. designation HEA-WP of I.S. 733-1975 and also designation WVG-WP of I.S. 1285-1975 section shall be as specified.

The works shall consist of standard extruded aluminium window having extruded aluminium colour anodized section frame main outer size 63.50mm x 38.10mm x 1.95mm (of Jindal section No. 4605 @wt. 1.094 Kg/mt.), as directed by Engineer in charge.

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

**1.1 Glass:** The transparent bronze colour tinted frosted glass shall be of approved make having thickness of 5mm. The glass shall be clear and free from scratches and cracks. The glass shall be provided on wall panel and fixed with transparent silicon gasket

**1.2 Glazing clips:** Glazing clips (structural glass) shall be of size as directed by the Engineer in charge around the glass all over shall be free from any scratches or holes or any damage of on surface all section shall have finished lustre surface on all sides.

**1.3 Rubber Gasket:** Rubber gasket shall be of approved make shall be free from any scratches or holes or any damages on surface, and shall have finished lustre surface on all sides.

**1.4 Fixtures:** Hinges shall be of approved make shall be free from any scratches or holes or any damages on surface and shall have finished lustre surface on all sides.

**1.5 Handles:** Handles shall be of approved make shall be free from any scratches or holes or any damages on surface, and shall have finished lustre surface on all sides.

**1.6 Bolts:** All Bolts shall be of approved make shall be free from any scratches or holes or any damages on surface and shall have finished lustre surface on all sides. Product is from reputed company having ISO 9001-2000 certificate and with three years performance guarantee.

## **2.0 WORKMANSHIP**

The work of standard extruded aluminium window shall be done with extreme finishing the partial board shall be fixed in the bottom panel and glass shall be fitted on top panel as directed by Engineer in charge, using glazing clips and rubber gaskets as required. All the fixtures and fastenings shall be fitted at right place and as directed by Engineer in charge floor spring shall

be fitted properly so as to align the window properly and shall be given trial of opening and closing properly.

### **3.0 Mode of Measurement & Payment**

3.1. The unit rate of standard extruded aluminium window shall include the cost of all materials, cost of anodizing, cost of all necessary fixtures and fastenings, labour charges for fixing frames, shutters and fixing the window 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 shutter of specified size 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 making walls good by plaster patch colour etc as required.

3.2. The Window shall be measured for its improvising and fixing standard extruded aluminium window having bracket, stoppers, 5mm thick transparent glass panel of approved make with S.S. fixtures and transparent silicon glass fixings to from as detail including PVC T in frame silicon-based linings handles, locks two nos. PVC gasket screws aluminium joints special runner etc. complete.

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

### **Item No 50**

**Supplying fabricating, erecting, aligning & fixing in proper position Asian make 14-gauge hollow mild steel, 50mm x25mm and 14gauge metal sheet as per design on both side outer frame with 75 x 37.5 x 4mm MS angle equal for shutters opening two on both side complete at site. Rate shall include for supplying all materials such as ISI mark welding rods, bolts, nuts, etc. and like labor for the work of straightening, cutting, drilling holes, necessary plants / equipment for assembling, bolting welding, erecting, etc. complete as directed. Rate shall include for one coat of red oxide and two coats of approved epoxy enamel paint after thorough cleaning of surfaces. Measurement of steel shall be on the basis of length of the sections as per drawings and standard weight as per ISI code.**

#### **1.0. Materials**

(A) Frame of 50 x 25 mm and 14 gauge metal sheet MS Hollow pipe od Asian Make

(B) Shutter frame size is 75 x 37.5 x 4 mm MS angle of ISI mark

(C) Stainless Steel Handle and stopper shall conform to relevant I.S. specification.

#### **2. 0. Workmanship:**

The item covers the requirement of preparation of shutters for doors, their supply and fixing with 14 gauge metal sheet shutter

##### **2.1. Shutters :**

**2.1.1.** The shutter with 14 gauge metal sheet as per detailed drawings supplied by the Department.

**2.2.** The shutters shall be prepared by fittings styles and rails (top, bottom, lock and frieze) as for paneled leaves with simple chamfer on edges only. The styles and rails shall be grooved with just sufficient width for received panels and plain panels of specified type panels shall be fitted into the grooves.

##### **2.5. Fixtures & Fastenings :**

**2.5.1.** The door shall be fixed with heavy type Hydraulic floor spring with CAM system and Lock concealed brass dead lock with Key Hole with Two pairs of 32mm dia and 600mm long S.S.. Handle three No. shall be fixed and 35mm dia Decorative stud shall also be fixed as directed.

**2.5.2** The rate shall include fixture and fastening as per para 2.5.1 including fixing with iron screws. The size and number of hinges shall be as per table given in annexure-1.

### **3.00 Application of paint :-**

#### **3.1.0 Materials**

**3.1.1.** The approved epoxy paint finish of two coat paint shall conform to relevant I.S. Specifications. with one coat of red oxide paint

#### **3.2.0 Workmanship**

**3.2.1. General:** The materials required for work of painting work shall be obtained directly from approved manufacturers or approved dealer and brought to the site in maker's drums, kegs, etc. with seal unbroken.

**3.2.2.** All materials not in actual use shall be kept properly protected, lids of containers shall be kept closed and surface (if paint in open or partially open containers covered with a thin layer of turpentine to prevent formation of skin. The materials which have become state or flat due to improper and long storage shall not be used. The paint shall be stirred thoroughly in its container before pouring into small containers. While applying also, the paint shall be continuously stirred in smaller container. No left over paint shall be put back into stock tins. When not in use the containers shall be kept properly closed.

**3.2.3.** If for any reasons, thinning is necessary, the brand of thinner recommended by the manufacture shall be used.

**3.2.4.** The surface to be painted shall be thoroughly cleaned and dusted. All rust, dirt and grease shall be thoroughly removed before painting is started. No painting on exterior or other exposed parts of the work shall be carried out in wet, damp or otherwise unfavorable weather and all the surfaces shall be thoroughly dry before painting work is started.

#### **3.3 Application of paint: -**

**3.3.1.** Brushing operations are to be adjusted to the spreading capacity advised by the manufacture of particular paint. The paint shall be applied evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area over with paint, brushing the surface hard for the first time over and then brushing alternately in opposite directions two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing any laying off will constitute one coat.

**3.3.2.** Each coat shall be allowed to dry completely and lightly rubbed with very fine grade of sand-paper and loose particles brushed off before next coat is applied. Each coat shall vary slightly in shade and shall be got approved from Engineer-in-charge before next coat is started.

**3.3.3.** Each coat except the last coat shall be lightly rubbed down with sand -paper of fine pumice stone and cleaned of dust before the next coat is applied. No hair marks, from the brush or clogging of paint puddles in the corners of panels, angles of Moulding etc. shall be left on the work.

**3.3.4.** Special care shall be taken while painting over bolts, nuts, rivets, overlaps etc. Approved best quality brushes shall be used.

#### **4.0. Mode of measurements & payment**

**4.1.** The rate for shutter includes cost of providing block and clear for keeping the shutter in open position as directed.

**4.2.** The dimensions of the shutter shall be measured clear size of the shutter in close position between the grooves of the frame.

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

#### **Item No 51/175**

**Finishing wall with weather proof exterior emulsion paint on wall surface (two coat) to give a required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials etc. Complete**

## **General**

This work shall consist of painting the walls with [weather proof exterior emulsion paint on wall surfaces](#) of the shape and dimensions shown on the drawings and conforming to these specifications or as approved by [Architech](#). Read and use Apex ultima in place of apex.

## **MATERIALS**

### **1.0 Exterior Emulsion Paint**

Exterior emulsion paint shall be of specified colour as approved by Engineer in charge the ready mixed exterior emulsion paint shall not be allowed, If however ready mix emulsion paint of specified shade or tint is not available white ready mixed paint with approved Steiner will be allowed in such case the contractor shall ensure that the shade of the paint so allowed shall be uniform exterior emulsion paint shall meet with the following general requirements

1. Exterior emulsion paint shall not show excessive setting in freshly opened full can and shall easily be redepressed with a paddle to a smooth homogeneous state. The APEX exterior emulsion paint shall show no curding, levering cracking or colour separation and shall be free from lumps and skins.
2. The exterior emulsion paint as received shall brush easily possess good levelling properties and show no running or sagging tendencies.
3. The exterior emulsion paint shall not skin within 48 hours in three quarters filled closed container
4. The exterior emulsion paint shall dry to a smooth uniform finish free from roughness grit unevenness and other imperfections
5. Ready mix exterior emulsion paint if allowed for specified shade, shall be used exactly as received from the manufacturers and generally according to their instruction and without any admixtures whatsoever.

### **2.0 WORKMAN SHIP**

#### **2.1 Scaffolding :**

Where scaffolding is required, it shall be erected in such a way that as far as possible no part of scaffolding shall rest against the surface to be distempered. A properly secured strong and well tied suspended platform (joola) may be used for distempering. Where ladders are used, pieces of old gunny bags.

#### **3.0 Application coat :**

The [exterior emulsion paint on wall surfaces](#) shall be diluted with water or any other prescribed thinner in a manner recommended by the manufacturer only. Sufficient quantity of distemper required for a day's work shall be prepared.

**3.1** For undecorated surfaces, after the primer coat is dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth for receiving the exterior emulsion paint, taking care not to rub out the priming coat. All loose particles shall be dusted off after rubbing. Minimum two coats of the exterior emulsion paint shall be applied with brushes in horizontal strokes followed immediately by vertical strokes which together shall constitute one coat. The subsequent coats shall be applied after a time interval of at least 24 hours between consecutive coats to permit proper drying of the preceding coat. The finished surface shall be even and uniform without patches, brush marks, distemper drops etc.

**3.2** Sufficient quantity of the [exterior emulsion paint](#) shall be mixed to finish one room at a time.

#### **3.0 MODE OF MEASUREMENT & PAYMENT :**

**3.1.** The unit rate wall painting with [exterior emulsion paint](#) shall include the cost of all materials, tools and plant required for mixing, cleaning brushing sand papering & painting with all required specials and Lapi compound, finishing as per direction of the Engineer-in charge, and all other incidental expenses for producing pipe line 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 rate of wall painting with **exterior emulsion paint** shall include the cost of all labour, materials tools and plant scaffolding and all incidental expenses as described herein above.

**3.3.** The wall painting with **exterior emulsion paint** shall be measured for its length and height limiting dimensions to those specified on plan or as directed. The rate shall be for a unit of one square meter.

**3.4.** The payment will be made on **square meter** basis of the finished work.

#### **Item No 108**

**Supply, installation, testing and commissioning of Domestic Water meters horizontal inferential, single or multi jet, dry dial, suitable for 50 deg. C, duly sealed against tampering, complete with coupling conforming to Class B, IS 779-1994 (latest edition) or ISO 4064, readings in metric system. 40 mm dia**

As sperate sheet attached of BIS Code and payment shall be made on No of Basis

#### **Item No 179**

**Supplying fabricating, erecting, aligning & fixing in proper position 14 gauge metal sheet to EZ-7 section doors/window frame and outer frame with 75x37.5x4mm M.S angle and M.S grill of 12mm M.S bars as require spacing welded to outer frame complete at site. Rate shall include for suppling all materials such as ISI mark welding rods, bolts, nuts, etc. and like labour for the work of erecting etc. complete as directed. Rate shall include for one coat of red oxide and two cots of surface. Measurement of steel shall be on the basic of length of the section as per drawing and standard weight as per ISI code**

1.0 General Technical Specification Vol. I Shall Apply.

2.0 Materials:-

The Structural Steel shall confirm to M-22. Paint shall confirm to M-44. Fixtures and fastening shall confirm to M-13

3.0 Workmanship.

The steel window shall be manufacture from fission welding steel std(42) section confirm to IS 2062-1969 The fabrication of windows shall of the best quality and free from any defect, fabrication work includes cutting, welding, providing hinges, providing and fixing 5.5mm thick figured glass. The size of ventilators shall be as per detailed drawings supplied by the department, section E/z for windows frame having weight not less than 1.53 Kg. / Rmt. . Section F/z for vertical section having weight not less than 2.217 Kg. / Rmt. The outer frame shall made from 75 x 37.5 x 4 mm MS angle with 12 mm MS bars for grill as per design and be fixed in true line and level. Hold fasts shall be made to confirm the M- 132. and fixed properly by welding with frame and shall be fixed with C.C. 1:2:4 in wall. No extra payment shall be made for C.C.. Shutter shall be made and fixed as directed with all required fixtures and fastening with 5.5mm thick figured glass louvers & partly wire mesh jail of steel 25 mm x 25 mm mesh weight not less than 7.75 kg per Sqmt with Two coat of oil paint of approved quality with one coat of primer coat of red oxide shall be applied to frames and shutters.

#### **4.0 Mode of measurement and payment:-**

The measurement shall be taken in Sq.Mt. of clear area. Payment shall be made for one Sq.Mt. unit. The rate includes the cost of all kind of material, labour, fixtures & fastening, oil paints with primer, glass etc for to complete the operation describe under workmanship.

#### **Item No 180**

**PEB Roof structure-73.31mt x 38.48 mt**

#### **Specification**

**1.Frame type length 72.81mt**

**2.Width 38.25mt**

- 3.clear height 6.097 from plinth level**
- 4.Roof Slope-1:10**
- 5.Bay spacing 10@ 7.331**
- 6.And Wall column Spacing -7.10**
- 7.Type of and frames non expandable**
- 8.Wind bracing pipe bracing for roof and side wall**
- 9.Roof cladding -0.47mm thick JSW / Bhusan make bare galvalume sheet roof liner panel**
- 10.Wall Cladding – Full height wall brick**
- 11.Gutter- Galvalume Gutter -0.50 mm thick**
- 12.Flashing –PPGL 345 MPa color galvalume 0.50 mm thick**
- 13.Down spout up to GL –PPGL 345 MPa color galvalume off white color 0.50 mm thick**
- 14.Canopy – 1 mt canopy on side walls**
- 15.primary members (frames and build up members) minimum thick 6 mm – Shot Blasting, epoxy DTM paint total DFT 90 to 100 microns**
- 16. Secondary members (purlin and girt) minimum thick 2.0 mm – galvanized 120 gsm**
- 17.anchor bolts and templets black painted**

## SCHEDULE FOR TESTING OF MATERIALS

For ensuring quality control and workmanship, various tests prescribed below corresponding to the material concerned shall be taken at periodic intervals as stipulated below.

The Material shall be got tested at GERI or Govt. recognized Laboratory or filed Laboratory of GERI for which 1% of the estimated amount to tender shall be recovered from the contractor from the R. A. Bill and Final bill as the testing charges shall be paid by the Govt. to the Laboratory. However if the charges increase over 1% no excess recovery shall be made from the contractor as per resolution of B & C department dated 10th May 1985, vide TNC/1085(4) S.

Item No. as per Sch. "B"	Brief Description of material to be tested	Prescription of test which shall be carried out	Frequency @ which test shall be carried out (As per GERI Q.C. Vol. I, 2002)	Qty. of materials	Total No. of test to be carried out
1	2	3	4	5	6
1	Coarse Aggregate (Metal, gravel etc.)	Gradation test impact value, flakiness index, water absorption, Stripping value.	1/150 M3 for concrete or as per specification		
2	Fine aggregate (Sand)	Gradation fineness modulus, specific gravity, water absorption, silt Content.	1/150 or concrete or as per requirement of relevant specification		
3	Bricks	Dimension and tolerance, water absorption, compressive strength; efflorescence	1 test per 50,000 Bricks 5 bricks from (Sample) 5 Woks from (Sample) 5 bricks from (Sample)		
4	C.C. Tiles/ vitrified tile	Water absorption. Transverse strength abrasion size tolerances	1/2000 tiles (18 tiles for Sample)		
5	Cement concrete R.C.C.	Compressive strength (I.S. 516-1959).	<b>Qty. Of C.C. M3 No. of Test</b> 1 – 5 1 test 6 – 15 2 test 16 – 30 3 test 31 – 51 4 test 51 & above 4 + 1 For each Addnl. 50M3 or part thereof		
6	Cement	Consistency, setting time, compressive strength, fineness, Chemical analysis Soundness	Up to 50 T 1 test 50 – 100 T 2 test 100 – 200 T 3 test 200 – 300 T 4 test 300 – 500 T 5 test 500 – 800 T 6 test 800 – 1300 T 7 test		

Item No. as per Sch. "B"	Brief Description of material to be tested	Prescription of test which shall be carried out	Frequency @ which test shall be carried .out (As per GERI Q.C. Vol. I, 2002)	Qty. of materials	Total No. of test to be carried out
1	2	3	4	5	6
			and 8 test for larger consignment		
7	Steel/TMT	Tensile strength, yield stress, Elongation	1/50 tonnes / per category		
8	Teak wood	Anatomy test, density tests moisture content test.	1 test		
9	Sand	(1) Silt content	One test per per work		
		(2) Gradation			