

THE AGRICULTURE PRODUCE MARKET COMMITTEE

UNJHA

**NAME OF WORK :- CONSTRUCTION OF NEW SUB
MARKET YARD AT BRAHMANWADA R.S. NO-613 OF
A.P.M.C. UNJHA. UNDER THE SCHEME OF AMI SUB
SCHEME OF ISAM.**

ESTIMATED COST PUT TO TENDER ₹. 627789022.10



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 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)	

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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 reinforced concrete work in BEAMS Ground Floor	40 56	5.8.3(D) 9.1 (G)(i)	
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)	

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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)	
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)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
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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)	
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)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
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)	
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	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
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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)	
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			As per attached sheet

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
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	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.			
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 of Bakelite			As per attached sheet

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	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
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			As per attached sheet

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	thick frosted glass as details etc. complete for. Window			
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
53	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		Separate Electrical general specification book separates attached	

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	/ 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 erected, with necessary Lamp holder/ceiling rose / H.D.Connector as directed.			
54	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		Separate Electrical general specification book separates attached	
55	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		Separate Electrical general specification book separates attached	
56	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		Separate Electrical general specification book separates attached	

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	medium class Rigid PVC pipe and accessories Cat III			
57	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 2-2.5 sq.mm Cu. Wire (a) with medium class Rigid PVC pipe and accessories Cat III		Separate Electrical general specification book separates attached	
58	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		Separate Electrical general specification book separates attached	
59	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		Separate Electrical general specification book separates attached	
60	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 1.5 sq. mm		Separate Electrical general specification book separates attached	
61	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		Separate Electrical general specification book separates attached	

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1	2	3	4	5
	green colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm			
62	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (a) 2 wire 4 sq. mm		Separate Electrical general specification book separates attached	
63	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		Separate Electrical general specification book separates attached	
64	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 - Aluminium film bonded Al. Braids @ suitable coverage overall sheathed with black PVC insulation. e). RG-11		Separate Electrical general specification book separates attached	
65	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		Separate Electrical general specification book separates attached	
66	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		Separate Electrical general specification book separates attached	
67	Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with single mounting base frame covered with textured/metallic /white front plate, modules erected with necessary connections as directed		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	1 no. 6A/16A universal plug-switch combined. 3 nos. 6A Switch 3 nos. 6A 5 pin Plug For Modular Type Accessories			
68	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		Separate Electrical general specification book separates attached	
69	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		Separate Electrical general specification book separates attached	
70	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		Separate Electrical general specification book separates attached	
71	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		Separate Electrical general specification book separates attached	
72	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 incoming and horizontal single-phase outgoing (b) sheet steel double door (IP-43) (iv)12 way		Separate Electrical general specification book separates attached	
73	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		Separate Electrical general specification book separates attached	

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1	2	3	4	5
74	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		Separate Electrical general specification book separates attached	
75	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		Separate Electrical general specification book separates attached	
76	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		Separate Electrical general specification book separates attached	
77	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, Schineider, C&S make		Separate Electrical general specification book separates attached	
78	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.		Separate Electrical general specification book separates attached	
79	Providing 2. 5mm.thick laminated acrylic sheet to cover the fan hook or Fan box.		Separate Electrical general specification book separates attached	
80	Providing & Erecting following Shockproof tission type accessories erected on 3 mm thick PC (Polycarbonate) sheet in PVC/ Metal/Wooden Box. erected on wall/ ceiling. (8) Bakelite lamp holder		Separate Electrical general specification book separates attached	
81	Providing & Erecting following Shockproof tissino type accessories erected on 3 mm thick PC		Separate Electrical general specification	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
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	(Polycarbonate) sheet in PVC/ Metal/Wooden Box. erected on wall/ ceiling. (7) Bakelite ceiling, rose		book separates attached	
82	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		Separate Electrical general specification book separates attached	
	SANITARY FIXTURES & FITTINGS			
83	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. EWC-P: (CERA, HINDWARE, PARRYWARE Make) CONCEALED CISTERN Twin Flush Type: (Jaquar, Gabrit, Veiaga Make) SEAT COVER: (CERA, HINDWARE, PARRYWARE Make)	146 147 148	23.112 (A)(I) 23.115 (A)(I) 13.112.0	
84	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) WASTE COUPLING: (HALF THREAD) JAQUAR ALLIED SERIES MAKE BOTTLE TRAP: (With Internal Partition) JAQUAR/ ALLIED SERIES MAKE	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
85	Providing and fixing central hole basin Pillar Tap cock, with required braided pipes from basin pillar tap to angular stop cock etc. complete. BASIN PILLAR COCK: (JAQUAR CONTINENTAL SERIES)	151	23.92 (B)(I)	Work shall be carried out as per item description and quality app by in

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
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				charge Engineer
86	Providing & 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)	152	23.00.1	Work shall be carried out as per item description and quality app by in charge Engineer
87	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
88	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
89	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
90	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	139	23.130(C)	Work shall be carried out as per

Sr No	Item	Building Specification Book P.No	Item No	Remarks
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	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)			item description and quality app by in charge Engineer
91	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) WASTE COUPLING (FULL THREAD) (JAQUAR ALLIED SERIES)	152	23.122 (A)	Work shall be carried out as per item description and quality app by in charge Engineer
92	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
93	Providing & fixing in position 15 mm C.P. brass bib cocks of best quality (as approved by the Engineer-in-Charge). BIB COCK: (JAQUAR CONTINENTAL SERIES)	149	23.141 A	Work shall be carried out as per item description and quality app by in charge Engineer
94	Providing & fixing of Hand Shower (Health Faucet), with 8mm Dia,1Rmt Long pvc Tube and Wall Hook accessories to complete the item. HAND SHOWER: (JAQUAR, ALLIED SERIES MAKE) INTERNAL & EXTERNAL DRAINAGE: (SOIL, WASTE, VENT AND RAIN WATER PIPES & FITTINGS)	154	23.8(E)	Work shall be carried out as per item description and quality app by in charge Engineer
95	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,	154	23.8(E)	Work shall be carried out as per item description

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	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: -160 mm diameter			and quality app by in charge Engineer
96	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: -110 mm diameter.	154	23.8(E)	Work shall be carried out as per item description and quality app by in charge Engineer
97	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
98	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
99	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

Sr No	Item	Building Specification Book P.No	Item No	Remarks
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100	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
101	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
102	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	
103	As above for 110 mm dia. pipe			Work shall be carried out as per item description and quality app by in charge Engineer
104	As above for 75 mm dia. pipe			
105	As above for 50 mm dia. pipe			
106	As above For 40 mm dia. pipe			
	EXTERNAL SEWER NETWORK			
107	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	154	23.8 E	
108	As above for 200MM	154	23.8 E	Work shall be carried out as per item description and quality
109	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	154	23.8 E	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
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	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			app by in charge Engineer
110	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)	
111	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	
a	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
b	900 x 800 mm size 1.0 to 1.5mtr depth	163	24.44 (II)	
c	1200 x 900mm size 1.5 to 3.0mtr depth	163	24.44 (II)	
112	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	156	24.19	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
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	directed at site). 300 x 300 mm chamber with 160 x 110 mm size 'P' trap.			
113	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	156	24.19	Work shall be carried out as per item description and quality app by in charge Engineer
114	Providing and fixing to the inlet mouth of rain water pipe FRP medium duty grating 15cm diameter or square size of cutting holes and making good the walls all complete.	99	15.87	Work shall be carried out as per item description and quality app by in charge Engineer
115 a	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
b	110 mm diameter. (Vertical Drops	99	15.87 A	
c	75 mm diameter.	99	15.87 A	
	INTERNAL & EXTERNAL COLD / HOT /DRINKING WATER SUPPLY:			
116	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
	DOMESTIC / FLUSHING WATER SUPPLY: -			
a	As above for 15 mm diameter	154	23.8 (E)	
b	As above for 20mm diameter	154	23.8 (E)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
c	As above for 25 mm diameter	154	23.8 (E)	
d	As above for 32 mm diameter	154	23.8 (E)	
e	As above for 40 mm diameter	154	23.8 (E)	
f	As above for 50 mm diameter	154	23.8 (E)	
g	As above for 65 mm diameter	154	23.8 (E)	
h	As above for 80 mm diameter	154	23.8 (E)	
i	As above for 100 mm diameter	154	23.8 (E)	
	INTERNAL TOILET PIPING HOT AND COLD-WATER SUPPLY WORK:			
117	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)	
a	As above for 15 mm diameter	154	23.8(A)	
b	As above for 20 mm diameter	154	23.8(A)	
c	As above for 25 mm diameter	154	23.8(A)	
d	As above for 32 mm diameter	154	23.8(A)	
e	As above for 40 mm diameter	154	23.8(A)	
118	Supply, Installation, Testing and Commissioning of 25 mm dia. air release valve. (Zoloto/ Audco/ R.B./ Spirex)		Follows GWSSB Specification Book	
119	Providing and fixing float valve with pressure type (Copper) float of approved make. (Zoloto/ Audco/ R.B./ Spirex) 25mm dia.		Follows GWSSB Specification Book	
120	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
	2 - DRYING AREA			
121	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in		Separate specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
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	layers at O.M.C to required dry density including feeling the depuration which occur during the process using power roller 8T to 10T(E) from borrow area within All lead (more than 10 ton)			
122	Plant mix method (construction of granular sub base by providing close graded Materia, mixing in a mechanical mix plant at Occurring of mixed material to work site spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401) For grading -II Material		Separate specification attached	
123	Suppling of graded stone aggregate of following sizes (for W.B.M road) (3) crushed stone aggregate for hard quality up to 63 mm size. Spreading the stone aggregate for rolling W.B.M including filling the interstices to required camber and gradient (excluding spreading of bandage) (iii)25mm to 50mm size crushed stone Suppling of course clean sharp sand at site. Spreading blindage or road crust filling the gaps in metal and levelling to camber and gradients as directed (ii)sand. Rolling and consolidate of soil including filling in depression which occur during the process, with power roller 8 tonne to 12 tonne		Separate specification attached	
124	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)	
125	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 250 mm with 32kg of RCH per/CMT levelling 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. Making expansion joint with 32 mm dia,300 mm length steel covered with 40 mm Dia PVC pipe with and cape placed 300 mm c/c covered with jute as per drawing		Separate specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
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126	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 S.O.R code 05014C		Separate specification attached	
	PAVING AREA FOR LOADING-UNLOADING			
127	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the deformation which occur during the process using power roller 8T to 10T(E) from borrow area within all lead (more than 10 ton)		Separate specification attached	
128	Plant mix method (construction of granular sub base by providing close graded Material, mixing in a mechanical mix plant at Occurring of mixed material to work site spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401) For grading -II Material		Separate specification attached	
129	Suppling of graded stone aggregate of following sizes (for W.B.M road) (3) crushed stone aggregate for hard quality up to 63 mm size. Spreading the stone aggregate for rolling W.B.M including filling the interstices to required camber and gradient (excluding spreading of blindage) (iii)25mm to 50mm size crushed stone Suppling of course clean sharp sand at site. Spreading blindage or road crust filling the gaps in metal and levelling to camber and gradients as directed (ii)sand. Rolling and consolidate of soil including filling in depression which occur during the process, with power roller 8 tonne to 12 tonne		Separate specification attached	
130	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)	
131	Providing and fixing pre-cast rubber dye inter locking concrete block 80mm thick with grade of concrete M250 pneumatic compressed by mechanically pressed and art level in and filling the		Separate specification attached	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	joints pe approved design including 75mm sand layer for with sand in proper line and level etc complete			
	4 - AUCTION SHED-2 (13.5mX73.13m)			
132	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)	
133	Providing and laying aveg.0.30mm thick layer of 60-40mm size metals and grit /sand with watering, compacting, levelling rolling as per directed		Separate specification attached	
134	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the deportation which occur during the process using power roller 8T to 10T(E) from borrow area within 3.0KM lead (more than 10 ton)		Separate specification attached	
135	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
136	Caring out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 Liter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
137	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)	
138	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	32 55	5.3.13 9.1 (A)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	for reinforced concrete work in foundation footings, base of columns and mass concrete.			
139	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 foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
140	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 Columns, pillars posts and struts G. FLOOR	40 56	5.8.3(D) 9.1 (G)(i)	
141	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 foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
142	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)	
143	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		Separate specification attached	
144	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/Cu.M concrete to be laid in alternate panels size approx. 3.5m x5.0m with steel channel foam work levelling 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 specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
145	Providing and fabricating on site as per architectural drawing of TATA RHS/SHS section. Junction shall be welded joints as required with good quality of electrodes.	67	112.A	
146	Applying primer coat over new steel and other metal surface after including preparing the surface by thoroughly cleaning, oil grease, dirt and other foreign matter and scoured with brushes fine wool, scraper and sand paper with ready mix priming paint brushing red lead. Painting two coats on new steel and other metal surface with sointhetic enamel paint brushing to given shade including the surface of all dirt, dust and foreign matter.	121	19.12	
147	The structure should be fixed to ground HAV anchor ER M20 x170 x108mm Dia ER-SS rod with HVU, chemical capsule as per manufacturer specification and company authorize applicator in concrete. The contractor has to give minimum 5 pull out test.		As per item description & instruction of in charge Engineer	
148	The sheet made out of coloured galvalume 0.5mm TCT as per ASTM A792 (M) grade 80, manufactured broil (HISPAN PROFILE) 1m width, pitch off 250mm and RIB HT.35mm with 3minimum RIB at centre and Capillary groves Curved sheet be fixed with SDST screw of Hilti (5.5-24x65) make with suitable washer 5 nos. On Creast fixed on purlin.		As per item description & instruction of in charge Engineer	
149	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 erected, with necessary Lamp holder/ceiling rose / H.D. Connector as directed.		Separate Electrical general specification book separates attached	
150	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		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification on Book P.No	Item No	Remarks
1	2	3	4	5
	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			
151	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		Separate Electrical general specification book separates attached	
152	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm		Separate Electrical general specification book separates attached	
153	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		Separate Electrical general specification book separates attached	
154	Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with 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.		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	3 nos. 6A Switch 3 nos. 6A 5 pin Plug For Modular Type Accessories			
155	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		Separate Electrical general specification book separates attached	
156	Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 1Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminium housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses with company mark/name engraved or embossed 120 to 300 V, Power Factor more than 0.95, THD < 10 %, CCT 3000 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy > 100 lumens/watt . LED driver efficiency > 85 %. CREE / OSRAM / PHILIPS Lumileds / NICHIA / SEOUL/ Bridgelux (U.S.A.) make LED used for luminaire. (fittings required LM-79 & LM-80 certificates) (NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer in charge may select any wattage capacity between the ranges shown.) (A) Street Light (IP-65), Surge protection -4KV integral and 10 kv non integral, Light must have 440VAC line supply protection. It should withstand 48 hours for 440VAC line supply. (c) above 24 to 36 watts		Separate Electrical general specification book separates attached	
	5 - CCTV			
157	Supply, Installation, Testing & Commissioning of IP Network IR Dome Camera, 1/2.8" CMOS, 2 MP, Min. Illumination required 0.05lux F1.4 colour, 0Lux F1.4(IR on), 120dB True WDR, Min. Pixels 1920 × 1080, min. dual stream, 2.7–12 mm motorized focus & zoom lens, BLC, HLC, 3DNR, Privacy Mask, IR LEDs Smart IR with up to 30m IR distance, 128GB SD card support, H.265, H.264 High Profile and MJPEG, PoE Class 3 and 12V DC, IP 66, IK10 rated vandal resistant, Having Operating temp range : –30°C to 60° C. ONVIF Profile, cyber		Separate CCTV general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	secured, UL, CE, FCC & RoHS certified. Approved Make: Honeywell, Bosch, Axis			
158	Supply, Installation, Testing & Commissioning of IP Network IR Bullet Camera, 1/2.8" CMOS, 2 MP, Min. Illumination required 0.05lux F1.4 colour, 0Lux F1.4(IR on), 120dB True WDR, Min. Pixels 1920 × 1080, min. dual stream, 2.7–12 mm motorized focus & zoom lens, BLC, HLC, 3DNR, Privacy Mask, IR LEDs Smart IR with up to 60m IR distance, 128GB SD card support, H.265, H.264 High Profile and MJPEG, PoE Class 3 and 12V DC, IP 66, Metal Body, Having Operating temp range : –30°C to 60° C. ONVIF Profile, cyber secured, UL, CE, FCC & RoHS certified. Approved Make: Honeywell, Bosch, Axis		Separate CCTV general specification book separates attached	
159	Supply, Installation, Testing and Commissioning of 64 Channel NVR With 1080p Realtime Live View H.265/H.264 MJPEG dual codec decoding Up to 12 MP resolution preview & playback Max 320 Mbps incoming bandwidth support 8 SATA HDDs up to 64TB, Supports fisheye videode-warping in local and web user interface, Supports visual or auditory notifications (a flashing light, bell, or siren). ONVIF compliant, UL, CE, FCC and & RoHS compliant. Approved Make: Honeywell, Bosch, Axis		Separate CCTV general specification book separates attached	
160	Supply, Installation, Testing and Commissioning of Storage on 2 MP 25 Fps And H.265 for 30 Days Approved Make: WD/Seagate		Separate CCTV general specification book separates attached	
161	Supply, Installation, Testing and Commissioning of 55" Full HD LED with slim narrow bezel, 1920 × 1080 resolution, Brightness: 500 cd/m ² , Bezel to bezel distance: max. 3.5mm with wall mount arrangement as per specifications Approved Make: Samsung, LG, Panasonic		Separate CCTV general specification book separates attached	
162	Supply, Installation, Testing and Laying of 25 mm Dia MMS PVC Conduit with all required accessories. Approved Make: Vraj, Nihir, Precession		Separate CCTV general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
163	Supply and laying of UTP CAT6 LSZH cable in pre-laid PVC conduits / pipes / raceway, but without the cost of raceway or pipe. CCTV System Cabling Approved Make: Tyco, Corning, Digi sol		Separate CCTV general specification book separates attached	
164	Supply, Installation, Testing & Commissioning of CAT6 UTP RJ-45 LSZH Patch Cords Solid Conductor 3ft for data (Hub Side)-Data Approved Make: Tyco, Corning, Digi sol		Separate CCTV general specification book separates attached	
165	Supply, Installation, Testing & Commissioning of CAT6 UTP RJ-45 LSZH Patch Cords Solid Conductor 7ft for Data (User Side)- Data Approved Make: Tyco, Corning, Digi sol		Separate CCTV general specification book separates attached	
166	Supply, Installation, Testing & Commissioning of Single UTP CAT6 RJ-45 I/O of specified make inclusive of termination of CAT6 cable at each IO at workstation area / device / desktop/Data Approved Make: Tyco, Corning, Digi sol		Separate CCTV general specification book separates attached	
167	Supply, Installation, Testing & Commissioning of Singlex Face Plate for mounting IO with required back box as per tender specification. Approved Make: Tyco, Corning, Digi sol		Separate CCTV general specification book separates attached	
168	Supply, Installation, Testing & Commissioning of Duplex faceplate for mounting IO with required back box as per tender specification. Approved Make: Tyco, Corning, Digi sol		Separate CCTV general specification book separates attached	
169	Supply, Installation, Testing & Commissioning of loaded UTP CAT6 Gigabit modular Patch Panel for 24 ports in 1U form factor as per the tender specifications, with universal A/B labelling on rear of panel allowing for quick and easy installation of 22 to 24 AWG cable. -Data includes Computer Point, CCTV. Approved Make: Tyco, Corning, Digi sol		Separate CCTV general specification book separates attached	
170	Supply, Installation, Testing & Commissioning of 6-core Outdoor Cable - Corrugated Steel tape Armoured, Loose-tube, Uni tube, Gel-filled, 9/125 Single Mode OS2 Fiber Cable where ever required in pre-laid conduits / RCC Hume pipes/HDPE/DWC,		Separate CCTV general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	whichever maybe available. Approved Make: Tyco, Corning, Digisol			
171	Supply, Installation, Testing & Commissioning of 19-inch 12 Port LIU, rack mount patch panel, 1U, loaded with 2 X 6 Ports Adaptor Connector Panel & with Splice Tray, inclusive of all mechanical accessories without pigtail. Approved Make: Tyco, Corning, Digisol		Separate CCTV general specification book separates attached	
172	Supply, Installation, Testing & Commissioning of LC-LC single mode duplex fibre optic patch cord 3mtr as per tender specification. Approved Make: Tyco, Corning, Digisol		Separate CCTV general specification book separates attached	
173	Supply, installation, testing and commissioning of Layer 2 networking switch, 24 # 10/100/1000 Port Network Switch, copper ethernet 24 port, PoE+ 370W, IEEE 802.3at-compliant, min. 4 shared mini-GBIC/SFP ports suitable for single/multi-mode fibre optics based, supporting transceivers up to 2000mtrs. Approved Make: Net gear, HP, Cisco		Separate CCTV general specification book separates attached	
174	Supply, Installation, Testing & Commissioning of 1G SFP Transceiver for Single Mode Fiber for Access switch as per tender specification. Approved Make: Net gear, HP, Cisco		Separate CCTV general specification book separates attached	
	6 - LOADING SHED-1 (12.0mX73.13m)			
175	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)	
176	Providing and laying aveg.0.30mm thick layer of 60-40mm size metals and grit /sand with watering, compacting, levelling rolling as per directed		Separate specification attached	
177	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depression which occur during the process using power roller 8T to 10T(E) from borrow area within all lead (more than 10 ton)		Separate specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
178	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
179	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 Liter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
180	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)	
181	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 foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
182	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 foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
183	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 Columns, pillars posts and struts G. FLOOR	32 55	5.3.13 9.1 (A)	
184	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 foundation footings, base of columns and mass concrete.	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
185	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)	
186	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	
187	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 levelling 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	
188	Providing and fabricating on site as per architectural drawing of TATA RHS/SHS section. Junction shall be welded joints as required with good quality of electrodes.	67	112.A	
189	Applying primer coat over new steel and other metal surface after including preparing the surface by thoroughly cleaning, oil greedier and other foreign matter and scoured with brushes fine wool, scraper and sand paper with ready mix priming paint brushing red lead. Painting two coats on new steel and other metal surface with nonthetic enamel paint brushing to given shade including the surface of all dirt, dust and foreign matter	121	19.12	
190	The structure should be fixed to ground HAV anchor ER M20 x170 x108mm Dia ER-SS rod with HVU, chemical capsule as per manufacturer specification and company authorize applicator in concrete. The contractor has to give minimum 5 pull out test.		As per item description & instruction of in charge Engineer	
191	The sheet made out of coloured galvalume 0.5mm TCT as per ASTM A792 (M) grade 80, manufactured broil (HISPAN PROFILE) 1m width, pitch off 250mm and RIB HT.35mm with		As per item description & instruction of in charge Engineer	

Sr No	Item	Building Specification on Book P.No	Item No	Remarks
1	2	3	4	5
	3minimum RIB at centre and Capillary grooves Curved sheet be fixed with SDST screw of Hilti (5.5-24x65) make with suitable washer 5 nos. On Creast fixed on purlin.			
192	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 erected, with necessary Lamp holder/ceiling rose / H.D. Connector as directed.		Separate Electrical general specification book separates attached	
193	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		Separate Electrical general specification book separates attached	
194	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		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
195	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm		Separate Electrical general specification book separates attached	
196	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		Separate Electrical general specification book separates attached	
197	Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with 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		Separate Electrical general specification book separates attached	
198	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		Separate Electrical general specification book separates attached	
199	Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 1Watt and above assembled on single MCPCB, efficiency more than 122 lm/w and corrosion free High pressure die cast aluminium housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses with company mark/name engraved or embossed 120 to 220 V,Power Factor more than 0.95, THD < 22 %, CCT 2200 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy> 220 lumens/watt . LED driver efficiency > 85 %. CREE / OSRAM / PHILIPS Lumileds / NICHIA / SEOUL/ Bridgelux (U.S.A.) make LED used for luminaire. (fittings required LM-79 & LM-80 certificates)		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer in charge may select any wattage capacity between the ranges shown.) (A) Street Light (IP-65), Surge protection -4KV integral and 22 kv non integral, Light must have 440VAC line supply protection. It should withstand 48 hours for 440VAC line supply. (c) above 24 to 36 watts			
	7 - AUCTION SHED-1 (12.0mX73.13m)			
200	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)	
201	Providing and laying avg.0.30mm thick layer of 60-40mm size metals and grit /sand with watering, compacting, levelling rolling as per directed		Separate specification attached	
202	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depression which occur during the process using power roller 8T to 10T(E) from borrow area within 3.0KM lead (more than 10 ton)		Separate specification attached	
203	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
204	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 Liter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
205	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
206	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 foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
207	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 foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
208	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 Columns, pillars posts and struts G. FLOOR	32 55	5.3.13 9.1 (A)	
209	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 foundation footings, base of columns and mass concrete.	32 55	5.3.13 9.1 (A)	
210	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)	
211	Providing Thermos 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	
212	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 levelling with surface vibrator finishes 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		Separate specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	ready-mix bituminous filler of Shalimar tar products.			
213	Providing and fabricating on site as per architectural drawing of TATA RHS/SHS section. Junction shall be welded joints as required with good quality of electrodes.	67	112.A	
214	Applying primer coat over new steel and other metal surface after including preparing the surface by thoroughly cleaning, oil greedier and other foreign matter and scoured with brushes fine wool, scraper and sand paper with ready mix priming paint brushing red lead. Painting two coats on new steel and other metal surface with nonthetic enamel paint brushing to given shade including the surface of all dirt, dust and foreign matter.	121	19.12	
215	The structure should be fixed to ground HAV anchor ER M20 x170 x108mm Dia ER-SS rod with HVU, chemical capsule as per manufacturer specification and company authorize applicator in concrete. The contractor has to give minimum 5 pull out test.		As per item description & instruction of in charge Engineer	
216	The sheet made out of coloured galvalume 0.5mm TCT as per ASTM A792 (M) grade 80, manufactured by CRIL (HISPAN PROFILE) 1m width, pitch off 250mm and RIB HT.35mm with 3minimum RIB at centre and Capillary groves Curved sheet be fixed with SDST screw of Hilti (5.5-24x65) make with suitable washer 5 nos. On Creast fixed on purlin.		As per item description & instruction of in charge Engineer	
217	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 erected, with necessary Lamp holder/ceiling rose / Hedonometer as directed.		Separate Electrical general specification book separates attached	
218	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		Separate Electrical general specification	

Sr No	Item	Building Specification on Book P.No	Item No	Remarks
1	2	3	4	5
	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		book separates attached	
219	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		Separate Electrical general specification book separates attached	
220	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm		Separate Electrical general specification book separates attached	
221	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		Separate Electrical general specification book separates attached	
222	Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with single mounting base frame covered with textured/metallic /white front plate, modules erected with necessary connections as directed		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	1 no. 6A/16A universal plug-switch combined. 3 nos. 6A Switch 3 nos. 6A 5 pin Plug For Modular Type Accessories			
223	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		Separate Electrical general specification book separates attached	
224	Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 1Watt and above assembled on single MCPCB, efficiency more than 122 lm/w and corrosion free High pressure die cast aluminium housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses with company mark/name engraved or embossed 120 to 220 V, Power Factor more than 0.95, THD < 22 %, CCT 2200 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy > 220 lumens/watt . LED driver efficiency > 85 %. CREE / OSRAM / PHILIPS Lumileds / NICHIA / SEOUL/ Bridgelux (U.S.A.) make LED used for luminaire. (fittings required LM-79 & LM-80 certificates) (NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer in charge may select any wattage capacity between the ranges shown.) (A) Street Light (IP-65), Surge protection -4KV integral and 22 kv non integral, Light must have 440VAC line supply protection. It should withstand 48 hours for 440VAC line supply. (c) above 24 to 36 watts		Separate Electrical general specification book separates attached	
	8 - PUBLIC ADDRESS SYSTEM			
	SITC of UL 60065 compliant IP Based Digital Public Address & Voice Alarm system. The selected system devices like controllers and Paging Microphones, should use the TCP/IP technologies and build on the standard network platform to ensure expandability.			
225	SITC of 8 zone IP based, digital Voice Alarm controller expandable up to 128 zones. The voice alarm controller should be able to connect directly over Ethernet. It should have functions like the audio playing, zone control, fault monitoring, log		Separate PAC General specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	<p>recording, volume control and amplifier switchover. The Voice alarm controller should also have the following functions:</p> <ul style="list-style-type: none"> . 255 Priorities . Time schedule broadcasts . AVC . Capable of amplifier redundancy . 8 trigger inputs/outputs <p>Approved Makes: Honeywell X-618, Bosch Prasanna, Ateis</p>			
226	<p>SITC of IP based Networkable 4-inch touch screen paging station for selection of zones, supervision of system status, setting of scheduled broadcasts with the following functions:.</p> <ul style="list-style-type: none"> Built-in monitoring loudspeaker . Detachable goose-neck microphone • Play Audio Files from USB Disk • Voice Synthesis • Timing Broadcast Function . LCD touchscreen display • Audio Prerecord & Broadcast <p>Approved Makes: Honeywell X-618, Bosch Prasanna, Ateis</p>		Separate PAC General specification book separates attached	
227	<p>SITC of 1X500W Class-D Amplifier with 2 independent channels and can provide automatic resettable overcurrent, overload, overheating, overvoltage, under-voltage and DC protection</p> <p>Approved Makes: Honeywell X-618, Bosch Prasanna, Ateis</p>		Separate PAC General specification book separates attached	
228	<p>SITC of 6W Ceiling Speaker with max SPL1M/1W 96dB. Frequency response of 80Hz-20KHz with a dispersion angle of 160 deg. The speaker should have tapings at 6W/3W</p> <p>Approved Makes: Honeywell X-618, Bosch Prasanna, Ateis</p>		Separate PAC General specification book separates attached	
229	<p>SITC of 15W Horn Speaker (IP66) with max SPL1M/1W 110dB. Frequency response of 500Hz-5KHz with a dispersion angle of 140 deg. The speaker should have tapings at 15W/7.5W</p> <p>Approved Makes: Honeywell X-618, Bosch Prasanna, Ateis</p>		Separate PAC General specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
230	<p>SITC of integrated Audio source with the following features:</p> <ul style="list-style-type: none"> • Two single CD\USB\SD and DAB\FM line outputs can play music applications in two areas. • The volumes of the two-line outputs can be adjusted separately. • CD\USB\SD has three play modes: single play, all play and repeated play. • DAB\FM can preset 10 channels of programs. • RS485 remote control interface <p>Approved Makes: Honeywell X-618, Bosch Prasanna, Ateis</p>		Separate PAC General specification book separates attached	
231	<p>Supply and Laying of 2 Core X 1.5 Sq.mm FRLS Multistrand PVC insulated Copper armoured RED cable with all required accessories.</p> <p>Approved Makes: Caliplast, Polycab, RR Cable</p>		Separate PAC General specification book separates attached	
	9-WEIGH BRIDGE			
232	<p>Electronic weighbridge with platform (pit type model) six 52x10 ft. 100 MT capacity, 450 mm gadder, 250 mm gadder, plate thickness 12mm, approximate weight of structure (10000 to 10500 kg) including installation testing, commissioning stamping by government and measure department, transportation etc. System with high speed embedded micro controller built in auto zero maintenance, digital calibration, digital filter, real time clock, display 2x6 digits, 7 seg display or 1/16-character dot metric display. input data entry of IBM compatible PC keyboard by parallel printer, standard alphanumeric key board for entry of data, capacity safe over load 150% of the rated capacity, breaking load 300% of the rated capacity, safe temperature 0 to 65 degree Celsius, degree of protection IP 68 type with inbuilt lighting protection etc.</p>		Separate Weigh Bridge specification attached	
	10 - 100 TON WEIGH BRIDGE CABIN			
233	<p>Excavation for foundation up to 1.50 Mt depth including sorting out and stacking of useful materials and (EXECUTED WITH MECHANISED EFFORTS MACHINARIES)</p>	22	4.0.0 (A)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
234	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)	
235	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 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)	
236	Providing and laying controlled cement concrete M-250 RMC EXPOSED WORK 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, (iii)having cross sectional area more than 0.12 Sq.M and up to 0.18 Sq.M	32 55	5.3.13 9.1 (A)	
237	Providing and laying controlled cement concrete M-250 RMC EXPOSED WORK 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 (III) having cross sectional area more than 0.12 SMT and up0.18 Smt Ground Floor	32 55	5.3.13 9.1 (A)	
238	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK 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 WALL 0.20 m thick	40 56	5.8.3(D) 9.1 (G)(i)	
239	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK 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 (IV) SLABS having more than 13 Cm and up to 15 Cm thick	41	5.004	
240	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	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
241	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
242	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 litter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
243	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	
244	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	
245	Providing and laying 600 mm x 600mm vitrified 9 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 colour cement slurry including finished with flush pointing & cleaning the surface etc. complete (VERMORA TULIP IVORY-GL)	14.32	84	Specification follows as per Item of ceramic tile using vitrified tile 600 x 600 mm
246	Providing and laying vitrified tiles 9 mm thick, 600 x 100 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 (VERMORA TULIP IVORY-GL)	14.32	84	Specification follows as per Item of ceramic tile using vitrified tile 600 x 100 mm
247	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		As per attached sheet	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	plain and curve surface & 12 mm to 20 mm of broken piece of ceramic / glazed tiles (one for more colour 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 colour 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.			
248	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	
249	Providing and fixing window having extruded aluminium Colour 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 colour tinted float glass with powder coated aluminium fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc complete for window.		As per attached sheet	
250	Extra for providing formwork for exposed concrete surface in desired pattern, grooves, bolting pattern and size using laminated shuttering plywood including neat cleaning the exposed concrete surface, as directed by the architect for all RCC works of any space and size horizontal vertical and slanting, curved surface etc, complete	54	9.1A	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
251	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 aluminium 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 Panelled	58 61	10.1.A 10.13.A I	
252	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 erected, with necessary Lamp holder/ceiling rose / H.D.Connector as directed.		Separate Electrical General specification book separates attached	
253	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		Separate Electrical General specification book separates attached	
254	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		Separate Electrical General specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	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			
255	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		Separate Electrical General specification book separates attached	
256	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 1.5 sq. mm		Separate Electrical General specification book separates attached	
257	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm		Separate Electrical General specification book separates attached	
258	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		Separate Electrical General specification book separates attached	
259	Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with single mounting base frame covered with textured/metallic /white front		Separate Electrical General specification	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	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		book separates attached	
260	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		Separate Electrical General specification book separates attached	
261	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		Separate Electrical General specification book separates attached	
262	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 incoming and horizontal single-phase outgoing (b) sheet steel double door (IP-43) (iv)12 way		Separate Electrical General specification book separates attached	
263	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		Separate Electrical General specification book separates attached	
264	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		Separate Electrical General specification book separates attached	
265	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.		Separate Electrical General specification	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
			book separates attached	
266	Providing 2. 5mm.thick laminated acrylic sheet to cover the fan hook or Fan box.		Separate Electrical General specification book separates attached	
267	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		Separate Electrical General specification book separates attached	
268	Supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS: 513/CRCA/aluminium pressure die cast powder coated and high U.V. & corrosion resistance with diffuser housed in aluminium casted body with company mark/name 120 to 300 V,Power Factor more than 0.9, THD < 10 %, CCT 3000 K to 6500K, Luminaire efficacy> 85 lumens/watt ,LED efficiency 110 lumens/watt. LED driver efficiency > 85 % CREE / OSRAM / PHILIPS Lumileds / NICHIA / SEOUL/Bridgelux make LED used for luminaire. (fitting required LM-79 & LM-80 Certificates) (NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer in charge may select any wattage capacity between the ranges shown.) (D) LED Panel Light with provision for Plane front frame with translucent cover fixed to housing complete. IP20 (f) 36 watts, 24" x 24" mm, Surge- 2KV		Separate Electrical General specification book separates attached	
	11 - 100 TON WEIGH BRIDGE			
269	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)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
270	Supplying of graded stone gritted of following sizes (for W M M road) 2 hand broken stone aggregate for hard quality up to 63 mm size spreading the stone aggregate for rolling and W.M.M including filling the interstices to required camber and gradient (excluding spreading of blindage) (iii)25mm to 50mm size crushed stone spreading blindage for road crust filling the gaps in metal and levelling to camber and gradient as directed9ii) sand rolling and consolidation of soling including filling and depression which occur during the process with power roller 8 tonne to 12 tonne.		Separate specification attached	
271	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)	
272	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 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)	
273	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK 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 Wall for Ground Floor	32 55	5.3.13 9.1 (A)	
274	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 SLABS for Ground Floor	41	5.004	
275	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		Separate sheet attac	
276	Supplying fabricating, erecting, aligning & fixing in proper position 40mm x 40mm, 12mm thick M S plate, 19mm Dia 4 holes as per drawing and 19mm Dia bolt of 300mm length etc. complete at site. Rate shall include for supplying all materials such as ISI		Separate specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	Market rate mark welding rods, bolts, nuts, etc and like labour for the work of straightening, cutting, drilling holes, necessary plants / equipment's for assembling, bolting welding, erecting, etc. complete as directed. Measurement of steel shall be on the basis of Smt Area As per drawing length of this sections as per drawing and standard weight as per ISI code			
	12 - TRIMIX ROAD			
277	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depression which occur during the process using power roller 8T to 10T(E) from borrow area within All lead (more than 10 ton)		Separate specification attached	
277	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depression which occur during the process using power roller 8T to 10T(E) from borrow area within All lead (more than 10 ton)		Separate specification attached	
278	Plant mix method (construction of granular sub base by providing close graded material, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401) For grading -II Material		Separate specification attached	
279	Suppling of graded stone aggregate of following sizes (for W.B.M road) (3) crushed stone aggregate for hard quality up to 63 mm size. Spreading the stone aggregate for rolling W.B.M including filling the interstices to required camber and gradient (excluding spreading of blindage) (iii)25mm to 50mm size crushed stone Suppling of course clean sharp sand at site. Spreading blindage or road crust filling the gaps in metal and levelling to camber and gradients as directed (ii)sand. Rolling and consolidate of soil including filling in depression which occur during the process, with power roller 8 tonne to 12 tonne		Separate specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
280	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)	
281	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 250 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 levelling 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 joint of size 10x40 mm by using of concrete cutter machine and ready-mix bituminous filler of Shalimar tar products. Making expansion joint with 32 mm dia,300 mm length steel covered with 40 mm Dia PVC pipe with and cape placed 300 mm c/c covered with jute as per drawing			
282	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		Separate sheet attac	
	13 - EXTERNAL PLUMBING WATER SUPPLY (PHE SERVICE)			
282	Providing and fixing UPVC-SCH-80 pipes with UPVC SCH-80 fittings UV stabilized and UPVC solution 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 Under Ground Works Under Ground main line work) (Astral/ Supreme/Ashirvad Make)	154	23.8 (E)	Quality & Brand as instructed by in charge Engineer
a	15 mm Dia	154	23.8 (E)	
b	20 mm Dia	154	23.8 (E)	
c	25 mm Dia	154	23.8 (E)	
d	32 mm Dia	154	23.8 (E)	
e	40 mm Dia	154	23.8 (E)	
f	50 mm Dia	154	23.8 (E)	
g	65 mm Dia	154	23.8 (E)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
h	80 mm Dia	154	23.8 (E)	
I	100 mm Dia	154	23.8 (E)	
j	150 mm Dia	154	23.8 (E)	
283	Supply, installation, testing & commissioning of gunmetal, male or female threaded isolation control valve (Ball Valve), confirming to latest IS, PN 10, with necessary specials, union, nipples etc., to complete the job. (Zoloto/ Audco/ R.B.)		Specification follows as per GWSSB Standard Specification attached	
	(External Control Main Works)			
a	15mm Dia		P No 168	
b	20mm dia.			
c	25mm dia.			
d	32mm dia.			
e	40mm dia.			
f	50mm dia.			
g	75mm dia.			
h	100mm dia.			
I	150mm dia.			
284	Supplying, fitting & fixing Non return valve (Spring type Dual plate type) as per API 594/598, tested to 10 kg/sq.cm etc. complete. (Valve will supplied by Client). (Zoloto/ Audco/ R.B./ Spirex)		Specification follows as per water supply technical specification Book P No 168	
a	25mm dia.			
b	32mm dia.			
c	40mm dia.			
d	50mm dia.			
e	75mm dia.			
f	100mm dia.			
285	Supply, Installation, Testing and Commissioning of 25 mm dia. air release valve. (Zoloto/ Audco/ R.B./ Spirex)		Specification follows as per GWSSB Standard Specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
286	Excavation for roadways in Soil of all sorts up to required depth including dressing section to the required grade and camber and side slopes in soil, soft murrum, hard murrum, BT surface, otta, dismantled structures including scaffolding if required shoring, strutting and conveying the excavated materials within the lead of 200m, spreading, watering, ramming including supporting the utility services such as pipe lines, cables etc. using bamboos, wire ropes, installing red lamps and barricading around the excavated pits for safety etc. complete. 0 to 0.60 mtr depth		Specification follows as per GWSSB Standard Specification attached	
287	Constructing masonry Chamber 75x 75 x 75 cm and up to 1.0mtr depth , inside with 75 second class designation brick work in cement mortar 1:5 (1 cement :5 fine sand) for sluice valve and ball valve, with C.I. surface box 100mm. top diameter, 160 mm bottom diameter and 180 mm deep (inside) for sluice valve and medium duty RCC manhole cover of 550mm dia. size with RCC precast frame for gun metal valve with chained lid and RCC top slab 1:2:4 mix (1 cement:2 coarse sand : 4 graded stone aggregate 20mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement :5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12mm thick finished with a floating coat of neat cement complete as per standard design: (Valve Chamber)		Specification follows as per GWSSB Standard Specification attached	
288	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.		Separate sheet attac	
a	25 mm dia.			
b	32 mm dia.			
c	40 mm dia.			
d	50 mm dia.			
	14 - COMPOUND WALL-1621.92 RMT			
289	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in		Separate specification attached	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	layers at O.M.C to required dry density including feeling the depression which occur during the process using power roller 8T to 10T(E) from borrow area within 3.0KM lead (more than 10 ton)			
290	Boring holes 3.5m deep in ordinary soil (for cast in situ piles) and getting out the soil and disposal of the surplus excavated soil as directed with in a lead of 50m for following Dia meter of pipe-300 mm	28	4.27	
291	Providing and laying controlled cement concrete M-200 RMC and curing complete and excluding reinforcement for reinforced concrete work in (a) Foundations, footings Bases of columns and the like and Mass concrete. (more than 10 ton) (pile footing)	32 55	5.3.13 9.1 (A)	
292	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 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)	
293	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)	
294	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 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)	
295	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 (ground beam)	40 56	5.8.3(D) 9.1 (G)(i)	
296	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for RCC work in (A) BEAMS (ii) having cross sectional area more than 0.08 Sq.M and up to 0.12 Sq.M Ground Floor (plinth beam)	40 56	5.8.3(D) 9.1 (G)(i)	Exposed finished

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
297	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for RCC work in (A) BEAMS (Lintel beam) (I) having cross sectional area 0.05 Sq.M and up to 0.08 Sq.M ground floor	40 56	5.8.3(D) 9.1 (G)(i)	Exposed finished
298	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for RCC work in (A) COLUMN having cross sectional area 0.05 Sq.M and up to 0.08 Sq.M ground floor (1.5 Mt ht)	38	5.8.1	
299	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for RCC work in (A) COLUMN having cross sectional area 0.05 Sq.M and up to 0.08 Sq.M ground floor (0.75 Mt) ht	38	5.8.1	
300	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for RCC work in (A) COLUMN having cross sectional area 0.05 Sq.M and up to 0.08 Sq.M ground floor (2.25 Mt) ht	38	5.8.1	
301	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK 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 Wall for Ground Floor (up to plinth level)	38	5.8.1	
302	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK 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 Wall for Ground Floor (up to super structural)	38	5.8.1	
303	Supplying fabricating, erecting, aligning & fixing in proper position Asian make 75x4mm thick vertical member mild steel, 75x6mm thick horizontal member, fix with 150x150x10mm Ms plate etc. complete at site. Rate shall include for supplying all materials such as ISI Market rate mark welding rods, bolts, nuts, etc and like labour for the work of straightening, cutting, drilling holes, necessary	67	11.2A	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	plants / equipment's 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 Smt Area As per drawing length of the sections as per drawing and standard weight as per ISI code			
304	Excavation for foundation up to 1.50 Mt depth including sorting out and stacking of useful materials and (EXECUTED WITH MECHANISED EFFORTS MACHINARIES)	22	4.0.0 (A)	
305	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	
306	Providing and fixing 75x40x5mm MS channel to make 'Y' form and 250 mm depth angle embed on RCC column with RCC concrete M-250 on top with necessary holes to fix 12x14 gauge of galvanise wire strand and barb spacing 15mm , 2 lines horizontal total 4 no. weighting 9.39 kg per 100MT 120 gsm fixed to post with GI stepless, razor wire 2.6mm Dia GI wire coil diameter 600mm, coil length 100 mm , 120 gsm Zinc cotted weight of coil 8 kg, blade profile BTO-102233+CBT 60 and 65 maximum 5.5 Mt length of spiral razor wire should be arrange from 1 coil fix with GI staples	67	11.2A	
307	Extra for providing formwork for exposed concrete surface in desired pattern, grooves, bolting pattern and size using laminated shuttering plywood including neat cleaning the exposed concrete surface, as directed by the architect for all RCC works of any space and size horizontal vertical and slanting, curved surface etc, complete	54	9.1A	
308	Charges for making holes in wall, slabs or any other RCC members by diamond core cutting machine of HILTI or equivalent including disposing the debris. measurement will be taken for the depth of holes in running meter. For disposal of the debris as per the disposal item	139	22.00.10	
A	Diameter of holes from 51 to 100 mm clear	139	22.00.10	
B	Diameter of holes from 101 to 200 mm clear	139	22.00.10	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
309	Providing and fixing in expansion joint 100 mm thick silflex (cepcelt hd 100) expansion joint board of best quality and approved make including cutting to required size and shape at all levels etc. Complete as directed		Separate specification attached	
	15 - GATE - 3 Nos.			
310	Excavation for foundation up to 1.50 Mt depth including sorting out and stacking of useful materials and (EXECUTED WITH MECHANISED EFFORTS MACHINARIES)	22	4.0.0 (A)	
311	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)	
312	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 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)	
313	Providing and laying controlled cement concrete M-250 RMC EXPOSED WORK 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, (iii)having cross sectional area more than 0.12 Smt and up to 0.18 Smt	40 56	5.8.3(D) 9.1 (G)(i)	Exposed finishing
314	Providing and laying controlled cement concrete M-250 RMC EXPOSED WORK 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 (III) having cross sectional area more than 0.12 SMT and up0.18 Smt Ground Floor	40 56	5.8.3(D) 9.1 (G)(i)	Exposed finishing
315	Providing and laying controlled cement concrete M-250 RMC EXPOSED WORK 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 super structure	40 56	5.8.3(D) 9.1 (G)(i)	Exposed finishing

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
316	Providing and laying controlled cement concrete M-250 RMC EXPOSED WORK 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 Wall for Ground Floor	40 56	5.8.3(D) 9.1 (G)(i)	Exposed finishing
317	Providing and laying controlled cement concrete M-200 RMC EXPOSED WORK 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 (IV) SLABS having more than 13 Cm and up to 15 Cm thick	40 56	5.8.3(C) 9.1 (H)(i)	Exposed finishing
318	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 super structure	40 56	5.8.3(C) 9.1 (H)(i)	Exposed finishing
319	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	
320	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
321	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 litter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
322	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		Separate sheet attached	
323	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	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
324	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 colour 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
325	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
326	Providing and fixing Rubi red Granite of 20 mm thick of uniform size and colour 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.		As per attached sheet	
327	Providing and laying water proofing treatment with China mosaic tiles flooring over age 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 colour 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 colour 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.		Separate sheet attached	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
328	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	
329	Providing and fixing window having extruded aluminium Colour 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 colour tinted float glass with powder coated aluminium fittings and fixtures and transparent silicon sealant glass fixing to frame as per details etc complete for window.		As per attached	
330	Extra for providing formwork for exposed concrete surface in desired pattern, grooves, bolting pattern and size using laminated shuttering plywood including neat cleaning the exposed concrete surface, as directed by the architect for all RCC works of any space and size horizontal vertical and slanting, curved surface etc, complete	54	9.1A	
331	Supplying fabricating, erecting, aligning & fixing in proper position Asian make, 40mm x 40mm steel rod outer frame and 50mm x 4mm MS patta at 50mm equal distance 4 Hinges on both the shutters fixed to ISMB-125 complete at site. Rate shall include for supplying all materials such as ISI mark welding rods, bolts, nuts, etc and like labour for the work of straightening, cutting, drilling holes, necessary plants / equipment's 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	10	32	As per attached sheet

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	on the basis of length of the sections as per drawings and standard weight as per ISI code.			
	Electrical Works			
332	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 erected, with necessary Lamp holder/ceiling rose / H.D. Connector as directed.		Separate Electrical general specification book separates attached	
333	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		Separate Electrical general specification book separates attached	
334	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		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	medium class Rigid PVC pipe and accessories erected flushed on wall/ceiling complete			
335	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		Separate Electrical general specification book separates attached	
336	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 1.5 sq. mm		Separate Electrical general specification book separates attached	
337	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 colour for earth continuity of following size (a) with medium class Rigid PVC pipe and accessories (b) 2 wire 2.5 sq. mm		Separate Electrical general specification book separates attached	
338	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		Separate Electrical general specification book separates attached	
339	Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with 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.		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	3 nos. 6A Switch 3 nos. 6A 5 pin Plug For Modular Type Accessories			
340	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		Separate Electrical general specification book separates attached	
341	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		Separate Electrical general specification book separates attached	
342	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 incoming and horizontal single-phase outgoing (b) sheet steel double door (IP-43) (iv)12 way		Separate Electrical general specification book separates attached	
343	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		Separate Electrical general specification book separates attached	
344	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		Separate Electrical general specification book separates attached	
345	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.		Separate Electrical general specification book separates attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
346	Providing 2.5mm. thick laminated acrylic sheet to cover the fan hook or Fan box.		Separate Electrical general specification book separates attached	
347	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		Separate Electrical general specification book separates attached	
348	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		Separate Electrical general specification book separates attached	
	16 - SEWER WASTE WATER PIPE NETWORK (PHE SERVICE)			
349	Excavation for roadways in Soil of all sorts up to required depth including dressing section to the required grade and camber and side slopes in soil, soft murrum, hard murrum, BT surface, otta, dismantled structures including scaffolding if required shoring, strutting and conveying the excavated materials within the lead of 200m, spreading, watering, ramming including supporting the utility services such as pipe lines, cables etc. using bamboos, wire ropes, installing red lamps and barricading around the excavated pits for safety etc. complete.		Separate specification attached	
a	Up to 1.0m depth			
b	1.00 to 2.00 m Depth			
c	2.00 to 3.00 m Depth			
350	Providing Cement Concrete Pipes of IS NP-3 Class of below diameter in proper line, level & Slope including providing, fixing collars in position in cement mortar 1:2 curing etc. complete. Laying in position RCC Hume pipe of IS NP-3 Class in proper line, level & Slope including providing, fixing rubber ring joint finishing with in cement mortar 1:2			

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	curing & testing etc. Complete. Laying of pipes shall be carried out as per relevant IS, including all leads and lifts etc. Complete as directed by Engineer.			
a	150 mm Dia. (NP-2)			
b	250 mm Dia. (NP-2)			
c	300 mm Dia. (NP-2)			
d	450 mm Dia. (NP-3)			
e	600 mm Dia. (NP-3)			
f	900 mm Dia. (NP-3)			
351	Constructing Brick masonry inspection Manhole chamber 23 cm thick in 1:6 cement mortar or using concrete block, plastering internally and externally in 1:3 cement mortar (no external plastering is required for concrete block), render cement finish, coping 75 mm thick 1:2:4 CC, constructing catch pit, 1:3:6 CC in bed concrete, rubble soling 230mm thick, preparing of channel with pipe, connecting out-going and incoming pipe lines, etc. complete.	163	24.44 I	
a	a) 75cm x 75cmx 1.00			
b	b) 90cm x 80cmx 1.50m			
c	c) 120cm x 90cmx 2.50m			
4	Providing precast cement concrete covers with frame over chamber of approved drawing and design.	110	GWSSB Specification Book	
a	a) 600 x 600 mm 250 Kg HD			
b	a) 600 x 900 mm 250 Kg HD			
352	Providing and laying cement concrete 1:5:10 (1 cement: 5 coarse sands: 10 graded stone aggregate 40 mm nominal size) S.W. pipes including bed concrete as per standard design:	156	24.2 B	
a	All Type of Pipe Size (15cm. Thick)	156	24.2 B	
353	Constructing Brick masonry Septic Tank As per the Structure Details Design, (5 x 2.50 x 1.50mtr Liq. Depth.)	164	24.00.2	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
354	Constructing Brick masonry Septic Tank As per the Structure Details Design (4 x 2.0 x 1.50mtr Liq. Depth.)	164	24.00.2	
355	Constructing Brick masonry Soak Well As per the Structure Details Design, (3.0mtr. Dia x 9.0 mar Liq. Depth.)	164	24.00.2	
	17 -OVERHEAD WATER TANK			
356	Providing and erecting RCC elevated reservoir of 3.0 lac capacity compiling provisions of Relevant Indian standards. All types of labour and material charges of lowering, laying, erecting, hosting and joining of pipes assembly of inlet, outlet, overflow, washout and bypass arrangement as per design and drawing. Providing and fixing any accessories CI man hole cover and frame, water table indicator, lighting conductor. GI pipe railing around walking at roof level, RCC spiral staircase with adequate tie beams, staircase footing, RCC chambers for valves, ventilation shaft etc. Minimum concrete grade M:300 Steel TMT (FE500) Or higher-grade reinforcing bars confirming to IS 1786/1139 Or CRS/TMT bars shall be used as per specification. LSL 17.0 MT from GL in Seismic zone-4 ESRS shell type as per design Specification as per section 1C-RCC ESR, GSR, SUMP, HGLR		Separate Specification attached	
	18- UNDER GROUND WATER TANK			
357	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)	
358	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)	
359	Excavation for foundation 3 Mt to 5mt 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)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
360	Excavation for foundation 3 Mt to 5mt 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)	
361	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depression which occur during the process using power roller 8T to 10T(E) from borrow area within all lead (more than 10 ton		Separate specification attached	
362	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
363	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 litter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
364	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)	
365	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.	32 55	5.3.13 9.1 (A)	
366	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.	32 55	5.3.13 9.1 (A)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
367	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. (PEDESTAL)	32 55	5.3.13 9.1 (A)	
368	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	40 56	5.8.3(D) 9.1 (G)(i)	
369	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)	
370	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)	
371	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)	
372	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 RCC Wall	40 56	5.8.3(D) 9.1 (G)(i)	
373	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	
374	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	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
	cement mortar 1:2 (1 Cement: 2 Coarse sand) finished with trowel including scaffolding curing etc. complete. GROUND FLOOR			
375	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	
	19 - PERCOLATION WELL-8 NOS (PHE SERVICE)			
376	Excavation for roadways in Soil of all sorts up to required depth including dressing section to the required grade and camber and side slopes in soil, soft murrum, hard murrum, BT surface, otta, dismantled structures including scaffolding if required shoring, strutting and conveying the excavated materials within the lead of 200m, spreading, watering, ramming including supporting the utility services such as pipe lines, cables etc. using bamboos, wire ropes, installing red lamps and barricading around the excavated pits for safety etc. complete.		Separate specification attached	
a	Up to 1m Depth			
b	1.00 to 2.00 m Depth			
377	Excavation for foundation pipe trenches in Soft or Hard Earth/ Rock including scaffolding if required shoring, strutting and conveying the excavated materials within the lead of 200m, spreading, watering, ramming including supporting the utility services such as pipe lines, cables etc. using bamboos, wire ropes, installing red lamps and barricading around the excavated pits for safety etc. complete. Up to 1.00m depth		Separate specification attached	
378	Boring/drilling bore well of required Dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/ bore log, including hire & running charges of all equipment's, tools, plants & machineries required for the job, all complete as per direction of Engineer -in-charge up to 90 metre depth below ground level. of 300mm Dia	28	4.27	
379	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well casing (CM) pipe of required Dia,		GWSSB specification	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	conforming to IS: 12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer-in charge. 200 mm Dia pipe			
380	Brick Masonry in Cement/Fly Ash Brick & 1:5 cement mortar including 50% crush sand & 50% river sand with joint filling & curing for 7 days etc. (0.230 m thick. Or above thick)		GWSSB specification	
381	15 to 25 mm Thick Plastering for brick masonry in 1:3 cement mortar including smooth Niru finish, cement finishing, groove cut in joints & curing for 7 days etc. 15 to 25 mm thick Internal Plaster		GWSSB specification	
382	Supplying and laying of approved 40 mm (Down Size & Over Size) metal as per engineer in charge on site.		GWSSB specification	
383	Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge		GWSSB specification	
384	Supplying, filling, spreading & levelling gravels of size range 5 mm to 10 mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in charge.		GWSSB specification	
385	Supplying, filling, spreading & levelling coarse sand of size range 1.5 mm to 2 mm in recharge pit, in required thickness over gravel layer, for all leads & lifts, all complete as per direction of Engineer -in-charge		GWSSB specification	
386	Gravel packing in tubewell construction in accordance with IS: 4097, including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction of Engineering-in charge.		GWSSB specification	
387	Providing and fixing suitable size threaded mild steel cap or spot-welded plate to the top of bore well housing/ casing pipe, removable as per requirement, all complete for borewell of:		GWSSB specification	
388	Providing and fixing Bail plug/ Bottom plug of required Dia to the bottom of pipe assembly of tubewell as per IS:2800 (part I).		GWSSB specification	
389	Providing and fixing factory made precast RCC perforated drain covers, having concrete of strength not less than M-25, of size 1000 x 450x50 mm,		GWSSB specification	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	reinforced with 8 mm Dia four no longitudinal & 9 nose cross sectional T.M.T. hoop bars, including providing 50 mm dial perforations @ 100 to			
	20 - TOILET BLOCK-			
390	Excavation for foundation uptown 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)	
391	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depression which occur during the process using power roller 8T to 10T(E) from borrow area within all lead & all lift (more than 10 ton)		Separate specification attached	
392	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
393	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 litter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
394	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)	
395	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.	32 55	5.3.13 9.1 (A)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
396	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.	32 55	5.3.13 9.1 (A)	
397	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. (PEDESTAL)	32 55	5.3.13 9.1 (A)	
398	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	40 56	5.8.3(D) 9.1 (G)(i)	
399	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)	
400	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 (first level)	40 56	5.8.3(D) 9.1 (G)(i)	
401	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 (second level)	40 56	5.8.3(D) 9.1 (G)(i)	
402	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)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
403	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)	
404	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		
405	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	43 46	6.12 (B) 6.19 (B)	
406	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)	
407	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 Ground floor	48	6.30 (IV) (B) 6.33 (B)	
408	Providing 30 mm thick both side prelam panel PVC door, made up of 5 mm prelam decorative Wood like veneered look PVC sheet. M.S tube frame of 19 gauge. The top and bottom rails, styles and panels for the same shall be as per drawing and specification and shall be jointed With solvent cement adhesive. The M.S frame shall be painted with approved red lead and primer. The frame shall be covered with moulded 5mm thick PVC panel etc complete.			As per Item Description & instruction of incharge Engineer and payment shall be made on Sq.M basis
409	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)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
410	Providing 10 mm. Thick cement plaster in single coat on brick/ concrete walls for interior plastering 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)	
411	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)	
412	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 labour etc. complete		As per Attached sheet	
413	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	
414	Providing and laying 300 mm x 300mm vitrified 9 mm thick tile dado flooring over 20 mm (average) base of cement mortar 1:6 (1 cement: 6 coarse sand) on new surface and jointed with colour cement slurry including finished with flush pointing & cleaning the surface etc. complete for VERMORA ANTIQUE LIGHT GREY, ANTIQUE DARK GREY -SATIN MATT GVT	14.32	84	Specificati on follows as per Item of ceramic tile using vitrified tile 300 x 300 mm
415	Providing and fixing Rubi red Granite of 20 mm thick of uniform size and colour for doors and vent frame, 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.		As per attached sheet	
416	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		As per attached sheet	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	plain and curve surface & 12 mm to 20 mm of broken piece of ceramic / glazed tiles (one for more colour 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 colour 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.			
417	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	
418	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	
419	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
	21 - ELECTRIC ROOM			
420	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)	
421	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depression which occur during the		Separate specification attached	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	process using power roller 8T to 10T(E) from borrow area within all lead & lift (more than 10 ton)			
422	Filling in foundation and plinth with sand in layers of 20 cm. Thickness including watering ramming and consolidating etc. complete.	28	4.24	
423	Carrying out plinth treatment to post construction / existing structure by spraying chemical solution for termite control treatment including labour 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 litre 20 EC chemical emulsion with 19 litter give 1 % concentration inclusive of one litre chemical emulsion application at the rate of 5 Litre chemical / Sqm of surface is recommended as per I. S	139	20.009	
424	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)	
425	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.	32 55	5.3.13 9.1 (A)	
426	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.	32 55	5.3.13 9.1 (A)	
427	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. (PEDESTAL)	32 55	5.3.13 9.1 (A)	
428	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	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
	fair finish but excluding the cost of reinforcement for reinforced concrete work in Columns, pillars posts and struts G. FLOOR			
429	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	40 56	5.8.3(D) 9.1 (G)(i)	
430	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)	
431	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)	
432	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)	
433	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)	
434	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	
435	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)	
436	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 aluminium fixtures and	58 61	10.1.A 10.13.A I	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	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 Panell			
437	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)	
438	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)	
439	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 labour etc. complete		As per attached sheet	
440	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 colour 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 colour 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 attached sheet	
441	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		As per attached sheet	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	surface free from mortar dropping and other foreign matter and sand papered smooth.			
442	Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) 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	
443	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
444	Providing and laying polished Kota stone slab 25mm thick in risers of steps, skirting dado and pillars laid on 10mm thick cement mortar 1:3 and jointed with Gray cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. Complete	87	14.44	
	22 - R.O PLANT ROOM			
445	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	40 56	5.8.3(D) 9.1 (G)(i)	
446	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)	
447	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)	
448	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	40 56	5.8.3 (C) 9.1 (H) (I)	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	fair finish but excluding the cost of reinforcement for reinforced concrete work in Lintels Ground Floor			
449	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	
450	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)	
451	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 aluminium 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 Panelled	58 61	10.1.A 10.13.A I	
452	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)	
453	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)	
454	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 labour etc. completed		As per attached sheet	
455	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		As per attached sheet	

Sr No	Item	Building Specification Book P.No	Item No	Remarks
1	2	3	4	5
	plain and curve surface & 12 mm to 20 mm of broken piece of ceramic / glazed tiles (one for more colour 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 colour 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.			
456	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	
457	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. Completed		As per attached sheet	
458	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
459	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 and jointed with Gray cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. Complete	87	14.44	
	23 - PUMP ROOM CIVIL			
460	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	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
	for reinforced concrete work in Columns, pillars posts and struts G. FLOOR			
461	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)	
462	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)	
463	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)	
464	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	
465	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)	
466	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 aluminium 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 Panelled	58 61	10.1.A 10.13.A I	
467	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)	106 106 106 107 107	17.61 (I) 17.69 17.70 17.94(I) 17.94(III)	

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	finished with trowel including scaffolding curing etc. complete. GROUND FLOOR			
468	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)	
469	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 labour etc. complete		As per Attached sheet	
470	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 colour 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 colour 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 As per separate sheet	
471	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	
472	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 separate sheet	
473	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,	120	18.57	As per Item descriptio

Sr No	Item	Building Specificati on Book P.No	Item No	Remarks
1	2	3	4	5
	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.			n and direction of in charge Engineer
474	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 and jointed with Gray cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. Complete	87	14.44	

Detail Specification

Item No 21/126/143/186/211/243/275/282/305/322/373/404/434/449/464

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. ^{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 bane 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 spiting of the concrete.

10.6. All reinforcement bars shall be accurately placed in exact position shown on the drawings and shall be securely held in position during placing of concrete by annealed binding wire not less than 1 mm in size and by using say blocks or metal chairs spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals, Bars shall not be allowed to sag between supports not displaced during concreting or any other operations of the work All devices used for positioning shall be of not corrodible material wooden and metal supports shall not extended to the surface of the concrete, except where shown in drawings. Placing bars on layers of freshly laid concrete as the work progresses for adjusting bar spacing shall not be allowed. Pieces of broken stone or brick and wooden 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 35/412/439/454/469

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

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 144/187/212

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 150mm with 32kg of RCH per/Cu.M concrete to be laid in alternate panels size approx. 3.5m x5.0m with steel channel foam work levelling with surface vibrator finish the surface with power float and dowels' Dewatering the floor with vacuum pump. light bluming 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 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 125/281

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 20 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/cm² 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 ² 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.

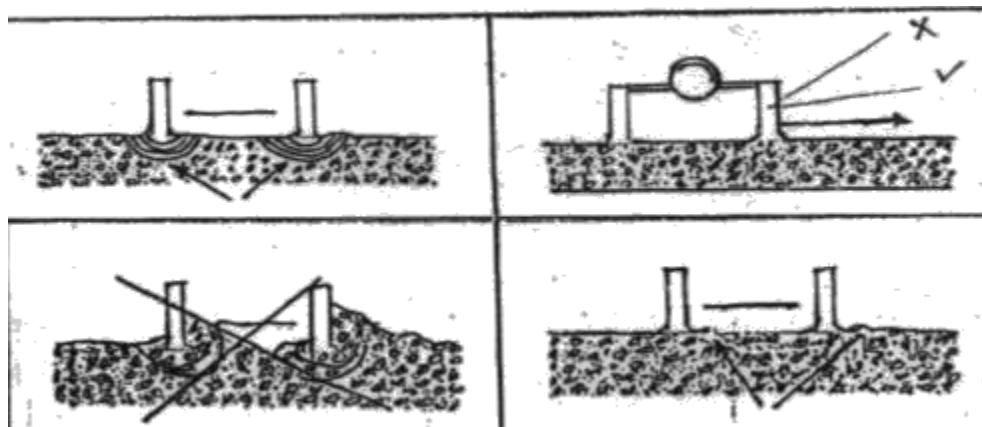
1. Working Method

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

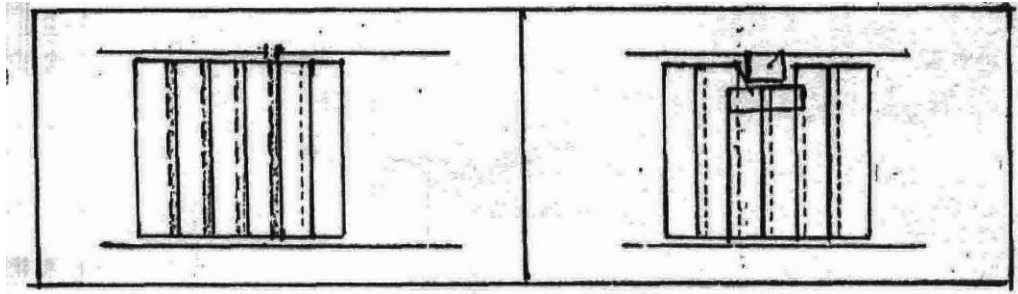


3. Surface Vibration :

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.

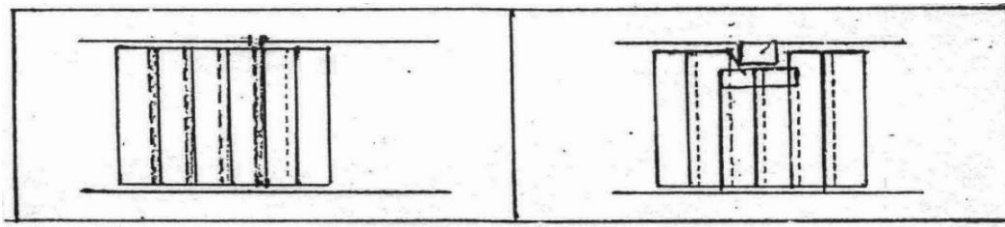
Thickness		Dewatering Time {Min}
MM	Inch	
50	2	7
100	4	15
125	6	20
150	8	30
200	10	40
250	12	45

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 .

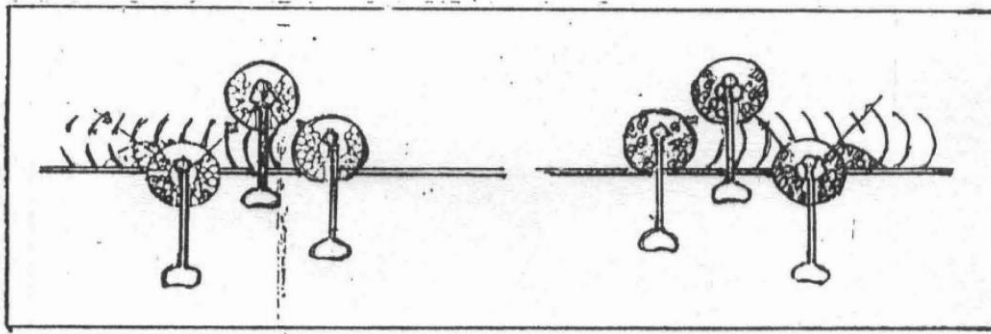
After first patch in any / given panel is dewatered, care should be taken while placing filter pad on the concrete surface next to the dewatered concrete. First filter pad should start from the edges of last filter pad of the previously dewatered concrete. The remaining filter pads than shall be placed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



While repeating dewatering process subsequently, in order that top cover should get proper sealing 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 one 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 cover.

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.

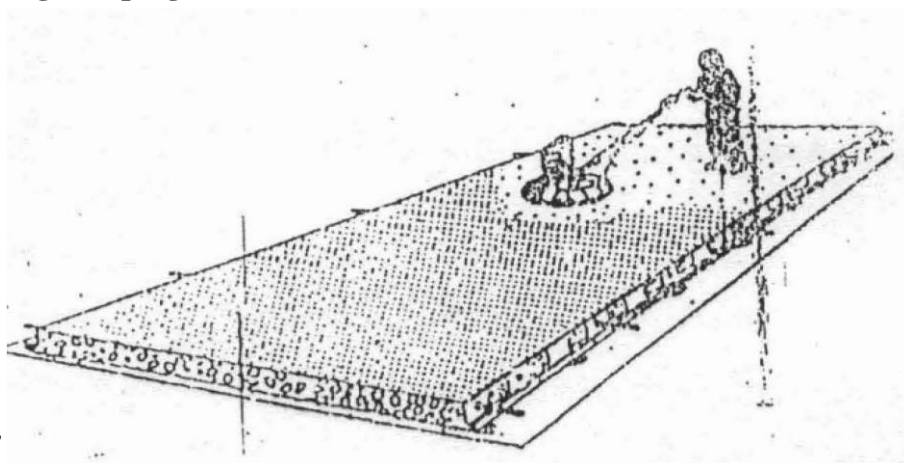
6 Troweling:-

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 passed to achieved smoother surface finish.

7. Curing

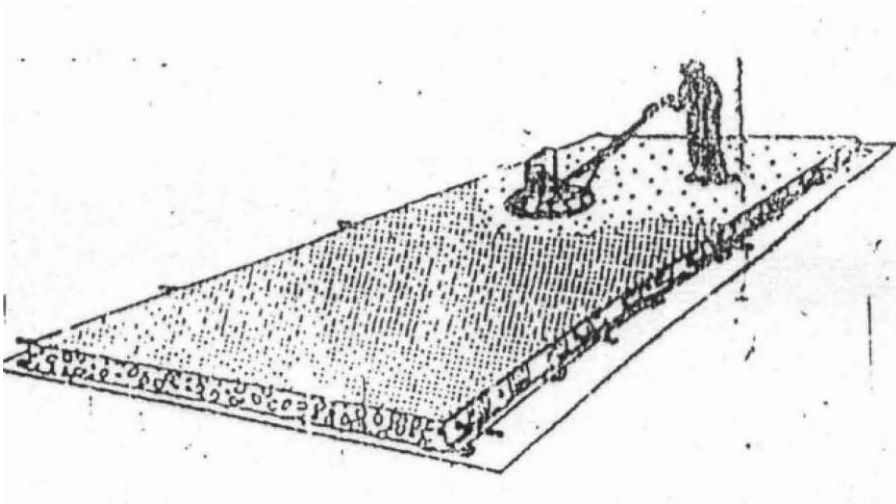
Concrete has to be protected from rapid drying which may result in cracking. Curing can be done by ponding, covering with plastic sheet or gunny bags. In any method, the surface should be always kept wet with water. Curing call also be done by application of curing compound. Curing must be done for at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

Intermixing of topping First Pass



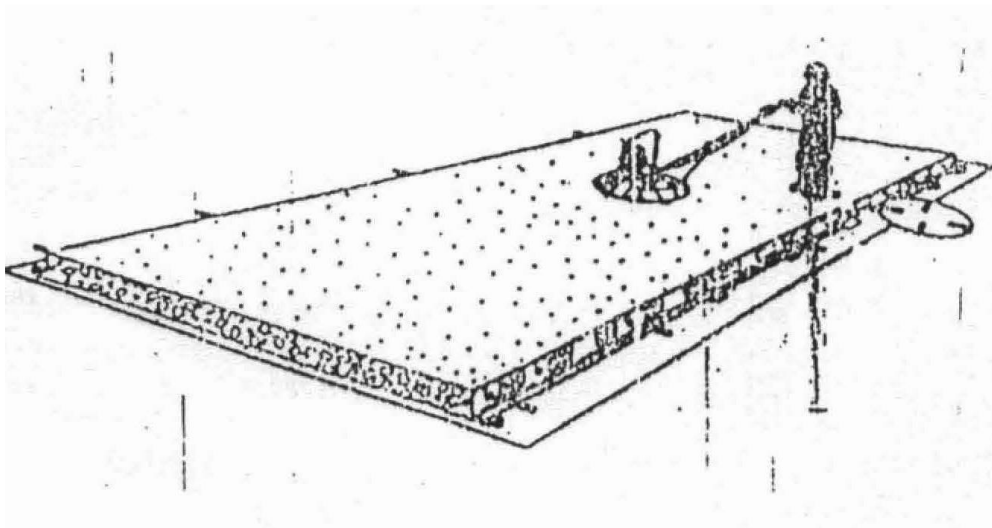
You can start the work when topping has darkened because the moisture under the concrete. The topping material is worked with care into concrete surface with a skim floated equipped with disc.

Intermixing of Topping Second Pass



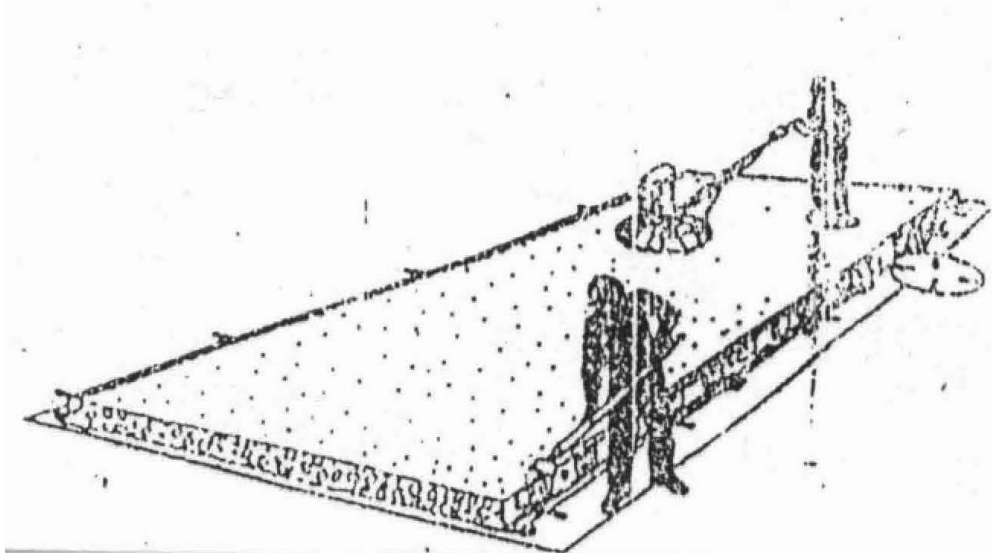
Check the surface flatness with straight edge and work the topping material into concrete as the first time.

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 42/325

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 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 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 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 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 for 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 43/326/415

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 of 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 require 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 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 44/247/327/416/440/455/470

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 j\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 charge 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 from 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 debris shall be removed thoroughly for the entire surface of the terrace All joints and cracks shall be raked 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 raked 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 tiling 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 tiling & 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 45/328/417/441/456/471

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 pairs 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 infraction of effloresces., mould moss, fungi, algae and lichen and patch repairs to plaster shall be included in this item for which nothing extra shall be paid.

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

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

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

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

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

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

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

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

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

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

3.7. The rate includes cost of all materials, labours, scaffolding, protective measures etc. involved in all the operations described above. This shall also include conveyance, delivery, 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 bonding 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 49/249/329/

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 approve 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 and-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 121/127/134/177/202/277/289/361/391/421

Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C to required dry density including feeling the depuration which occur during the process using power roller 8T to 10T(E) from borrow area within All lead (more than 10 ton)

1. The land width on which the earth work is to be done shall be cleared of all trees having a girth of 30 cm and less, loose, stones, vegetation, bushes, stumps and all other objectionable materials. All the materials cleared will be the property of Government. Useful material shall be arranged in convenient stacks along the road boundary or as directed at places within 50 metres lead, and handed over to the department in convenient section Unsuitable material shall be burnt or otherwise disposed off by the contractor at his own cost without causing any nuisance, inconvenience or damage to the works property of people in the neighborhood. In all cases, the materials shall be disposed off in a neat manner.

2. After clearing the site, the alignment of the road shall be properly set out true to line, curves, slopes grades and sections as shown on the plan or directed by the Engineer-in-charge.. The contractor shall provide all labours and materials such as lime, strings, pegs, nails, bamboos, mortar, concrete etc. required for setting out establishing Bench Marks and giving profiles. The contractor shall be responsible for maintaining the B. Ms. Profiles alignments and other marks as long as they are required for the work in the opinion of the Engineer-in-charge. If the contractor defaults in this respect they may be restored by the department at the cost of the contractor.

3. When an existing embankment is to be widened, continuous, horizontal benches each at least 0.3 metre wide shall be cut into the existing slope for ensuring adequate bond with the

fresh embankment materials to be added. The material obtained from the outing of benches can be utilized in the widening of the embankment. Where the width of the widened portions is insufficient to permit the use of usual rollers, compaction shall be carried out with the help of tandem/ sheep's foot rollers, hand rollers, mechanical tempers or other approved plant. The dumping of material from trucks for widening operations shall be avoided except in difficult circumstances when the extra width is too narrow to permit the movement of any other type of hauling equipment.

4. The soil to be used for embankment shall be free from stones, stumps, roots, rubbish or any other objectionable materials. Only material considered suitable by the Engineer-in-charge shall be used for the construction and that considered unsuitable shall be disposed off as directed by him. The selection of the materials to be used in the construction of embankment shall be made after soil surveys and investigations are carried out by the Department. The embankment shall consist of earth available from road-side borrow pits on either side with lead or all lifts, and within land-width in the manner specified in para 12 below. The road if any required for the purpose of haulage of earth by men, animals or vehicles will be constructed (if not existing) and maintained by the contractor at his own cost, the material satisfying the density requirements given in the table below shall be employed for embankment construction.

Type of Work	Laboratory Dry Density when tested As per IS : 2720 (Pt. VII)
- Embankment up to 3 metre height	Not less than 1.44 gm/cc
-Embankment exceeding 3 metre height Or embankment of any height subject to Long period of inundation.	Not less than 1.52 gm/cc
- Top 0.5 metre of embankment below the Subgrade level and shoulder [Where earth shoulder are specified]	Not less than 1.65 gm/cc

Field density shall be a percentage of laboratory density as recommended by the Gujarat Engineering research institute.

5. Department will extend all necessary Co-operation in helping contractor to get borrow area from nearby Government or Panchayat Land, If available. However, department is not responsible if no such area is made available to the contractor and in that case, contractor will have to make his own arrangement to get borrow area for borrowing earth of the approved quantity even by making temporary arrangement with the private land owners.

6. The embankment shall be constructed in uniform layers not exceeding 250 mm in loose thickness. The soil shall be spread uniformly over the entire width of the embankment. Unless otherwise directed by The Engineer-in-charge. The consolidation including watering and rolling of earthwork shall be carried out by the Department. The operation of laying the successive layer of earth shall have to be suitably synchronized with the consolidation work. If the soil as delivered to the road is too wet, it shall be dried by exposure to the sun till the moisture content is acceptable for compaction. All clods or hard lumps of earth shall be broken to have maximum size of 15 cm. when being placed in the embankment and a maximum size of 5 cm. when being placed in the top 45 cm. of the embankment. The work of next layers shall be allowed only after the first layer below it has been thoroughly compacted to the density specified.

7. Where an embankment is to be placed on sloping ground the surface of the ground shall be benched in the steps or broken up in such a manner that the new material shall have perfect bond with the existing surface. Where the embankment is to be placed over an existing road surface the surface shall be scarified to minimum depth of 5 cm so as to provide

ample bond between the old and new material. However when the embankment is to be placed over an old concrete pavement and lies within 1 metre of new sub grade level, the pavement shall be broken up in pieces not to exceed 0.1 m and may be left under the new embankment. If the existing road surface is of granular or bituminous type and lies within 1 mt. of the new subgrade level the same shall be scarified to a depth of minimum 50 mm so as to provide ample bond between the old and the new material .

8. To avoid interference with the construction of abutment wing walls or return walls of culverts / bridge structures, the contractor shall , at point to be determined by the Engineer-in-charge suspend work on embankments forming approaches to such structures , until such time as the construction of the latter is sufficiently advanced to permit the completion of approaches without the risk of interference or damage to the bridge work. Unless directed otherwise , the filling ground culverts , bridge and other structures up to a distance of twice the height of the embankment from the back of the embankment shall be carried out independent of the work on the main embankment. The fill material shall not be placed against any abutment of wing wall unless permission has been given by the Engineer-in-charge but in any case not until the concrete or masonry has been in position for 14 days, the embankment shall be brought up simultaneously in equal layers on each side of the structure to avoid displacement and unequal pressure. The sequence of work in this regard shall be got approved from the Engineer-in-charge. Where the provision of any filter medium is specified behind the abutment, the same shall be laid in layers simultaneously with the laying of fill material . The material used for the filter shall conform to the requirements for filler medium and will be paid extra in the relevant item. Where it may be impracticable to use power rollers or other heavy equipment, the compaction shall be carried out by mechanical tampers or other methods, approved by the Engineer-in-charge. Care shall be taken to see that the compaction plant does not hit or come too any structural members so as to cause any damage to them.

9. The embankment shall be finished in conformity with alignment levels cross sections and dimension shown on the plans or as directed by Engineer-in-charge. Where the alignment of the road is in a curve, the top of the embankment shall be formed with the super elevation and the increased width shown on the drawings or as the Engineer-in-charge may direct. Finishing operations shall include the work of shaping and dressing the shoulders, road bed and the side slopes to conform the cross section.

10. The consolidation of earth work including rolling and watering at O.M.C. as per laboratory requirement shall be carried out by the Department. The field and laboratory investigations and testing of samples shall be carried out by the Department. However, the contractor shall give full co-operation and shall be the charges for labours and collection of samples for testing at authorized Government laboratory. The work of lying of earthwork in layers shall be synchronized with the field and laboratory testing. When density measurements reveal any soft area as in the embankment, the Engineer-in charge shall direct that these areas shall be compacted further. If In spite of that, specified compaction is not achieved, the materials in the soft areas shall be removed as directed and replaced by the approved materials.

11. The earthwork measurements shall be paid on cross sectional measurements and computing the volumes of earth works in cubic metres by average area method. The contractor shall sign day to day leveling work and also original cross sections, longitudinal section etc, in token of his acceptance. The working sections both longitudinal and cross of the ground shall be taken by the Engineer-in-charge before the actual work is started. The contractor or his authorized representative shall attend day to day leveling work and sign with date the field book daily, in token of his acceptance. If there is any disagreement the contractor shall inform of it in writing to the officer concerned with specific reference to the sectioned before starting further

work. Once the work is started, no cognizance of any complaint will be taken merely not signing of level book shall not be deemed as disagreement. The Executive Engineer shall also verify leveling work to the extent of 5 % before commencement of earth work and on finalization. The contractor shall maintain the embankment by filling in ruts, rain cuts; depression due to shrinkage etc, to proper formation and grade till this item is finally measured and accepted by the Department. The measurements shall be taken on compacted earth work. No Deduction for shrinkage shall be made from gross measured quantity of compacted earth work. However the contractor shall have to bear loss of quantity due to all settlements as well as other type of deformation etc. if any that might have taken place at the time of taking final measurement of this item.

12. If usable approved material is available within the land width of road, the same shall be permitted for use in the road embankment subject to the following conditions: -

- (i) The borrow pits will be excavated as to for a road side longitudinal gutter to drain the water interrupted by such gutter.
- (ii) The width of the drain shall be restricted to 1.5 mt. only. The depth will be restricted to such grade so as to drain the water efficiently. All balance quantity of earth shall be brought from distant borrow areas only
- (iii) If there is top layer of black cotton or other objectionable soils, the same be removed and disposed off elsewhere and usable material found at the lower level will only be used in the earthen embankment, if the contractor choose to utilize this material.
- (iv) The drain should be aligned along the boundary of the land width of the road No pit other than this drain, shall be dug within 6 meters of the toe to the final section of the road embankment.
- (v) No borrow pits shall be allowed in the length in which earth obtained from cutting is specified to be used in embankment.

13. The rate of earthwork includes, clearing jungles, dog belling fixing profiles, erecting necessary pillars for stones for bench marks for leveling purpose, excavating earth from borrow areas, breaking clods, conveying and spreading earth in layers with all lead and lift, finishing the entire embankment and incidentals necessary to complete the work to the specifications. The cutting stuff of cutting in ordinary soil, soft murrum, soft rock, hard murrum and hard rock shall be utilized in embankment construction under this item within the lead specified in the particular item. No payment shall be made under this item for the cutting stuff use in embankment but labour for cutting will be paid as per specifications in the particular item, and only balance quantity of earthwork brought from borrow areas will be paid in this item.

14. For spreading materials in Layers and bringing the appropriate moisture content, the embankment materials shall be spread uniformly over the entire width of the embankment in layers not exceeding 250 mm in loose thickness. Successive layers of embankment shall not be placed until the layer under construction has been thoroughly compacted to the requirements set down hereunder.

Moisture content of the materials shall be checked at the source of supply and if found less than that specified for compaction, the same shall be made good either at the source or after spreading the soil in loose thickness for compaction. In the latter case, water shall be sprinkled directly from a hose line or from a truck mounted water tank, and flooding shall not be permitted under any circumstances.

If the materials delivered to the road bed is too wet it shall be dried. By evaporation and exposure to the sun. Till the moisture content is brought down to acceptable standard for

compaction. Should circumstances arise where owing to wet weather, the moisture content cannot be reduced to the required level by the above procedure work of compaction shall be suspended.

Moisture content of each layer of soil shall be checked in accordance with IST 2720 (Part-II) and unless otherwise mentioned shall be so adjusted, making due allowance for evaporation losses, that at the time of the compaction it is in the range of 1 percent to 2 percent to 2 percent below the optimum moisture content determined in accordance with ISI (Part-VII) Highly expansive clays shall however be compacted at 2 to 4 percent above the optimum moisture content.

After adding the required amount of water, the soil shall be processed by means of harrow, rotary mixers of as otherwise approved until the layer is uniformly wet.

Clods of hard lumps of earth shall be broken to have maximum size of 150 mm when being placed in the lower layers of the embankment and a maximum size of 60mm when being placed in the top 0.5 meter portion of the embankment below the sub grade.

Hauling equipment shall be dispersed uniformly over entire surface of the previously constructed layer to minimize cutting of uneven compaction.

Where the embankment is to be constructed on low area ground that will not support the weight of trucks of other hauling equipment , the lower part of the fill should be constructed by dumping successive loads in a uniformly distributed layers of a thickness not greater than that necessary to support the hauling equipment while placing subsequent layers .

15 COMPACTION: Only compacting equipment approved by the Engineer-in-charge shall be employed to compact the materials. The contractor shall demonstrate the efficiency of the plants he intends to use for carrying out compaction trials.

Each layer of the materials shall be thoroughly compacted to the densities in Table 1.2 Table 1.2 Compaction requirements for embankment.

Sr. No.	Type of work / materials	Field dry density as percentage of maximum Laboratory dry density as per IS:2720 (Part-VII)
1	Top 0.5 meter portion of embankment below Sub grade level and shoulders.	Not less than 100.
2	Other portion of embankment.	Not less than 95
3	Highly expensive class	85 to 90

Subsequent layers shall be placed only after finished layer has been tested according to M.O.S.T. specification clause 902 and accepted by the Engineer-in-charge.

When density measurements reveal any soft areas in the embankment further compaction shall be carried out as directed by the Engineer-in-charge. If in site of that the specific compaction is not achieved, the materials in the soft areas shall be removed and replaced by approved materials and compacted to the density requirement, to the satisfaction of the Engineer-in-charge

16 Measurements for Payment:

Consolidation of earth embankment construction shall be measured by taking cross section at intervals in the original position before the work starts and after its completion and computing of the volume of earthwork in cubic meters by the method of average and areas. The measurement of fill materials from borrow area shall be the difference between the net quantities of suitable materials brought from roadway and drainage excavation. For this purposed it shall be assumed that one cubic meter of suitable materials brought to site. From roadway and drainage excavation from one cubic meter of compacted fill and all bulking or shrinkage shall be ignored.

Stripping including storing and reapplication of top soil shall be measured as volume in cubic meter.

17 The contract unit rate included cost of mechanical roller required for consolidation including all labour , equipments fuel , hire charges , tolls , and incidentals necessary.

Item No 122/128/278

Plant mix method (construction of granular sub base by providing close graded Materia, mixing in a mechanical mix plant at Occurring of mixed material to work site spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401) For grading -II Material

404.1 Scope

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

404.2 Materials

404.2.1 Coarse aggregates: Coarse aggregates shall be either crushed or broken stone, crushed slag, over burnt (Jhama) brick aggregates or any other naturally occurring aggregates such as kankar and laterite of suitable quality. Materials other than crushed or broken stone and crushed slag shall be used in sub-base courses only. If crushed gravel/shingle is used, not less than 90 percent by weight of the gravel/shingle pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregate shall conform to the physical requirements set forth in Table 400-5. The type and size range of the aggregate shall be specified in the Contract or shall be as specified by the Engineer. If the water absorption value of the coarse aggregate is greater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS:2 386, (Part 5).

Table 400-8 Physical requirement of Coarse Aggregate for Water Bound Macadam for Sub Base/ base Course

Sr No	Test	Test Method	Requirement
1	Lose Angle Abrasion value	IS:2386(Part-4)	40 Percent(Max)
	or Aggregate Impact Value	Is:2386 (part-4) or Is:5640	30 Percent (Max)
2	Combined Flakiness and Elongation indices (Total)	IS:2386(Part-1)	35 Percent(Max)

Aggregate which get softened in presence of water shall be tested or impact value under wet condition in accordance with IS:5640

The requirement of flakiness index and elongation index shall be enforced only in the case of crushed broken stone and crushed slag.

TABLE 400.1 : GRADING FOR GRANULAR SUB-BASE MATERIALS

IS Sieve Designation	Per cent by Weight Passing the IS Sieve		
	Grading I	Grading II	Grading III
75.0 mm	100	-	-
53.0 mm	-	100	-
26.5 mm	55-75	50-80	100
9.50 mm	-	-	-
4.75 mm	10-30	15-35	25-45
2.36 mm	-	-	-
0.425 mm	-	-	-
0.075 mm	<10	<10	<10

Notes: (1) The material passing 425 micron (0.425 mm) sieve for all the three gradings when tested according to IS:2720 (Part 5) shall have liquid limit and plasticity index not more than 25 and 6 per cent respectively.

(2) On clayey subgrades, the per cent passing IS Sieve 0.075 mm shall not exceed 5.

The Wet Aggregate Impact Value (IS:5640) shall not exceed 50.

Where locally available moorums are used in the Granular Subbase, it shall be ensured through adequate tests on representative samples, that all the requirements set out in this Clause are satisfied.

401.3. Strength of Sub-base

It shall be ensured prior to actual execution that the material to be used in the sub-base shall have a minimum Soaked CBR value of 30*.

When directed by the Engineer, this shall be verified by performing CBR tests in the laboratory as required on specimens remoulded at field dry density and moisture content and any other tests for the “quality” of materials, as may be necessary.

401.4. Construction Operations

401.4.1. Preparation of subgrade: Immediately, prior to the laying of sub-base, the subgrade already finished to Clause 303 shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water if necessary and rolled with two passes of 80-100 kN smooth wheeled roller.

The sequence of construction operations shall be such that the construction of granular subbase layer shall match the construction of the adjoining layer in the shoulders, as per Clause 407.4.1.

401.4.2. Spreading and compacting: The sub-base material of grading specified in the Contract shall be spread on the prepared subgrade with the help of suitable tractor-towed appliances, for maintaining the required slope and grade during the operation or other means as approved by the Engineer.

When the sub-base material consists of combination of materials mentioned in Clause 401.2.1, mixing shall be done mechanically by the mix-in-place method or by an approved mixing plant.

* In case the sub-base material of the requisite soaked CBR value is not available within economical leads, the sub-base material meeting any of the prescribed gradings and other requirements with a soaked CBR value of not less than 15 can be permitted with the approval of the competent authority.

Manual mixing shall be permitted only where the width of laying is not adequate for mechanical operations, as in small-sized jobs. The equipment used for mix-in-place construction shall be a tractor-towed rotavator or similar approved equipment capable of mixing the material to the desired degree. If so desired by the Engineer, trial runs with the equipment shall be carried out to establish its suitability for the work.

Moisture content of the loose material shall be checked in accordance with IS:2720 (Part 2) and suitably adjusted by sprinkling additional water from a truck mounted or trailer mounted water tank and suitable for applying water uniformly and at controlled quantities to variable widths of surface or other means approved by the Engineer so that, at the time of compaction, it is from 1 per cent above to 2 per cent below the optimum moisture content corresponding to IS:2720 (Part 7). While adding water, due allowance shall be made for evaporation losses. After water has been added, the material shall be processed by mechanical or other approved means, like, tractor-towed disc harrows, rotavators until the layer is uniformly wet.

Immediately thereafter, rolling shall start. If the thickness of the compacted layer does not exceed 100 mm, a smooth wheeled roller of 80 to 100 kN weight may be used. For a compacted single layer upto 225 mm the compaction shall be done with the help of a vibratory roller of minimum 80 to 100 kN static weight. Rolling shall commence at the lower edge and proceed towards the upper edge longitudinally for portions having unidirectional cross fall and super elevation and shall commence at the edges and progress towards the centre for portions having cross fall on both sides.

Each pass of the roller shall uniformly overlap not less than one-third of the track made in the preceding pass. During rolling, the grade and crossfall (camber) shall be checked, with the help of templates and straight edge, and any high spots or depressions, which become apparent, corrected by removing or adding fresh material. The speed of the roller shall not exceed 5 km per hour.

Rolling shall be continued till the density achieved is atleast 100 per cent of the maximum dry density for the material determined as per IS:2720 (Part 7). The surface of any layer of material on completion of compaction shall be well closed, free from movement under compaction equipment and from compaction planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of layer and re-compacted.

401.5. Aggregate Plugs

When the granular sub-base is extended over the full formation, as shown on the drawings, the exposed edges shall be protected with suitable aggregate plugs, 200 to 300 mm wide, as specified on the drawings.

401.6. Surface Finish and Quality Control of Work

The surface finish of construction shall conform to the requirements of Clause 1802.

Control on the quality of materials and works shall be exercised by the Engineer in accordance with Section 1800.

401.7. Arrangements for Traffic

During the period of construction, arrangement of traffic shall be maintained in accordance with Clause 111.

401.8. Measurements for Payment

Granular sub-base shall be measured as finished work in position in cubic metres.

The protection of edges of granular sub-base extended over the full formation as shown in the drawing shall be considered incidental to the work of providing granular sub-base and as such no extra payment shall be made for the same.

401.9. Rate

The Contract unit rate for granular sub-base shall be payment in full for carrying out the required operations including full compensation for:

- (i) making arrangements for traffic to Clause 111 except for initial treatment to verges, shoulders and construction of diversions;
- (ii) furnishing all materials to be incorporated in the work including all royalties, fees, rents where necessary and all leads and lifts;
- (iii) all labour, tools, equipment and incidentals to complete the work to the Specifications;
- (iv) carrying out the work in part widths of road where directed; and carrying out the required tests for quality control

Item No123/129/279

Suppling of graded stone aggregate of following sizes (for W.B.M road) (3) crushed stone aggregate for hard quality up to 63 mm size. Spreading the stone aggregate for rolling W.B.M including filling the interstices to required camber and gradient (excluding spreading of bandage) (iii)25mm to 50mm size crushed stone Suppling of course clean sharp sand at site. Spreading blindage or road crust filling the gaps in metal and levelling to camber and gradients as directed (ii)sand. Rolling and consolidate of soil including filling in depression which occur during the process, with power roller 8 tonne to 12 tonne &

Item No 201

Providing and laying aveg.0.30mm thick layer of 60-40mm size metals and grit /sand with watering, compacting, levelling rolling as per directed

405.1. Scope

- (i) **405.1.1.** This work shall consist of clean, crushed aggregates mechanically interlocked by rolling and bonding together with screening, binding material where necessary, and water laid on a properly prepared subgrade-sub-base/base or existing pavement, as the case may be and finished in accordance with the requirements of these Specifications and in close conformity with the lines, grades, cross-sections and thickness as per approved plans or as directed by the Engineer.

- (ii) **405.2. Materials**

- (iii) **405.2.1. Coarse aggregates:** Coarse aggregates shall be either crushed or broken stone, crushed slag, overburnt (Jhama) brick aggregates or any other naturally occurring aggregates, such as, kankar and laterite of suitable quality. Materials obtained from rocks, such as, Phyllites, Shales or Slates, etc. shall not be permitted in WBM construction. Materials other than crushed or broken stone and crushed slag shall be used in sub-base courses only. If crushed

gravel/shingle is used, not less than 90 per cent by weight of the gravel/shingle pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregates shall conform to the physical requirements set forth in Table 400.7. The type and size range of the aggregate shall be specified in the Contract or shall be as specified by the Engineer. If the water absorption value of the coarse aggregate is greater than 2 per cent, the Soundness test shall be carried out on the material delivered to site as per IS:2386 (Part 5).

(iv) TABLE 400.7: PHYSICAL REQUIREMENTS OF COURSE AGGREGATES FOR WATER BOUND MACADAM FOR SUB-BASE/BASE/SURFACING COURSES

Test	Sub-base	Base	Surfacing
Aggregate Impact Test (IS:2386 Part 4 or IS:5640)	Less than 50	Less than 40	Less than 30
Flakiness Index Test (IS:2386 Part 1)	Less than 30	Less than 25	Less than 20
Soundness Test (IS:2386 Part 1)			
- Loss with Sodium Sulphate	Less than 12%	Less than 12%	Less than 12%
- Loss with Magnesium Sulphate	Less than 18%	Less than 18%	Less than 18%

(v) **405.2.2.** Aggregates, like, brick bats, kankar, laterite, etc. which get softened in presence of water shall be tested for Aggregate Impact Value under wet conditions in accordance with IS:5640.

(vi) **405.2.3.** The requirement of flakiness Index shall be enforced only in the case of crushed or broken stone and crushed slag.

(vii) **405.2.4. Crushed or broken stone:** The crushed or broken stone shall be hard, durable and free from excess flat, elongated, soft and disintegrated particles, dirt and other deleterious material.

(viii) **405.2.5. Crushed slag:** Crushed slag shall be made from air-cooled blast furnace slag. It shall be angular shape, reasonably uniform in quality and density and generally free from thin, elongated and soft pieces, dirt or other deleterious materials.

(ix) **405.2.6 Overburnt (Jhama) brick aggregates:** Jhama brick aggregates shall be made from over burnt bricks or brick ballast and be free from dust and other objectionable and deleterious materials.

(x) **405.2.7. Grading requirement of coarse aggregates:** The coarse aggregates shall conform to one of the Gradings given in Table 400.8 as specified, provided, however, the use of Grading No.1 shall be restricted to sub-base courses only.

(xi) TABLE 400.8 : GRADING REQUIREMENTS OF COARSE AGGREGATES

Grading No.	Size Range	IS Sieve Designation	Per cent by weight passing
(2)	63 mm to 45 mm	90 mm	100
		63 mm	90-100
		53 mm	25-75
		45 mm	0-15
		22.4 mm	0-5

(xii) Note: The compacted thickness for a layer with Grading 1 shall be 100 mm while for layer with other Gradings, i.e., 2 & 3, it shall be 75 mm.

(xiii) **405.2.8 Screenings:** Screenings to fill voids in the coarse aggregate shall generally consist of the same material as the coarse aggregate. However, where economic considerations so warrant, predominantly non-plastic material (other than rounded river borne material) may be used for this purpose provided liquid limit and plasticity index of such material are below 20 and 6 respectively and fraction passing 75 micron sieve does not exceed 10 per cent. The Screenings shall not contain any of the undesirable constituents listed in Clause 301.2.3 which would render it unsuitable as a fill material.

(xiv) Screenings shall conform to the grading set forth in Table 400.9. The consolidated details of quantity of screenings required for various grades of stone aggregates are given in Table 400.10. The Table also gives the quantities of materials (loose) required for 10 m² for sub-base compacted thickness of 100/75 mm.

(xv) **TABLE : 400.9 : GRADING FOR SCREENING**

Grading Classification	Size of Screenings	IS Sieve Designation	Percent by Weight Passing the IS Sieve
A	13.2 mm	13.2 mm	100
		11.2 mm	95-100
		5.6 mm	15-35
		180 micron	0-10
B	11.2 mm	11.2 mm	100
		5.6 mm	90-100
		180 micron	15-35

(xvi) The use of screenings shall be omitted in the case of soft aggregates, such as, brick metal, kankar, laterite, etc. as they are likely to get crushed to a certain extent under rollers.

(xvii) **405.2.9 Binding material:** Binding material to be used for water bound macadam as a filler material meant for preventing raveling, shall comprise of a suitable material **approved by the Engineer having a Plasticity Index (PI) value of less than 6 for sub-base/base course and 4 to 10 for surfacing course as determined in accordance with IS:2720 (Part 5).**

(xviii) **The quantity of binding material where it is to be used, will depend on the type of screenings.** Generally, the quantity required for 75 mm compacted thickness of water bound macadam will be 0.06-0.09 m³/10m² and 0.08-0.10 m³/10 m² for 100 mm compacted thickness.

(xix) The above mentioned quantities should be taken as a guide only, for estimation of quantities for construction, etc.

(xx) Application of binding materials may not be necessary when the screenings used are of crushable type.

TABLE 400.10: APPROXIMATE QUANTITIES OF COARSE AGGREGATES AND SCREENINGS REQUIRED FOR 100/75 mm COMPACTED THICKNESS OF WATER

BOUND MACADAM (WBM) SUB-BASE/ BASE/ SURFACING COURSE FOR 10 M² AREA.

Classification	Size Range	Compact ed thickness	Loose Quantit y	Stone Screenings		Crushable Screenings such as moorum or	
				Grading Classi- fication & Size	For WBM Sub-base/ Base Course (Loose Quantity) m ³	Properties	Loose Quantit y
Grading 1	90 to 45	100	1.21 to 1.43	Type A 13.2	0.27 to 0.30	LL<20, PI<6 percent passing 0.075 mm 10	0.30 to 0.32
Grading 2	63 to 45	75	0.91 to 1.07	Type A 13.2	0.12 to 0.15	-do-	0.22 to 0.24
Grading 2	63 to 45	75	0.91 to 1.07	Type B 11.2	0.20 to 0.22	-do-	-do-
Grading 3	53 to 22.4	75	0.91 to 1.07	Type B 11.2	0.18 to 0.21	-do-	-do-

(xxi) 405.3. Construction Operations

(xxii) **405.3.1. Preparation of base:** The surface of the subgrade/sub-base/base to receive the water bound macadam course shall be prepared to the specified lines and crossfall (camber) and made free of dust and other extraneous material. Any ruts or soft yielding places shall be corrected in an approved manner and rolled until firm surface is obtained if necessary by sprinkling water. Any sub-base/base/surface irregularities, where predominant, shall be made good by providing appropriate type of profile corrective course (leveling course).

(xxiii) Laying water bound macadam course over an existing bituminous layer shall be avoided since it will cause problems of internal drainage of the pavement at the interface of two courses. It is desirable to completely pick out the existing thin bituminous wearing course where water bound macadam is proposed to be laid over it.

(xxiv) **405.3.2. Inverted choke:** Where the WBM layer is to be laid over the subgrade and the subgrade soil is fine-grained, it is advisable to lay 100 mm intervening layer of screening or coarse sand on top of the fine-grained soil.

(xxv) **405.3.3. Provision of lateral confinement of aggregates:** While constructing water bound macadam, arrangement shall be made for the lateral confinement of the aggregate. This shall be done by laying materials in adjoining shoulders along with that of water bound macadam layer and following the sequence of operations described in Clause 407.4.1.

(xxvi) **405.3.4. Spreading coarse aggregates:** The coarse aggregates shall be spread uniformly and evenly upon the prepared subgrade/sub-base/base to proper profile by using templates placed across the road about 6 mm apart, in such quantities that the thickness of each compacted layer is not more than 100 mm for Grading 1 and 75 mm for Grading 2 and 3, as specified in Clause 405.2.5. Aggregates placed at locations which are inaccessible to the spreading equipment, may be spread in one or more layers by any approved means so as to achieve the specified results.

(xxvii) The spreading shall be done from stockpiles along the side of the roadway or directly from vehicles. No segregation of large or fine aggregates shall be allowed and the coarse aggregate as spread shall be of uniform gradation with no pockets of fine material.

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

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

(xxx) **405.3.5. Rolling:** Immediately following the spreading of the coarse aggregate, rolling shall be started with three wheeled power rollers of 80 to 100 kN capacity or tandem or vibratory rollers of 80 to 100 kN static weight. The type of roller to be used shall be approved by the Engineer based on trial run.

(xxxi) Except on superelevated portions where the rolling shall proceed from inner edge to the outer, rolling shall begin from the edges gradually progressing towards the centre. First the edge/edges shall be compacted with roller running forward and backward. The roller shall then move inward parallel to the centre line of the road, in successive passes uniformly lapping preceding tracks by at least one half width.

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

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

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

(xxxv) It shall be ensured that shoulders are built up simultaneously along with water bound macadam courses, in accordance with the procedure given in Clause 407.4.1.

(xxxvi) **405.3.6. Application of screenings:** After the coarse aggregate has been rolled to Clause 405.3.4, screenings to completely fill the interstices shall be applied gradually over the surface. These shall not be damp or wet at the time of application. Dry rolling shall be done while the screenings are being spread so that vibrations of the roller cause them to settle into the voids of the coarse aggregate. The screenings shall not be dumped in piles but be spread uniformly in successive thin layers either by the spreading motions of hand shovels or by mechanical spreaders, or directly from tipper with suitable grit spreading arrangement. Tipper operating for spreading the screenings shall be so driven as not to disturb the coarse aggregate.

(xxxvii) The screenings shall be applied at a slow and uniform rate (in three or more applications) so as to ensure filling of all voids. This shall be accompanied by dry rolling and brooming with mechanical brooms, hand brooms or both. In no case shall the screenings be applied so fast and thick as to form cakes or ridges on the surface in such a manner as would prevent filling of voids or prevent the direct bearing of the roller on the coarse aggregate. These operations shall continue until no more screenings can be forced into the voids of the coarse aggregate.

(xxxviii) The spreading, rolling, and brooming of screenings shall be carried out in only such lengths of the road which could be completed within one day's operation.

(xxxix) **405.3.7. Sprinkling of water and grouting:** After the screenings have been applied, the surface shall be copiously sprinkled with water, swept and rolled. Hand brooms shall be used to sweep the wet screenings into voids and to distribute them evenly. The sprinkling, sweeping and rolling operation shall be continued, with additional screenings applied as necessary until the coarse aggregate has been thoroughly keyed, well-bonded and firmly set in its full depth and a grout has been formed of screenings. Care shall be taken to see that the base or subgrade does not get damaged due to the addition of excessive quantities of water during construction.

(xl) In case of lime treated soil sub-base, construction of water bound macadam on top of it can cause excessive water to flow down to the lime treated sub-base before it has picked up enough strength (is still "green") and thus cause damage to the sub-base layer. The laying of

water bound macadam layer in such cases shall be done after the sub-base attains adequate strength, as directed by the Engineer.

(xli) **405.3.8. Application of binding material:** After the application of screenings in accordance with Clauses 405.3.5 and 405.3.6 the binding material where it is required to be used (Clause 405.2.7) shall be applied successively in two or more thin layers at a slow and uniform rate. After each application, the surface shall be copiously sprinkled with water, the resulting slurry swept in with hand brooms, or mechanical brooms to fill the voids properly, and rolled during which water shall be applied to the wheels of the rollers if necessary to wash down the binding material sticking to them. These operations shall continue until the resulting slurry after filling of voids, forms a wave ahead of the wheels of the moving roller.

(xlii) **405.3.9. Setting and drying:** After the final compaction of water bound macadam course, the pavement shall be allowed to dry overnight. Next morning hungry spots shall be filled with screenings or binding material as directed, lightly sprinkled with water if necessary and rolled. No traffic shall be allowed on the road until the macadam has set. The Engineer shall have the discretion to stop hauling traffic from using the completed water bound macadam course, if in his opinion it would cause excessive damage to the surface.

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

(xliv) **405.4. Surface Finish and Quality Control of Work**

(xlv) **405.4.1.** The surface finish of construction shall conform to the requirements of Clause 1802.

(xlvi) **405.4.2.** Control on the quality of material and works shall be exercised by the Engineer in accordance with Section 1800.

(xlvii) **405.4.3.** The water bound macadam work shall not be carried out when the atmospheric temperature is less than 0° C in the shade.

(xlviii) **405.4.4. Reconstruction of defective macadam:** The finished surface of water bound macadam shall conform to the tolerance of surface regularity as prescribed in Clause 1802. However, where the surface irregularity of the course exceeds the tolerances or where the course is otherwise defective due to subgrade soil mixing with the aggregates, the course to its full thickness shall be scarified over the affected area, reshaped with added material or removed and replaced with fresh material as applicable and recompact. In no case shall depressions be filled up with screenings or binding material.

(xlix) **405.5. Arrangement for Traffic**

(l) During the period of construction, the arrangement of traffic shall be done as per Clause 111.

(li) **405.6. Measurements for Payment**

(lii) Water bound macadam shall be measured as finished work in position in cubic metres.

(liii) **405.7. Rate**

The Contract unit rate for water bound macadam sub-base/base course shall be payable in full for carrying out the required operations including full compensation for all components listed in Clause 401.9 (i) to (v) including arrangements of water used in the work as approved by the Engineer.

Item No 51/418/442/457/472

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 120

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 309

Providing and fixing in expansion joint 100 mm thick silflex (cepcelt hd 100) expansion joint board of best quality and approved make including cutting to required size and shape at all levels etc. Complete as directed

1. Expansion joint shall be constructed according to the details shown on the drawings. The position of all bolts cast and holes drilled in plates shall be accurately determine from templates.

2. Steel plates, angles, or other structural sections provided in the expansion joints shall conform to the relevant IS specification and shall be accurately shaped to the section of concrete deck and shall be hot dip galvanized after fabrication. Positive methods shall be employed in placing the assemblies to keep them in correct position during the placing of concrete. Care shall be taken to avoid impairment of the clearance in any manner. The material used for filling expansion joint shall be bitumen impregnate felt, elasomeric or any other suitable material as specified on the drawings. Impregnate fet shall conform to the reuirement of IS : 1838 and shall be got approved from the Engineer in charge. The joint filler shall consist of large pieces and assembly of small pieces to make up the required size shall be avoided.

3. The expansion joints shall be measured in running metres.

4. The rate shall include the cost of all material, labour, equipment and other incidental charges for fixing the joints complete in all respects as shown on the drawings.

Item No 349/376/377

Excavation for roadways in Soil of all sorts up to required depth including dressing section to the required grade and camber and side slopes in soil, soft murrum, hard murrum, BT surface, otta, dismantled structures including scaffolding if required shoring, strutting and conveying the excavated materials within the lead of 200m, spreading, watering, ramming including supporting the utility services such as pipe lines, cables etc. using bamboos, wire ropes, installing red lamps and barricading around the excavated pits for safety etc. complete.

1.1 The excavation for trenches will generally, refers to open excavation for trenches in wet / dry conditions for pipe laying work.

2.0 Clearing of Sites:

2.1 The site on which the pipelines are to be laid and shown on plan and the area required for setting out and other operations shall be cleared and all obstruction loose stones and materials, rubbish of all kinds, stumps, brushwood as trees shall be removed as directed the roots shall be entirely grubbed up.

2.2 The products of the clearing to restacked in such a place and in such a manner, as directed by the engineer in charge.

2.3 All holes or hollows whether originally existing or produced by digging up roots, shall be carefully filled up with earth, well watered, well rammed leveled off, as may be directed.

2.4 The agency has to obtain necessary permission for diverting the traffic or public as per requirement from competent authority for carrying out the work.

3.0 Setting Out:

The center lines of all pipe trenches etc. shall be given by the Engineer-in-charge and it will be the responsibility of the contractor to install substantial reference marks, bench marks, etc. and maintain them as long as required true to line, level curve and slopes. The contractor shall assure full responsibility for alignment, and dimension of trench.

The labour materials etc. required for setting out and establishing benchmarks and other reference marks shall be arranged by the contractor at his own cost.

4.0 Excavation

4.1 The excavation for the pipe trenches shall also include removal of all materials of whatever nature and whether wet or dry condition necessary for laying of pipelines exactly in accordance with alignment, levels grades and curves shown on the plans or as directed by the Engineer-in-charge. Trenches shall be excavated to the exact width and depth according to the size of pipe and the sides shall be left vertical as far as possible or according to the angle of repose of various soils. Unless there is a specific extra provision in the contract for shoring and strutting or for cutting side slopes the contractor shall at his own cost do the necessary shoring and strutting or cutting of slopes to the angle of repose or both approved by the Engineer-in-charge. The contractor shall notify the Engineer before starting excavation to enable him to take cross sectional levels for purpose of measurements before the ground is disturbed.

The bottom of the trenches shall be leveled both longitudinally and transversely or slopped as directed by the Engineer. The contractor shall at his own cost to remove such portions

of boulders or rocks, as are rectified to make the bottom of the trench level. No filling shall be allowed to bring the trench to level. If by contractor's mistake excavation is made deeper than shown on the plans and if ordered by the Engineer the extra depth shall have to be made with selected excavated stuff only with watering, ramming etc. as directed, by the Engineer and at the cost of the contractor. Other hard excavation shall be cleared of all sorts including loose materials and cut to firm surface, either level, stepped as directed by the Engineer. The Engineer may order such changes in the dimensions and alignment of pipe trench as may be deemed necessary to secure satisfactory cover over pipeline.

After each excavation is completed, the contractor shall notify the Engineer to that effect and no laying of pipeline will be allowed to be laid until Engineer has approved the depth and dimensions of trenches, level and measurements.

Excavation by the Use of Explosives

Unless otherwise stated herein, I.S. Specification "IS: 4081: Safety Code for Blasting and related Operations" shall be followed. As far as possible all blasting shall be completed prior to commencement of construction. At all stages of excavation, precautions shall be taken to preserve the rock below and beyond the lines specified for the excavation, in the soundest possible condition. The quantity and strength of explosives used shall be such as will neither damage nor crack the rock outside the limits of excavation. All precautions, as directed by Employer's Representative, shall be taken during the blasting operations and care shall be taken that no damage is caused to adjoining buildings or structures as a result of blasting operations. In case of damage to permanent or temporary structures, Contractor shall repair the same to the satisfaction of Employer's Representative at his cost. As excavation approaches its final lines and levels, the depth of the charge holes and amount of explosives used shall be progressively and suitably reduced.

The contractor shall obtain a valid Blasting License from the authorities concerned. No explosive shall be brought near the work in excess of quantity required for a particular amount of firing to be done; and surplus left after filling the holes shall be removed to the magazine. The magazine shall be built as away as possible from the area to be blasted. Employer's Representative's prior approval shall be taken for the location proposed for the magazine.

In no case shall blasting be allowed closer than 30 meters to any structure or to locations where concrete has just been placed. In the latter case the concrete must be at least 7 days old. Blasting for excavation in hard rock will only be allowed if permitted by competent authority otherwise shall be done with chiseling only.

For blasting operations, the following points shall be observed.

- b) Contractor shall employ a competent and experienced supervisor and licensed blaster in-charge of each set of operation, which shall be held personally responsible to ensure that all safety regulations are carried out.
- ii) Before any blasting is carried out, Contractor shall intimate Employer's Representative and obtain his approval in writing for resorting to such operations. He shall intimate the hours of firing charges, the nature of explosive to be used and the precautions taken for ensuring safety.
- iii) Contractor shall ensure that all workmen and the personnel at site are excluded from an area within 200 m radius from the firing point, at least 15 minutes before firing time by sounding warning whistle. The area shall also be given a warning by sounding a distinguishing whistle.
- iv) The blasting of rock near any existing buildings, equipment or any other property shall be done under cover and Contractor has to make all such necessary muffling

arrangements. Covering may preferably be done by MS plates with adequate dead weight over them. Blasting shall be done with small charges only and where directed by Employer's Representative; a trench shall have to be cut by chiseling prior to the blasting operation, separating the area under blasting from the existing structures.

v) The firing shall be supervised by a Supervisor and not more than 6 (six) holes at a time shall be set off successively. If the blasts do not tally with the number fired, the misfired holes shall be carefully located after half an hour and when located, shall be exploded by drilling a fresh hole along the misfired hole (but not nearer than 600 mm from it) and by exploding a new charge.

vi) A wooden tamping rod with a flat end shall be used to push cartridges home and metal rod or hammer shall not be permitted. The charges shall be placed firmly into place and not rammed or pounded. After a hole is filled to the required depth, the balance of the hole shall be filled with stemming, which may consist of sand or stone dust or similar inert material.

vii) Contractor shall preferably detonate the explosives electrically.

viii) The explosives shall be exploded by means of a primer, which shall be fired by detonating a fuse instantaneous detonator (F.I.D) or other approved cables. The detonators with F.I.D. shall be connected by special nippers.

ix) In dry weather and normal dry excavation, ordinary low explosive gunpowder may be used. In damp rock, high explosive like gelatin with detonator and fuse wire may be used. Underwater or for excavation in rock with substantial accumulated seepage electric detonation shall be used.

x) Holes for charging explosives shall be drilled with pneumatic drills, the drilling pattern being so planned that rock pieces after blasting will be suitable for handling without secondary blasting.

xi) When excavation has almost reached the desired level, hand trimming shall have to be done for dressing the surface to the desired level.

xii) Any rock excavation beyond an over break limit of 75 mm shall be filled up as instructed by Employer's Representative, with concrete of strength not less than M10. Stopping in rock excavation shall be done by hand trimming.

xiii) Contractor shall be responsible for any accident to workmen, public or Employer's property due to blasting operations. Contractor shall also be responsible for strict observance of rules, laid by Inspector of explosives, or any other Authority duly constituted under the State and / or Union Government as applicable at the place of excavation.

Stripping Loose Rock

All loose boulders, detached rocks partially and other loose material which might move therewith not directly in the excavation but so close to the area to be excavated as to be liable, in the opinion of Employer's Representative, to fall or otherwise endanger the workmen, equipment, or the work shall be stripped off and removed from the area of the excavation. The method used shall be such as not to render unstable or unsafe the portion, which was originally sound and safe.

Any material not requiring removal in order to complete the permanent works, but which, in the opinion of Employer's Representative, is likely to become loose or unstable later, shall also be promptly and satisfactorily removed.

Classification of Strata:

The decision regarding, classification of strata shall rest with the Engineer in charge and his decision shall be final and binding to the contractor.

All the materials encountered in the excavation shall be classified as under:-

Ordinary soil and soft murrum:

These will include all materials of an earthy or sandy nature, which can be easily ploughed or small shingle, and gravel, which can be easily removed.

Hard murrum:

This shall include all kinds of disintegrated rock or shale or inundated clay which can be removed with a shovel without difficulty and which do not require blasting.

Soft rock:

This shall include all materials which is rock or hard conglomerate, all decomposed and weathered rock, highly fissured rock old masonry and also soft rock boulders bigger than ½ cubic meter and other varieties of rock. Which do not require blasting and which can be removed with the pie crowbars wedges and hammer.

Hard rock:

This shall include rocks, occurring in masses, which could best be removed by chiseling.

5.0 Protection

5.1 The trenches shall be strongly fenced and red light signal shall be kept at night and arrangement of watchman to prevent accidents should be done. Sufficient care and protective measure shall be taken to see that the excavation shall not affect or damage the adjoining structure. The contractor shall be entirely responsible for any injury to life and damage to the properties etc. Necessary protection work such as guide ropes, crossing places, barricades, caution boards etc. shall be provided by the contractor.

6.0 The excavation in all sorts of soil, hard murrum, soft rock or hard rock or any type of soil shall have to be carried out up to the required depth by the agency

7.0 Disposal of Excavated Stuff

7.1 No excavated stuff from trench are to be placed even temporarily nearer than 1.5 meter or greater distance up to 90 meter or as prescribed by the Engineer from the outer edge of trench. All excavated material will be the property of the owner. The rate of excavation includes sorting out of useful materials and stacking them separately as directed within specified lead. The excavated stuff suitable and useful for refilling or for other use shall be stacked at convenient places. The materials not useful in any way shall be disposed off as directed by the Engineer from the outer edge of trench.

7.2 The site should be cleared off on completion of work.

8.0 Additional Requirements

8.1 At the joints of pipes, the trench shall be excavated to an additional depth of 15 cm. and width of 30 cm. And length of 15 cm. beyond the edge of collar on both the sides or as directed. The rate include for such extra excavation made at the joints. The trenches shall be excavated perfectly in straight line. The bottom of the trench shall be kept as per invert level or as directed. To maintain the proper slope the usual method of site rails and boning rods shall be adopted. The contractor shall have to provide and fix and maintain sight rails and boning rods without any extra cost.

If the contractor fails or makes delay to give hydraulic test of the pipe line laid in any of the

section, without any genuine reason, he shall be responsible to get any part of the length trenches refill in such case (i.e. before testing) for safety of pedestrian and/or vehicular traffic as found necessary by the engineer-in-charge without any extra cost. If found necessary and directed by the Engineer-in-charge, the contractor shall have to excavate the refilled trenches, during hydraulic test without any extra cost.

At all road crossings, trenches shall be excavated only for half width of the road and pipe shall be laid. The other half shall be excavated only after back filling over the laid pipeline is done so as to make it suitable for the traffic. The contractor shall provide diversion when the pipeline is to be laid along the road as required and shall maintain the diversion or any part of it, without any extra cost. At all road crossings, the pipe shall be laid below the crest of road

8.2 The contractor shall break the road surface by chiseling to the exact width and length as shown on the drawing or as directed by the Engineer-in-charge.

The excavated stuff shall be deposited in uniform layers to avoid mixing with other kind of materials at non-objectionable place or as directed by the Engineer-in-charge.

9.0 Measurement and Payment

9.1 Payment shall be made as per actual work done.

9.2 The rate for the item of excavation shall include the following unless and otherwise mentioned

- (a) Clearing of site
- (b) Setting out work including all materials and labour.
- (c) Providing and subsequently removing, shoring and strutting outing slopes etc..
- (d) Excavation and removal and staking of all excavated stuff as directed.
- (e) Necessary protection including labour materials equipment etc. to ensure safety and protection against risk or accident.
- (f) Providing facilities for inspection and damage to property if caused during progress of work.
- (g) Compensation for injury to life and damage to property if caused during progress of work.
- (h) Restoring of water supply connections, sewer connections, telephone lines, khalkuva soak pits etc. if damaged by contractor without extra payment.
- (j) Clearing the site on completion of works directed by the Engineer.

Measurement and Payment

Payment shall be made on cubic meter basis of excavation for single time only.

Item No 131

Providing and fixing pre-cast rubber dye inter locking concrete block 80mm thick with grade of concrete M250 pneumatic compressed by mechanically pressed and art level in and filling the joints pe approved design including 75mm sand layer for with sand in proper line and level etc complete

1504.1. Scope

Interlocking Concrete Block Pavement (ICBP) shall consist of a surface layer of appropriately sized concrete paving blocks paved and compacted over a thin bedding sand layer of specified grading, which is spread over a properly constructed and profiled base course and is bounded by properly installed edge restraints. The joints shall be filled by fine sand of specified grading. The work shall include supplying laying and paving of blocks including all materials, labour and equipment and performing all operations in connection with the laying of ICBP as per these Specifications.

1504.2. Materials

1504.2.1. The Concrete Paving Block shall conform to the relevant IS standard.

1504.2.2. Bedding sand: Bedding sand shall conform to the grading given in Table 1500.6.

1504.2.3. Joint filling sand: Joint filling sand shall conform to grading given in Table 1500.6.

TABLE 1500.6: GRADINGS FOR BEDDING AND JOINT FILLING SAND

IS Sieve Size (mm)	Per cent Passing	
	For Bedding Sand	For Joint Filling Sand
10.00	100	100
4.75	90-100	90-100
2.36	60-95	75-100
1.18	15-34	55-90
0.60	25-60	35-59
0.30	5-20	8-30
0.15	0-10	0-10
0.075	0-5	0-5

1504.3. Buffer

Buffer of specified quantity of paving blocks (of the same shape, size and thickness) required for normal maintenance of paved area as specified by the Engineer, shall be supplied and stored for replacement as and when needed. Normally this will be 5 per cent of the blocks used in the paved area.

1504.4. Block Thickness

For rural roads catering to heavy vehicles, the minimum thickness of paving blocks shall be 60 mm for traffic up to 100 vehicles per day, and 80 mm for projected traffic from 100 to 250 vehicles per day.

1504.5. Dimensions and Tolerances

The dimensions and tolerances of paving blocks shall conform to the Specifications given in Table 1500.7. Aspect ratio is the ratio of length to thickness of blocks. Chamfer is the beveled edge, provided on the top surface of a block. Plan area is the horizontal area bounded by the vertical faces. Wearing surface area is the horizontal area bounded by the vertical faces, minus the area reduced due to the presence of chamfer.

TABLE 1500.7: DIMENSIONS AND TOLERANCES FOR PAVING BLOCKS

S. No.	Dimension	Recommended Values	Tolerance Limit
(1)	Width W	To be specified by Manufacturer	±2 mm
(2)	Length L	To be specified by Manufacturer	±2 mm
(3)	Thickness T	60 to 80 mm	±3 mm
(4)	Aspect Ratio L/T	Maximum: 4.0	±0.2
(5)	Chamfer (Arris)	Maximum: 5 mm Maximum: 7 mm	±1 mm
(6)	Plan Area	Maximum: 0.03 m ²	+0.001 m ²
(7)	Wearing Face Area	Minimum 75% of Plan Area	-1%

(8)	Squareness	Nil	±2 mm
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1504.6. Compressive Strength

1504.6.1. The average 28 days compressive strength of 8 blocks shall be 30 MPa and strength of individual block shall not be less than 26 MPa.

1504.6.2. The 28 days compressive strength of paving blocks tested as per relevant IS specification shall be determined as explained hereinafter.

1504.6.2.1. Compression testing machine of adequate capacity shall be used for testing of blocks. The steel bearing plates shall have a minimum thickness of 25 mm. The surface area of the bearing side of the plate should be such that no edge of the bearing plate is less than 10 mm from the outer edge of the paving block being tested.

1504.6.2.2. In case the testing surface of the paving block departs from a plain surface by more than 0.05 mm, capping using suitable materials shall be adopted for testing as per IS:516.

1504.6.2.3. The blocks shall be stored for 24 ± 4 hours in water maintained at a temperature of $(20 \pm 5) ^\circ\text{C}$ before testing. The dimensions and plan areas of the block shall be determined. The bearing plates of the testing machine shall be wiped clean. The specimen shall be clamped between the plates in such a way that the axes of the specimen are vertically aligned with those of the bearing plates.

1504.6.2.4. The load shall be applied without shock and increased continuously at a rate of $15 \pm 3 \text{ N/mm}^2/\text{minute}$ until no greater load can be sustained by the specimen or delamination occurs. The maximum load applied to the specimen shall be noted.

1504.6.2.5. The apparent compressive strength of individual block shall be calculated by dividing the maximum load (N) by the plan area (mm^2). The corrected compressive strength shall be calculated by multiplying the apparent compressive strength by the appropriate correction factor from Table 1500.8. The strength shall be expressed to the nearest 0.1 N/mm^2 .

TABLE 1500.8: CORRECTION FACTORS FOR THICKNESS AND CHAMFER OF PAVING BLOCK FOR CALCULATION OF COMPRESSIVE STRENGTH

Paving Block Thickness (mm)	Correction Factor for	
	Plain Block	Chamfered Block
60	1.00	1.06
80	1.12	1.18

1504.6.2.6. Water Absorption: The water absorption being the average of five blocks shall be not more than 6 per cent by mass.

1504.7. Edge Blocks

The edge blocks shall have equivalent cube compressive strength not less than 30 MPa. The road kerbs provided on the edges of the road also serve the purpose of edge blocks. In case the end kerbs are not provided, 300 mm x 300 mm x 150 mm of M30 grade concrete edge blocks or other suitable size as per drawings or direction of the Engineer shall be provided.

1504.7.2. Subgrade

The Subgrade shall conform to Clause 1501.5.1 of these Specifications. The soaked CBR of subgrade soil shall not be less than 4 per cent.

1504.8. Sub-base

The sub-base shall be 100 mm thick granular layer conforming to Clause 401 or 100 mm thick WBM Gr. 1 conforming to Clause 405 of these Specifications. In case the subgrade soil is clayey, the sub-base shall be extended over the full formation width for proper drainage.

1504.9. Base Course

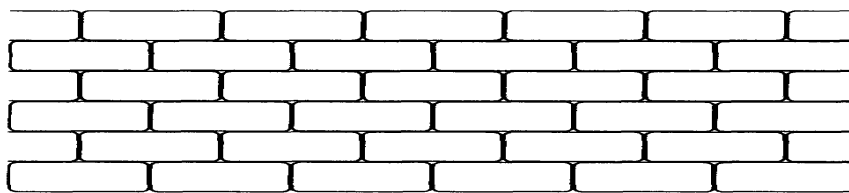
A minimum 100 mm thick layer of granular/stabilized base course shall be provided. The base course layer shall be extended at least 300 mm beyond the edge restraints. The material shall conform to Clause 402 of these Specifications.

1504.10. Bedding Sand

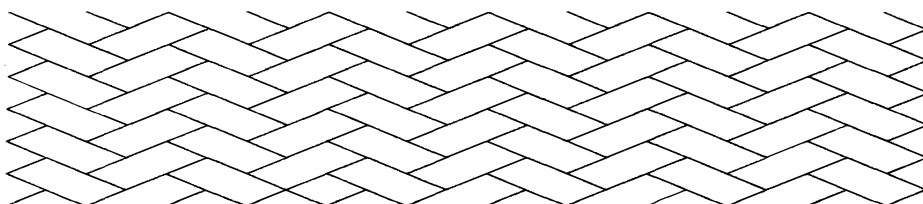
Bedding sand conforming to Table 1500.6 shall be uniformly laid to a compacted thickness of 25 mm for 60 mm thick blocks and 30 mm for 80 mm thick blocks. Bedding sand shall be unloaded in small piles regularly placed over the base course and shall preferably have a moisture content of about 6 per cent which will facilitate its spreading and compaction. Bedding sand shall be screeded in a uniform layer over the base course. The screed can be guided to level by tensioned string lines set above the base course. At the time of screeding, the thickness of sand must allow for the amount by which it will be subsequently compacted which is normally about 25 per cent more than the compacted thickness. Screeding shall not proceed beyond about 1 m ahead of the planned end of block paving for the day. Sand shall preferably be compacted with a manual; fabricated plate compactor and the level shall **be readjusted** using the screed. The surface profile of the screeded bedding **sand** shall **match that** required for the completed pavement.

1504.11. Paving Pattern

The pattern in which blocks are to be paved shall be decided in advance from the two choices or their derived forms available. These are the herringbone and stretcher patterns, as shown in Fig. 1500.3.



(a) STRETCHER OR RUNNING



(b) HERRINGBONE

Fig. 1500.3. Basic Bonds

1504.11.1. By and large, these patterns are the same as adopted for brick paving. All shapes of blocks are not amenable to the above paving patterns. For paving in trafficked areas, herringbone pattern shall be adopted for ensuring better performance. Paving shall commence and progress from one starting line only. Wherever possible, paving shall commence adjacent to or against edge restraint.

1504.12. Paving and Compaction of Blocks

Blocks shall be placed at the correct angle to the start line to achieve the final orientation of the laying pattern. For curved or unfavorably oriented edge restraints, a string line shall be established to permit fast, easy laying such that it is not required to force a block between the blocks already paved. Control over alignment, laying pattern and joint width can be assisted by the use of chalked string lines set at about 5 m intervals. Nominal joint width of 2 to 4 mm shall be maintained by holding the paving unit lightly against the face of the adjacent block and allowing it to slide into position. Cutting paving units for filling the paving gaps occurring against edge restraints etc. shall be deferred until sufficient work has progressed to allow reasonably continuous operation. When space does not permit the use of cut pieces of blocks, premixed or dry packed concrete shall be used. After a section has been paved, compaction shall be affected by using vibrating plate compactors in the following sequence of operations:

- (i) Vibrate the blocks with 3 passes of the plate vibrator of adequate capacity.
- (ii) Spread a thin layer of fine joint filing sand on top of the paved blocks and sweep it into the joints, using suitable brooms.
- (iii) Vibrate the sand into the joints by making 3 passes of the compactor.
- (iv) Sweep off the excess sand from top of blocks.

As a guide to the characteristics of typical vibrating plate compactors, standard compactors have a weight of 90 kg, a plate area of 0.3 m² and apply a centrifugal force of 1500 kg. Heavy duty compactors weigh between 300 to 600 kg, have a plate area of about 0.5 to 0.6 m² and apply a centrifugal force in the range of 2000-3000 kg. Use of heavy-duty compactors is desirable for trafficked pavements.

1504.12.1. Trial length: The contractor shall lay a trial length of 30 m and get it inspected and approved by the Engineer before proceeding with the regular paving work. The trial length shall be rectified/re-laid if found deficient in any respect. The procedure demonstrated in the laying of trial length shall be followed while executing the main construction work.

1504.13. Opening to Traffic

The pavement can be opened to traffic as soon as the construction work is completed.

1504.14.1. Transverse profile: When measured by a camber template, the transverse profile shall not deviate by more than 10 mm from the design profile.

1504.14.2. Longitudinal profile: When measured by a 3 m straight edge, the longitudinal profile shall not deviate by more than 12 mm from the design profile.

1504.15. Acceptance Criteria

From each lot of 500 blocks, 5 blocks shall be selected at random for water absorption and compressive strength tests. In case the number of blocks in the lot is less than 500, a minimum 1 per cent of the blocks delivered to site shall be tested for water absorption and strength. The blocks shall be first tested for water absorption and these shall meet the requirement of Clause 1504.5.2.6 of these Specifications. The same five blocks (or minimum 1 per cent) shall be tested for strength and shall conform to the strength as per Clause 1504.5.1 of these Specifications.

The paved surface shall meet the tolerances for lines, levels, and grades etc. as given in Section 1800 of these Specifications.

1504.16. Measurements for Payment

The measurement of the paved area shall be in square meters measured from the inner edge of edge restraints on one side of the pavement to the inner edge of the edge restraints on the transverse side of the pavement. The measurement of the edge restraints shall be in number of units or in cubic meters.

1504.17. Rate

The contract unit rate shall include the cost of blocks, cost of stacking, transportation to site and paving including supply and application of bedding sand and joint filling sand. The rate shall include full compensation for labour, tools, plant, equipment, testing and all incidentals to the work, including all royalties, taxes, storage rents wherever necessary, and all leads and lifts

Item No 232

Electronic weighbridge with platform (pit type model) six 52x10 ft. 100 MT capacity, 450 mm gagger, 250 mm gagger, plate thickness 12mm, approximate weight of structure (10000 to 10500 kg) including installation testing, commissioning stamping by government and measure department, transportation etc. System with high speed embedded micro controller built in auto zero maintenance, digital calibration, digital filter, real time clock, display 2x6 digits, 7 seg display or 1/16-character dot metric display. input data entry of IBM compatible PC keyboard by parallel printer, standard alphanumeric key board for entry of data, capacity safe over load 150% of the rated capacity, breaking load 300% of the rated capacity, safe temperature 0 to 65 degree Celsius, degree of protection IP 68 type with inbuilt lighting protection etc.

TECHNICAL SPECIFICATION – 100T WEIGH BRIDGE

Electronic Truck Scale

1. Purpose	:	To Weigh Truck
2. Drawing (to be provided by Supplier)	:	To provided by supplier
A. Civil Drawing	:	To provided by supplier
B. Earthing Drawing	:	To provided by supplier
C. Electrical Drawing	:	To provided by supplier
MECHANICAL STRUCTURE DETAILS:		
Sr No	Requirement	Scope
01	Capacity	15.90
02	Platform Size	10.5 mt x 3 Mtr.
03	Accuracy	5 Kg
04	Type of Weighbridge	Fully Electronic "PITLESS Type Weighbridge"
05	Type of platform	Steel Fabricated, Painted with two coats of Primer & one coat of finish paint
06	Platform details	Mild Steel Structure
07	Overload capacity	120%
08	Ultimate overload capacity	150%
09	Calibration & Testing	Expert Technician with the help of necessary Standard weights & un skilled labor, Hydra or Crane. All corner of weighbridge will be checked & tested by Standard weights
10	Government stamping	On completion of all the formalities of weigh bridge installation & testing, Dept. of W&M Inspector to check weighbridge with help of

		standard weights, then after successful inspection of weighbridge, required Stamping Certificate to be issued upto validity of 1 Year
	Power Supply	
01	Rated voltage	230 V , 50 Hz
02	Permissible variation a. Voltage: $\pm 10\%$ b. B Frequency : $\pm 10\%$ c. Waveform distortion: 5 % d. Phase unbalance :2 %	Yes
03	System neutral: Solid ground	Yes
	Terminal System :-	
	Standard Software Features:	
	operating Method	Operator Prompting & Menu Based User Friendly operating
	Number of Records (Storage)	5000 Completed/Incomplete Transactions. (In Standard Configuration)
	Type of Reports	Date-wise/Truck-Wise Complete/Incomplete Weighment.
	Format of Report	Serial No./Key No., Truck No., Gross Weight, Tare Weight, Net Weight and Material Etc
	Weighment Slip Details	Weighment Slip Contains Serial No., Key No., Truck No., Material/Party Name, Date, Time, Gross/Tare/Net Weight Etc.
	Re-Print Facility	Duplicate Slip printing facility is required.
	Manual Tare Entry	Facility of Manual Tare Entry is Required.
ELECTRONIC PC BASE SYSTEMS COMPUTER along with Battery backup is required for operation with a printer and to suit the rugged industrial condition		
Standard print out should include following: <ul style="list-style-type: none"> <input type="checkbox"/> Time, date, year and Serial No. <input type="checkbox"/> Gross Weight, Tare Weight and Net Weight. <input type="checkbox"/> Automatic calculation and printing of Net Weight. <input type="checkbox"/> Truck number. <input type="checkbox"/> Material in Truck. <input type="checkbox"/> Driver IN/OUT. <input type="checkbox"/> Bill No. /Challan No. with date. <input type="checkbox"/> Supplier / customers name and address. 		
The contract includes supply, installation & commissioning of supplied Electronic Weigh-bridge inclusive of structure, electronics, load cells, interconnecting cables, testing and calibration of the system (including dept. of W&M certification), operational training of local people etc. with Civil works		
QUALITY ASSURANCE PLAN: Supplier shall furnish a detailed inspection plan indicating various stages of inspection. Stage shall also include the testing of the Weigh-bridge for its rating.		
DATA REQUIRED FROM SUPPLIER WITHIN 2 DAYS OF PLACEMENT OF ORDER:		

☐ All Civil construction drawing for foundation and other connected works

Erection & Commissioning :

The erection and commissioning of the weigh bridge shall be done by the supplier at Customer site with unloaded and full loaded extreme safety conditions. The complete requirement for testing should be furnished in bid offer. A commissioning certificate to be issued after successful commissioning and prove out of the system.

Guarantee :

Supplier should furnish all loading safety certificates before supplying the Weigh bridge. Weigh bridge will be subjected to cover a complete Guarantee against any malfunctioning for one year from the date of Commissioning.

Copy of license from Govt. Of India to manufacture Weigh Bridge needs to be submitted along with the bid/offer.

Item No 350

Providing Cement Concrete Pipes of IS NP-3 Class of below diameter in proper line, level & Slope including providing, fixing collars in position in cement mortar 1:2 curing etc. complete. Laying in position RCC Hume pipe of IS NP-3 Class in proper line, level & Slope including providing, fixing rubber ring joint finishing with in cement mortar 1:2 curing & testing etc. Complete. Laying of pipes shall be carried out as per relevant IS, including all leads and lifts etc. Complete as directed by Engineer. All dia

1. The work shall consist of furnishing and installing reinforced cement concrete pipe of the type dia meter and length required at the location shown on the drawings or as ordered by the Engineer-in-charge.

2. Reinforced concrete pipe shall be NP3 type conforming to the requirements of IS: 458 and shall be of dia as specified in the item . Each consignment of cement concrete pipes shall be inspected. if necessary and approved by the Engineer-in-charge. Either at the place of manufacture or at the site before their incorporation in the works.

NP3, NP2, NP1 pipes are used for R.C.C. Pipes where testing of pipes will not feasible the contractors will have to produce a certificate from the manufactures on company's latter head the given hereinafter form.

Production of such certificate will not however relieve the contractor from his responsibility of supplying pipes of required standard and will have to bear the loss or damage caused to the work on account of defects found subsequently during the execution. It will also be necessary to purchase these pipes from manufacturer having standard equipment for carrying out various test as per IS: 458 at his factory.

FORM OF CERTIFICATE FOR NP3, NP2 NP1 PIPES

We _____ manufacturer or R.C.C. pipes produce R.C.C. pipes as per the requirement of IS: 458 and also carry out the required test at our place. We have acquired equipment for carrying out test and are prepared to carryout test at our factory sites.

We have experience of manufacturing of pipes of _____ years The pipes supplied by us to M/s _____ satisfy the requirement of IS: 458

Date: _____

Place: _____ Manufacturer's Sign _____

3. No pipe shall be placed in position until the foundations have been approved by the Engineer-in-charge. Where two or more pipes are to be laid adjacent to each other they shall be separated by a distance equal to at least half the diameter of the pipe subject to minimum of

450 mm. The laying of pipes on the prepared foundation shall start from the outlet and proceed towards the inlet and be completed to the specified lines and grades. The pipes shall be fitted and matched so that when laid in works they form a culvert with a smooth uniform invert. Any pipe found defective or damaged during laying shall be removed at their cost of Contractor.

4. The pipes shall be jointed either by collar joint or by flush joint or by flush joint. In the former case the collars shall be of R.C.C. 150 to 200 mm wide and having the same strength as the pipes to be jointed. Caulking space shall be between 13 and 20 mm according to the diameter of the pipes. Caulking material shall be slightly wet mix of cement and sand in the ratio of 1:2 rammed with caulking irons. Before caulking the collar shall be so placed that its centre coincides with that of pipe and an even annular space is left between the collar and the pipes. Flush joint may be shaped to form a self-cantering joint with a joining space 13 cm wide. The joining space shall be filled with cement mortar 1 cement to 2 sands mixed sufficiently dry to remain in position when forced with a trowel or rammer. Care shall be taken to fill all voids and excess mortar shall be removed. All joints shall be made with care so that their interior surface is smooth and consistent with the interior surface of the pipes. After finishing the joint shall be kept covered and damp or at least four days.

5. R.C.C. pipe shall be measured along their centre between their inlet and outlet ends in linear metres.

6. The rate for the pipes shall include the cost of pipe including loading unloading handling storing laying in position and joining complete.

Signature of contractor

**Chairman
APMC. Unjha**

LIST OF MATERIALS WITH RECOMMENDED COMPANY		
No	Material	Name of Company
a)	Cement OPC (33/43/53 Grade)	Ultra tech, Ambuja, ACC
b)	Sand	Banas River
c)	Aggregate (Special Black)	ORIGIN SAVALIA OR APPROVED BY ARCHITECT..
d)	Steel	TATA / SAIL OR Equivalent APPROVED BY ARCHITECT.
e)	GLASS (FLOAT)	MODI GLASS / ASAHI / GUJARAT GUARDIAN.
f)	VITRIFIED TILES	VARMORA.AGL, Kajariya, Nitco, Simpolo, RAK
g)	CERAMIC / GLAZED TILES	VARMORA.AGL, Kajariya, Nitco, Simpolo, RAK
h)	EXTERNAL PAVING	PAVIT, EUROCON.VYARA
i)	BATHROOM FIXTURES	JAQUAR, ESS ESS, PLUMBER, CERA
j)	EWC, WASH BASIN	CERA, HINDWARE. PLUMBER
k)	ROLLING SHUTTERS	SWASTIC, STAR, SONA.
l)	COLOUR	Asian, Nerolac, Burger

MAKE OF MATERIAL FOR ELECTRICAL WORK

- | | | | |
|-----|----------------------------------|---|---------------|
| 1. | ACB. | : | L & T/ C & S |
| 2. | MCCB. | : | L & T/ C & S |
| 3. | SFU –Switch Gear. | : | L & T/ C & S |
| 4. | CONTACTOR. | : | L & T/ C & S |
| 5. | O/L RELAY. | : | L & T/ C & S |
| 6. | PUSH BUTTONS. | : | L & T/ C & S |
| 7. | INDICATING LAMP. | : | L & T/ C & S |
| 8. | KWH METER. | : | L & T/ MECO |
| 9. | AMMETER /VOLTMETER. | : | MECO / IMP |
| 10. | C.T. | : | HIRAL / C & S |
| 11. | CHANGE OVER SWITCH. | : | L & T/ C & S |
| 12. | MCB Distribution Board. (Metal) | : | L & T/ C & S |
| 13. | MCB (10 KA.) TYPE –C. | : | L & T/ C & S |

14.	ELCB.	:	L & T/ C & S
15.	ALU. Armored Cable	:	HEVELLS / AVOCAB
16.	TIMER.	:	L & T/ C & S
17.	CAPACITOR	:	EPCOS, C.T.R
18.	ELECTRICAL WIRE ISI - FLEXIBLE.	:	RR / FINOLEX .
19.	PVC CONDUIT & ACCESSORIES(ISI).	:	NIHIR / PRECISION
20.	PIANO TYPE SWITCHES AND ACCESSORIES.(for MISC Bldg)	:	ANCHOR / PRECISION-MEGIC.
21.	MODULAR TYPE SWITCHES AND ACCESSORIES.(for Office Bldg)	:	NORTH WEST / CPL
22.	SWITCH BOX.(for MISC Bldg)	:	MADE FROM GOOD QUALITY TEAK WOOD BOX DULY VARNISHED.
23.	SWITCH BOX COVER PLATE.	:	5 mm THK. WHITE LAMINATED SHEET.
24.	CABLE LUGS AND SOCKETS.	:	DOWELLS / 3D.
25.	TIMER.	:	L & T/ C & S
26.	BUSBAR.	:	ELECTRILYTIC GRADE COPPER.
27.	CRCA SHEET FOR PANEL.	:	14 /16 GUAGE SHEET.
28.	CABLE GLANDS.	:	DOWELLS / COMET
29.	POWER PLUG AND SOCKET. METAL CLAD 3 PIN.	:	NORTH WEST / CPL
30.	LIGHTING FITTINGS(Internal)	:	HEVALLS / PHILIPS
31.	LIGHTING FITTINGS(Street light)	:	HEVALLS / PHILIPS
32.	LAMPS AND TUBES.	:	HEVALLS / PHILIPS
33.	FRP JUNCTION BOX.	:	SINTEX. Hensal
34.	HEAT SHRINKABLE CABLE JOINT	:	MSEAL / REYCHEM.
35.	APFCR RELAY.	:	L & T / C & S
36.	PVC INSULATION TAPE.	:	MAGIC
37.	CCTV Camera	:	Hikvision, Honeywell, Bosch,

38.	CAT6 Cable	:	Axis Tyco, Corning, Digisol
39.	PUBLIC ADDRESS SYSTEM	:	Honeywell X-618, Bosch Prasanna, Ateis

NOTE:

- a) The consultants reserve the right to select the manufacturer or approved make from above list, no change to be permitted in this make during the execution of the contract.
- b) Switch box, outlet box, junction box sample shall be submitted for Architect/ Consultants approval.
- c) No make is being approved for following items. Such items require to be used, then sample shall be submitted for approval.
 - 1. Laminate switch box Cover plate.
 - 2. Hard ware.
 - 3. Pipe for street light pole.
 - 4. Bus bar.
 - 5. CRCA Sheet.
 - 6. PVC tapes.
 - 7. Connectors.
 - 8. FIRE EXTINGUISHER.
 - 9. GI Pipe.

Signature of contractor

**Chairman
APMC. Unjha**

SCHEDULE FOR TESTING OF MATERIALS

For ensuring quality control and workmanship, various tests prescribed below corresponding to the material concerned shall be taken as 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 shaft 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).	Qty. Of C.C. M3 No. of Test 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,	Up to 50 T 1 test 50 – 100 T 2 test 100 – 200 T 3 test 200 – 300 T 4 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
		fineness, Chemical analysis Soundness	300 – 500 T 5 test 500 – 800 T 6 test 800 – 1300 T 7 test 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			

Signature of contractor

**Chairman
APMC. Unjha**