

BHAVNAGAR MUNICIPAL CORPORATION

(PMAY / MMGY)



SPECIFICATION

1. MINIMUM ACCEPTABLE SPECIFICATIONS

Sr. No.	Description	Minimum Specifications
1.	RCC Works	
	RCC in foundation, columns, beams, slab, loft, lintel, chhajah, stair case, railing etc.	The detailed dimensions & mix of all RCC to be adopted shall be as per approved structural design and as per IS 456 (Only steel props shall be used for shuttering below slab). Use of fly ash shall not be accepted. Concrete shall be done by ready mix plant only.
2.	Reinforcement	TMT Fe-500/550D of approved make only.
3.	Masonry Works	
a	Foundation & up to plinth	Brick masonry works in C:M 1:6 proportion
b	Parapet wall of all terrace, landing wall of stair case, passage wall, OTS wall, wall of wash, lift wall etc. for super structure	Brick masonry works in C:M 1:6 proportion. Parapet on the terrace shall be 1.15 m above the finished terrace level. Parapet shall be provided of 230 mm thick brick masonry wall.
c	Superstructure	Autoclaved aerated light weight concrete block in C:M 1:5 proportion.
d	All partition wall (Brick / AAC)	In C:M 1:4 proportion and as per detailed specification. RCC bends/ including reinforcement shall be provided at intervals specified in structural drawings.
4.	Railing in staircase	75 mm thk. and 450 mm in height R.C.C. railing with 450 mm high MS medium class hollow square or rectangular pipe railing of the approved pattern and vertical bars embedded in RCC wall. Total height of the railing shall be 900 mm from finished level of steps as specified in drawings.
5.	Plastering work	
a	Internal Ceiling	10MM thk. cement plaster in single coat on ceiling & soffits of stair for interior plastering finished even and smooth in cement Mortar 1:4 (1-Cement : 4-Sand) incl. finishing with a floating coat of neat cement slurry.
b	Internal Wall	10mm thk. cement plaster in single coat on brick/concrete walls for interior plastering finished even and smooth in cement mortar 1:4 (1-Cement : 4-Sand) incl. finishing with a floating coat of neat cement slurry.
c	External Wall	20mm thick sand faced cement plaster on walls upto all height above ground level consisting of 12 mm thick backing coat of C. M. 1:3 (1- Cement : 3-sand) and 8mm thick finishing coat of C.M. 1:1 (1- Cement: 1- Sand) etc. complete.
6.	Floor finish	

i	Flooring & skirting	
a	Bed room / Kitchen / Living room/ Shop / Community Hall	605 x 605 mm vitrified tiles flooring over 40 mm (average) base of cement mortar 1:6 (1-Cement : 6-Coarse Sand) on new surface including jointed with color cement slurry including finished with flush pointing & cleaning the surface etc. complete for approved made, shade & pattern. 75 mm high skirting in all rooms, passages in residential, commercial and community hall area.
b	W.C. / Bath / Toilet blocks for commercial & community hall	400 x 400 mm ceramic tiles flooring lay on a bed of 12 mm thk. Cement mortar 1:3 (1-Cement: 3-Coarse Sand) finished with flush Pointing in white cement etc. complete for approved made, shade & pattern.
c	Wash area, Lift machine room, Stair room, Stair landing, Passages etc.	25mm thick polished Kota stone slab flooring over 20mm (Average) thick base of cement mortar 1:6 (1-Cement : 6-Coarse Sand) laid over and jointed with grey cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. complete.
d	Loft in DU	10mm thk. cement plaster in single coat on brick/concrete walls for interior plastering finished even and smooth in cement mortar 1:4 (1-Cement : 4-Sand) incl. finishing with a floating coat of neat cement slurry.
e	Chhajah top	20mm thick sand faced cement plaster on walls upto all height above ground level consisting of 12 mm thick backing coat of C. M. 1:3 (1- Cement : 3-sand) and 8mm thick finishing coat of C.M. 1:1 (1- Cement: 1-Sand) and Cement Vata (10 cm. x 10 cm. size) quarter round in cement mortar 1:1 including neat cement finishing watering, providing throating of plaster drip and moulding to R.C.C. Chhaja etc. complete.
ii	Wall Tiles (Dado)	
a	Kitchen area above platform	Coloured Glazed Tiles up to lintel level of the size 300 mm x 380 mm x 8 mm / 300 mm x 450 mm x 8 mm dedo on 10 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) & jointed with white cement slurry of approved made, shade & pattern.
b	Wash area	'---Do--- as above (sr. no. ii.a) but up to parapet wall level (1 mt. from finished floor level)
c	Wash basin area	'---Do--- as above (sr. no. ii.a) but up to 1 mt. from finished floor level.
d	W.C.	'---Do--- as above (sr. no. ii.a) but up to 1 mt. from finished floor level.

Sr. No.	Description	Minimum Specifications
e	Bath / Toilet blocks for commercial & community hall	'---Do--- as above (sr. no. ii.a) but up to lintel level from finished floor level.
iii	Staircase riser & tread	Polished kota stone slab 25mm thick in tread & risers of steps, on 10mm thick cement mortar 1:3 (1-Cement : 3 coarse sand) and jointed with gray cement slurry mixed with pigment to match the shade of slab including rubbing and polishing etc. complete.
iv	Parking area of residential & community hall	Providing and laying cement concrete 1:4:8 (1-Cement: 4: coarse sand: 8-crushed stone aggregates 40 mm nominal size) and curing complete for P.C.C. within plinth area. Providing and fixing Pre-cast Rubber Dye Inter Locking concrete Block 60 mm thk. with grade of concrete M-250 pneumatic compressed by mechanically pressed and as per approved design including 75mm sand layer for leveling and filling the joint with sand in proper line and level etc. complete in parking of approved made, shade & pattern.
v	Terrace area	Average 110mm thick Brick bat coba flooring with water proofing treatment finished with broken China Mosaic Flooring For Terrace using 12 mm to 20 mm broken pieces of glazed tiles to be laid over cement mortar 1:3 to plain or slope and to be tempered to bring mortar crême out upto surface using white cement including rounding off junctions and extending them upto 30 cm along the wall, clearing with water and oxalic acid etc. as directed & pattern. Providing Cement Vata (10 cm. x 10 cm. size) quarter round in cement mortar 1:1 including neat cement finishing watering as per detail specification.
7	Platform in Kitchen	Providing & constructing of Kitchen Platform of 60cm. width and 75cm. height with both side polished Kotah stone (25mm thick) on top resting on 40mm thick polished kotah stone vertical support fixing by making grooves including 75 mm wide facing patti of kotah same colour of top with external edge of the patti shall be finished with quarter round molding & mirror polished etc. completed with cutting hole as per sink size as directed by an architect. Providing and laying 75 mm thk. Cement concrete 1:5:10 (1-

		Cement: 5-fine sand: 10-graded brick aggregates 40 mm nominal size) and curing complete in Kitchen platform otta for all floor.
8	Door shutters	
a	Main Door	Providing and fixing waterproof Flush Door of 35mm thk. shutters, solid core construction including door magnet, S.S. Handle of 15 cm size, S.S. Stopper of 20 cm long size, 3 no. of S.S. Hinges in each door, S.S. Aldrop 30 cm long size, S.S. Tali 20 cm long size etc. of all S.S. Grade confirming to ASIS 304 fasteners and fixtures with necessary screws including both side 1mm thick laminate of approved make & shade etc. complete as directed by engineer-in-charge.
b	Other Door In DU - Wash, Bedroom In Community Hall – Wash, Kitchen, Room In Health Center & Aanganwadi	Providing and fixing water proof Flush Door of 35mm thk. shutters, solid core construction including door magnet, S.S. Handle of 15 cm size, S.S. Stopper of 20 cm long size, 3 no. of S.S. Hinges in each door, S.S. Aldrop 30 cm long size, S.S. Tali 20 cm long size etc. of all S.S. Grade confirming to ASIS 304 fasteners and fixtures with necessary screws including both side finished with one coat of enamel primer and two coats of enamel paint of approved make & shade etc. complete as directed by engineer-in-charge.
c	W.C. / Bath / Toilet blocks for commercial & community hall / Stair room / Lift machine room	Providing and fixing PVC DOOR WITH FRAME AND SHUTTER 30mm thick FACTORY MADE SOLID BOTH SIDE PRELAM PANEL PVC DOOR SHUTTER consisting of frame made out of M.S. tubes of 19 gauge thickness and size of 19mm x 19mm for stiles, top and bottom rails. M.S. frame shall have a coat of steel primer of approved make and manufactures. M.S frame covered with 5mm thick heat moulded prelam PVC 'C' channel of size 30mm thickness, 70 mm width of which 50mm shall be flat and 20mm shall be tapered in 45 degree Angle on either side forming stiles, and 5mm thick, 95mm wide prelam PVC sheet out of which 75mm shall be flat and 20mm shall be tapered in 45 degree on the inner side ot form top and bottom rail and 115mm wide prelam PVC sheet out of which 75nmm shall be flat and 20mm shall be tapered on both side to form lock rail, Top, bottom and lock rails shall be provided either side of the panel. 10mm (5mm x 2) thick 20mm wide cross PVC sheet shall be provided as gap insert for top rail and bottom rails. Paneling of 5mm thick both side prelam PVC sheet to be fitted in the M.S. frame welded, sealed to the stiles and rails with 7mm (5mm + 2 mm) thick x 15mm wide PVC sheet beading on inner side, and joined together with solvent cement adhesive.

		An additional 5mm thick PVC strip of 20mm width is to be stuck on the interior side of the 'C' channel using PVC solvent adhesive etc. complete as per direction of Engineering in charge, manufacture's specification and drawing.
9	Door frames	
a	Main Door	Providing & fixing of 18 to 20 mm thk. Green Marble of approved shade to Door frame in single piece over 15mm (average) base of cement mortar 1:3 (1-Cement : 3-fine sand) laid and jointed with grey cement slurry including rubbing, polishing, curing and quarter round edge for both side etc. completed as directed. Frame should be double groove (danti) for door shutter & for safety door.
b	Other Door In DU - Wash, Bedroom In Community Hall – Wash, Kitchen, Room In Health Center & Aanganwadi	'---Do--- as above (sr. no. 9.a) but in single groove (danti) for door shutter
c	W.C. / Bath / Toilet blocks for commercial & community hall / Stair room / Lift machine room	Providing and fixing factory made Polyvinyl Chloride (PVC) door frame of the size 50 x 47 mm with a wall thickness of 5mm, made out of extruded 5mm rigid PVC foam sheet, meter out of two corners and joined with 2nos. of 150mm long brackets of 15 x 15mm M.S. Square tubes. The two vertical door profiles are to be reinforced with 19 x 19 mm M.S. square tube of 19 gauge, EPDM rubber gasket weather seal to be provided throughout the frame. The door frame shall be fixed to the wall using 65/100 mm long M.S. screws through the frame by using PVC fasteners. A minimum of 4 nos. of screws to be provided for each vertical members and minimum 2 nos. for horizontal members etc. complete as per manufactures specification and direction of Engineer in charge.

10	Aluminum Window section	
a	Window	Providing and fixing window having extruded Aluminum 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 61.85mm 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 5mm thick transparent bronze colour 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.
v	Ventilation	Providing and fixing standard extruded of aluminum section of size 63mm x 38.10mm x 1.2mm (Jindal Section:2434, @ Wt. 0.643 Kg/mt) with colour. Powder Coated Aluminum Frame for ventilation with 5 mm thick frosted glass as details etc. complete for Ventilation
11	Sill, Jams & soffits of Window / Ventilation	Providing & fixing of 18 to 20 mm thk. Green Marble of approved shade to Window/Ventilation sill, jams & soffit in single piece over 15mm (average) base of cement mortar 1:3 (1-Cement : 3-fine sand) laid and jointed with grey cement slurry including rubbing, polishing, curing and quarter round edge for both side etc. completed as directed.
12	Paint finishing	
a	Internal ceiling & wall area for DU	White washing with lime on wall & ceiling surface (two or more coats) to give an even shade including thoroughly booming the surface to remove all dirt, dust; mortar drops and other foreign matter.
b	Internal ceiling & wall area for common area like stair area, passages, Parking, Stair & Lift machine room for DU, Community Hall, Health Centre, Aanganwadi etc.	Distempering (Two or more coats) with oil bound washable distemper of approved brand and manufacture and of required shade on ceiling surfaces to give an even shade, over and including a priming coat with alkali resistance primer of approved brand after thoroughly brushing the surface and other foreign matter and also including preparing the surface even and sand papered smooth.

c	External Wall	Finishing wall with weather proof exterior emulsion paint of approved made on wall surface (two or more 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.
13	Sanitary / water supply / plumbing & drainage system	
a	Indian type W.C.	Providing and fixing water closet (Indian type W.C. Pan) size 580 x 400mm with 100mm size P or S trap for water closet squatting pan including jointing the trap with the pan and soil pipe in cement Mortar 1:1 (1-Cement : 1-Fine sand) and G.I. inlet connection for flush pipe with W.C. pan. Also, fixing pair of white vitreous China 250mm x 130mm x 30mm footrest in Cement Mortar 1:3 (1-Cement : 3-Coarse Sand) (A) Vitreous China. (I) Long pattern = White or colour.
b	Wash basin	Providing & fixing flat back Wash Basin of size 450x300 mm or other size as per drawing with single hole for pillar tap with C.I. or M.S. brackets painted white including cutting holes and making good the same including C.P. Brass waste, M.I. Fisher union 32mm dia., 15mm dia long body pillar tap capstan head, screw down high pressure with screws, and back nuts, C.P. Brass stop tap, and plastic connection P.V.C. Waste pipe, Rubber Plug etc.
c	Kitchen sink	Providing & fixing S.S. Kitchen sink Glossy AISI 304 Grade, 1mm thk. with overall size 485x410 mm & bowl size 410 x 365 x 165 mm with single hole for pillar tap including cutting holes and making good the same including C.P. Brass waste, M.I. Fisher union 32mm dia., 15mm dia pillar tap, capstan head, screw down high pressure with screws, and back nuts, C.P. Brass stop tap and plastic connection P.V.C. Waste pipe, Rubber Plug etc.
d	European type W.C.	Providing & fixing wash down Water closet (European type W.C. Pan) with integral 'P' or 'S' trap including jointing the trap with soil pipe in cement mortar 1:1 [1-Cement:1-Fine sand], plastic seat and cover for wash down water closet with C.P. Brass hinges and rubber buffers including Jet spray heavy duty with S.S. Braided hose 60 cm long and G.I. inlet. [A] Vitreous China pattern in colour.
e	Flushing Tank	Providing and fixing 12.5 Liters high level C.I. flushing

		cistern with A pair of C.I. or Mild steel brackets, complete with fittings such as syplionic arrangement, 15mm nominal size brass ball valve with polythene float, lever G.I. China (60 cm.) and pull union and couplings for connections with inlet, outlet and overflow pipes etc. including cutting holes in walls and making good the same.
f	Urinal	Providing and fixing Urinal or approved quality including connecting the Urinal with waste pipe, tap etc. complete. (A) White or colour earthenware flat back or corner type size 430mm x 260mm x 350mm.
g	Nahani Trap	Providing & fixing PVC SWR Nahani Trap IS 14735 for drain with jali of the 100 mm nominal diameter of self-cleaning design with C.I. Screwed down or hinged grating including the cost of cutting and making good the walls.
h	Shower Rose	100 mm dia. C.P. brass shower rose with 15 mm or 20 mm inlet
i	Bib Tap	15 mm dia. Brass chromium plated screws down type
j	Stop Tap	15mm dia. brass screw down concealed type
k	Check or Non-return Valve.	Full way Wheel Gun Metal type
l	Half turn flush cock	Chromium plated brass type
m	Internal water supply network for cold water (Rising main from U.G.T. to O.H.T. & internal supply)	Providing, laying and jointing in true line and level U.P.V.C. Pipe (SCH-40) including fitting as approved by Engineer-in-charge. Pipe shall be fixed on the wall with the help of clamp at every two meter c/c or shall be concealed as directed including necessary fittings etc. including testing of pipe and joints and fixing the same with adhesive solvent and including cost of all materials.
n	Internal water supply network for hot water	Providing and fixing concealed center point to wall, ceiling & floor CPVC (SDR 13.5) Pipe of approved make having National Sanitation Foundation (NSF) seal for hot water of 15 mm dia. nominal bore tube fitting and clamps including making good the wall, ceiling and floor etc. complete.
o	Internal drainage network (up to manhole at G.F. level)	Providing, supplying, lowering, laying and jointing in standard length ISI Mark rigid PVC pipes and specials of approved make including all taxes and charges, jointing material, fittings, labour etc. complete. Giving satisfactory hydraulic testing as per ISI code. Test pressure 6kg/sq.cm.
p	External water supply network	Ductile Iron Pipes with internal cement mortar lining and

	(Main network from source to U.G.T. and branch lines)	external Zinc coating with finishing layer of Bitumen; manufactured, tested and duly marked in strict accordance with and confirming to IS: 8329/2000 (as per latest amendment); suitable for push-on Jointing, along-with one number Rubber Gaskets for each length of pipe (EPDM Gasket as per IS: 5382/1985).Class- K7 Ductile Iron fittings like, bends, tees, reducers or any other specials as per IS-9523-2000 (as per latest amendment) use with D.I. Pipes manufactured as per IS:8329/1994 (With external bitumen & zink coating & internal cement mortar lining)Socket & Spigot Type and Flanged Ended
q	External drainage network (from pipe connecting house manhole and service manhole and onwards)	ISI marked(IS-651/1989) only standard length stoneware pipes of Class A including all taxes, insurance, transportation, freight charges, octroi, inspection charges, loading, unloading, conveyance to departmental stores, stacking etc. complete of various dia. with specials as per design & drawing
r	Gully trap	Brick Masonry Chamber with Gully trap & FRC medium duty round cover
s	Sewer Manhole	A & B type as per standard design of required depth and for required dia. of sewer pipe etc. as per drawing & design.
t	Chamber	Brick Masonry Chamber of various size as per drawing & design with FRC medium duty cover
u	Rain water pipe	ISI Mark rigid PVC pipes and specials of approved make including giving satisfactory hydraulic testing as per ISI code. Test pressure 6kg/sq.cm.
14	Overhead & Underground tanks	
a	Overhead tank (For firefighting)	Total 17 Nos. each having 20000 ltr. Capacity R.C.C. above each & every stair room of residential building as per detail design & drawing.
b	Overhead tank (For water supply network)	Total 136 Nos. each having 5000 ltr. Capacity (i.e. 5000 lits capacity Per 8 Nos. of Du) of Triple layer PVC tank of approved make as per detail design & drawing.
		For Community Hall - 12000 ltr. Capacity R.C.C. above stair room as per detail design & drawing.
c	Underground tank (For firefighting)	2 Nos. each has 1.5 lacs ltr. Capacity R.C.C. as per detail design & drawing.
d	Underground tank (For water supply network)	Total 17 Nos. each has 48000 ltr. Capacity R.C.C. for residential building as per detail design & drawing.
		For Community Hall - 12000 ltr. Capacity R.C.C. as per

		detail design & drawing.
15	Sunken slab	Providing 10mm thk. Cement plaster in single coat on sunken portion walls for interior plastering of even and smooth in Cement Mortar 1:4 (1-Cement : 4-Sand) incl. finishing with a floating coat of neat cement slurry. Providing horizontal & vertical Cement Vata (10 cm. x 10 cm. size) quarter round in cement mortar 1:1 including neat cement finishing watering etc. complete. Providing and filling cinder of Light weight material or broken AAC blocks for filling sunk portion etc. as directed. Providing and laying waterproofing treatment for Sunk including applying neat cement slurry 2.75 kg/sq.mt. of cement admix with waterproofing compound after cleaning the surface. (b) 150mm thick laying cement concrete using brick bats 25 to 100 mm size with 50% cement mortar 1:5 (1-cement : 5-coarse sand) admixed with waterproofing compound over 20 mm thick layer of C.M.1:5 to require slope including rounding of junction or walls and slabs (c) after two days of proper curing applying a second coat of cement slurry. (d) Finishing the surface with 20 mm thick cement mortar 1:4 and finally finishing the surface with trowel As directed with cement slurry. (e) After finishing the whole terrace shall be flooded with water for a period of two weeks.
16	Plinth protection	Carrying out plinth treatment to all structures by spraying chemical solution for termite control treatment including labour and material consistent with I.S.I specification as directed & instructed.
17	Grill to windows	DELETED
18	MS ladder for terrace to lift machine room & stair room to O. H. Tank	Providing and fixing in position 50 cm. wide M.S. Ladder fabricated from M.S. flats 10 mm x 75 mm with 20 mm dia. steel bar steps in double rows @ 30 cm c/c. They include stays of 10 mm x 50 mm flats fixed at 3 mt. c/c with welding anchoring and 3 coats of anticorrosive paint of approved make & shade.
19	Collapsible steel shutters	Providing and fixing in position collapsible steel shutters with vertical channels 20 x 10 x 2 mm braced with flat iron diagonals 20 x 5 mm size with top and bottom rails of T_rin 40x 40 x 6 mm with 38mm dia, steel pulleys complete with bolts, nuts, locking arrangements, stoppers handles including applying a priming coat of read lead paint and painting two or more coats with enamel paint, brushing, interior to give an even shade including cleaning the surface of all dirt, dust and other foreign matter etc. of approved make & shade.

20	Rolling shutters	Providing and fixing Rolling Shutters of approved make made of 80 mm wide M.S. laths inter-locked together through their entire length and jointed together at the ends by end locks mounted on specially designed pipe shaft with bracket plates, guide channels and arrangements for inside and outside locking with push-pull operation including the cost of hood cover and spring etc. complete. Applying priming coat after and including preparing the surface by thoroughly cleaning, oil, grease, dirt and other foreign matter and scoured with brushes fine steel wood, scrapers and sand paper with ready mixed priming paint brushing red lead and painting two or more coats with enamel paint of approved make & shade, brushing, interior to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.
21	Filling within foundation & plinths	Filling in foundation and plinth with Murrum or selected soil brought from outside in layers of 20 cm. thickness including watering ramming and consolidating etc. completed. Black cotton soil or any other soil received from excavated material which shall not proper to fill in opinion of the Engineer-in-charge shall be strictly restricted.
22	Boundary wall surrounding to Plot & Compound wall surrounding to Community Hall	
i.	RCC Works	
a	RCC in foundation, pile cap, columns, beams, etc.	Cast in situ single under reamed piles of specified diameter and length below pile cap. The detailed dimensions & mix of all RCC to be adopted shall be as per approved structural design and as per IS 456(Only steel props shall be used for shuttering). Use of fly ash shall not be accepted. Concrete shall be done by ready mix plant only.
ii.	Reinforcement	TMT Fe-500/550D of approved make only.
iii.	Masonry Works	
a	Foundation, up to plinth & superstructure	Conventional Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.cm. in cement mortar 1:6 (1-Cement : 6-coarse sand) curing etc. complete for following.
iv	External Plaster work	20mm thick sand faced cement plaster on walls upto height 10 meters above ground level consisting of 12 mm thick backing coat of C. M. 1:3 (1- Cement : 3-sand) and 8mm thick finishing coat of C.M. 1:1 (1- Cement: 1-Sand) etc. complete.

v	Paint finishing	Providing, applying & finishing wall with weather proof exterior emulsion paint on wall surface (two or more 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.
23	Internal R.C.C. Roads	MoRTH Specifications shall be followed for all items
i	Earthwork (As per MoRTH Specification Clause No. 301)	Excavation for road way in all strata for road work as per "L" section & detailed drawing and MoRTH Specifications Clause No. 301 with suitable mechanical means or manually as approved including cutting, sorting out the useful materials and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead etc. complete as directed. Carting & disposing the surplus excavated stuff received from roadway cutting etc. from site of work to outside at suitable location with suitable means incl. loading, unloading, transporting and disposal the surplus excavated stuff with all required lead & lift etc. complete as directed.
ii	Sub-grade & Soil stabilization	Loosening, leveling, compacting and stabilization of the excavated road way supporting sub-grade and preparing the ground by loosening of the ground up to a level of 150 mm below the sub-grade level and including spreading, mixing & pulverized coarse sand (Zone-I) at work site brought from approved quarry including all required leads & lifts and all incidental charges, taxes, royalty etc. complete as directed (with excavated stuff) in place @ of 6.00 M3 per 100 M2 area by using a motor grader or suitable means as approved for soil stabilization, watering, grading and compacted in layers to meet requirement of table 300-2 of MoRTH for sub-grade construction. as per site condition as directed by the Engineer incl. leveling the ground to the required line, grade & profile by suitable means, watering and compacting with vibratory power roller to achieve the desired compacted density etc. complete as directed.
iii	Sub-base Course (As per MoRTH Specification Clause No. 401)	Providing, spreading, mixing by mix in place, dressing & compacting Granual Sub-Base with Coarse Graded Material (Grading I) (Table: 400-2) having soaked CBR value not less than 30% brought from approved quarry located outside including all required leads & lifts, in a required compacted layers (each layers not exceeding 150 mm thickness) as per the drawings or as directed for construction of sub-base & side shoulder (As Per MoRTH Specifications Clause No.401) including spreading in uniform layer in such loose quantities that the thickness of each compacted layer should not be less than required compacted thickness of layers shown on the drawing on well prepared surface by using a motor grader, dressing, watering,

		mixing by mix in place method with rotavator at OMC, compacting with vibratory roller of minimum 80 to 100 KN static weight with plain drum or heavy pneumatic tyred roller to achieve the desired density at O.M.C. including filling the depression which occur during the process, all lead & lift, all taxes, royalty etc. complete as directed. Total thickness of GSB shall be 450 mm. (i.e. 3 layers each having 150 mm compacted thickness)
iv	Base Course (As Per MoRTH Specification Clause No.404)	Layer of 150.00 MM compacted thickness for Water Bound Macadam by mechanical means, Grading- I (Using screening crushable type such as moorum or gravel-Using Screening Type-A (13.2 mm Aggregate) (Providing, Laying, spreading & compacting stone aggregates of specific sizes in a following single compacted layers to construct the base of water bound macadam (As Per MoRTH Specification Clause No. 404) including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tonnes in stages to proper grade and camber, applying and brooming requisite type of screening/binding material to fill up the intestines of coarse aggregate, watering and compacting to the required density, all required lead and lift, all taxes, royalty etc. complete as directed).
v	Dry lean Cement Concrete Base Course (As per MoRTH Specification Clause No. 601)	Construction of 100.00 MM compacted thickness dry lean cement concrete Sub - base over a prepared sub - base/base of WBM with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing incl. maintenance of Diversion, all required lead and lift, all taxes, royalty etc. complete as directed.
vi.	Surface Course (As per MoRTH Specification Clause No. 602)	Construction of 200.00 MM thick (compacted) Continuously Reinforced Cement concrete Pavement in M - 35 Mix as per approved mix design over a prepared sub-base, with cement content as per approved mix design, course and fine aggregates conforming to IS:383, maximum size of course aggregates not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finishing to lines and grades in a continuous operation as per drawing, surface texturing as per IRC -15 & as approved including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane of

		impermeable plastic sheeting 125 micron thick as approved, sealant primer, joint sealant, deboning strip, dowel bar, tie rod, Super plasticizer admixture IS marked as per 9103-1999 @ 0.50 per cent by weight of cement as approved, finishing to lines and grades as per drawing & MoRTH Specifications including curing of concrete for 14-days, construction & maintenance of diversion, all required lead and lift, all taxes, royalty incl. cost of all materials & labours including cost of reinforcement (TMT bars) required for pavement, joints of dowel, tie bars, expansion joints etc. complete as directed.
vii	Service Pipes	Supplying & fixing RCC heavy duty non-pressure pipe of I.S. class NP3 with collars for SERVICE PIPE carrying heavy traffic as per I.S. 458 - 1991 specifications incl. setting & jointing the pipes in CM 1:2 including watering & laying (to level & slope) of I.S. class NP3 of 300 mm internal dia as directed & as per detail drawing.
viii	Service Chambers	Constructing Service Chambers having inside clear dimension of 0.60 x 0.60 x 0.90 M depth as per given detailed drawing including 100 mm thk. P.C.C. 1:4:8 mix (1-Cement:4 coarse sand, 8 M/c stone aggregate 20MM nominal size) - 330 MM thick brick masonry walls with heavy duty Precast R.C.C 100 MM thick Top slab of size 0.75 x 0.75 M in C.C. M - 200 (C.C. 1:1.5:3 - 1-Cement :1.5 coarse sand, 3 M/c stone aggregate 20MM nominal size) with handles, inside plastering 10 MM thick in Cement Mortar 1:4 (1 Cement - 4 Coarse sand) finished with a floating coat of neat Cement slurry and making bottom channels in 40 mm thk. Cement Concrete 1:2:4 mix (1-Cement : 2 coarse sand, 4 M/c stone aggregate 20 MM nominal size) finished smooth with a floating coat of neat cement incl. Providing and fixing 100 mm thk. R.C.C. copping on top of wall in C.C. M-200 incl. curing, testing, excavation etc. complete as directed.
ix	Kerb Stone (As per MoRTH Specification Clause No. 408)	Providing and fixing pre-cast concrete kerb stone of grey cement based concrete block 30 cm length, 30 cm height and 15 cm thick of M200 grade concrete as per approved design and including excavation for fixing in proper line and level, filling the joint with C:M 1:3 (1-cement : 3-fine sand etc. complete as directed & as per detail drawing.
24	Internal Paths / Paver block paving (other than RCC Road)	
i	Earthwork	---Do--- same as per item of RCC Road work

ii	Sub-grade & Soil stabilization	---Do--- same as per item of RCC Road work
iii	Sub-base Course	---Do--- same as per item of RCC Road work
iv	Surface course	Providing and fixing pre-cast Rubber Dye inter locking concrete block 80 mm thick with grade of concrete M350 pneumatic compressed by mechanically pressed and as per approved design including 75 mm sand layer for leveling and filling the joint with sand in proper line and level etc. complete.
25	Housing entry gate	Providing & Constructing of 2 Nos. R.C.C. Frame Structure Housing Entry Gate as per architectural & structural design of appx. Size - 6.0 mt. in height and 6.10 mt. in width inclusive of excavation of foundation, columns, masonry works, plastering, required & sufficient nos. of electric points with fixtures & fittings, finishing with weather proof exterior paint, Painting of Name Board of Housing scheme etc. completed as directed and as instructed by BMC officials.
26	Security Cabin - at Housing entry Gate	Providing & Constructing of 2 Nos. R.C.C. Frame / Load bearing wall structure Security Cabin adjoining to Housing Entry Gate as per architectural & structural design of appx. 4.00 sqm. Carpet Area and 2.44 mt. clear floor height inclusive of excavation of foundation, columns, masonry works, internal & external plastering, doors & windows, required & sufficient nos. of electric points with fixtures & fittings, finishing with interior & exterior paint, etc. completed in ready to use in condition and as directed and as instructed by BMC officials.
27	Openable / Sliding Compound Gate - at Housing entry Gate	Providing & fixing of 2 Nos. of openable / sliding Compound Gate of appx. size 6.10 mt. in length and 1.52 mt. in height made out of RHS/SHS M.S. Pipe inclusive on 1 wicket gate of 1.22 mt. wide in each gate, arrangements of openable fittings & fixture, finishing with oil paint, etc. completed in ready to use in condition and as directed and as instructed by BMC officials.
28	Cattle Trap	Providing & fixing of 2 Nos. of Cattle Trap of appx. Size - 6.10 mt. in length & 1.66 mt. in width of having 23 cm thk. RCC wall all around & 2 Nos. of RCC Beam of size 23 cm x 30 cm as per structure designs in ready mix conc. of M200 and providing and fixing 65 mm dia. G. I. Pipe of medium grade, 10 mm thk. M.S. plate, cleat etc. completed including of internal plastering, bottom IPS finishing, horizontal & vertical cement vata etc. in ready

		to use in condition and as directed and as instructed by BMC officials.
29	Openable / Sliding Compound Gate - at Community Hall entry Gate	Providing & fixing of 2 Nos. of openable / Sliding Compound Gate of appx. size 4.57 mt. in length and 1.52 mt. in height made out of RHS/SHS M.S. Pipe inclusive on 1 wicket gate of 1.22 mt. wide in each gate, arrangements of openable fittings & fixture, finishing with oil paint, etc. completed in ready to use in condition and as directed and as instructed by BMC officials.
30	Numbering	The numbering shall be printed on Aluminum plate of size 100x150 mm above the entrance door and block numbering on appropriate size.
31	Lift	Six person capacity lift shall be provided confirming to relevant BIS Code and façade shall be cladded with green marble slab at every floor. Lift shall be automatic with gear mechanism & with lift cabin at terrace. Landing door, cabin door, shall be powder coated. Lift shall be with Automatic Rescue Device.
32	Electrification	Concealed copper wiring. One fan point, two light points, and one plug point in each room. Also necessary point for Fridge, TV, Computer. In common passages of all floors, at terrace and in parking area light fixtures * fittings shall be provided by contractor as per detailed drawing & as directed.
33	Conduits for electrical and Telecommunication cables	To be laid as per National Building Code/ BIS standards and to be concealed mostly.
34	General	Efficient Rain Water harvesting network/ system to be laid /installed. Environment friendly material (green) to be used as far as possible. Good landscaped are to be provided. Necessary signage boards of required size as instructed. And society main board over all entry gate.
35	Fire safety	As per GDCR norms

SCHEDULE OF APPROVED MAKES / MANUFACTURER'S OF MATERIALS

The following guidelines are to be noted with regard to use of materials in the work:

- 1.0** As far as possible, materials bearing "Standard Mark (ISI)" from Bureau of Indian Standard (BIS) shall be used in the work.
- 2.0** Wherever, materials bearing Standard Mark (ISI) are used in the work, the following shall be ensured:
 - 2.1** The supplier has a valid license form BIS during the period the material is being used in the work.

- 2.2** The Contractor should maintain furnish necessary documents and proof of payments made for the procurement of materials bearing Standard Mark (ISI).
- 3.0** Due to non-availability of materials, bearing ISI Mark as detailed in Para-2 above the materials as per the list of approved makes of materials shall be used in the work and the Contractor shall be free to use any of makes given in the attached Annexure.
- 4.0** In case, it is established that standard material (bearing ISI Mark) as well as the materials indicated in the list (as mentioned in the above para) are not available in the market then approved equivalent materials may be used in the work subject to approval from the consultant and The Client / PMC.
- 5.0** Mandatory Tests shall be conducted at the specified frequency specified in the Contract. In case, frequency of testing is not stipulated in the contract then standard specification (R&B, CPWD, ISI etc.) may be considered for frequency at which materials are to be tested.
- 6.0** Before bulk purchase of quantities of materials, it is the responsibility of the Contractor to get the samples of materials approved from consultant and EIC.
- 7.0** All cost towards the testing shall be borne by the contractor.

LIST OF MAKES**FOR CERTAIN MATERIALS ACCORDING TO WHICH THE MATERIALS TO BE PROVIDED**

1.	Ordinary Portland Cement 53 Grade	Ambuja, Ultratech, Sanghi, ACC, Hathi, Siddhi, Binani, Hi-bond or as decided by authority. (PPC is not applicable)
2.	White Cement	J.K. White, Birla White, Nihon White or as decided by authority.
3.	Reinforcement Bar	TMT Bars Fe-500 / 500 D conforming to relevant IS Code Vizag / Tata / SAIL / Sanghi / Electrotherm / Friends / ASR Thermax / Gallent / Utkarsh / Aditya or as decided by authority.
4.	Structural Steel	SAIL, TISCO, Vizag, Asian or as decided by authority.
5.	Teak Wood	Bulsar / C.P Teak (2nd Class specified) or as decided by authority.
6.	Hard Wood	Redmerranti or as decided by authority.
7.	Kota Stone / Marble Stone	As per approved sample by authority
8.	Ceramic Tiles (White or Colored Anti-Skid)	Bell Ceramics, Somani, Kajaria, Nitco, Cera, Johnson, Asian, Euro, Restiles, Swastik or as decided by authority.
9.	Vitrified Tiles (White, Colored, Anti-Skid)	Bell Ceramics, Somani, Kajaria, Nitco, Cera, Johnson, Asian, Euro, Restiles, Granamite, Swastik, Varmora, Granamite or as decided by authority.
10.	Chequered Cement Tiles / Decorative Tiles	Nitco, NTC, Kajaria, Vyara or as decided by authority.
11.	White / Coloured Glazed Tiles	'H & R Johnson', 'Somani', 'Pilkington', Nitco, Cera, Bell, Kajaria, Asian, Euro, Swastik or as decided by authority.
12.	Interlocking paver blocks	Regency, Gurjari, Vyara, Floorex, PEEDEE, Jagruti - Surat or as decided by authority.
13.	Plywood Products Commercial Block Board Commercial Ply Teak Ply	Greenply, Novopan / Sitapur Plywood / Kitply / Century, Anchor, Duro, National wood craft, Alpro, Neolux Laminated, Formica, Decoboard, Sunmica Board/Bhutan, Green Ply, Western India plywood (WIP) or as decided by authority.

14.	Laminates / Decorative laminates	Decolam, Greenlam Merinolam Formica, National laminate, Neoluxe, Decolite, Delta, Hommica or as decided by authority.
15.	Pre laminated board	Bhutan, Novopan, Eco board, Bakelite Hylem Nepal board, Green board or as decided by authority.
16.	Impregnated Fibre Board	Shalitek by Shalimar Tar Productor as decided by authority.
17.	Teak Veneer	Anchor, Kitplyor as decided by authority.
18.	Flush Doors	'Sitapur plywood', 'Mysoboard', Sudarshan W & P Industries, Bajwa, Baroda, Goyal, Industrial Corp, Wood craft, Jain wood Industries, Alpro, Genda- Northen Doors, Greenply, Kitply, Bhutanor as decided by authority.
19.	Aluminum Section	Indal, Hindal, Jindal, Ajit, Banco, Gujarat Extrusion, Hindalco, Mon, Domalor as decided by authority.
20.	All Aluminum Hardware, Fittings	Everite, Garnish, Arches, Kausal, Nulite Alif, Shalimar (Bombay) Singla, Opel, Bolt, Arhishor as decided by authority.
21.	Stainless Steel Hardware Fittings	Kich, Dorset, Magnum or as decided by authority.
22.	Glass / Float / Sheet	Saint Gobain, Modi, Hindustan Pilkington, Hindustan, Tata, Asahi, Triveni, Shree Vallabhor as decided by authority.
23.	Locks	Godrej, Harrison, Plaza, Golden, Doorset, Europeor as decided by authority.
24.	Rolling Shutters	As approved by authority.
25.	Silicon Sealant	Chokesy Chemical, Structure Proofing Co., Pidilite, GE Silicon, Tuffseal, Cemceal or as decided by authority.
26.	Synthetic Enamel Paints / Oil bound washable distemper	Shalimar', ICI', 'Goodlass Nerolac', Berger, Johnson & Nicholson, Asian Paint, Dulux or as decided by authority.
27.	Water Proof Acrylic Paints / Weather proof Acrylic Paints	Asian, Nerolac, Berger, Dulux, Super Snowcem, Supercem or as decided by authority.
28.	Plastic Emulsion paint	Asian, Berger, Dulux or as decided by authority.
29.	Water Proofing Compound	'CICO', Fosroc, GE silicon Pidilite, MC- Bauchmie, Sika, Cemseal or as decided by authority.
30.	Weather Sealant / Silicon sealant / Poly isobutylene sealant	Fosroc, Pidilite, MC-Bauchmie, Wecker 789, Dow corning 789 or as decided by authority.

31.	Hardeners	'Ironite', 'Ferrok', 'Hardonate' or as decided by authority.
32.	Wire Mesh	145 GSM Glass Fibre Netas decided by authority.
33.	Anti-Termite Treatment	Thyodin by Hoechst, Lyntric by Bayer India, Durmet by Cynamid India, Nocil Pyramidor as decided by authority.
34.	M.S. Tubes	TATA, SAIL, Vizag, Jindal, Asian or as decided by authority.
35.	Lift	OTIS, Orbis, Schindler, Omega, Techno, Express, Kone, Trio (automatic) or as decided by authority.
36.	Polypropylene Fiber	Fiber mesh, Duracem, Fosroc or as decided by authority.
37.	Welding Rod	Advani, Philips, Sunarc, Eshab or as decided by authority.
38.	Construction Chemicals	Fosroc, MC-Bauchmie, Sika, Pidilite, Cemseal or as decided by authority.
39.	AAC Blocks	BILT, Siporex, Aerocon, Pravin – Morbi, Ecogreen, Accurate or as approved by authority.
40.	Tile adhesives	Laticrete, BAL, Fosroc, Mapei, MC-Bauchemie or as approved by authority.
41.	PVC Door & Frames	As per specification & as approved by authority.

**LIST OF MATERIALS OF APPROVED BRAND / MANUFACTURER
(ONLY FIRST QUALITY TO BE USED)**

WATER SUPPLY & SANITARY WORKS

1	Cast Iron Pipes and Fittings (LA Class)	TISCO / ISCO/ KESHO SPUN Co. - Calcutta E.L.C. or as decided by authority. (Standard approved manufacturers of any other brand of fittings having ISI marking.)
2	R.C.C. Pipes	Indian Hume Pipe Co., Alcock Cement Products, Patel Spun (Surat) or as decided by authority.
3	G.I. Pipes	Jindal, Prakash, Surya, Gujarat Steel Tube, Tata, Bharat Steel Tube, Bombay, Zenith, G.S.T. Unik or as decided by authority.
4	G.I. Fittings	"R "Mark, Unik or as decided by authority.
5	Gun Metal Valves	Leader Engineering Works, Jalandhar, Crown / prince - Surat Bombay Metal Co Annapurna Metal Work, Calcutta 'Sant' brand, Jalandhar, L&K, Bombay metal & Alloy Manu. Co. Bombay, Premier, Aatco, Atlas, BR, BS, NN or as decided by authority.
6	Brass fittings	Leader Engineering Works, Calcutta L&K Mathura, Crown / Prince -Surat Annapurna Metal Works, Calcutta, Perko, Kingstone Ark, Enclss Willians, Chilly, Aquva Plus, Nova, Kingstone, Driple, Ranutrol Hansa or as decided by authority.
7	C.P. Fittings	'ESSCO', NU-Lite Navbharat Shalimar Crown, Prince, Jaquar, Plumber or as decided by authority.
8	W.C. Pan / Wash basin / Urinals / flushing cistern	CERA, E.I.D. Parry, Hindware, Neycer, Johnson, Bell, Simpulo or as decided by authority.
9	Flushing Cistern – Cast iron	Overhead –'Nomos'ELCO'A-I'AUTOMATIC-EID Hindustan Sanitary ware, Calcutta, Nelson flush valve, SRIF(Agara), Parrys – Madras or as decided by authority.
10	E.W.C. Seats (Solid)	E.I.D. Parry, Hindware, CERA, Neycer, Hindustan or as decided by authority.
11	Stainless Steel Sink	Nirali, Diamond, Nilkanth, Cobra, Jayna or as decided by authority.
12	Plumbing / Sanitary Fixtures	Jaquar continental, CERA, Hindustan Sanitary ware / Parryco India. Hindware, Lauvet, Kohlar, Rak, Jaquar or as decided by authority.
13	C.I. Sluice valve, Check valves	Kirloskar, IVC, Burn, William Jacks, Indian Valve(IVC), Advance, Leader or as decided by authority.
14	HDPE pipes	Duraline, Pennwalt Agru, Nocil, Jain, Supremeor as decided

		by authority.
15	Fibre reinforced R.C.C. Manhole Cover	Pratibha, CIDCO or as decided by authority.
16	C.I. Manhole cover with frame	ISI as decided by authority.
17	P.V.C. Pipes & fittings	Astral, Supreme, Prince, Finolex, Laxmi, Prakash, Jainor as decided by authority.
18	P.V.C. / H.D.P.E Water Tanks (100% PVC Virgin)	Sintex, Purvee, Aqua or as decided by authority.
19	Ball Cock	GPA Brand by Govardhan Das Jullunder, L & K Brand by L. K. Industries Mathura, Sant Brand by Sant Press Metal Works or as decided by authority.
20	UPVC Pipes – SCH 40 (Solvent Welded)	Astral, Supreme, Prince, Jainor as decided by authority.
21	C.P.V.C. Pipes (SDR 13.5) & Fittings	Astral, Supreme, Prince or as decided by authority.
22	Water meter	Kapstan Bombay, Voltas Kent, Calcutta or as decided by authority.
23	Fire Hydrant Valve & Air valve, Scour Valve	ISI as decided by authority.
24	D.I. Pipes	M/s. Jai Balaji Industries, Burdwan (W.B.) M/s. Jindal Saw Ltd., Kutch M/s. Lanco Industries Ltd., AP

**LIST OF MATERIALS OF APPROVED BRAND / MANUFACTURER
(ONLY FIRST QUALITY TO BE USED)
ELECTRICAL WORKS**

1.	Cu / Gl. Strip and earthing material(All Brands should be ISI Brand)	Furse, Indiana, Bharti, Erico, Kingsmill
2.	a. Electrical Cabling Fire Rated PVC/ XLPE insulated multi-stranded copper wire 1.1 KV grade	Finolex, RPG, Ravin, RR Kable
	b. Electrical Cabling HT Cables 11kV	Unistar, CCI, FINOLEX
	c. Electrical Cabling LV Cables 1.1kV Fire Rated	Finolex, RPG, Ravin, RR Kable
	d. Electrical Cabling Fire Alarm Cabling standard (PH30) and enhanced fire resistance cabling	Tyco Pirelli Ravin Cables
3	Cable Glands & Bi-metallic crimping type lugs	Comet, Dowel , Commex, Gripwell
4	Cable Tays / Trunking	Profab, Indiana/Asian/ MEM, Cablofil
5	G.I. Pipes	Jindal (Hisar),Tata, Surya Roshni
6	G.I. Conduit pipe (ISI marked)	Vimco, B.E.C. , NIC , AKG
7	SFT PVC Conduit pipe (ISI marked)	Precision , B.E.C. , AKG,POLYPACK
8	Conduit accessories	Precision Plastic ,B.E.C , AKG, POLYPACK
9	Switch, socket with switch	Clipsal , Crabtree, Legrand, Wipro, CPL
10	Weather Proof/Industrial Socket outlets (poly carbonate body)	BCH, Scame, L&T, Clipsal, Legrand
11	TV co-axial cable	Finolex, Delton, Nicco
12	Telephone cables	Finolex, Delton, Nicco, RR cables
13	M.S. Steel (Angle. Channel, Strip,	Tata, Sail
14	Dry Type step down Transformer	ABB, Schneider, Voltamp, Universal
15	Measuring Instruments	Enercon, L&T, AEI, Schneider Electric, CONZERV, ABB
16	Panel Accessories	SCHNEIDER, Rishab, Siemens, BCH, Teknic
17	Protective relays	Siemens, L&T, ABB
18	Control Fuses with base	Siemens, GE, L&T, ABB, Schneider
19	CTs/ PTs	AEI, Kappa, Pragati, Gilbert & Maxwell
20	Selector switch	Salzer, Siemens, BCH, KACEE, L&T
21	Crimping lugs/ Thimbles	Dowell, Comet
22	Terminal strip	Connectwell, Elmex, Wago, Phoneix, Obo Bettermann
23	Contactors & Timers	Siemens, L&T, Schneider, Telemechanic, GE, ABB

24	Programmable timer	Siemens, L&T, Schneider, GE
25	Auxiliary relays	Siemens, L&T, ABB, Schneider, GE
26	ELCB, MCB, RCCB & DBs	Siemens, Schneider, LegrandL&T/Hager, ABB
27	Fire Rated PVC / XLPE/ Copper/ Aluminium Cable	Universal Cables, Ravin Cables RPG, Finolex, KEI, RP Cables
28	Copper control Cable	Finolex, Lapp, RPG
29	Luminaries	WIPRO, GE, Philips, Thorn, BAJAJ
30	Lighting Controls	Lutron, Siemens, Delmatic, Helvar Schneider electric, Wipro, ABB
31	Emergency Lighting	CEAG, Thomas & bett, Siemens WIPRO, BAJAJ
32	Lamps	Philips, Osram, Crompton, GE
33	Luminaire Ballasts	Tridonic, Philips, OSRAM, Lutron, Wipro
34	MCCB (electronic protection)	Siemens – SENTRON 3VL Schneider –COMPACT NSX Legrand – DPX, L&T-D SINE ABB – Isonmax, GE - Record Plus
35	Battery Charger	Amara Raja, Mastech
36	Battery (Maintenance Free)	Amara Raja, HBL Nife, Exide, HITACHI, BOSCH
37	Shunt Capacitors with Harmonic Filters	L&T, Siemens- EPCOS, ABB, DUCATI
38	ACBs (electronic protection)	Seimens - SENTRON 3WL, ABB - Emax L&T - C-Power, GE - EntelliGuard G Schneider-Merlin Gerin - Masterpact NW
39	Bus ducts / Bus riser	L&T, Siemens, Schneider Electric Godrej, EAE Elektrik (IIGM)
40	Cubicle LV Panels Main Distribution Boards (MDB), Sub-Main Distribution Boards (SMDB), Distribution Boards (DB) Residential Consumer Units (RCU)	Schieder approved Assemblers Arrow Engineer, Zenith Engineering Legrand, Indoasian, L & T, Sterling & Wilson
41	Switch Fuse Units (SFU)	ABB, L&T, Siemens, Schneider
42	Surge Arrestors	ABB, FURSE, ERICO, Indelec, EMERSON
43	Generators & Alternator	CUMMINS & Leroy Somer/STAMFORD MTU & Leroy Somer/STAMFORD Caterpillar & Leroy Somer/STAMFORD Perkins & Leroy Somer/STAMFORD
44	Automatic Transfer Switches	EMERSON, ABB, GE, Schneider, ASCO
45	Lightning Protection Equipment	Furse, ERICO, A N Wallis & Co., Ltd.
46	HT Termination Kits	RAYCHEM (Tyco Electronics), 3M India
47	HT isolators	ABB, Schneider, Siemens, L&T
48	HT Protection Relay- Numeric Type	ABB, Schneider, Siemens, L&T
49	LV Protection Relay- Numeric Type	ABB, Schneider, Siemens, L&T
50	Manual Change Over Switch	SCHNIEDER, ASCO, Siemens, L&T

51	INDICATING LAMP- LED TYPE	ESBEE, Schneider Electric, Teknic, GE, Vaishno
52	Energy Meters (Electronic & Dual)	L&T, ABB, Conserve, Secure
53	LV Jointing Kit/Termination	RAYCHEM (Tyco Electronics), 3M India REPL
54	Fire Stop Material	HILTI, 3M India, PROMAT, KBS Fire Stop
55	Fire Spray On Cable – Endothermic	KBS Passive Fire, HILTI, SGS
56	Variable Frequency Drive	ABB, Danfoss, Siemens, Schneider Electric, GE, Allen Bradley
57	Lighting Poles (Hex, Angular, Ms Tubular, Decorative)	WIPRO, Thorn, Bajaj Electricals, Keselec, Transrail Bombay Tubes & Poles

Notes:

- a) The contractor shall produce samples of the materials for approval of the EIC. The materials of the makes out of the above as approved by the EIC shall be used on the work.
- b) In respect of materials for which approved makes are not specified above, these will be of makes to be decided by the EIC.