GOVERNMENT OF TAMILNADU

LUMP SUM CONTRACT – SINGLE COVER SYSTEM

NAME OF WORK.	:	**Construction of Integrated Agricultural Extension Centre(IAEC) under NADP 2021-2022 at Ariyalur in Ariyalur district.**
E.M.D AMOUNT.	:	**Rs. 2,12,000/-**
DATE OF TENDER.	:	**05.04.2022 UP TO 3.00 PM.**

TAMIL NADU STATE AGRICULTURE MARKETING BOARD

CHENNAI.

SCHEDULE "A"

SCHEDULE OF RATES AND APPROXIMATE QUANTITIES

(a)). The quantities given here are those upon which the lump sum tender cost of the work is based but they re subject to alternations omissions, deductions or addition as provided for in the conditions of this contractor and do not necessarily show the actual quantities of work to be done. The units rates noted below are those Governing payment for extras or deductions or omissions according to the condition of the contract, as set forth in the preliminary specification of the TAMILNADU BUILDING PRACTICE and other conditions or specifications of the contract.

(b) It is to be expressly understood that the measured work is to be taken not (not withstanding) any custom or practice the contrary according to the actual quantities when in place and finished according to the drawings or as may be ordered from time to time by Executive Engineer and the cost calculated by measurement or weight at the respective prices, without any additional change for any necessary or contingent works connected therewith. The rates quoted are for works in site and complete in every respect.

Sl. No.	**Total quantity**	**Description of work**	**T.N.B.P.C. No.**	**RATE (in figures & words)**	**UNIT**	**Amount in figures.**

Vide separate sheet enclosed

Note : The second sub division of this column (i.e. column 3) is for entering description in words such as number, cubic metre, Running metre, Square metre, Kg, etc.,

Issued to M/s. / Thiru.

…… Pages and …… with plans

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GOVERNMENT OF TAMILNADU

Name of work	:	**Construction of Integrated Agricultural Extension Centre(IAEC) under NADP 2021-2022 at Ariyalur in Ariyalur district**
Last date of receipt of tender	:	**05.04.2022 TO 3.00 PM**
Date of opening	:	**05.04.2022 TO 3.30 PM in Executive Engineers chamber**
E.M.D. to be remitted	:	**Rs. 2,12,000/-**
Mode of E.M.D. to be remitted	:	1)EMD should be drawn in the shape of D.D.,. The D.D., should be drawn in any Nationalized (or) Schedule Banks in favour of **E.E., TNSAMB, Chennai-32**, payable at Madurai. **No other mode of payment will be accepted. MSME and NSIC applicants also should pay EMD for Evaluation purpose and will be adjusted in the Security deposit during agreement on successful** **2)MSME and NSIC registered contractors should enclose the Government orders to show the details of works eligible under their registration**

Tender not submitted in wax sealed cover will be summarily rejected

T.No.34/3

NAME OF WORK: **Construction of Integrated Agricultural Extension Centre(IAEC) under NADP 2021-2022 at Ariyalur in Ariyalur district .**

SCHEDULE

Sl. No.	Total Qty.,	Description.	TNBPC No.	Rate in Rupees. (In figures and words)	Unit.	Amount Rs.
1	1092.00 M^3 (One thousand and ninety two Cubic Metres)	Earthwork excavation for foundation (for narrow excavation) to full depth as per designed in all soils and sub soils except soft disintegrated rock not requiring blasting and hard rock requiring blasting and bailing water wherever necessary. Refilling the sides of foundation with excavated earth other than sand in layers of well rammed and compacted and depositing the surplus earth in places shown by the departmental officers with an initial lead of 10m and initial lift of 2m and clearing and leveling the site etc. complete complying with standard specification.	23 & 24		1M^3 (One Cubic Metre)	
2	152.00 M^3 (One hundred and fifty two Cubic Metres)	Supplying and filling in foundation and basement with Filling M sand in layers of not more than 15cm thick well watered, rammed and consolidated etc., complete as per standard specification.	Spl.		1M^3 (One Cubic Metre)	
3	315.00 M^3 (Three hundred and fifteen Cubic Metres)	Supplying and filling of conveyed Red Gravel by lorry in Basement filling including stacking for Pre-measurement conveyance loading and unloading charges and all other incidental charges including filling, layering, watering and consolidation etc., complete as directed by the dept. officers and complying with standard specification	Spl.		1M^3 (One Cubic Metre)	

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4	28.00 M^3 (Twenty eight Cubic Metres)	Refilling with excavated earth other than sand with an initial head load of 100 mts. and depositing the earth as shown by the departmental officers in layers of not more than 15 cm thick well rammed, watered and consolidated etc. complete complying with standard specification	Spl.		1M^3 (One Cubic Metre)	
5	151.50 M^3 (One hundred fifty one point five zero Cubic Metres)	Cement Concrete 1:5:10 (One cement, Five sand and Ten hard broken stone) using 40 mm gauge hard broken jelly for flooring including laying, consolidating, finishing, rendering the top surface rough to receive the floor, curing, etc. complete complying with standard specification. (The rate is inclusive of necessary planking for panelling wherever necessary and as directed by the departmental officers	28		1M^3 (One Cubic Metre)	
6	7.00 M^3 (Seven Cubic Metres)	Plain Cement Concrete 1:2:4 (one cement, two M sand and four hard broken stone jelly) using 20mm jelly for wearing coat including laying, compacting, finishing and curing, etc., complete as per standard specificatins and as directed by the departmental officers.	28		1M^3 (One Cubic Metre)	
7	13.00 M^3 (Thirteen Cubic Metres)	Brick work in following Cement Mortar 1:3 using Fly Ash Bricks of 230 x 110 x 70mm size conforming to IS: 12894-1989 Class designation not less 50 kg./ sq.cm. average compressive strength in cement mortar 1:3 for load bearing structures for foundation and basement and for superstructure including curing, etc., complete complying with standard specifiction.			1M^3 (One Cubic Metre)	

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8		Brick work in Cement Mortar 1:5 using best quality of Fly Ash Bricks of 230 x 110 x 70mm size conforming to IS: 12894-1989 Class designation not less 50 kg./ sq.cm. average compressive strength in for foundation and basement including curing, etc., complete complying with standard specification.	31 31C			
a)	100.50 M^3 (One hundred point five zero Cubic Metres)	For foundation and basement			1M^3 (One Cubic Metre)	
b)	60.00 M^3 (Sixty Cubic Metres)	For S.S in G.F			1M^3 (One Cubic Metre)	
c)	8.00 M^3 (Eight Cubic Metres)	For S.S in F.F			1M^3 (One Cubic Metre)	
9		Brick work in Cement Mortar 1:6 using best quality ofFly Ash Bricks of 230 x 110 x 70mm size conforming to IS: 12894-1989 Class designation not less 50 kg./ sq.cm. average compressive strength in for foundation and basement including curing, etc., complete complying with standard specification.	31 31C			
a)	43.00 M^3 (Forty three Cubic Metres)	For S.S in G.F			1M^3 (One Cubic Metre)	

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b)	37.00 M^3 (Thirty seven Cubic Metres)	For S.S in F.F			1M^3 (One Cubic Metre)	
c)	32.00 M^3 (Thirty two Cubic Metres)	For S.S in S.F			1M^3 (One Cubic Metre)	
10		Brick partition walls of 11.80cm thickness using best quality of Fly Ash Bricks of 230 x 110 x 70mm size conforming to IS: 12894-1989 Class designation not less 50 kg./ sq.cm. average compressive strength in Cement Mortar 1:3 (One Cement and Three Sand) using hoop iron reinforcement if found necessary including curing etc. complete and as directed by the departmental officers. (Hoop iron reinforcement will be measured and paid for separately)	Spl.			
a)	151.00 M^3 (One hundred and fifty one Cubic Metres)	In Ground floor			1M^3 (One Cubic Metre)	
b)	153.00 M^3 (One hundred and fifty three Cubic Metres)	In First floor			1M^3 (One Cubic Metre)	
c)	25.00 M^3 (Twenty five Cubic Metres)	In Second floor			1M^3 (One Cubic Metre)	

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11	450.00 M^2 (Four hundred and fifty Square Metres)	Supplying and erecting steel centering including necessary supports for plane surfaces for Reinforced Cement Concrete works such as column footings, column pedestals, plinth beams, grade beams, staircase steps, etc. which require only nominal strutting using mild steel sheets of size 90cm x 60cm and 10 BG stiffened with welded mild steel angles of size 25mm x 25mm x 3 mm for boarding, laid over silver oak joists of size 10cm x 6.5cm spaced at about 75cm centre to centre or at suitable intervals etc. complete in all floors complying with standard specifcation. (Payment for centering shall be given after the concrete is laid)	30S 86 86A		1M^2 (One Square Metre)	
12		Supplying and erecting centering for sides and soffits including necessary supports and strutting upto 3.30 M height for plane surfaces as detailed below in all floors with all cross bracings using Mild Steel sheets of size 90 x 60 cm and 10 BG stiffened with welded Mild Steel angle of size 25mm x 25mm x 3 mm for boarding laid over silver oak joists of size 10cm x 6.50 cm spaced at abote 90 cm centre to centre and supported by casurina props of 10cm to 13 cm dia spaced at not more than 75 cm centre to centre etc. complete complying with the standard specificaiton. (Payment for centering shall be given after the concrete is laid)	30S 86 86A			
a)	9.00 M^2 (Nine Square Metres)	For plane surfaces such as RCC floor slab, roof slab, beams, lintels, bed blocks, landing slab, waist slab, portico slabs and beams, etc.			1M^2 (One Square Metre)	

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b)	1280.00 M^2 (One thousand one hundred and eighty four Square Metres)	For plane surfaces such as vertical slab, side slabs of boxing, vertical drops, facia, vertical wall, etc.			1M^2 (One Square Metre)	
c)	605.00 M^2 (Five hundred and seventy six Square Metres)	For plane surfaces such as vertical slab, side slabs of boxing, vertical drops, facia, vertical wall, etc.			1M^2 (One Square Metre)	
13		Cement Concrete 1:1-1/2:3 (One Cement, One and a half sand and Three hard broken stone jelly) using 20 mm gauge hard broken granite stone jelly for all RCC items of works excluding cost of reinforcement grill and fabricating charges centering and shuttering but including laying, vibrating with mechanical vibrators, finishing, curing, etc. and providing fixtures like fan clamps in the RCC floor / roof slabs wherever necessary and bearing surfaces of walls, beams etc. shall be finished smooth with Cement Mortar 1:3 (One Cement and Three Sand) and kraft paper laid over it without claiming extra, etc., complete complying with standard specification and as directed by the departmental officers	28			
a)	191.50 M^3 (One hundred ninety one point five zero Cubic Metres)	In foundation and basement			1M^3 (One Cubic Metre)	

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b)	109.00 M^3 (One hundred and nine Cubic Metres)	For S.S in G.F			1M^3 (One Cubic Metre)	
c)	58.00 M^3 (Fifty eight Cubic Metres)	For S.S in F.F			1M^3 (One Cubic Metre)	
d	31.00 M^3 (Eight point five zero Cubic Metres)	For S.S in S.F			1M^3 (One Cubic Metre)	
14	384.00 Qtl (Three hundred and Eighty four Qiuntols)	Supplying, fabricating and placing in position Mild Steel / Ribbed Tor Steel grills for all RCC works as per design given including cost of steel and G.I. binding wire in all floors etc. complete complying with standard specification. (Contractor has to make his own arrangements for the supply of steel and binding wire)	86B 86C		1Qtl (One Quintol)	

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Executive Engineer,
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15	170.00 M^2 (One hundred and seventy Square Metres)	Vacum dewatering on freshly laid and thoroughly vibrated concrete surface to produce a homogeneous and smooth concrete surface .Suction matshall be spread over the levelled fresh concrete surface and shall be connected by the suction hose to the vaccum pump for dewatering of surplus water in the concrete . After dewatering is complete , the concrete surface is trawled with minimum two passes to achieve a wear resistance concrete surface	Spl.		1M^2 (One Square Metre)	
16		Manufacturing, supplying and fixing Precast Reinforced Cement Concrete slabs of following thickness in RCC 1:2:4 (one cement, two sand and four aggregates), using following HBGS jelly excluding cost of reinforcement steel in position but including cost of moulding charges, casting of slab, finishing, curing and fixing in position in all floors etc., complete complying with standard specification and as directed.				
a)	22.00 M^2 (Twenty two Square Metres)	25mm thick slab(using 10-12mm HBGS Jelly)	Spl.		1M^2 (One Square Metre)	
b)	7.00 M^2 (Seven Square Metres)	50mm thick slab(using 20mm HBGS Jelly)	Spl.		1M^2 (One Square Metre)	
c)	5.00 M^2 (Four point five zero Square Metres)	75mm thick precast slab	Spl.		1M^2 (One Square Metre)	

Contractor.

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Executive Engineer,
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17	46.50 M^3 (Forty six point five zero Cubic Metre)	Weathering course in brick jelly lime concrete using broken brick jelly of size 20mm uniform gauge in pure slaked lime (no sand to be used) to the proportion of brick jelly to lime being 32:12.5 by volume and laid over the RCC roof slab in a single layer of required slope and finished by beating the concrete with wooden beaters of approved pattern, keeping the surface constantly wet by sprinkling lime jaggery water, etc., complete as per standard specification and as directed by the deparmental officers.	31 31C		M^3 (One Cubic Metre)	
18	471.00 M^2 (Four hundred and sixty six Square Metre)	Finishing the top of roof with one course of machine pressed tiles of size 230mm x 230mm x 20mm of approved quality set in Cement Mortar 1:3 (One Cement and Three Sand) 12mm thick mixed with water proofing compound conforming to ISS at 2% by weight of cement used and the joints pointed neatly to full depth of tiles with the same cement mortar mixed with red oxide and water proofing compound including curing etc., complete complying with standard specification and as directed by the departmental officers	31 31C		M^2 (One Square Metre)	
19	507.50 M^2 (Four hundred twelve point five zero Square Metre)	Flooring with Vitrified tiles size 600x600x8mm laid over 20 mm thick cement mortar 1:3 (One Cement and Three Sand) base mortar over the existing slab / floor including cutting the tiles to the required size with special cutter wherever necessary, laying in position and pointing with white cement mixed with colouring pigment at the rate of 0.3 Kg. / sq.m. etc., complete complying with standard specification.	46H 28		M^2 (One Square Metre)	

Contractor.

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20	51.00 M^2 (Forty five Square Metre)	Flooring with following ceramic tiles of size 305 x 305 x 6 mm laid over 20 mm thick cement mortar 1:3 (One Cement and Three Sand) base mortar over the existing slab / floor including cutting the tiles to the required size with special cutter wherever necessary, laying in position and pointing with white cement mixed with colouring pigment at the rate of 0.3 Kg. / sq.m. etc., complete complying with standard specification. (The make and brand of the tiles should be got approved by Executive Engineer before use on works)	46H 28		M^2 (One Square Metre)	
21	275.00 M^2 (Two hundred and fifty Square Metre)	Dadooing walls with following best approved quality, white / colour glazed tiles of following sizes set in Cement Mortar 1:2 (One Cement and Two sand) 10mm thick and pointing the joints with white cement mixed with colouring pigments at the rate of 0.40 Kg. / sq.m. neatly in all floors, curing, etc., complying with standard specification and as directed by the departmental officers.	38A		M^2 (One Square Metre)	
22	100.00 M^2 (One hundred Square Metre)	Paving the floor with pre-polished concrete anti-skid tiles (Required shape and design) of 20mm thick of approved quality and colour laid in Cement Mortar 1:3 (One Cement and Three sand) 20mm thick and pointed with white cement mixed with colouring pigment at the rate of 0.40 Kg. / sq.m., curing, etc., complete complying with standard specification and as directed by the departmental officers. (The make and brand of the tiles should be got approved by Executive Engineer before use on works)	38A		M^2 (One Square Metre)	

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23	150.00 Rm (One hundred and thirty Running Metres)	Supplying and fixing in position best approved of BIS quality PVC rain water down fall pipes of 110mm dia., having a pressure of 4 kg. / sq.cm including cost of necessary PVC shoe, PVC bend, cast iron gratings of required diameter and special clamps, brass screws, nails, etc., and fixing of cast iron gratings at junction of parapet and the RCC roof slab including finishing neatly etc., complete. The rate shall be inclusive of cast of removable cast iron grating. The PVC pipe shall be fixed in wall with special type of "U" clamp at the centre of the pipe line in addition to those for more than 3.0 metre pipe length, etc., complete complying with standard specification.	107		1RM (One Running Metre)	
24	1990.00 Kg (One thousand seven hundred and forty Kilo gram)	Supplying and fixing of M.S.grill of approved design for grill gate, grill work to doors and windows openings etc., using necessary mild steel etc., complete complying with standard specification.	Spl.		1Kg (One Kilogram)	
25	3794.00 M^2 (Three thousand three hundred and thirty three Square Metres)	Plastering with Cement Mortar 1:5 (One cement and Five sand), 12mm thick in all floors including curing etc. complete complying with standard specification and as directed by the departmental officers.	56 57		1M^2 (One Square Metre)	

Contractor.

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26	1029.00 M^2 (Nine hundred seventy five Square Metres)	Special ceiling plastering and finishing the exposed surface of all RCC items of work such as slabs, beams, sunshades, facia, canopy slab, staircase waist slab, landing slab etc., with Cement Mortar 1:3 (One Cement and Three Sand) 10mm thick including hacking the surfaces, providing cement mortar nosing, beading for sunshades, staircases, steps, landing slabs and curing, etc., in all floors complying with standard specification and as directed by the departmental officers	56 57		1M^2 (One Square Metre)	
27	4290.00 M^2 (Three thousand seven hundred seventy five Square Metre)	White washing two coats with freshly burnt white shell lime in all floors including cost of lime, blue powder fevicol type gum, brushes, scaffolding charges, etc., complete complying with standard specification and as directed.	36 63		M^2 (One Square Metre)	
28	4110.00 M^2 (Three thousand five hundred ninety five Square Metre)	Painting two coats of newly plastered wall surface with ready mixed plastic emulsion paint of first class quality and of approved colour over a priming coat including thorough scrapping, clean removal of dirt, and including necessary plaster of paris putty, wherever required etc., complete complying with standard specification.	72		M^2 (One Square Metre)	
29	32.35 M^2 (Twenty four Square Metre)	Painting new wood work with two finishing coats of synthetic enamel ready mixed paint of approved quality and colour over one coat priming coat in all floors including the cost of primer etc., complete complying with standard specification. (The make, quality and colour of paint should be got approved by the Executive Engineer before use on works.)	72		M^2 (One Square Metre)	

Contractor.

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30	151.00 M^2 (One hundred and thirty sevenSquare Metre)	Painting new iron works such as steel doors, windows, ventilators, window bars, balustrades etc., with two coats of best approved first quality and colour of synthetic enamel paint over one coat of red oxide priming coat in all floors including cost of priming coat etc., complete complying with standard specification. (The make, quality and colour of paint should be got approved by the Executive Engineer before use on works.)	72		M^2 (One Square Metre)	
31	28.50 M^2 (Twenty eight point five zero Square Metre)	Supplying and fixing in position of Aluminium anodized with power coating of any colours single leaf door with partly glazed partly PLB with outer frame 62 x 38 x 2 mm extruded box section at vertical and horizontal members and bottom section is 100x 44.45x 2.5 mm @ 1.974 Kg/m using alu box section.The bottom panel should be covered with 12 mm thick PLB exterior grade and the top panel should be fixed at 5.5 mm thick clear glass with necessary glassing clips, rubber beading etc. including necessary dismantling making holes in RCC columns, beams, masonry wherever necessary with power drill to the extent required and made good to the original conditions after fixing as directed by the departmental officers. The aluminium surface is to be anodized with matt finish under electrically controlled condition in accordance with ISI 1868/1962 specifications for an average anodic film thickness of not less 'than 15 microns. All materiaLSshould be got approved by the Executive Engineer before fixing in position.	Spl.		M^2 (One Square Metre)	

Contractor.

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Executive Engineer,
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32	8.10 M^2 (Eight point one zero Square Metre)	Manufacturing, supplying and fixing of Steel doors with following specification. MS angle of size 40x40x6mm at 3.5 kg/m used for outer frame and MS Angle of size 35x35x5mm at 2.6 Kg/m for the shutter frame. Stiffeners with 32x6mm at 1.5 Kg/m MS Flat is provided as the lock rail of the door and welded intact on both ends to the shutter frame. 18 GCR Sheets of best quality is laid as panel in the shutter frames. over the 32x6mm at 1.50kg/m MS Flat on the rear side of the door, sandwitching the CR Sheet for rigidity. Additional stiffeners with 18x5mm at 0.7 Kg/m MS flats are provided diagonally on the rear side of the shutter. 2 Nos. of hinges in case of single leaf and 4 Nos. of hinges in case of double leaf shutters is provided. 6 Nos. of hold fasts 200mm length spliced at the ends are welded to the outer frame of the door. Tower bolt 1 No. one at the top is provided. One aldrop is provided in case of double leaf door at lock rail section in the door. In single leaf doors, one more aldrop is provided in the inner side of the lock rail section of the door, one rotating locking arrangements for the inner side of the door and additional provision for locking arrangements for lock is provided on the rear side of the door at an appropriate place in case of a double leaf door. (Single leaf)	Spl.		M^2 (One Square Metre)	

Contractor.

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Executive Engineer,
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33	32.50 M^2 (Twenty nine Square Metres)	Solid PVC door shutters using 19 guage 19mm M.S. square tubes for styles and outer frames, 15mm M.S. tubes for top, lock and bottom rails. The steel tubes shall be covered with 5mm thick solid PVC sheets. Shutter using 5mm thick solid PVC sheets for paneling shall rigidly fixed in position including necessary furniture and fittings. The over all size of styles shall be 50mm x 30mm.The over all size of top rail, lock rail and bottom rail shall be 75mm x 30mm. The over all size of frames shall be 50mm x 45mm, with suitable rabate for housing the shutter solid panel PVC door with frame (SOR item No.125. a Pg,No.43.00)	Spl.		1M^2 (One Square Metre)	

34		Supplying and fixing of rolling shutters with ISI mark shall be of pull and push type made out of 18/Gauge x3'' lathe sections which consists of five main parts such as curtain, lock plate, guide channels rollers and hood cover. These five main parts are made out of special components detailed below; Curtain; Shall be of 18/Gx3' lath sections cut to required size and filled with heavy cast iron/ M.S. Clips for 8'0"[2.45m] high rolling shutter lathe sections provided shall be not less than 37 numbers. Lock Plate; Shall be 10gaue M.S.Sheet reinforced with 40mmx 6mm M.S angles at the bottom and fitted with heavy latches of 12mm thick locking arrangements on either sides. There should be one handle on either side Guide channel; Pressed guide channels shall be of 10 gauge M.S.Sheet and attached to the side brackets with 20mm square bar. Side brackets shall be of 10 Gauge angle M.S.Plate and cost iron 'U' clamps shall be reveted to the side brackets Roller; Shall be of heavy cast iron pullies fitted with heavy duty C' Class 40mm steel pipes and high tensile high carbon coil springs-2 springs shall be supplied. Supplying and fixing of Hood Cover; Shall be of 0.9mm CRCA sheet reinforced with 25mm x 25mm x 3mm M.S. angle or gate channel. The rolling shutter in addition to the above should have pulling hook and shall be coated with heavy coat of zinc chromite primer. The above specifications for various components of rolling shutter shall be invariably followed and verified with the rolling shutters supplied by the firms at site. If the rolling shutters supplied do not confirm to the above specifications, the concerned firms should be asked to replace the shutter or supply the missing components				

Contractor.

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a	27.00 m^2 (Twenty seven Square Metre)	manually operated type (from 8 m2 to 12 m2 area)	Spl.		1M^2 (One Square Metre)	
35	58.00 M^2 (Forty nine Square Metres)	UPVC Window Specification : Supplying and fixing UPVC (Unplasticized Polyvinyl Chloride) Windows of casement type (Open) from the profile the size of Outer frame 60mmx58mm and shutter profile are reinforcement with GI/1mm 125GSM and 100% corrosion free, the profiles are multi chambered sections with wall thick of 2mm. The EPDM rubber (black colour) covered with over all the edges of frame and shutter the shutter will be provided with Espag multi power point locks and also it Operates as handle. The corners and joints should be welded and cleaned. Radiations free pin headed plain or brown colour glass 4mm thick should be provided to the shutter and it should not allow leakage of water even at most ranging storms and should have key lokable action security protetive hinges strong locking systems and as per size for arresting noise and energy loss. The connecting mechanism between sash and outer frame that enables opening of the window. The window should be fixed to the wall with 100% packing with screws and silicon packing all round the frame.The window should be got approved from the Executive Engineer before use on work	Spl.		1M^2 (One Square Metre)	

Contractor.

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Executive Engineer,
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36	7.00 M^2 (Five point five zero Square Metres)	Supplying and fixing UPVC (Un-Plasticized Polyvinyl Chloride) Louvered Ventilators of from the profile the size of outer frame 60mm x 58mm and shutter profile size of 60 x 78mm both profiles are reinforced with GI/1mm 125GSM and 100% corrosion free, the profile are multi chambered sections with wall thick of 2mm. The EPDM rubber (black colour) covered with all over the edges of frame and shutter.The corners and joints should be welded and cleaned. Radiations pin headed glass 4mm thick should be provided in the louvers. The window should be fixed to the wall with 100% packing with screws and silicon packing all round the frames. The ventilator should be got approved from the Executive Engineer before use on work	Spl.		1M^2 (One Square Metre)	
37	17.00 M^3 (Seventeen Cubic Metres)	Manufacturing, supplying and fixing glazed "N" type ventilators of required size, made out of 25x25x6mm angles for horizontal and vertical members alround, 25x6mm flat - 4 Nos as stiffeners, the gap fixed with 10 gauge weld mesh of size 1" x 1" , 4mm thick pin head glass fixed with glass putty, painting one coat of zinc chromite primer, transporation to site etc., complete and as directed by the departmental officers.	Spl.		1M^3 (One Cubic Metre)	
38	30.00 M^2 (Thirty Square Metres)	Supplying and fixing in position S.S.Handrails using 40mm pipes of 2mm thickness spaced at 900mm centre to centre and the top connected with 40mm pipe hand rails by means of SS pipes of 20 MM size two nos provided at the bottom of hand rail; the bottom shall be fixed on to the top of step concrete. etc., complete complying with standard specification and as directed by the departmental officers.	Spl.		1M^2 (One Square Metre)	

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Contractor.

Executive Engineer,

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39	14.70 M^2 (Ten point five zero Square Metres)	Suplying and fixing of teak wood scantlings door frame of size 6" x 4" and Double door solid teak wood shutter frame of size 5" x 1 1/2 " and plank 1 1/4" thickness and over laying with SR resin or fevicol resin p inclusing the labour wrought and put up and door shutter in position and incuding labour charges for fixing furniture fittings and cost of fittings and polishing etc. complying with standard drawings and standard specification. - For Size 2.00 x 2.10 m	Spl.		1M^2 (One Square Metre)	
40	444.00 M^2 (Four hundred and forty four Square Metres)	Providing Pre construction of Anti termite Treatment for the Construction of building including all chemicals as per standard specifications. Labour charges for preparing the areas for treatment, spraying chemicals and other incident charges etc.,complete. The rate shall be inclusive of giving anti termite treatment to the building for the following four stages including breaking the termite moulds, making holes with crow bars at an interval of 30 cms to a depth of 50 cms in the pheriphery of building and pouring chemicals etc., complete as per ISI 6313 (Part 2) 2001. The antitermite chemical chloropyriphos 20 EC used should form 0.5% concentrate for the entire operation etc., as directed by the Engineer in charge and including cost of chemicals labour transportation etc.,	Spl.		1M^2 (One Square Metre)	
		Stage 1: Spraying Anti termite treatment chemical solution for the foundation before laying the foundation concrete at bottom and sides of the foundation.				
		Stage 2: Spraying Anti termite treatment chemical solution to the grade beam level, spraying has to be done for the grade beam, brick masonry in the super structure in contact with back fill earth.				

(Sd)/-xxxxx

Contractor.

Executive Engineer,

TNSAMB, Chennai - 32.

		Stage 3: Spraying Anti termite treatment chemical solution on sand for the flooring before laying the flooring concrete; the treatment has to be carried out on the sand filling in basement and after leveling operation is over.				
		Stage 4: Spraying Anti termite treatment chemical solution around the building on outside by making crow bar holes at an interval of 15 cms to a depth of 30 cms before laying the plinth projection. These holes have to be closed after the treatment.				

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

41	20.00 Nos (Eighteen Running Metres)	Supplying and fixing position CI Nahani Trap / Floor Trap of the following sizes with best stainless steel gratings of approved brand and quality, fixed over a bed of brick jelly lime concrete 1:2:5 (One part of lime, two part of sand and five part of 40mm gauge brick jelly) and finished with Cement Mortar 1:3 (One Cement, Three sand) including dismantling masonry works wherever found necessary and making good the dismantled portions to the original condition and giving connection to the CI / PVC pipes, etc., complete complying with standard specification. (The Nahani Trap should be got approved by the Executive Engineer before use on works)	Spl.		1No (One Number)	
42		Supplying and fixing in position best quality PVC soil / waste pipes of various dia having 6 kg / sq.cm. pressure BIS mark and providing leak proof joints using PVC adhesives including fixing to the wall with special PVC / MS clamp, teak wood plugs, brass screws, etc., and making connection to all sanitary fittings, dismantling masonry / RCC works wherever found necessary and making the good dismantled portion to the original condition, including testing for any leakages, etc., complete complying with standard specifications. (The PVC pipes should be got approved by the Executive Engineer before use on works). The rate for earth work excavation will be measured and paid separately in the cases where the pipe lines are proposed to laid below ground level	Spl.			
a	65.00 Rm (Sixty five Running Metres)	75mm dia			1RM (One Running Metre)	

(Sd)/-xxxxx

Contractor.

Executive Engineer,
TNSAMB, Chennai - 32.

b)	56.00 Rm (Forty nine Running Metres)	110mm dia			1RM (One Running Metre)	
c)	71.00 Rm (Thirty six Running Metres)	160mm dia			1RM (One Running Metre)	
43		Supplying and fixing in position PVC specials of the following dia and types of approved quality confirming to BIS and providing leak proof joints including fixing to the walls and giving connection to the PVC soil stacks, dismantling the masonry or RCC works and re-doing the dismantled portion to original condition etc., complete complying with standard specifications. (The PVC specials should be got approved by the Executive Engineer before use on works).	Spl.			
		75mm dia				
a	11.00 Nos (Eleven Number)	PVC plain elbow			1No (One Number)	
b)	11.00 Nos (Eleven Number)	PVC door elbow			1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

		110mm dia				
a	15.00 Nos (Eleven Number)	PVC plain elbow			1No (One Number)	
b)	14.00 Nos (Eleven Number)	PVC door elbow			1No (One Number)	
		160mm dia				
a	6.00 Nos (Six Number)	PVC Tee			1No (One Number)	
44	1.00 Nos (One Number)	Supplying and fixing PVC ventilating shaft of 110mm dia (having working pressure 4 kg. / sq.cm) with 3 metre height including cost of PVC cylindrical cowl of best approved quality etc., complete complying with standard specifications and as directed by the departmental officers	Spl.		1No (One Number)	
45	0.60 M^3 (Zero point six zero Cubic Metres)	Supplying and filling 40mm ISS Jelly	Spl.		1M^3 (One Cubic Metre)	
46	1.65 M^3 (One point six five Cubic Metres)	Supplying and filling 20mm ISS Jelly	Spl.		1M^3 (One Cubic Metre)	
47	1.65 M^3 (One point six five Cubic Metres)	Supplying and filling 10mm - 12mm ISS Jelly	Spl.		1M^3 (One Cubic Metre)	

(Sd)/-xxxxx

Contractor.

Executive Engineer,

TNSAMB, Chennai - 32.

48	1.65 M^3 (One point six five Cubic Metres)	Supplying and filling Brick Jelly 20mm size	Spl.		1M^3 (One Cubic Metre)	
49	2000.00 Ltr (Two thousand Litre)	Supplying and fixing of 1000 litres capacity PVC water tank with IS specification IS 10701/96 the tank is meant for outdoor (or)indoor use complete with removable hinged top locking arrangement and to make provision to fix water supply pipe lines, necessary man hole with cover and including all PVC specials pugs, screws nails to fix the tank etc., complete and the tank should fixed firming as directed by the departmental officers. The rate shall be inclusive of all materials, labour conveyance hoisting and fixing charges etc., (The water tank should be got approved by the EE before use on work)	Spl.		1Ltr (One Litre)	
50		Supplying, laying and joining the following size of UPVC pipes 10 kg / Sqcm of approved quality and best verity conforming to ISS and with ISI Mark laid properly to alignment including cutting, threading and fixing UPVC specials but excluding the cost of such specials and fixing to the wall with necessary TW plugs, PVC clamps and screws, making holes on the wall or drilling holes in the roof and making good the dismantled portion to original condition with necessary brick work, concrete and plastering wherever necessary with necessary scaffolding charges etc., complete as per standard specification.	Spl.			

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

a	57.00 Rm (Fifty seven Running Metres)	20mm dia UPVC pipe			1RM (One Running Metre)	
b)	106.00 Rm (Ninety two Running Metres)	25mm dia UPVC pipe			1RM (One Running Metre)	
c)	106.00 Rm (Ninety nine Running Metres)	32mm dia UPVC pipe			1RM (One Running Metre)	
51		Supplying UPVC Specials (with working pressure 10 kg. / sq.cm.) in water supply arrangements (both in internal and external water supply arrangements	Spl.			
		Note:Since the labour for cutting, threading / pasting, sundries have already been included under pipe line item of works, no separate provision for fixing UPVC specials needs to be allowed				
a	12.00 Nos (Twelve Number)	20mm UPVC Elbow			1No (One Number)	
b)	12.00 Nos (Twelve Number)	25mm UPVC Elbow			1No (One Number)	
c)	9.00 Nos (Nine Number)	20mm UPVC Bend			1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

d	9.00 Nos (Nine Number)	25mm UPVC Bend			1No (One Number)	
e	7.00 Nos (Seven Number)	20mm UPVC Tee			1No (One Number)	
f	7.00 Nos (Seven Number)	25mm UPVC Tee			1No (One Number)	
g	4.00 Nos (Four Number)	20mm UPVC Coupler			1No (One Number)	
h	4.00 Nos (Four Number)	25mm UPVC Coupler			1No (One Number)	
i	2.00 Nos (Two Number)	20mm H Nipple			1No (One Number)	
j	2.00 Nos (Two Number)	25mm H Nipple			1No (One Number)	
k	2.00 Nos (Two Number)	25X20mm UPVC reducer elbow			1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

I	2.00 Nos (Two Number)	25X20mm UPVC reducer Tee			1No (One Number)	
52		Supplying and fixing in position first quality and approved variety of Gun Metal Gate Valve / Wheel Valve with BIS make of the following dia including cost of shellac, thread balls, etc., complete complying with standard specifications (for both internal and external water supply arrangements). The valves to be used on work shall be got approved by the Executive Engineer before use on work.	97 98 102			
a	4.00 Nos (Four Number)	20mm dia			1No (One Number)	
b)	2.00 Nos (Two Number)	25mm dia			1No (One Number)	
53	21.00 Nos (Nineteen Number)	Supplying and fixing in position 15mm dia brass CP screw down tap / Pillar tap (heavy duty) of approved make conforming to BIS specifications and quality including cost of shellac, thread, etc., complete complying with standard specification and including cutting and threading wherever necessary. (Taps should be got approved by the Executive Engineer before use on the works)	97 102		1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

54	11.00 Nos (Nine Number)	Supplying and fixing in position white glazed European Water Closet of best quality and approved make with 100 mm "P" or "S" trap connecting with CI pipe of 100mm dia / PVC pipe of 110mm dia, double flapped rigid PVC black seat and seat cover with CP brass hinges including cost of white cement, cement for packing, spun yarn, teak wood plugs, brass screws, etc., including supplying and fixing 10 litres capacity PVC / 12.5 litres capacity porcelin low level flushing tank with a pair of CI brackets, etc., complete with all fittings such as 15mm brass ball valve with polythene float with brass handle, union, coupling connected by means of 40mm white PVC flush hand using Indian adopter joint including all internal fittings.	102		1No (One Number)	
55	2.00 Nos (Two Number)	Supplying and fixing in positon Indian Water Closet (Oriya type) of size 580 x 440mm white glazed earthern ware of approved quality and brand with "P" or "S" trap conforming to BIS with sand cushion and forming flooring alround the closet using 40mm broken brick jelly in lime concrete 1:2:5 (One lime, Two sand and Five brick jelly) 100mm thick and finishing the top to the required slope and including giving necessary connection to CI soil pipes (including the cost of 100mm dia CI pipe for a length of 600mm) by dismantling brick masonry wall / reinforced cement concrete roof / floor slab and making good the dismantled portion to the original condition with leakages etc., complete complying with standard specifications and as directed by the departmental officers. (The water closet should be got approved by the Executive Engineer before use onworks).	102		1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

56	6.00 Nos (Six Number)	Supply and fixing in position of best Indian make white / colour glazed earthernware lipped mouth flat back urinal of best quality and approved make of size 430mm x 260mm x 350mm with GI pipe, 32mm dia bell mouth PVC connection and waste pipe, 15mm dia GI pipe of required length, 15mm dia GM wheel valve, 15mm dia brass nipple 2 Nos., and fixing the urinals in position with necessary TW plugs, clamps, screws, etc., including dismantling masnory and re-doing the same to the original condition, etc., including painting the pipe with two coats of best quality approved synthetic enamel paint over one coat of red oxide primer and checked without any leakage etc. complete complying with standard specifications and as directed by the departmental officers. (The urinal should be got approved by the Executive Engineer before use on works.)	102 103		1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

57	11.00 Nos (Nine Number)	Supplying and fixing in position best quality and approved make Indian made white / colour glazed earthernware wash hand basin of size 550 x 400mm (with pedestal / without pedestal) with a pair of cast iron brackets, including cost 15mm dia brass CP pillar tap, 32mm dia "B" class GI waste pipe with rubber plug and chain, 15mm dia GM wheel valve, 15mm brass nipple, 15mm dia nylone connection, 32mm dia CP brass waste coupling including fixing of wash basin using CI brackets on to the wall in position with TW plugs and screws, rubber washers, white lead and giving necessary water supply connection and painting the brackets with two coat of painting over a priming coat of anti-corrosive paint including testing for leakages etc., complete complying with standard specification and as directed by the departmental officers. (The wash hand basin and specials should be got approved by the Executive Engineer before use on works).	102 103		1No (One Number)	
58	11.00 Nos (Nine Number)	Supplying and fixing best approved best quality brass CP soap tray of size 150 x 150mm including cost of teak wood plugs, brass screws, etc., complete complying with standard specifications. (The soap tray should be got approved by Executive Engineer before use on works).	Spl.		1No (One Number)	
59	11.00 Nos (Nine Number)	Supplying and fixing in position Indian make bevelled edge mirror of approved quality and brand PVC / Fibre Glass framed 600 x 450 x 5.5mm thick mirror, shelf type with hard board backing of approved colour fixed with brass screws, rawl plug, etc., complete complying with standard specification. (The mirror should be got approved by the Executive Engineer before use on woks)	Spl.		1No (One Number)	

(Sd)/-xxxxx

Contractor.

Executive Engineer,

TNSAMB, Chennai - 32.

60	11.00 Nos (Nine Number)	Supplying and fixing approved best quality brass CP towel rail 600mm long and 20mm dia with brackets of same materials including cost of teak wood plugs and CP screws, etc., complete complying with standard specifications. (The tower rail should be got approved by Executive Engineer before use on works).	102 103		1No (One Number)	
61	35.00 Pts. (Thirty five points)	Wiring with 2 x 1.5 sq.mm. (22 / 0.3) PVC insulated unsheathed single core copper conductor of 1100V grade in suitable PVC rigid pipe concealed in wall and ceiling with PVC accessoires with TW switch box and 5A FT switch in flush with wall with 3mm thick hylum sheet cover for making good of the concealed portion with suitable colour for PVC concealed light point / fan point (for electronic regulator)	SD 24		1Points (One Point)	
62	105.00 Pts. (Ninety six points)	Wiring with 2 x 1.5 sq.mm. (22 / 0.3) PVC insulated single core unsheathed copper conductor of 1100V grade in suitable PVC rigid pipe concealed in wall and ceiling with PVC accessoires in flush with wall with 3mm thick hylum sheet cover with TW switch box and 5A FT switch and making good of the concealed portion with suitable colour forPVC concealed light / fan Point (for electronic regulator) (5 points per coil)	SD 25		1Points (One Point)	
63	17.00 Pts. (Seventeen points)	Wiring with 2 x 1.5 sq.mm. (22 / 0.3) PVC insulated single core unsheathed copper conductor of 1100V grade in suitable PVC rigid pipe concealed in wall and ceiling with PVC accessoires in flush with wall with 3mm thick hylum sheet cover with TW switch box and 5A FT switch and making good of the concealed portion with suitable colour forPVC concealed light (6 points per coil) (for rooms like bath, toilet & pumproom, etc.)	SD 26		1Points (One Point)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

64	32.00 Pts. (Thirty two points)	Wiring with 2 x 1.5 sq.mm. (22 / 0.3) PVC insulated single core unsheathed copper conductor of 1100V grade in suitable PVC rigid pipe concealed in wall and ceiling with PVC accessories in flush with wall with 150mm x 100mm x113mm TW switch box with 3mm thick hylem sheet cover for 5A 3 pin non inter locking wall socket with 5A flushtype switch with continuous earth wire connection of 14 SWG TC wire and making good of the concealed portion withsuitable colour for concealed PVC plug point	SD 38		1Points (One Point)	
65	8.00 Nos (Eight Number)	Supply and fixing of fancy glass shade and 11W CFL for BH point	SD 80		1No (One Number)	
66	67.00 Nos (Sixty seven Number)	Supply and fixing of single box type 4'40W fluorescent fitting complete with copper choke and condensorwith conduit pipe suspension from the ceiling with PVC unsheathed copper leads from terminals to the fitting with tube	SD 89		1No (One Number)	
67	16.00 Nos (Twelve Number)	Supply and fixing of 4'40W twin mirror optic suspension type fitting complete with louvers cover complete with copper choke and condensor with conduit pipe suspension with PVC unsheathed copper leads from the terminals to the fittings with fluorescent tubes	SD 96		1No (One Number)	
68	4.00 Nos (Two Number)	Supply and fixing of AC / DC 76mm buzzer / call bell suitable for 230 volts 50 c/s single phase AC supply on suitable TW board with push switch	SD 105		1No (One Number)	
69	39.00 Nos (Thirty six Number)	Supply and fixing of 1200mm (48") AC ceiling fan complete with stepped electronic 300W regulator with 300mm down rod on the existing clamp	SD 110		1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

70	11.00 Nos (Nine Number)	Supply and fixing of 300mm (12") sweep (light duty) AC exhaust fan complete with necessary wall opening and making good of the wall	SD 124		1No (One Number)	
71	11.00 Nos (Ten Number)	Supply and fixing of louvers shutters arrangements for 300mm (12") sweep (light duty) AC exhaust fan	SD 120		1No (One Number)	
72	14.00 Nos (Fourteen Number)	Supply and fixing of 5A / 15A 3 pin combined flush type wall socket with 15A flush type switch on suitable TW Box	SD 136		1No (One Number)	
73	29.00 Nos (Twenty nine Number)	Supply and fixing of 3 Nos. 5A (3 pin and 2 pin) combined flush type wall socket with control switches concealed in suitable TW box covered with hylem sheet in flush with wall with earth connection (for computer plug socket)	SD 139		1No (One Number)	
74	9.00 Nos (Seven Number)	Supply and fixing of 20A DP plug and socket in sheet enclosure with 32A DP MCB in flush with wall with earth connection (For AC Plug)	SD 140		1No (One Number)	
75	16.00 Nos (Sixteen Number)	Supply and fixing of 4'40W twin street light fluorescent fitting complete with copper choke and condensorwith19mm dia GI pipe (Class 'B') with 1 No. 19mm GI bend complete on the existing post / wall with 16A aerial fuse unit on MS plate with PVC unsheathed copper leads with MS clarnps and aluminium painting with fluorescent tubes	SD 94		1No (One Number)	
76	3.00 Rm (Three Running Metres)	Supply and laying of 31/2X 50sq.mm PVC LTUG aluminium armoured cable in a trench to be excavated at a depth of 0.75 metre putting 0.15 metre layer of sand and covering the cable completely with bricks and sand and refilling the earth to make good	SD 224		1RM (One Running Metre)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

77	450.00 Rm (Four hundred and fifty Running Metres)	Supply and run of 2 of 1.5 sq.mm. (22 / 0.3) PVC insulated single core unsheathed copper conductor of 1100V grade in suitable PVC rigid pipe on wall and ceiling with continuous earth wire connection 14 SWG TC wire with painting of suitable colour	SD 54		1RM (One Running Metre)	
78	200.00 Rm (Two hundred Running Metres)	Supply and run of 2 of 1.5 sq.mm. (22 / 0.3) PVC insulated single core unsheathed copper conductor of 1100V grade in rigid pipe concealed in wall and ceiling with continuous earth wire connection of 14 SWG TC wire and making good of the concealed portion with suitable colour	SD 55		1RM (One Running Metre)	
79	95.00 Rm (Ninety five Running Metres)	Supply and run of 4 of 6 sq.mm. (84 / 0.3) PVC insulated single core unsheathed copper conductor of 1100V grade in suitable PVC rigid pipe concealed in wall and ceiling with continuous earth wire connection by 14 SWG TC wire and making good of the concealed portion with suitable colour	SD 63		1RM (One Running Metre)	
80	1.00 Nos (One Number)	Supply and fixng of TNEB meter board suitable for 3 phase 63A service connection made up of suitable angle iron frame work of size 2 feet x 1-1/2 feet using angle iron of size 1-1/2" x 1-1/2" x 1/4" rigidly fixed on wall covered with hylem sheet of size 2 feet x 1/2 feet of 6mm thickness with necessary bolts and nuts supports and supply and fixing of 3 Nos. 63A fuse units (500V), 1 No. neutral link, copper earth flat of size 1" x 1/4" with inter connection of EB meter to fuse units by 16 Sq.mm PVC insulated copper wire with earth connection complete	SD 129		1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

81	1.00 Nos (One Number)	Supply and fixing of 63A TPNMC switch with suitable angle iron frame work with MS cable entry boxes with earth connection only	SD 166		1No (One Number)	
82	4.00 Nos (Four Number)	Supply and fixing of 8 way single pole and neutral MCB sheet steel enclosure distribution board of double door type with metal door with IP43 protection with 1 No. 32A DP MCB as incoming and 6 Nos. 6A to 32A SPMCB outgoing in flush with wall and making good of the concealed portion with earth connection only. The MCB DB and MCB's should be with ISI mark (like standard make)	SD 167		1No (One Number)	
83	4.00 Nos (Three Number)	Supply and fixing of horizontal type 4 way triple pole neutral MCB distribution board in sheet steel enclosure doubledoor of double door type with metal door with IP43 protection with 40A 4 pole MCB isolater as incoming and 12 Nos.6A to 32A SP MCB as outgoing in flush with wall and making good of the concealed portion with earth connection.The MCBDB and MCB's should be with the ISI mark (like standard make)	SD 179		1No (One Number)	
84	2.00 Nos (Two Number)	Supply and fixing of brass cable gland for 2 x 10 sq.mm. PVC LTUG aluminium armoured cable with earth connection	SD 182		1No (One Number)	
85	2.00 Nos (Two Number)	Supply and fixing of brass cable gland for 3-1/2 x 35 sq.mm. PVC LTUG aluminium armoured cable with earth connection	SD 187		1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

86	10.00 Rm (Ten Running Metres)	Supply and laying of 2 x 10 sq.mm PVC LTUG aluminium armoured cable in a trench to be excavated at a depth of 0.75 metre putting 0.15 metre layer of sand and covering the cable completely with bricks and sand and refilling theearth to make good	SD 198		1RM (One Running Metre)	
87	40.00 Rm (Forty Running Metres)	Supply and laying of 3-1/2 x 50 sq.mm PVC LTUG aluminium armoured cable in a trench to be excavated at a depth of 0.75 metre putting 0.15 metre layer of sand and covering the cable completely with bricks and sand and refilling theearth to make good	SD 206		1RM (One Running Metre)	
88	10.00 Rm (Ten Running Metres)	Supply and clarnping of 2 x 6 sq.mm. PVC LTUG armoured cable on post or on wall with MS clamps	SD 215		1RM (One Running Metre)	
89	15.00 Rm (Fifteen Running Metres)	Supply and laying of 31/2X120 sq.mm PVC LTUG aluminium armoured cable in a trench to be excavated at a depth of 0.75 metre putting 0.15 metre layer of sand and covering the cable completely with bricks and sand and refilling theearth to make good	SD 227		1RM (One Running Metre)	
90	3.00 Nos (Three Number)	Earthing as per the ISI specification with an earth electrode of 2.10 metre Class 'B' GI pipe of dia not less than 40mm with copper earth plate of size 125mm x 50mm x 6mm with necessary funneling arrangements with necessary masonry work and with 38mm RCC cover slab for the brick masonry	SD 233		1No (One Number)	

Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

91	40.00 Rm (Forty Running Metres)	Supply and run of 1 of No.8 SWG GI wire for earth connection	SD 74		1RM (One Running Metre)	
				Total Rs.		
				GST		
				Grand Total		

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Contractor.

(Sd)/-xxxxx
Executive Engineer,
TNSAMB, Chennai - 32.

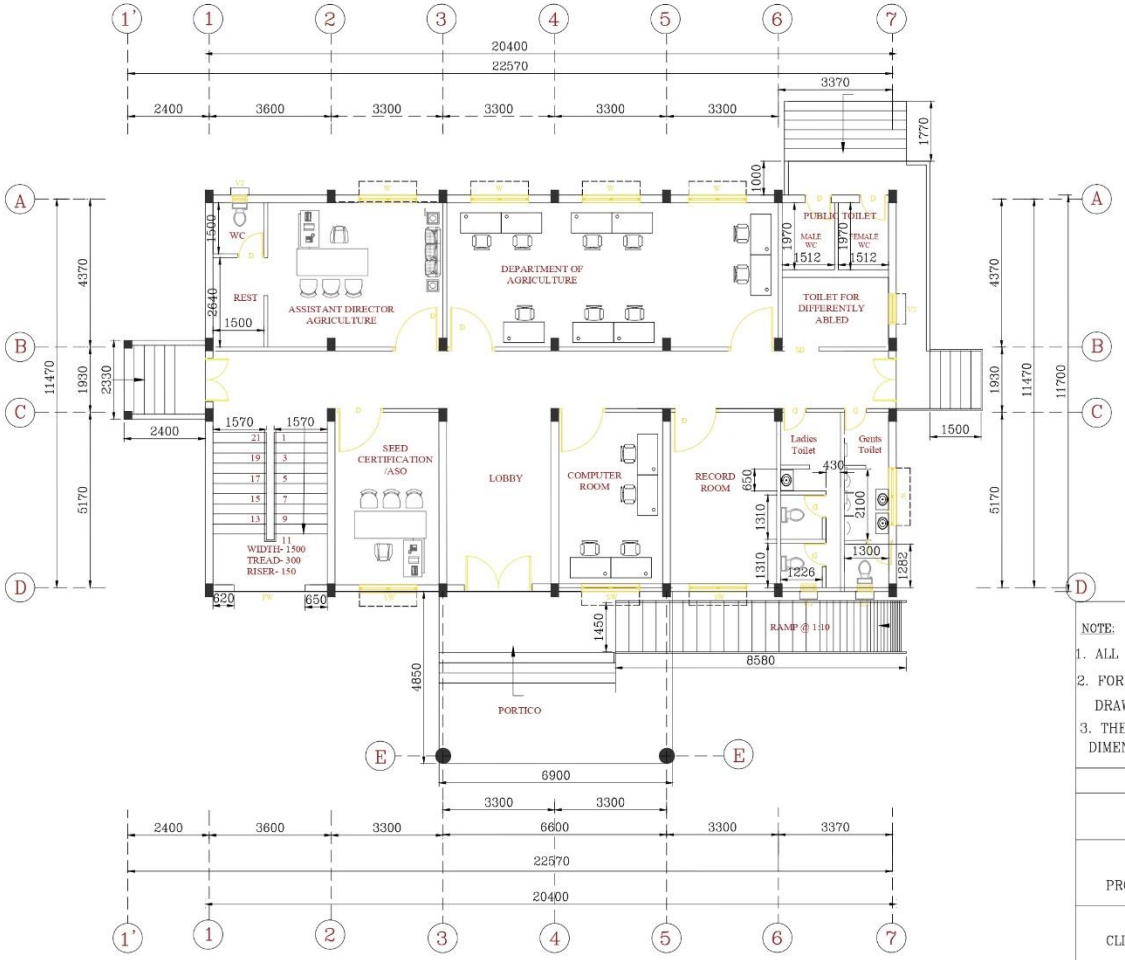
/ True Copy /
Senior Draughting Officer,
TNSAMB, Chennai - 32.

LIST OF DRAWINGS

Note. All drawings to be signed by the Contractors as well as the officer entering into contract.

DEPARTMENT OF AGRICULTURAL MARKETING & AGRIBUSINESS	
LIST OF LOCATION & BUILDINGS FOR ARIYALUR	
Sl. No.	**Description.**
1	**Ground floor plan**
2	**First floor plan**
3	**Second floor plan**
4	**Elevation**

CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE



GROUND FLOOR PLAN

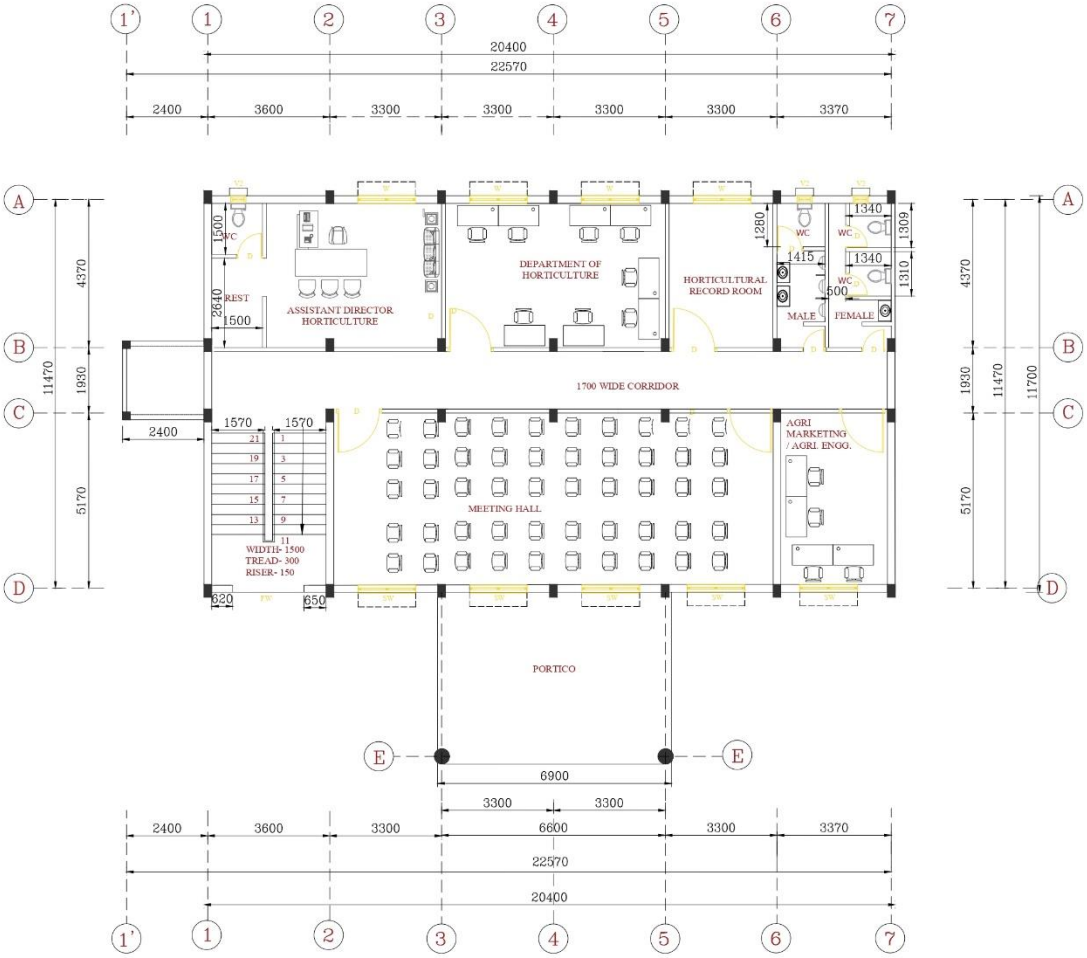
G.F. AREA= 238.68 Sq.m
PORTICO AREA= 38.78 Sq.m
All dimensions are in mm

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
2. FOR OTHER NOTES SHALL BE READ ALONG WITH DRAWING PDC-MDU-SD-P266/19-GN1
3. THE MEASUREMENTS SHOULD NOT BE SCALED ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED

REV.NO	DESCRIPTION		
	A.B	G.S	C.K
	DRAWN	CHECKED	APPROVED
PROJECT	CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE (IAEC) UNDER NADP 2019 – 20.		
CLIENT	CHIEF ENGINEER AGRICULTURAL ENGINEERING DEPARTMENT CHENNAI-35		
CONSULTANT	GEOMATRIX CONSULTANCY 141 & 142 , SVSK Towers, Alagar Koil main Road , Tallakulam , Madurai - 625002. PH :0452-4366668 & 7598031360.		
TITLE	CONCEPT PLAN		
DRAWING ID	PDC-MDU-SD-P266/19-CP1	SHEET-A2	REV – 00

CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE



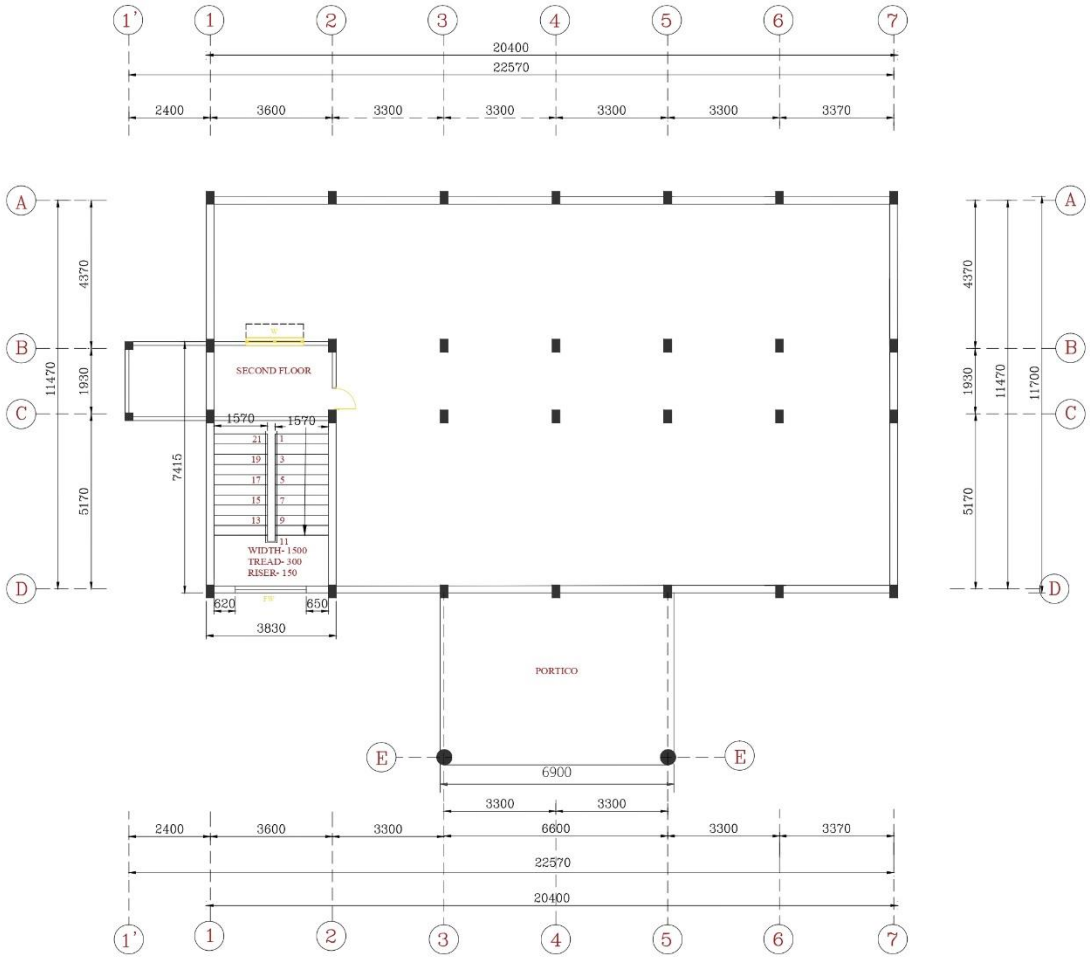
FIRST FLOOR PLAN

F.F. AREA= 238.68 Sq.m
All dimensions are in mm

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
2. FOR OTHER NOTES SHALL BE READ ALONG WITH DRAWING PDC-MDU-SD-P266/19-GN1
3. THE MEASUREMENTS SHOULD NOT BE SCALED ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED

REV.NO	DESCRIPTION		
	A.B	G.S	C.K
	DRAWN	CHECKED	APPROVED
PROJECT	CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE (IAEC) UNDER NADP 2019 – 20.		
CLIENT	CHIEF ENGINEER AGRICULTURAL ENGINEERING DEPARTMENT CHENNAI-35		
CONSULTANT	GEOMATRIX CONSULTANCY 141 & 142 , SVSK Towers, Alagar Koil main Road , Tallakulam , Madurai - 625002. PH :0452-4366668 & 7598031360.		
TITLE	CONCEPT PLAN		
DRAWING ID	PDC-MDU-SD-P266/19-CP2	SHEET-A2	REV – 00

CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE



SECOND FLOOR PLAN

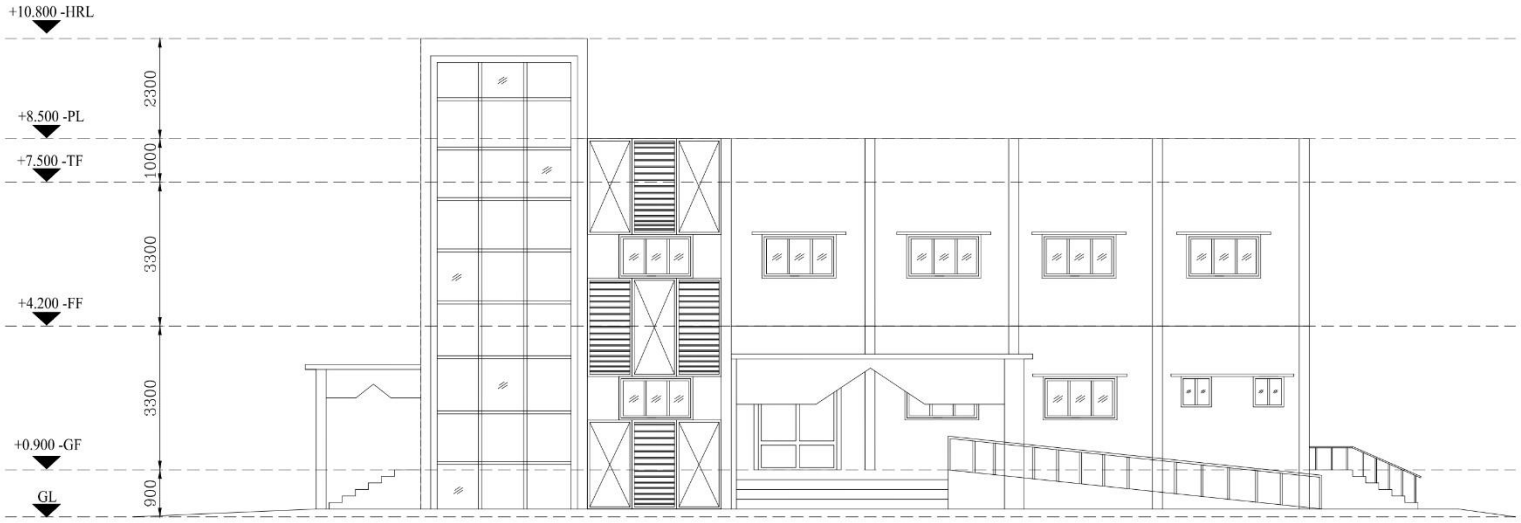
Head room area = 29.25 Sq.m
All dimensions are in mm

NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
2. FOR OTHER NOTES SHALL BE READ ALONG WITH DRAWING PDC-MDU-SD-P266/19-GN1
3. THE MEASUREMENTS SHOULD NOT BE SCALED ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED

REV.NO	DESCRIPTION		
	A.B	G.S	C.K
	DRAWN	CHECKED	APPROVED
PROJECT	CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE (IAEC) UNDER NADP 2019 – 20.		
CLIENT	CHIEF ENGINEER AGRICULTURAL ENGINEERING DEPARTMENT CHENNAI-35		
CONSULTANT	GEOMATRIX CONSULTANCY 141 & 142 , SVSK Towers, Alagar Koil main Road , Tallakulam , Madurai - 625002. PH :0452-4366668 & 7598031360.		
TITLE	CONCEPT PLAN		
DRAWING ID	PDC-MDU-SD-P266/19-CP3	SHEET-A2	REV – 00

REV – 01

CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE



ELEVATION

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.
2. FOR OTHER NOTES SHALL BE READ ALONG WITH DRAWING PDC-MDU-SD-P266/19-GN1
3. THE MEASUREMENTS SHOULD NOT BE SCALED ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED

PROJECT	CONSTRUCTION OF INTEGRATED AGRICULTURAL EXTENSION CENTRE (IAEC) UNDER NADP 2019 – 20.			CONSULTANT	GEOMATRIX CONSULTANCY 141 & 142 , SVSK Towers, Alagar Koil main Road , Tallakulam , Madurai - 625002. PH :0452-4366668 & 7598031360.
CLIENT	CHIEF ENGINEER AGRICULTURAL ENGINEERING DEPARTMENT CHENNAI-35				
REV.NO	DESCRIPTION			TITLE	ELEVATION
	A.B	G.S	C.K		
	DRAWN	CHECKED	APPROVED	DRAWING ID	PDC-MDU-SD-P266/19-CP3 | SHEET-A2 | REV – 01

INIMUM QUALIFICATION CRITERIA
FOR SPECIAL ATTENTION :

(i)a Only the Contractors, registered with Tamil Nadu State Public Works Department under **Class – I** with monetary limit above **Rs.75.00 lakhs (Rupees Seventy Five Lakhs)** and with proven track record are eligible.

(ii) The Applicants in the same name and style should have been in the Civil Engineering Construction field atleast for the past **"Five"** years.

(iii) The Applicant should have completed atleast one "Building" work of similar nature with value not less than Rs.189.12 Lakh under a "single agreement" in any one the preceding **"Five"** years.

(iv) The Applicant shall be solvent to a tune of atleast Rs.30.00 Lakh (Rupees Thirty Lakh only) on immovable properties in his name. Solvency Certificate issued by the Thasildar should be produced. This certificate shall not be prior by 3 years from the date of tender. Encumbrance Certificate issued by the Registration Department on the properties listed out in the Solvency Certificate for the period from the date of issue of solvency on or after 17.03.2022 and before tender date. Without any break)

(V) Annual turnover of the Applicant should not be less than Rs.284.00 lakh (Rupees Two hundred and eightyfour lakh only) in any one year of the previous five years

Audited Balance sheet, Profit and loss Account etc., and IT Certificate duly certified by the Chartered Accountant for the preceding "FIVE "years

(vi) GST registration Number with latest GST filed copy.

(vii) The applicant shall have working capital of Rs.24.00 lakh available atleast sufficient to finance one – month current activity on the assumption that this work is awarded to the applicant, on being Qualified

(Viii)1 Project Manager : 1 No -(One Number) B.E.,(Civil) Degree in Civil Engineering with atleast Ten years experience in executing similar works.

2. Site Engineers: : 3 No. –(Three Number) – B.E., Degree in Civil Engineering with atleast three years experience

3 Nos –(Three Numbers) Diploma in Civil Engineering with atleast three years experience

1 No –(One Number) Diploma in Electrical Engineering with atleast three years experience

The applicant shall have the following minimum construction equipments Tools and Plants exclusively available for this work. – (Either own or under lease with the applicant)

1	Concrete Mixer Machine with Hopper	:	5 Nos – (Five Numbers)
2	Vibrators	:	5 Nos – (Five Numbers)
3	Dewatering pumps & motors	:	5 Sets - (Five Sets)
4	Lorry / Tipper	:	5 Nos - (Five Numbers)
5	Steel centering Materials to cover an area of	:	6000 sq.m- (Six thousand square metres)
6	Mechanical spray set for curing	:	3 Nos – (Three Numbers)
7	Mechanical Hoist	:	3 Nos. – (Three Numbers)
8	JCB	:	2 Nos. – (Two Numbers)

I. DOCUMENTS TO BE PRODUCED:

i. Xerox copy of the R.C. Books for the Machineries / Vehicles owned by the applicant.

ii. Sworn in Affidavit and Chartered Accountant's Certificate stating the details of equipments, tools and plants available with the applicant with make year of purchase, capacity, present working condition of the equipment etc.,

If the Tools and plants are proposed to be taken on lease or already on lease with the applicant, the source, from which the Tools and plants have been taken on lease or proposed to be taken on lease with proof, should be furnished in addition to the particulars in item– ii -.

(ix) Minimum quantity executed 1) Cement Concrete 1:1 ½ : 3 - 367.00 m^3

(x) All the documentary evidences should be stitched neatly (Spiral Binding should be avoided) and the pages should be serially numbered. Index of the Documents produced should be prepared and reference to page number of the documents produced should be furnished in the index.

All the Above details should be attached duly attested along with the Tender documents if not Tender will be summarily rejected.

Annexure

PARTICULARS TO BE FURNISHED BY THE TENDERER

1. Name of the Tenderer and address
2. Name of work
3. Date of tender
4. Total value of tender
5. Details about EMD enclosed for this tender and its validity
6. Registered class of the Tenderer in PWD with monetary limit
7. Recent works executed (details about name and place of work, value of work etc. should be furnished)
8. Works under execution (details about name and place of work value of work etc. should be furnished
9. Command of labour in brief
10. Turnover of previous year (particulars for period of three consecutive years to be furnished).
11. Whether income tax clearance certificate is enclosed if not when it will be produced.
12. (i) GST registration No.
    (ii) Whether GST is enclosed.
13. In case of registered co-operative societies they should furnish name for the nominee with their credentials details at the time of tender itself. They should also

certify that the nominee of the society is not a registered contractor in the Department.

14. Site Engineer details
    (i). Name
    Qualification certificate
    Experience certificate
    (ii). Name
    Qualification certificate
    Experience certificate
    Or
    Name
    If retired civil Engineer Designation
    And date of retirement (copy may be enclosed)

15. If any other details.

Note : The consent letter from the Site Engineer proposed to be employed should be furnished and enclosed with the tender

FOR SPECIAL ATTENTION OF THE CONTRACTOR

1. Proof of registration in PWD, as a contractor shall be attached with the tender.

2. Current income tax clearance certificates shall be enclosed with the tender.

3. EMD will be received in the shape as detailed in **Sl. No.1** of tender notice.

4. Security should be in the form of National Savings Certificates / Deposits / Accounts of POSTAL DEPARTMENT PLEDGED IN THE NAME OF EXECUTIVE ENGINEER CONCERNED. IRREVOCABLE BANK GUARANTEE as per the form prescribed by the Department, only, No other form of EMD and security deposit will be accepted vide G.O. Ms. No.227, dated 13.04.82 and G.O. Ms. No. 283, Public Works (G2) Department, dated 21.05.99.

5. The following particulars shall also be furnished by the contractor with the value.

    a. List of details of works executed by the contractor with the value.
    b. Annual turn over of the contractor for the last five years. Necessary certificates to the effect issued by the respective bank shall be attached

6. The lower / lowest tenderer when informed that his tender is under consideration shall have to furnish PERT chart in the proper form within a week from the date of receipt of letter calling to PERT chart. The pert chart should conform with departmental time schedule for the completion of the work furnished in the tender notice. If the pert chart is not received with a week from the date of receipt of communication his tender will not be considered.

7. The tender document will be issued only to the contractors who have registered their names as contractors in PWD in the appropriate class in case of pre-qualification tender, the tender document will be issued to the pre-qualified contractors only

SPECIAL INSTRUCTIONS TO THE TENDERERS

1. The tenderer should carefully go through the schedules and quote their rates for all items.

2. The rates should be filled in neatly in figures and worlds and taking into account the metric unit specified in the tender, scrubbing, over writing and erasing should be avoided as for as possible.

3. The amount for each item of work should be worked out and furnished. Proper care must be taken in working out the amount of each item of work taking into account unit for which the rate is quoted and the quantity of work to be done under the item.

4. The total of each page should be noted at the end of each page and carried over to next page and the grand total value of work should be worked out and shown at the end.

5. The tender should be submitted along with a covering letter giving full details as stated in the tender notice.

    i. Details of the earnest money deposit as per details in item No.4 of tender notice

    ii. Income tax clearance certificate for the current year should be submitted along with the tender.

    iii. Details of previous works done by the tenderer covering the cost of work the agreement amount and date, the Department in which the work was carried out etc. so as to assess the previous experience of the tender, end also make an easy reference to their record of work. Year wise details should be furnished so as to see that those tenderers have minimum experience of major buildings.

    iv. List of various machinery and other equipment at the tenders disposal for use in the execution of work.

    v. The tender forms should be filled in while submitting the tender. The tenders submitted without filling up the tender form are liable to be rejected.

    vi. The tenders must be submitted in a fullscape cover there by duly signed all the conditions, plans and schedules issued as tender document.

    vii The contractors registered with Tamilnadu State Public Works Department under Class I under Electrical with monetary limit above Rs.75.00 lakhs (Rupees Seventy Five Lakhs) and with proven track record.

TENDER NOTICE

On behalf of Governor of Tamil Nadu sealed tenders will be received by the **Executive Engineer, Tamil Nadu State Agriculture Marketing Board CIPET Road, Chennai-32** at his office **upto 3.00 P.M. on 05.04.2022** for the **Construction of Integrated Agricultural Extension Centre(IAEC) under NADP 2021-2022 at Ariyalur in Ariyalur district.** The tender should be in the prescribed form obtainable from the office of the Executive Engineer, Tamil Nadu state Agriculture Marketing Board, CIPET Road, Chennai-32 at the place and on the date before mentioned.

1.1. The tenderer or their agents are expected to be present at this time of opening of tenders. The tender receiving officer will on opening each tender, prepare a statement of the attested and unattested corrections in the presence of the tenderer. If any of the tenderers or their agents find it inconvenient to be present at time, then in such case the tender receiving officer will on opening the tender of the absentee tenderer, make out a statement of the unattested corrections and communicate it to him. The absentee tender shall then accept the statement of the corrections without any questions whatsoever.

1. Tenders may be submitted in sealed covers and should be addressed to the Executive Engineer, Tamil Nadu State Agriculture Marketing Board, Cipet Road, Chennai-32. The name of the tenderer with their address and the name of the work being noted in the cover.

2.1. If the tender is made by an individual, it shall be signed with his full name and his address shall be given. If it is made by a firm, it shall be signed with the co-partnership name by a member of the firm who shall also sign his own name, and the name and address of each member of the firm shall be given. If the tender is made by a corporation. It shall be signed by a duly authorized officer who shall produce with his tender, satisfactory evidence of his authorization. Such tendering corporation may be required, before the contract is executed, to furnish evidence of the corporate existence.

2. Each tenderer must also send a current certificate of income tax clearance from the appropriate income tax authority in the form prescribed therefore. The certificate will be valid for one year from the date of issue for all tenders submitted during the period.

3.1. In the case of proprietary or partnership firm, it will be necessary to produce the certificate afore mentioned for the proprietors and for each of the partner as the case may be.

3.2. The current certificate for Registration of contractor in Public Works Department, Government of Tamilnadu is to be produced.

3.3. All tenders received without a certificate as afore mentioned will be summarily rejected.

4. Each tender must pay earnest money deposit a sum of **Rs. 2,12,000/-** In the shape of DD in favour of the Executive Engineer, Tamil Nadu State Agriculture Marketing Board, CIPET Road, Chennai-32. Payable at Madurai .The Earnest money will be refunded to the unsuccessful tenderer on application after intimation is sent on rejection of the tender or at the expiration of ninety days from the date of tender whichever is earlier. However

the earnest money for the first three lowest tenderers will be retained till the final decision is taken on tender. This refund will be authorized by the Executive Engineer by suitable endorsement. However refund of the first three lowest tender will be considered only by the tender accepting authority. If any additional EMD is required after tender, it should be paid before acceptance of agreement.

4.1. The EMD will be accepted in the shape of demand draft of the Nationalized and Schedule Banks. The demand drafts of the Nationalized and Scheduled Banks furnished towards earnest money deposit should be drawn in favour of the Executive Engineer, Tamil Nadu State Agriculture Marketing Board, CIPET Road, Chennai-32. Payable at Madurai.

The earnest money will be retained in the case of successful tender and will not carry any interest. It will be dealt with as provided in the tender.

5. The tender will remain valid for a period of ninety days from the last date of receipt of tender. The validity period can be extended further if the contractor gives his consent in writing, specifying the period of extension.

6. (i). Tenderer whose tender is under consideration shall attend the Executive Engineer's office before the end of the period specified on written intimated to him. If the tenderer fails to attend the office before the end of the specified period his tender will not be considered. He shall forthwith upon intimation being given to him of acceptance of his tender by the officer, duly authorized in this behalf, under article 299 (i) of the constitution herein after called the tender accepting authority, furnish security deposit of 2% of the value of contract, in one of the form prescribed by department (i.e.) would be sufficient to pay the balance amount to make it to 2% of the value of contract for the purpose of security deposit in the shape of National savings certificate scripts / accounts of postal department or in the shape of Indira Vikas Patras pledged in favour of ,Executive Engineer ,Tamil Nadu State Agriculture Marketing Board, CIPET Road, Chennai-32. or in the shape of irrevocable Bank guarantee as per the form prescribed by the Department by the successful tenderer on intimation of acceptance of tender. It would be sufficient to pay the balance amount to make up the 2% of the value of contract for the purpose of security deposit, which has to be remitted only in the shape of NSC / Deposits / accounts of postal Department or Indira Vikas Patras or irrecoverable Bank guarantee as per the form prescribed pledged in favour of ,Executive Engineer ,Tamil Nadu State Agriculture Marketing Board, CIPET Road, Chennai-32 National savings scripts / accounts of postal account and pledged to the Executive Engineer concerned. The security deposit together with earnest money deposit and the deductions made at 5% of the value of each bill **Including GST towards with held** amount vide clause 64 (i) of general condition to contract will be retained as security for the fulfillment of contract, such deposit shall not bear any interest.

(ii). On receipt of written communication of acceptance of tender, if the tenderer falls to pay the requisite security deposit within the specified in the written communication or back out from the tender, or withdraw his tender, the EMD shall be forfeited and credited to the Government account.

(iii). If the contractor falls to carryout the contract after paying the requisite security deposit then he will be liable for the excess expenditure if any, incurred to complete the work, as contemplated in the general conditions of contract.

(iv). It shall be expressly understood by the tenderer, that on receipt of written communication of acceptance, of tender from the accepting authority, there emerges a valid contract between the Government of Tamil Nadu and the tenderer for execution of the work without any separate written agreement. Hence for this purpose the tender documents in tender documents (i.e.) tender notice, tender offered by contractor, general condition to the contract, special condition to the contract, negotiation correspondence written communication of acceptance of tender etc. shall constitute a valid contract and that will be a foundation of the rights of both the parties to the contract, provided that it shall be open to the accepting authority to insist execution of any written agreement by the tenderer, if administratively considered necessary of expedient.

7. The tender shall examine clearly the Tamil Nadu Building Practice and also general condition of the contract contained therein and sign the divisional office copy of the Tamil Nadu Building Practice and its addenda volume in token of such study before submitting his tender. Unit rate which shall be for finished work in situ. He shall also carefully study the drawings and additional specification and all the documents connected with the contract. The Tamil Nadu buildings practice and other documents connected with the contract such as specifications, plans descriptive specification sheet regarding materials, etc. can be seen at any tie during office hours from 11.00 a.m. to 5.00 p.m. In the office of the Executive Engineer, TNSAMB, Guindy, Chennai – 32.

8. The tenderers attention is directed to the requirements for materials under the materials and workmanship in the General conditions of the contract, conforming to the Indian standard specification shall be used on the work and shall quote his rates accordingly.

9. Every tenderer is expected before quoting his rates to inspect the sites of the proposed work. He should also inspect the quarries and satisfy himself about the quality and availability materials. The best class of materials to be obtained from the quarries or other sources be used on the work. In every case, the materials must comply with the relevant standard specification. Samples of materials as called for in the standard specification or in this tender notice or as required by the Executive Engineer in any case shall be submitted Executive Engineers approval before the supply to the site of work is begun.

9.1. The Government will not however after acceptance of contract, rate, pay any extra charges for lead or for any other reasons in case, the contractor is found later on to have misjudge materials available. Attention of the contractor is directed to the general condition of the regarding payment of Seigniorage, tolls etc.

10. The tenderer’s particular attention is drawn to the section and clauses in the general conditions to the contractor dealing with.

    a. Test inspection and rejection of defective materials on work.
    b. Carriage
    c. Construction plant

d. Water and lighting
e. Cleaning up during progress and for delivery
f. Accidents
g. Delays
h. Particulars of payment

The contractor should closely peruse all the specification clauses for items of works for which he is tendering his rates.

10. A schedule of quantity accompanies this tender notice. It shall be definitely understood that, the Government does not accept any responsibility for the correctness or completeness of this schedule and that this schedule is liable to alternation by omissions, deductions or additions at the discretion of the Executive Engineer TNSAMB, Guindy, Chennai – 32. or as set forth in the conditions of contract. The tenderer will however base his lump sum tender on this schedule of quantities, in the case of percentage tender system for the works costing upto Rs.20.00 Lakhs, the tenderer should note their tender percentage Excess / Less (instead of quoting specific value put to tender. In case of other works costing more than Rs.20.00 Lakhs he should quote specific rates for each item in the schedule and the rates should be in rupees and in sum of five paise. The rate should be written both in words and figures and the units in works.

10 (i). The tender should also show the total of each item and the grant total of the whole contract and quote in the tender a lump sum for which he will undertake to do the whole work subject to the condition of contract such lump sum agreeing with the total amount of schedule (a). This schedule accompanying the lump sum tender shall be written legibly and free from erasures over writing or condition of the figures. Correction where unavoidable should be made by crossing out, initialing dating and rewriting.

11. The tenderer offering a percentage deduction from or increase on the estimate amount except in the case of tender called for specifically under the percentage rate tender system and those not submitted in prescribed form or in due time will be rejected. Rates or lump sum amounts for item not called for all not be included in the tender. No alterations which is made by the tenderer in the contract form the conditions or contract, the drawings, specifications or quantities accompanying the same will be recognized and, if any such alternations are made the tender will be void.

12. The tender should work out his own rates without reference being made to PWD current schedule rate PWD estimates. However in case tenders called for under the percentage tender system the tenderer should work out his own rate but quote his percentage rate above or below the total estimate cost of work of the department indicated in the tender schedule.

13. The price at which and the source from which the contractor shall obtain certain particular materials are given at the end of the schedule accompanying the tender form. Tenderers must accept the materials at these prices and shall quote their price for finished work accordingly. Not withstanding any subsequent charge in the market value for these materials the charge to the contractor will remain as originally entered in the written contract. No centage or incidental charges will be borne by Government in connection with this supply.

14. The attention of the tenderer is directed to the contract requirements at the time of beginning work, the rates of progress and the datas for the completion of the whole work and its several parts. The following rate of progress and of proportionate

value of work done from time to time as will be indicated by the Executive Engineer and certificates of the work done will be required. Date of commencement of this programme will be date on which the site (or) premises is handed over to the contractor.

Period after date of commencement (1)	Percentage of work to be complete based on contract lump sum amount (2)
First Month **Second Month** **Third Month** **Fourth Month** **Fifth month** **Sixth month** **Seventh Month** **Eighth month** **Total for Eight Months.**	**10%** **10%** **10%** **10%** **15%** **15%** **15%** **15%** **-------** **100%** **-------**

Note : The periods to be entered in column I for the purpose of defining the rates of progress may be fixed by the Executive Engineer, TNSAMB, Guindy, Chennai – 32 to suit each case.

15. No part of the contract shall be sub-let without written permission of the Executive Engineer, nor shall transfer be made by power of attorney, authorizing others receive payment on the contractor's behalf.

16. If further necessary information is required, the Executive Engineer of the Division will furnish such information but it must be clearly understood, that tenders must be received in order and according to instructions.

17. The Executive Engineer or other sanctioning authority reserves the right to reject any tender all the tenders.

18. The tenderers who are themselves not professional qualified shall undertake to employ qualified men at their cost to look after the work. The tenderers should state in clear terms whether they are professionally qualified or whether they undertake to employ technical men required by the department, specified in the schedule below for the work. In case the selected tenderer is professionally qualified or has undertaken to employ technical men under him, he should see that one of the technically qualified men is always at the site of the work during working hours, personally checking all items of works and paying extra attention to such works as may demand special attention (e.g) Reinforcement concrete works etc.

EMPLOYMENT OF TECHNICAL PROFESSIONAL

(Based on this value of contract)

1. UptoRs.5.00 lakhs	1. One diploma holder in civil Engineering (or) 2. Not less than one retired Junior Engineer.
2. From Rs.5 to 10 Lakhs	1. One B.E. (Civil) or 2. Equivalent degrees holder or 3. Not less than one retired sub-Divisional Officer / Assistant Executive Engineer or ADE
3. From Rs.10 to 25 Lakhs	1. One B.E. (Civil) with 3 years experience plus one diploma holder in Civil Engineer (or) 2. Equivalent degree holder with 3 years experience plus one diploma holder in civil Engineering. 3. Not less than one retired sub-Divisional Officer plus one diploma holder in Civil Engineer. 4. Two diploma holders in Civil Engineer with 3 and 5 years experience respectively.
4. From Rs.25 to 50 Lakhs	1. One B.E. (Civil) with 3 years experience plus one diploma holder in Civil Engineer (or) 2. One B.E. (Civil) with 3 years experience plus two retired Junior Engineers (or) 3. Equivalent degree holder with 3 years experience plus two diploma holder in civil Engineering / two retired Junior Engineers.(or) 4. One retired sub-Divisional Officer / AEE / ADE plus two diploma holder in Civil Engineer. (or) 5. One retired sub-Divisional Officer / AEE / ADE plus two retired Junior Engineers.

5. Above Rs.50 Lakhs.	(As noted in pre-qualification cover I)

a. A penalty of Rs.2000/- per month for diploma holders and Rs.5000/- per month for degree holder be levied in case of default on the part of contractors in following the norms laid down above.

b. The employment of Technical Assistants could be based only on value of contract. Engineers with Mechanical Engineer qualification and retired from Civil Engineer Departments are also suitable to supervise the Civil Engineering works because of their experience in Civil Engineer field.

It will not be incumbent on the part of the contractor to employ technical Assistants when the work is kept in abeyance due to valid reasons and if during such period in the opinion of the Executive Engineers, the employment of Technical assistant if required for the due fulfillment of the contract, should be made.

c. In case of contract who is professionally qualified is not in position to remain always at the site of the work during working hours personally checking all items of work and paying extra attention of the works as may demand special attention (e.g.) RCC work etc. he should employ technical qualified person's prescribed for the work.

d. The contractors who possess a degree in Mechanical or Civil Engineer may also have to appoint Technical Assistants in case of Registered Contractors with degree in Electrical Engineering when they are entrusted with civil works by the Department.

e. Engineers with Mechanical Engineering qualification and retired from Civil Engineering Department are also suitable for supervising the Civil Engineering works subject to condition that evidence for experience in Civil Engineering filed is produced.

f.

g. One technical Assistant may be employed by the contractor for more than one work situated within one kilo metre provided that monetary limit prescribed for the nature of Technical Assistants to be employed is adhered to by one and the same contractor.

19. A tenderer submitting a tender which the tender accepting authority considers excessive and or indicative in sufficient knowledge of current prices or definite attempt at profiteering will trended himself liable to be debarred permanently from tendering or for such period as the tender accepting authority may decide. The tender rates should be based on the controlled price for materials, if any fixed by Government or the reasonable price permissible for the tenderer to charge 3 private purchaser under the provisions of clause 8 of the Hoarding profiteering Preventions ordinance 1943, as amended from time to time on similar principles in regard to labour and supervision in the construction.

20. The contractor should offer employment to ex-toddy lappers as far as possible. The number of ex-toddy lappers to whom he can so offer employment should be mentioned in the tender and he should undertake in the agreement to offer such employment to such number.

21. The contractors shall comply with the provisions of the Apprentices, Act 1961 and the rules and orders issued there under from time to time. If he falls to do so, his failure will make breach of contract and the competent authority, may at his discretion, cancel the contract, of invoke any of the penalties for the breach of contract provided in the

conditions of the contract. The contractor shall also be liable for any peoundary liability arising on account of any violation by him of the provision of the Act.

Without prejudice to the above clause the contractor shall during the period of the contract when called upon by the Engineer, incharge engage and also ensure engagement by the sub-contractors and other employees by the contractor in connection with the work, such number of apprentices in all categories for such period as may be required by the Engineer-in-Charge.

22. In the case of contracts for construction of buildings, either permanent of semi permanent buildings a sum of equivalent to 2 ½ % of the value of work done will be retained for the period of one year from the date of completion of work in order to enable the department officers to watch the effect of all seasons on the work done by the Contractor. The amount so retained with the Government will be refunded only on the expiry of one year period referred to above and on execution of indemnity bond by the contractor for a further period of four years. The contractor shall be liable to set right all defects arising out of this faulty execution or substandard work noticed during the above five years period at his cost.

23. A movement register should be opened and maintained, for technical Assistants by the contractor of for the technical qualified contractor. The technical assistance or technically qualified contractor should note the arrival and the departure timing every day along with initials. Such register should be produced during inspection of the inspecting officers.

24. The fact of submitting the tender implies that the tenderers have actually inspected the site of work and have examined before tendering the nature and extent of various kinds of soils at various depth and have based their tender in such examination by them and no future representation in this regard will be considered.

25. A statement giving brief particulars of equipment and resources that will be put at the disposal of the work under the following classifications should accompany the tender.

A. Equipment (Transport for materials viz. Lorries and carts, concrete mixtures)

B. Organization (i). Technical, (ii). Unskilled.

C. Resources of materials like teakwood etc. and extent to which department help is required top procurement of materials and transport of the same.

D. Methods that will be adopted to speed up the work to ensure completion within or less than the time fixed for completion.

26. The tenderer of the contract who agree to employ the maximum number of ex-service men (Number to be specified in the tender) will receive preferential consideration. The tenderers are requested to report on their covering letter.

27. In registered PWD contractors who had not already produced live certificates in the current year also should do so.

28. All rates quoted in the tender shall be inclusive of sales tax payable under the General sales tax act as amended from time to time (including amendment, Act 28/84) and that the contractor is responsible to file the sales tax return and pay the amount as amended by the C.T. Department. No request for payment of sales tax separately in addition to

tendered rates due to any plea of subsequent levy increase in tax will be entertained vide clause 38 (2) of General contains to contract.

TENDER

To

His Excellency the Governor of
Tamilnadu represented by the
Executive Engineer,
TNSAMB,
Chennai- 32.

Sir,

I/We do hereby tender and if this tender be accepted, undertake to execute the following work viz……………………………. ………………… ………………. ……… …………………….. …………. …………….. …………….. …………….. ………….
As shown in the drawings and described in the specification deposited in the office of the Executive Engineer, TNSMAB, Chennai – 32.with such variation by way of alternations or additions to and omission from the said works and method of payment as are provided for in the "Conditions of contract" for the sum of Rupees …………………………………….. or such sums as may be arrived at under the clause of the "General condition to contract" relating to payment on lump sum basis or by final measurements at unit prices.

2 (i) I/We have also completed the price list of item schedule "A" annexed (in words and figures) for which I/We agree to execute the works and receive payment on measured quantities as per the General conditions of the contract.

3. I/We do hereby distinctly and expressly declare and acknowledge that before the submission of my / our tender. I / We carefully following the instructions in the tender notice and have read the Tamilnadu Building Practice addenda volume and that. I/We have made such examinations of the contract documents and of the plans, specifications, quantities and of the location where the said work is to be done and such investigation the work required to be done and in regard to the materials required to be furnished to enable me / us to thoroughly understand the intention of the same and the recruitment covenants stipulations and restricts We will not thereafter make any claim or demand upon the Government based upon or arising misunderstandings or misconception of mistake or my / or part of the said requirements and covenants stipulations and conditions.

4. I/We enclose an income tax verification certificate. I/We being registered Public Works Department contractor. I/We have already produced an income tax verification certificate during the current year in respect of (here particulars of the previous occasion on which the certificate was produced should be gin). The legal address of the contractor for service of all letters of notices will be as follows

5 (i). (a) I / We enclose herewith for the payment of …………….. the sum of Rs………. As Earnest money not to bear interest.

5. (i). (b). In lieu of cash deposits, I / We ………….. have enclosed a certificate bearing No……….. date………….. issued by ………………… for a value Rupees ……….

…….. …… only) drawn / endorsed / pledged in favour of the Executive Engineer, TNSAMB, Chennai – 32.

5 (i) (c) I am / We are …….. And hence exempted from payment of E.M.D.

6. If my / our tender is not accepted this um shall be returned to me / us on my / our application. When intimation sent to me / us of rejection or at the expiration of ninety days from date of this tender whichever is earlier, if tender is accepted, the EMD shall be retained by the Government as security for the due fulfillment of the contract. If upon written intimation being given to me / us by the authority authorized by the Government under the Article 299(i) of the constitution. (Here in after called "the accepting authority") of acceptance of tender. I / we fail to make the additional security deposit then I/We agree to the forfeiture of the EMD. Any notice required to be served on me / us if delivered to me / us personally or forwarded to me / us by post (registered or ordinary) or left at my / our address given herein. Such notice shall if sent by post be deemed to have been serviced on me / us at the time when in due course of post it would be delivered at the address to which it is sent.

7. I / We fully understand that on receipt of communication of acceptance of tender from the accepting authority there emerges a valid contract, between me / us and the Governor of Tamil Nadu and Tender documents (i.e) tender notice tender with schedule general condition to the contract, and special condition of the tender negotiation letter communication of acceptance tender shall constitute the contract for this purpose and be the foundation of rights as defined in, clause IV of tender notice, provided that it shall be open to the accepting authority to insists on execution any written agreement by the tenderer. If administratively considered necessary or expedient.

8.I / We have also signed the copy of Tamilnadu Building Practice and National Building Code and addenda volume there to maintained in the office of the Executive Engineer, TNSMB, Chennai-32 in acknowledgement of being bound by all conditions of the clauses of the general conditions to be contract and all specifications for items of works described by the specification number in Schedule (A).

9.In consideration of the payment of Rs…… or such sum as may be arrived at under the clause of the General condition to the contract relating to the payment on lump sum basis or by final measurements at unit prices, I/We agree subject to the said condition to execute and complete the works shown upon the said drawing serially number from 1 to …….. inclusive of (schedule B) and described in the specifications (Schedule C) and to the extent of probable quantities shown in (Schedule A) with such variation by way of additions to or alternations, deductions from, the said work and method of payment therefore as are provided for in the said conditions.

10. the term Executive Engineer in the said condition shall mean the officer incharge of the Office having jurisdiction for the time being over the work, who shall be competent to exercise all the powers and privileges reserved, herein, in favour of Government with the previous sanction of a subject to ratification by the competent authorities in case, where such sanction of ratification may be necessary and who has been duly authorized under article 299 (i) of the constitution.

11. I / We agree that the time shall be considered as the "Essence of this contract" and to commence the work as soon as this contract is accepted by the competent authority as defined by the Tamilnadu PWD code and the site or premises is handed over to me / us as provided for in the said condition and agreed to complete the work within …….. Months from the date of such handing over of the site or premises and show progress as defined

in the tabular statement. "Rate of progress" subject nevertheless to the provision for extension of time contained in clause 56 of the general conditions to the contract appendix to the Tamilnadu Building Practice.

12. I / We agree that upon the terms and conditions of this contract being fulfilled and preformed to the satisfaction of the Executive Engineer, the security deposited by me / us herein before recited of such portion thereof as I / We may be entitled to under the said conditions be paid back to me // us as provided in clause 64 of General condition to the contract.

13. I am / we are professionally qualified and my / our qualifications are given below.

Name	Qualification and Experience

I / We in pursuance of clause of tender notice undertake to employ the following technical staffs for supervising the works and will see that one of them is always at site during working hours personally checking all items of works and paying extra attention to such works as may required special attention (eg.) reinforced cement concrete works.

Name of technical staffs proposed to employed	Qualification and Experience

Note : a. The last two clauses should be score out if the cost of work involved is less than Rs.1.00 lakh.

b. The tenderers should score out the last clause if they themselves, are professionally qualified or undertake to employ technical staff under them.

14. I / We agree that the arbitrator for fulfilling the duties set forth in the arbitration clause of the general condition to contractor shall be.

(i). **The Superintending Engineer,Building(C&M) circlr,Chennai-5** in case the value of claim does not Exceed **Rs.50,000/- (Rupees Fifty thousand only)**

(ii) I / We agree that in case of the value of claim is over **Rs.50,000/-** and above, the remedy will be through the competent civil court only.

Signature of the Contractor
with full addressed with
Name in block letters.

The Tenderer should furnish the Copy of Goods and Services Tax (GST) Registration No.

QUOTING RATES BY TENDERER EXCLUDING GST

The Tenderer shall quote the rates and prices (both in figures and words) for all the items of the Works described in the Bill of Quantities along with total tender price (both in figures and words).

The Tenderer shall quote the rates and prices (both in figures and words) for all the items of the Works described in the Bill of Quantities excluding GST along with sum of the quoted tender value excluding GST at the end (both in figures and words).

GST RATES AT 12% FOR WORKS CONTRACT

Government of India has notified vide Notification No. 20 / 2017 –Central Tax (Rate), dated 22nd August, 2017 and Notification No.24 / 2017 – Central Tax (Rate), dated 21st September, 2017, the concessional rate of the Goods and Services Tax (GST) at 12% [CGST at 6% + SGST at 6%] is leviable for any Government Contract, whether Civil or Electrical, irrespective of the Goods and Services Tax (GST) rate applicable on purchase of goods used in the execution of Government Contract. And the GST amount will be calculated at 12% from the sum of total tendered value quoted by the tenderer for construction cost (excluding GST) specified in the BOQ, Subject to GST rate applicable from time to time as recommended by the GST Council.

a) As per Notification 202, dated 29.06.2017 and as per sub-section (2) of Section 7 of the Tamil Nadu Goods and Services Act, 2017, (Tamil Nadu Act 19 of 2017), activities or transactions undertaken by State Government shall be treated neither as supply of goods nor a supply of service.

b) As per Chapter IX (Section 41) of the Tamil Nadu Goods and Services Act, 2017, every registered persons may be entitled to take the credit of eligible input tax, as self-assessed, in his return and such amount shall be credited on a provisional basis to his electronic credit ledger.

c) As per PWD SOR (2019-20), dated 17.06.2019, under General Note, 8 (ix), the Contractor is eligible to get refund of excess tax paid over or liable to pay tax for this Contract Work.

INCOME TAX

Income Tax will be deducted in every part bill (or) final bill 1% to the individual persons and 2% to the firms.

FOR CONTRACTORS SPECIAL ATTENTION

1. Clean river sand shall be used in all cases.

2. Only clean fresh water shall be used on the work. The contractor shall make his own arrangements for water and shall meet all charges therefore. The special attention of the Contractor is drawn to clause 39 of preliminary specification of the T.N.B.P. regarding water and lighting.

3. The broken stone for concrete and RCC work shall be granite and passed by the Executive Engineer.

4. All iron work or steel work of every kind such as to be embedded in concrete shall immediately on arrival at the site be properly scrapped and wire brushed and given priming coat of approved lead painting without claims for extra.

5. The iron holdfasts shall be buildup on the walls in cement mortar 1:3 at the time of construction of walls. No extra claim shall be due for the same wherever the holdfasts are to be provided to 9" thick wall. Those should be fixed with cement concrete 1:3:6 using 20mm gauge broken granite stone jelly for proper anchorage and proper biding. No separate for such pockets of concrete filling at masonry along with adjacent masonry.
6. The Teakwood shall be best Indian Teakwood only and shall be subject to inspection and approval by the Executive Engineer before use on work. Country wood where specified shall be "Karimarudhu" or "Kongu" for scantling "Aiyini" for planks.

7. Holes for Electric, wiring, water supply and drainage's etc. shall be provided as directed during progress of work without any claim for extra.
8. The work will be carried out with the lest hindrance to the adjoining building and the contractor will be responsible for the damages caused to the existing fixtures, electric fittings etc. the course of execution and the contract shall make good nay damages without any claim for extra.

9. In the case of "T" beams and "L" beams the quantity given in the schedules is the quantity for rib portion only. The top flange portion will be always measured with the general slab portion and paid for the slab rate only. For all RCC works, the rate shall be include the treatment of bearing as per TAMILNADU BUILDING PRACTICE.

10. Concrete works: All exposed concrete surfaces will be required to be finished by cement plaster as detailed in Schedule "A".

11. Plastering all external corners, edges of beams, edges of doors and windows openings etc. shall be finished sharp using richer mortar and also finished truly vertical or horizontal as the case may be. The rate for plastering shall include the cost of finishing as above and no separate extra for the corners, edges beams etc shall be paid.

12. If rates are not separately called for, for similar items of works in difference floors, the contractor should not that one rate is applicable for all floors indicated in the detailed plans. Any claims for extra for such items floor war will not be entertained under any circumstances.

13. The project if any to the masonry will be measured under the relevant items and non extra will be paid for finishing the same.

14. (i). the work in Public Works Department (Buildings) executed by the contractor under the contract shall be maintained by the contractor until the work is taken over by the Executive Engineer. The contractor shall accordingly arrange his own insurance against fire, flood, volcanic eruption, earth quake other convention of nature and all other natural calamities risk arising out of acts of God during such period and that the Government shall not be liable for any loss or damages occasioned by or arising out of any such acts of God.

14.(ii). Provided, however that the contract shall not be liable for all or any loss or damages occasioned by or arising out of act of foreign enemies, invasion hostilities or war like operation (before or after declaration of war) rebellion, military or Usurped power.

RETENTION OR WITHHELD AMOUNT

14.(iii). **2 1/2%** of the total value of the work will be retained in the final bill of the work for the period one year reckoned from the date of completion of the work in the order to enable the department to watch the effect of all seasons of the work. The contractor should furnish an indemnity bond for further period of four year. If any defects are notified in the above said period the defects should be rectified by the contractor at his own costs as directed by the Departmental Officers and no extra payment be made for the rectification of such work.

REVENUE RECOVERY ACT

14.(iv). Whenever any amount has to be paid by the contractor in lieu of determination of the contract by virtue of clause 57 (4) any amount that may be due or may be come due from the contractor under the presence and the contractor is not responding to the demands for the payment of said amount, then the Government shall be entitled to recover the said amount under the provision of the Revenue Recovery Act.

In the event of the work being transferred to any other Office /Executive Engineer/ Assistant Executive Engineer who is in charge of office having jurisdiction over the work shall be component to exercise all the powers and privileges reserved in favour of Government.

RISK INSURANCE

14 (v). The work executed by the contractor or under this contract shall be maintained by the contractor's risk until the work is taken over by the Executive Engineer. The Government should not be liable to pay for any loss or damages occasioned by (or) arising out of fire, flood, volcanic eruptions, earth quake, other conclusion of nature and all other natural calamities, risk arising cut of act of God during such period and that the option whether to take insurance coverage (or) not to care such risks is left to the contractor.

The contractor shall not be liable for all or any loss of damages occasioned by or arising out of acts for foreign enemies, invasions, hostilities or war like operation (before or after declaration of war) rebellion military or usurped power.

ARBITRATION CLAUSE

14 (vi). In case any dispute or difference between the parties to the contract either during the progress or after the completion of the works or after determination, abandonment or

breach of the contract or as to any other matter or thing arising there under except as to the matters left to the sole discretion of the Executive Engineers under clause 18, 20, 25-3, 27-1, 34, 35 and 37 of the general condition of the contractor as to the with holding by the Executive Engineers or the payment of any bill to which the contractor may claim to be entities. Then either party shall forth with give to the other, notice of such dispute or difference and such dispute or difference shall be and is hereby referred to the arbitration of the Executive Engineer, TNSAMB, Chennai –32. (Mentioned in the "Articles of agreement" (here in after called the arbitrator) in case where the value of claim is less than and upto Rs.50,000/- (Rupees fifty thousand only)

In case where the value of the claim is more than Rs.50,000/- the parties will seek remedy through the competent civil court (G.O. Ms. No.253, PWD., dated 24.02.1981.

14 (vii). If at any subsequent to the execution of this agreement, Government materials other than those specified in the agreement are supplied to the contractor for use of the work, they will be charged at the market value prevailing at the time of writing of the charge and the should intimate in writing the rate which he demands for finish the work in view of the fact that he is to use Government materials. No centage of incidental charges will be borne by the Government in connection with the supply of the materials referred to in this paragraph.

ADDITIONAL SPECIFICATION

1. The arrangements of M.S. rods for all RCC works shall be in accordance with the working drawing supplied.

2. (i). Payments for centering works for all RCC items shall be made only after the concrete is laid, even though separate items for centering works are included in the schedule. The centering and form shall be provided to the extent and area ordered by the Executive Engineer during execution.
   (ii). all cement concrete for RCC works shall be machine mixed and vibrated.
   (ii). All lime mortar shall be ground in mortar will be as per TNBP

3. M.S. steel rods should be cut and placed as reinforcement with proper care according to the available rods at site, so as to ensure the minimum possible wastage. The maximum percentage of wastage of permissible in any size of reinforcement rods shall be of 5% which will be charged on at the issue rate of Steel.

SCHEDULE C

List of specification for the various item of work supplementing those prescribed in Schedule "A" by standard specification Number.

1. The contractor shall be employ the following technical staff for supervising the work and shall see that one of them is always at site, during working hours personally checking all items of work and paying extra attention to such works as may demand special attention (eg.) reinforced concrete work etc.

Name or Member of the technical staff to be employed.	**Qualification.**	**Experience.**

Note 1 : In the case, the contractor is himself professionally qualified is not in position to remain always at the site for the work during working hours, personally checking all items of work and paying extra attention to such works as may demand special attention (i.e..) RCC work, etc, the contractor should employ technically qualified men and as prescribed for the work.

Note 2 : A penalty of **Rs.2000/- (Rupees two thousand only)** per month for diploma holder and **Rs.5000/- (Rupees five thousand only)** per month for degree holder will be levied in case of default of the part of contractor as per the norms specified regarding appointment of Technical Assistant with tender notice.

ADDITIONAL CONDITION – 1

1. The materials noted in the list enclosed will be supplied departmentally at the section stores at site of work and their cost recovered from the contractor's bill issue rates noted against each.

2. The contractor shall be responsible for the safe custody and storage of the materials under dry conditions at the places of the work spot approved by the Executive Engineer.

3. No royalty shall be charged where due for materials quarried from PWD or District Board or other Government Quarries. Necessary assistance will be given to the Contractor by the PWD to obtain access to quarries approved by the Executive Engineer. No plot rent shall be charged for materials stacked on the Government land during the course of construction, provided, all such materials are removed with a month after the work is completed.

4. The contractor shall pay royalty or charge due for use of private quarries and private land.

5. The contractor shall form his own approach road to the work site for which no extra will be due to him. On completion of work, the contractor shall not be permitted to remove the materials laid for formation of road. If the contractor is allowed to use the existing road, he shall maintaining them in good condition at this own cost throughout the period of the contract.

6. (1) any surplus materials remaining at the site, will not generally be taken over by the Department whether before or after the completion or termination of contract. Such materials either which were originally procured by the contractors were issued to them by the department and charged to their accounts are the property to the contractors and can however be taken by the Department is required, for use on other works, which are in progress only, be special arrangements and at the prevailing market rates viz. The rates which the article or articles of a similar description can be procured at a given time at the store, godown, from Public market suitable to the Division for obtaining such there of.

   (2) If the materials originally used by the Department the price allowed to the contractor on re-acquisition shall not exceed the amount charged to the contractor excluding the element of storage charges if any.

   (3) If at any time subsequent to the execution of this arrangements, Government materials other than those specified in the agreement are supplied to the contractor for use on the work they will be charged at the market value prevailing at the time of supply or stock issue rates whichever is higher. The contract will be informed in writing of this charge and he should intimate in writing the rate he demands for finishing the work in view of the fact that he is not to use Government materials. No centage or incidental charges will be borne by the Government in connection with the supply of materials referred to in this paragraph. 5

(4) The surplus materials which were originally issued to the contractor back to the department for use of the work shall not be removed from the site of work without getting the written permission of the Executive Engineer.

7. The contractor's special attention is invited to clause 37 and 38 of the preliminary specification of T.N.B.P. and he is requested to provide at his own expenses shed, latrine and Urinal for his workmen.

8. If night work is required to fulfill the agreed rate of progress all arrangements shall be made by the contractor including of lighting without any claim for extra.
9. The contractor shall not employ the labours below the age of 12 years and shall also note that he must offer employment ex-toddy tappers and unemployment agriculture labours as far as possible.

10. Any of the items in the schedule may be omitted or radically altered no variation in rates shall become payable to contractors on account of such omissions or variation in quantity.
11. Reference to TNBP in the schedule of quantities referred and addenda and corrigenda issued thereafter.

12. The contraction of building will be deemed to be completed only, if all the items of work including finishing items contemplated herein after executed.

13. The contractors shall abide the contractor's labour regulation of the PWD framed by the Tamilnadu Government.

5. Construction materials

Supplemental to clause of 20 of General conditions.

5.1. Cement :

The contractor has to make his own arrangements for the procurement of Cement of required specifications for the works subject to the followings :-

(A). The contractor shall procure cement required for the works only from reputed cement factories (main produced of their authorised agents, manufacturing cement to ISI standard) acceptable to the Engineer-in-Charge. The contractor shall be required to furnish to the Executive Engineer bills of payment and cost certificates issued by the manufactures or their authorised agents to authenticate procurement of quality cement from the approved cement factory. The contractor shall make his own arrangements for safe haulage and adequate storage of cement.

(B). The contractor shall procure in stand packing of 50Kg per bag from the authorised manufacturer. The contractor shall make necessary arrangement at his own cost to the satisfaction of Engineer-in-Charge for actual weightment of random sample from the available stock and shall confirm with the specification laid down by the Indian Standards Institutions or other standard foreign intuitions as the case may be. Cement shall be got tested for all the tests as directed by the Engineer-in-Charge atleast one month in advance before the use of cement bags brought and kept at site godown.

(C). The employer will furnish air recraing agents and admixtures required to the contractor free of cost at the employer stores. The use of such admixtures and agents shall be made as per the instructions of the Engineer-in-Charge. The cost of cartage / storage, handling, batching mixing shall be borne by the Contractor and shall be included by him to unit officers tendered for concrete.

(D). The contractor should store the cement of 60 days requirement atleast one month in advance to ensure the quality of cement to brought to site and shall not remove the same without the written permission of Engineer – in – Charge.

The contractor shall forthwith remove from the works area, and the cement that the Engineer-in-Charge may disallow for use on account of failure to meet with required quality and standard.

(E). The contractor will have to construct sheds for storing cement having capacity not less than the cement required for 9 days use, at approved locations. The Engineer – in – Charge or the representative shall have free access to such store at all times.

(F) The contractor shall further at all times satisfy the Engineer-in-Charge on demand by production of records and test books or by submission of returns and other profs as directed that the cement is being used as tested and approved by the Engineer – in – Charge for the purpose and the contractor shall at all times, keeps his record upto date and enable the Engineer-in-Charge to apply such checks as he may desire.

(G) Cement which has been unduly long in storage with the contractor or alternatively has deteriorated due to inadequate storage and thus become unfit for use on the works will be rejected by the Department and no claim will be entertained. The Contractor shall forth with remove from the work are any cement the Engineer – in – Charge may disallow for use of work and replace it by cement complying with the relevant Indian Standards

5.2. STEEL

The contractor shall provide mild steel (MS) reinforcement basis, High Yield strength deformed (HYSD) bars, rods and structural steel etc., required for the works only from the main and secondary producers manufacturing steel or other authorized agents to the prescribed specifications. Bureau of Indian Standards requirements and licensed to affixing ISI test certificate issued by the Government approval laboratory certification marks and acceptable to the Engineer – in – Charge. Necessary ISI test certification are to be produced to Engineer – in – Charge before use on works.

The Diameters and weight of steel should be as follows.

Sl. No.	Diameter of Rod	Sectional weight in kg per running meter both for plain and HYSD Steel.
1	6 Millimeters	0.22
2	8 Millimeters	0.39
3	10 Millimeters	0.62
4	12 Millimeters	0.89
5	14 Millimeters	0.21
6	16 Millimeters	1.58
7	18 Millimeters	2.09
8	20 Millimeters	2.47
9	22 Millimeters	2.98
10	25 Millimeters	3.85
11	28 Millimeters	4.83
12	25 Millimeters	6.35
13	20 Millimeters	4.03
14	32 Millimeters	6.31
15	33 Millimeters	6.71
16	36 Millimeters	7.99
17	40 Millimeters	8.06
18	42 Millimeters	10.88

Note : If any rods other than those specified above are used the weight shall be as per standard steel tables.

ADDITIONAL CONDITION OF CONTRACT- I

The contractor should use steel centering sheets over sites as to obtain the required finish to the under site of the slab centering steel sheets must be made smooth and perfectly level and to give smooth and even finish to the RCC ceiling centering and form work shall be provided to the and area ordered by the Executive Engineer during execution.

ADDITION CONDITION OF CONTRACT - II

The contractor shall at his own expenses provide arrangements for this provision of footwear for any labour during cement mixing work all other similar type of work involving the use of tar mortar etc. to satisfaction of the Engineer – in – charge and no his failure to do so, the Government shall be entitled to provide same and recover the cost from the contract.

When there are complaints of non-payment of wages to he labourers bills of the contractor may be with held pending a clearance of certificate from the labour department.

ADDITIONAL CONDITION OF CONTRACT - III

Rules for the provision of health and sanitary arrangements for workers employed by the PWD and his contractors.

The contractor's special attention is invited to clause 37, 38, 39 and 51 of the Tamilnadu Building Practice and he is requested to provide at his own expense the following amenities to the satisfaction of the Executive Engineer.

FIRST AID

1. At the work site there shall be maintained a readily accessible place, first aid appliances and medicines including adequate supply sterilized dressings and sterilized cotton wool. The appliances shall be kept in a good order. They shall be under the charge of responsible person who shall be readily available during working hours.

DRINKING WATER

2. (a) Water of good quality fit for drinking purposes shall be provided for the work people on a scale of not less than three gallon head per day.

   (b). Where drinking water is obtained from an intermittent Public Water Supply each work place shall be provided with the storage tanks where such drinking water shall be stored.

   (c). Every water supply and storage shall be at a distance not less than 50 feet from any latrine / drain or other existing well which is within such proximity of latrine, drain on any other source of pollution, the well shall be properly closed. If water is drawn from it for drinking. All such wells shall be entirely closed and be provided with a trap door, which shall be dust and waterproof.

(d). A reliable pump shall be fitted to each covered well. The trap door shall be kept locked and opened only for cleaning or inspection which shall be done atleast once in a month.

WASHING AND BATHING PLACES

3. Adequate washing and bathing places shall be provided separately for men and women. Such places shall be kept clear and drained condition. Bathing or washing should not be allowed in or near the drinking water well.

LATRINES AND URINALS

4. There shall be provided within the premises of every work place latrines and urinals in an accessible place and the accommodation separately for each of them shall be on the following scale or on the scale so directed by the Executive Engineer in any particular area.

1. Where the number of persons employed does not exceed 50-3 seats.

2. Where the number of persons employed exceed 50 but does not exceed 100-3 seats.

3. For every additional 100 persons 3 seats.

If women are employed, separate latrines and urinals screened from those for men shall be provided on the same scale. Except in work places provide with water flushed latrine connected with a water borne sewage system, all latrines shall be provided with actable dry earth system which will be cleared atleast four times daily and atleast twice during working hours and kept in a strictly sanitary condition. The latrines and urinals shall be tarred inside and outside atleast once a year.

The escreta from the latrines shall be disposed off at the contractor's expense, in outside pits approved by the local public health authority. The contractor shall also employ adequate number of scavengers, conservancy staff to keep the latrines and urinals in a clean condition.

SHELTER DURING REST

At the work site, there shall be provided at free of cost two suitable sheds one for meals and another for rest separately for men and women for the use of labourers.

CRECHES

2. At every work place at which 50 or more women are working there shall be provided tow huts of suitable size for the use of children under the age of 6 years belonging to such women. One hut shall be used for infants, games and play and the other as their bedroom. The huts shall not be constructed and a lower standard than the following.

i. Thatched roofs
ii. Mud floors and walls
iii. Planks spread over the mud floor and covered with matting

The size of the crech or creches should vary according to the number of women workers. The creches should be properly maintained and necessary equipment like toys etc, should be provided and huts shall be provided with suitable and sufficient sweepers to keep the

place clean. There shall be two ayahs in attendance. Sanitary utensils shall be provided to the satisfaction of the health officer of the area concerned.

The number of huts shall be restricted to children and their attendants of the children.

CANTEEN

3. A cooked food canteen on a moderate scale shall be provided for the benefits of the workers if it is considered expedient.

SHEDS FOR WORKMEN

The contractor should provide at his own expenses shed for housing the workmen. The sheds shall be on a standard not less than the cheap shelter type, to live in which the work pertaining to locality area accustomed to. A floor area of about 1.80 metre X 1.5 metre for 2 persons shall be provided. The sheds to be in rows with 1.3 metres clear work people's camp shall be laid out in units of 400 persons each. Each unit to have clear space of 12 meter around.

ADDITIONAL CONDITION OF CONTRACT – IV

Safety provision in the building industry conditions in additional to clause 36 preliminary specification of TNBP.

PART – I

ARTICLES – 1

1. Suitable scaffolds shall be provided for workmen for all work that cannot be safely done from ladder or by any other means.

2. A scaffold shall not be constructed, taken down or subsequently altered except,

a). Under the supervision of a competent and responsible person and

b). by competent workers possessing adequate experience in this kind of work.

3. Scaffolds shall be so constructed that no part thereof can be displaced in consequent of normal use.

4. Scaffolds shall not be over loaded so far as practicable and shall be evenly distributed.

5. Before installing lifting gear on scaffolds special precautions shall be taken to ensure the strength and stability of the scaffolds.

6. A competent person shall periodically inspect scaffolds.
7. Before allowing a scaffold to be used by his workmen every employer shall satisfy as to whether the scaffold has been executed by his workmen or not be should taken step to ensure that it functions fully with the requirements of this article.

ARTICLE – 2

1. Working platform gangways and staircase shall be so constructed that no part thereof can sag unduly or unequally.

a). Be so constructed and maintained to obviate from risks of persons tripping or slipping and

b). be kept free from any unnecessary obstruction.

c). Every working platform gangway working place and staircase shall be suitably forced.

ARTICLE – 3

1. Every opening in the building or in a working platform shall except for the time to the extent required to allow the excess of persons or the transport or shirting of materials be provided with suitable means to prevent the fall of persons or materials.

2. When persons are employed on a roof where there is danger of falling from the height exceed that to be prescribed by national laws of regulations, suitable precautions shall be taken to prevent the fall of persons of materials.

3. Suitable precautions shall be taken to prevent persons being struck by articles which might fall from scaffolds or other working places :

ARTICLE – 4

1. Safe means of access shall be provided, to all working platforms and other working places.

2. Every ladder shall be securely fixed and of such length as to provide secure hand hold and foot held at every position at which it is used.

3. Every place where work is carried on and the means of approach there to shall be adequately lighted.

4. Adequate precautions shall be taken to prevent persons danger from electrical equipment.

5. No materials on the site shall be so attached or placed as to cause danger to any persons.

PART – II

GENERAL RULES AS TO HOISTING APPLIANCES

ARTICLE – 5

1. Hoisting machines and tackle including their attachments enhotages and supports shall.

a) Be of good mechanical condition sound material and adequate strength and free from patient defects and

b) Be kept in good repair and in good working order.

2. Every rope used in hoisting or lowering materials or as a means of suspension shall be of suitable quality and adequate strength and free from patient defects.

ARTICLE-6

1. Hoisting machines and tackle shall be examined and adequately tested after erection on the site and before use and be reexamined in position at intervals to be prescribed by national law or regulation.

2. Every chain ring, hook shackle, swivel and pulley block used in hoisting or lowering materials or as a means of suspension shall be periodically examined.

ARTICLE – 7

1. Every crane driver or hoisting appliances operator shall be properly qualified.

2. No persons under an age to be prescribed by national law regulations shall be in control of nay hoisting machinery including any scaffold which or gives signals to the operator.

ARTICLE – 8

1. In the case of very hoisting machine and every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as a means of suspension, the safe working load shall be ascertained by adequate means/

2. Every hoisting machine and all gear referred to in the proceeding paragraphs shall be plainly marked with the safe working load.

3. In the case of hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated.
4. No part of any hoisting machine or of any gear referred to in the paragraph (i) of this article shall be loaded beyond the safe working load except for the purpose of testing.

ARTICLE – 9

1. Motor gearing, transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with sufficient safe guards.

2. Hoisting appliances shall be provided with such means as well reduce the risk of the accident descent of the load.

3. Adequate precautions shall be taken to reduce the risk of any part of suspended load becoming accidentally displaced.

PART – III

GENERAL RULES TO SAFETY EQUIPMENT AND FIRST AID

ARTICLE – 10

1. All necessary personal safety equipment shall be kept available for the use of the persons employed on the site and be maintained in a condition suitable for immediate use.

2. The workers shall be required to use the equipment thus provided and the employer shall take adequate steps to ensure proper use of the equipment by those concerned.

ARTICLE – 11

When work is carried on in proximity to any place where there is risk of drawing all necessary equipment shall be provided an kept ready for use and all necessary step shall be taken for the prompt reduce of any person in danger.

ARTICLE – 12

Adequate provision shall be made for prompt first aid treatment of all injuries pixely to be sustained during the course of the work.

ARTICLE – 13

Where large work place are situated in cities, towns or in their sub-urban and no beds are considered necessary owing to the proximity of city or town hospital, suitable transport shall be provided to facilitate removal of urgent cases to the Hospitals, at their work places some conveyance facilities such as car shall be kept ready available to the injured person or persons suddenly taken seriously ill to the nearest hospital.

MOSAIC FLOORING

1. Cement concrete flooring tillers shall be manufactured from a mixed cement natural aggregates and colour materials where required by pressure process. During manufacture the tiles shall be subject to a pressure of not less than 140 Kg per sq.m. (or 2000 lbs per sq.m.)

2. Proportion of cement to aggregate in backing of the tiles shall not be less than 1.5 by weight.

3. On removal from mould, the tiles shall be kept in moist condition continuously for atleast 7 days and subsequently if necessary kept moist for such a longer period that would ensure their conformity to the requirements of Transfers strength, resistance to wear and tear absorption and would minimize shrinkage and cracking, tillers shall be stored under cover.

4. Tolerance: Tolerance on length and breath shall be plus or minus one millimeter. Tolerance on thickness shall be plus 5mm that the range of dimensions if any of one delivery of tiles shall got exceed 1mm of length and breadth and 3mm on thickness.

5. THICKNESS OF WEARING LAYERS

Class of tiles	Minimum thickness of wearing layer
Plain cement and plain coloured tiles for general duty	3mm
Plain cement and plain coloured tiles for heavy duty	6mm
Plain (mosaic) terrace tiles with chips of size Varying from the smallest upto 6mm (1/4")	5mm
Mosaic terrace tiles with chips of size ranging from the smallest upto 12mm (1/2")	5mm
Mosaic terrace tiles with chips of size varying from the smallest upto 20mm (3/4")	6mm

6. Colours and appearance: The colour and texture of the wearing layer shall be uniform through out its thickness.

7. When specifying the tiles, the contractor should specifically indicate whether the chips to be used are from the smallest units 6mm or from the smallest upto 12mm or from the smallest upto 20mm size. The offers of the department shall also specify size of chips by referring the approximate photograph given in figures upto figures 4 to 6 in Indian Standard 1237 / 1959

GENERAL QUALITY OF TILES

8. Unless otherwise required the wearing face of the terrace tiles shall be mechanically should and flat. The wearing face of the tiles should be plane from projection depressions and crack (Hair cracks not included) and shall be reasonably parallel to the back free of tiles all angle shall be right angels and all edges shall be sharp and true.

9. Breaking traverse strength of tile shall be given as below

Size of tiles	Span	Breaking wet test	Load based Dry test
19.85 X 19.85cm	15cm	71 Kg	106 Kg
24.85 X 24.85cm	20cm	90 Kg	120 Kg
29.85 X 29.85cm	25cm	99 Kg	149 Kg

10. The average wear of not less than 12 specimens shall not exceed 2mm and wear on any individual specimen shall not exceed 2.5cm when tested in an vibration machine.

11. The average percentage of water absorption shall not be less than six full tiles shall not exceed ten in the case of water absorption test.

12. The density of the tiles shall be in the order of about 2.4 gms. The tiles shall be laid with the minimum possible width of joint and not exceeding 1/32 inch. The joints shall be filled with gray cement to match the finish of the tiles and shall be made almost invisible when the floor is given the final polish. The polishing shall be done by means of electric polisher wherever possible and hand polish to other places like vertical faces or walls covered and other areas where the machines can have no access and to a highly degree so as to present a perfectly smooth and glossy surface as even as possible.

13. All angles at junctions of vertical faces shall be rounded off to 11/2" radius with same quality of materials and colour of the tiles of the floor. But laid in situ and these cover shall be measured as part of flooring and laid for at the same rates as the flat floors. The colours of the tiles shall be match other coloured face adjacent or as may be directed by Executive Engineer.

14. The dadooing and skirting have to be finished by giving necessary races in the brick wall itself so that the projections does not exceed ¾" from the face of the wall i.e. the finish plastered surfaces.

15. Based on the modules of the ruptures of 30 Kg per sq.m. for dry test and two thirds of the value of wet test.

GUIDE LINES FOR ADOPTION OF STRENGTH GARDENING OF CONCRETE

16. Plain and reinforced concrete have been graded according to the cube compressive strength and designation as M100: M150, M200, M250, M300, M350 and M400. In the designation of concrete the letter "M" refers to the mix and the "Number" to the specified 28 days work cube compressive strength of that mix expressed in Kg. Cm sq.m.

17. Approximately the M100, M150, M200, M250 grades of concrete corresponds to 1:3:6, 1:2:4, 1:11/2:3 and 1:2 nominal mixed of ordinary concrete currently used. The national building code gives necessary specification for strength gardening of concrete, proportionately and works control and the same may be followed the extract of the same is enclosed.

18. The proportion of aggregates, cement and water to be used for controlled concrete shall be designed by preliminary tests of the materials to be actually used to obtain the specified strength with the maximum quantity of cements. However, the maximum total quantity of aggregate by weight per 50 Kg of cement shall not normally exceed 450 Kg.

19. For any particular item compressive strength required to be obtained by the concrete at 28 days in the preliminary and work test on the 15cm cubes minimum cement content, required to be used and the approximate proportions approved fine and coarse aggregate shall be specified, in the tender schedule. These particulars will be only for the guidance of the contractor for quoting rates.

20. Immediately upon the receipt of the award of contract, the contractor shall inform the Executive Engineer the exact location of the sources of the materials which he propose to use and get the materials approved. The mix with the actual approved materials to be used shall be got designed in an approved laboratory by the contractor with minimum quantity of cement to give the specified strength in the preliminary tests and the

proportions shall be used so long as the materials continue to be of the same quality and the same sources subject only to slight changes in the relative qualities is of fine and coarse aggregate for the purpose of promoting 3ork ability provided the work tests also show the required strength. If during the progress of work, the contractor wishes to change the materials the proportion shall be fixed on the basis of the fresh preliminary tests to give the required strength after the Executive Engineer is satisfied that the materials satisfy the specification. No adjustment of cost shall be made for change of proportions of cement fixed in the original preliminary tests.

PROPORTIONING OF MIX

Each batch of mix shall be proportioned by weight of cement fine aggregate and coarse aggregate, water for each bag shall be added in quantity measured by volumes or by weight. Where weight of cement determined by accepting the maker weight per bag, a reasonable number of bag shall be weighted separately to check the nett weight, and the cement is weighted weight per bag, a reasonable number of bags shall be weighed on the site and not in bags. It shall be weighted separately from the aggregate. In the weighting equipment's shall be maintained in a clean and serviceable condition and their accuracy checked periodically.

MIXING

Mixing shall be done by mechanical mixes. The quantities of fine aggregate and water shall be adjusted duly in the filed to compensate for bulkage due to the quantity of moisture present in fire aggregate and free water in the coarse aggregate at the time of use.

TESTS

Tests shall be got done in an approved laboratory at the cost of the contractor.

A. PRELIMINARY TEST

If concrete mixes are specified by its strength then the mix needs be designed and preliminary test should be carried out.

Preliminary test is conducted in a laboratory on the trial mix of concrete produced in the laboratory with the object of:

a). Designing a concrete mix before the actual concrete operation starts.

b). Determining the adjustments requirement in the designed mix when there is a change in the materials used during the execution of works or.

c). Verifying the strength of cement mix.

B. WORK TESTS

The test shall be conducted either in the field or in a laboratory on the sample made in the work spot of the concrete used on the work.

The samples shall be spread as evenly as possible throughout the day then wide changes of weather conditions occur during concrete additional sample may be taken as desired by the Executive Engineer.

All expenses on the tests shall be borne by the contractor. Nothing extra shall be paid to the contractor for carrying out the tests.

All samples or tests shall be taken in the presence of the Assistant Engineer concerned and the contractor or his authorized agent.

All mix design and test date and results shall be maintained as part of the record for the contract and shall be signed by the Assistant Executive Engineer and the contractor.

A register of cement concrete cubes cast and tested giving the following particulars shall be maintained at the site:

1. Name of work and reference to Agreement
2. Serial Number
3. Date and time of sample taken
4. Sample Number
5. Number of cubs
6. Identification marks
7. Proportions of mix
8. Description of the portion of work represented by the sample and quantity of concrete represented by the sample
9. Initial of Assistant Executive Engineer and the contractor's authorized agent in whose presence the sample is taken.
10. Result of 7 days test.
11. Result of 28 days test.
12. Review and remarks by Executive Engineer.

EXTRACT OF :
NATIONAL BUILDINGS CODE OF INDIA, 1970
Part VI Section 5A : PLAIN AND REINFORCED CONCRETE

4.2 Grades of concrete.

4.2.1. Plain and reinforced concrete shall be in seven grades as designated as M100, M150, M200, M250, M300, M350 and M400.

Note ; In the designated of a concrete mix, letter "M" refers to the mix and the number of specified 28 days work cube compressive strength of that mix expressed in Kg/sq.m.

4.2.2.1. Where ordinary Portland cement or Portland blast furnace slag cement conforming to accepted standard VI 5 (2)* is used. The compressive strength requirements for various grades of concrete shall be as given in Table.1. Where requirements specified in Table.1.shall be met at 7 days. Where other cements are used, the Engineer – in – Charge shall specify the corresponding requirements preferably on the basis of preliminary tests.
* IS 269 / 1967 specification for ordinary rapid hardening and low heat Portland cement.

IS 455 / 1967 specification for Portland and blast furnace slag cement.

4.2.2.2. The strength requirements specified in Table.1. shall apply to both controlled concrete and ordinary concrete (see 4.31) preliminary tests need not however, be made in the case of ordinary concrete:

a. In order to get a relatively quicker idea of the quality of concrete, optional works tests on beams for modulus of rupture at 72 + or – 3 hours / at 7 days, compressive strength tests at 7 days may be carried out in addition to 28 days compressive strength test. In all cases, the 28 days compressive strength specified in Table.1.shall alone be the criterion for acceptance or rejection of the concrete. If however form tests carried out in a particular job over a reasonably long period, it has been established to the satisfaction of engineer – in – Charge that a suitable ratio between the 28 days strength and the modulus of rupture at 72 + or – 2 hours at 7 days of compressive strength at 7 days may be accepted. The Engineer-in-Charge may suitably relax the frequency of 28 days compressive strength test specified in Table.5. provided the expected strength values at the specified early age are consistently met. For this purpose the values given in Table.2. may be taken for general guidance in the case of concrete with ordinary cement.

b. Whether the strength of a concrete mix, as indicated by test lies between the strength for any two grades, specified in Table.1. such concrete shall be classified for all purpose as a concrete belonging to the lower of the two grade between which its strength lies.

4.3. Proportioning and works control:

4.3.1. Methods of proportioning : The determination of the proportion of cement aggregate and water to attain the required strength shall be made by one of the following.

a). With preliminary tests by adopting nominal concrete mixes. Such concrete shall be ordinary concrete.
4.3.2. Controlled Concrete :

4.3.2.1. As far as practicable, controlled concrete should be used on all concrete works. Controlled concrete for use in plain an reinforced concrete structures shall be in grade M100, M150, M200, M250, M300, M350 and M400.

4.3.2.2. The concrete mix shall be designated to have an average strength corresponding to the value specified for preliminary test in table.1. The proportions chosen should be given such that the concrete is of adequate workability for the conditions prevailing on the work in question and may properly compacted with the means available.

The maximum total quantity of aggregate by weight per 50 Kg of cement shall not exceed 450 Kg. Except where otherwise specifically permitted by the Engineer – in – Charge.

4.3.2.3. Except where it can be shown to the satisfaction of the Engineer-in-Charge that supply of proper graded aggregate of Uniform quantity may be maintained over the period of work, the grading of aggregate should be controlled by obtaining the course aggregate in different sizes being stocked in separate stock file. The materials should be stock piled for several hours preferably a day before use. The grading of coarse and fine aggregate should be checked as frequently as possible the frequency for a given job being determined by the Engineer – in – Charge to ensure that the suppliers are maintaining the grading uniform with that on the samples use in the preliminary tests.

4.3.2.4. In proportioning concrete the quantity of both cement and aggregate should be determined by weight. Where the weight of cement is determined by accepting the manufactures weight per bag and reasonable number of bags should be weighed separately to check the net weight where the cement is weighed on the site and not in bags it should be weighed separately from the aggregates. Water should be either measured by volumes in calibrated tanks on weighed. All measuring conditions and their accuracy may be periodically checked.

4.3.2.5. It is most important to maintain the water cement ratio constant at its correct value. To this end, determination of moisture contents in both fine and coarse aggregates should be made as frequently as possible the frequency for given job being determined by the Engineer – in – Charge according to weather conditions. The amount of the added water should be adjusted to Compensate for any observed variations in the moisture contents. The determination of moisture content in the aggregate shall be carried out in accordance with good practice (VI-05-9) IS 2386 Part III – 1963. To allow for the variation in the weight of aggregates due to variation in their moisture content suitable adjustment in the weight of aggregate should also be made.

4.3.2.6. No substitution in materials used on the work or alternation in the established proportions except as permitted in 4.3.2. Shall be made without additional tests to show that the quality and strength for this purpose.

4.3.2.7. Workability of the concrete should be checked at frequent intervals. To slump test or where facilities with the compacting factor test conducted in accordance with good practice VI 5 (10) may adopted for this purpose.

4.3.2.8. A competent persons should be employed where first duty will be supervision all stage in the preparation and placing of the concrete. All work test specimen should be made and site tests carried out with his direct supervision.

4.3.3. Ordinary Concrete :

4.3.3.1. Where it is considered not practicable to use controlled concrete, ordinary concrete may be used for concrete of grades M100, M150, M200, M250. The proportions of materials for nominal concrete mixes for ordinary concrete shall be in accordance with table.3.

4.3.3.2. In purporting concrete the quantity of cement should be determined by weight. The quantities of fine and coarse aggregates may be determined by volume but these should also preferably be determined from the volume specified in table.3. and the weight per litre of dry aggregate. If fine aggregate is moist and volume batching is adopted, allowances shall be made for bulking in accordance with good practice (VI.5 (9)*)

4.3.3.3. The water cement ratio shall not be more than the specified in table.3. The cement content of the mix specified in the table.3.any nominal mix may be increased if the quantity of water in a mix has to be increased to overcome to the difficulties of placement and compaction so that the water cement ratio specified in Table.3. is not exceeded.

Note.1 : In case of vibrated concrete, the limit specified may be suitably reduced to avoid aggregation.

Note.2 : The quantity of water used in the concrete mix for reinforced concrete work should be sufficient, but should not be more than what is sufficient to, produce a dense concrete of adequate workability for the purpose, which will surround the properly grip, all the reinforcements, work ability of the concrete should be controlled by maintaining water cement ratio that is found to give a concrete which is just sufficiently wet to be placed and compacted without difficulty with the means available.

4.3.3.4. Workability of concrete should be controlled by direct measurement of water content, making allowance for any surface water in the fine and coarse aggregates. The slump test may be conducted in accordance with good practice (VI.5 (10)).

4.3.3.5. Allowance should be made for surface water present in the aggregate when computing the water cement surfaces water shall be determined by field methods in accordance with good practice VI.5 (9). In the absence of exact date the amount of surface water may be estimated from the values given in the Table.4.

4.3.3.6. If ordinary concrete made in accordance with the proportions given for a particular grade does not yield the specified due to proper qualities of materials not being available, such concrete shall be classified as belonging to the appropriate lower grade.

Ordinary concrete proportioned for a grade given in accordance with table.3. shall not however be placed in a higher grade on the ground that the test strengths are higher than the minimum specified. No interpolation shall be permissible.

4.4. Sample size and acceptance criteria

4.4.1. All tests shall be carried out in accordance with good practice (VI-5 (4)).

4.4.2. The number of test specimens required, the frequency of sampling and the criteria for acceptance of a concrete as conforming to the specified grade shall being accordance with table.5. for both ordinary concrete and controlled concrete. No preliminary test are, however, necessary in the case of ordinary concrete.

* ISI 199 – 1959 – Methods of sampling, and analysis of concrete.

* IS 2386 (Part III 1963) specific gravity, density, voids absorption and bulking – methods of tests for aggregation for concrete.

* IS 223866 – Methods of test for aggregates for concrete. IS (Part III) 1963-Specific gravity density voids absorption and bulking.

* IS 516 – 1959 – Method of tests for strength of concrete.

TABLE.1.

STRENGTH REQUIREMENTS OF CONCRETE

(CLAUSE 4.2.2.1 AND 4.2.2.2.)

(All values in Kgs / Cm. Sq.)

Grade of compressive strength of 15cm cubes at 28 days after mixing concrete …… conducted in accordance with good practice VI.5 (4). *

1.	Preliminary tests min. 2	Work test Min 3.
M100	135	100
M150	200	150
M200	260	200
M250	320	250
M300	380	300
M350	440	350
M400	500	400

Note 1 : Preliminary Test : A test is conducted in a laboratory on the trail mix of concrete produced in the laboratory with the object of

a). Designing the adjustments required in the designed mix when there is a change in the materials used during the execution of work, or

b). Determining the adjustment required in the designed mix when there is a change in the materials used during the execution of work, or

c). Verifying the strength of concrete mix

Note 2 : Work Test : A test conducted either in the field or in laboratory on the specimens made on the works out of the concrete being used on the works.

Note 3 : Size of cubes : In the working test, with the approval of the Engineer-in-Charge 10cm cubes may be used in place of 15cm cubes provided the maximum nominal size of aggregate does not exceed 20mm. Even the use of 15cm cubes should normally be restricted to concrete's having a maximum nominal size of aggregate not exceeding 40mm. Where concrete with aggregates larger than 40mm size is required to be tested, the size of cubes should be specified by the Engineer-in-charge, keeping in view that generally the length of side of the cube should be about four timers the maximum nominal size of aggregate in the concrete constituting the cube specimen.

* IS 5-16 – 1959 – Methods of test for strength of concrete

Note 5 : Cylinder strength – Compressive strength test may, with the approval of the Engineer-in-charge, be conducted on 15cm, diameter and 30cm high cylinder in accordance with good. Practice (VIU.5 (4))* instead of one cube, where cylinder strength figures are adopted the compressive strength figures given above shall be modified according to the formula. Minimum cylinder compressive strength required 0.8. compressive strength specified for 15cm cubes.

THE CENTRAL ROAD RESEARCH INSTITUTE, New Delhi has carried out test with a view to establishing a relation between water cement ratio and the compressive strength of concrete using ordinary Portland cement manufactured in the country to accepted Standards (VI-5 (2)).

As a result of these, it has been considered advisable to give graphs showing the relationship between the compressive strength of Concrete mixes with different water cement ratios and the 7 days compressive strength of concrete tested in accordance with good practice (VI – 5 – (2)). These graphs have been given in Appendix – A. As they would be some assistance in obtaining the water cement ratio for trail mix of concrete.

TABLE.2.

OPTIONAL WORKS TEST REQUIREMENTS OF CONCRETE

(Clause 4.2.2.2 (a))

(All values in Kg/cm.sq.)

All test shall be conducted in accordance with good practice (VI-5-(4)*).

Grade of Concrete 1.	**Compressive strength of 15cm cubes min 7 days 2.**	**Modules scrupture by beams test in**	
		At 7.2 + or –2 Hours 3.	**At 7.2 + or –2 Hours 4.**
M100	70	12	17
M150	100	15	21
M200	135	17	24
M250	170	19	27
M300	200	221	30
M350	235	23	32
M400	270	25	34

Note : Notes 3 to 5 under Table.1. are also applicable to this table.
* L.S. 510-1959 Methods of test for strength of concrete
* L.S. 261-1967 Specification for ordinary rapid hardening and best Portland cement

TABLE.3.

CONCRETE MIX PROPORTIONS
(CLAUSE 4.3.3.)

ORDINARY CONCRETE

Grade of concrete 1.	**Total quantity of dry aggregates by volume per 50 Kg of cement to be taken as the sum of the individual volumes of fine and coarse aggregate max. 2.**	**Proportion of fine aggregate to coarse aggregate 3.**	**Quantity of water per 50 Kgs. Of cement Max. 4.**
M100	300 Liters.	--	34 Liters.
M150	220 Liters.	--	32 Liters
M200	160 Liters.	--	30 Liters
M250	100 Liters.	--	27 Liters

Note : It may be noted for general guidance that M100, M150, M200 and M250 or ordinary concrete correspond approximately to 1:3:6, 1:2:4, 1:11/2:3 and 1:1:2 nominal mixes of ordinary concrete currently used in the country.

The preparations of the aggregate should be adjusted from upper limit to lower limit progressively as the grading of the fine aggregate becomes finer and the maximum size of coarse aggregate becomes larger. Example, for an average grading of fine aggregate i.e. Zone II in accordance with good practice (VI-5-(1)) the proportion shall be 1:11/2, 1:2 and 1:3 for maximum size of aggregate 10mm, 20mm and 30mm respectively.

TABLE.4.

SURFACE WATER CARRIED BY AVERAGE AGGREGATE

Aggregate 1.	**Appr. Quantity of surface water 1/m3 2.**
Very wet sand	120
Moderate wet sand	80
Moist Sand	40
Moist gravel or crushed work / 20 to 40	40

- Course aggregate, less the water it will carry
- I.S. 383 – 1963 – specification for coarse and fine aggregate for natural coarse
- I.S. 516 – 1959 – Specification for nominal and manufactured aggregate for use in mass concrete.

TABLE .5.

ACCEPTANCE CRITERIA FOR CONCRETE (ALL GRADES)

Preliminary Test				Work test						
Minimum No. of specimens from each batch (cubes)		Minimum frequency	Criteria for acceptance	Minimum No. of specimen taken from the same day's Works				Minimum frequency		Criteria of acceptance
				(Cubes)		(Beam				
7 days compressive strength test as on optional test if desired	28 days compressive strength test			7 days compressive strength test as on optional test if desired	28 days compressive strength test	72 + or – 2 hours test as on optional test, if desired	7 test as an optional test, if desired	In terms of period	In terms of period	
1.	2.	3.	4.	5.	6.	7.	8	9	10	11

	5	For each batch with a minimum of three batches	Accept if average compressive strength of the specimens tested is not less than the compressive strength specified in Tabl1. (For optional tests, see Table.2.) subject to the conditional that only one out of five consecutive tests may give a value less than specified strength					For every 150 cubic meter of concrete of part there of	At such intervals as the Engineer – in – charge may diced however, in the case of controlled concrete, samples shall be drawn on each day for the first 4 days of concreting and there after alteast once in 7 days of concreting	Accept of average strength of the specimens tested is not less than the strength specified in table1. (for optional tests see table.2.) subject to the condition that only one out of 3 consecutive tests may give a value less than the specified strength but this shall not be less than 90% of specified strength

	10	For each batch with a minimum of three batches	Accept if average compressive strength of the specimens tested is not less than the compressive strength specified in Tabl1. subject to the condition that the average compressive strength in Table.1. by at least the value of Standard deviation * of the series of test.					For every 150 cubic meter of concrete of part there of	At such intervals as the Engineer – in – charge may diced however, in the case of controlled concrete, samples shall be drawn on each day for the first 4 days of concreting and there after alteast once in 7 days of concreting	Accept of average strength of the specimens tested is not less than the strength specified in table1. (for optional tests see table.2.) subject to the condition that only one out of 5 consecutive tests may give a value less than the specified strength.

* Standard $\sqrt{\mathbf{M}\ \frac{d^2}{n - l^3}}$

Where d = individual deviation form one average, and
n = number of specimens tested.

SPECIFICATION FOR SANITARY FITTING SD DRAINAGE AND WATER SUPPLY

1. Water closets basins urinals sinks and other sanitary were shall be of approved make as required in the relevant items fixing of these shall be in accordance with the special specification.

2. The rates shall include the dismantling making holes in walls or slabs and restoring the structure to the original conditions after the completion of the work.

3. The work should be carried out with least hindrance to the adjoining building and the contractor shall be responsible for any damage caused to the existing fixture, electric fittings etc. in the course of execution and the contractor shall make good any such damage without claim for extra.

4. The rate for laying stone were pipes shall include necessary all incidental charges during execution of work and making good the damage to the roads and other structures.

5. The rates for laying G.I. pipes or PVC pipes shall include fixing with wooden plus G.I / C.I. clamps and brass screws where the pipes area fixed to wall. The rates for G.I. pipes shall also include wrapping them with tarred taps where they are buried in earth the portions embedded in masonry and painting with while lead two coats for portions above ground level.

6. The clamps for G.I. pipes fitting should not be spaced more than a part the wooden plugs for pipe and bracket fitting should be properly fixed in C.M. 1:3 in holder make in masonry with the wide and of wedge shaped plugs in side the walls. The size of plugs should not be less than 1 sq.m. inch at one end, ½ sq.m inch at the other end with depth of not less than 3".

7. Painting with two coats of best white paint or any other colour approved by the Executive Engineer over priming cot of red lead to all flushing tanks brackets claps used for fixing pipes and all other connection.

8. The contractor should employ sufficient number of qualified licensed plumber with necessary experience and skill in the trade to the satisfaction of the Executive Engineer concerned for execution of water supply and sanitary items of work.

9. The rate shall include all dismantling making holes in walls or slabs and testing the structure to the original condition after the completion of the work.

1. The water for works shall be as far as practicable free from earthling vegetable or organic matter and from salts or other substance likely to interface with the setting of mortar of otherwise prove harmful to the work

2. All items of work shall be done in accordance with the relevant classes of TNBP and agenda volume to the TNBP or amendments from time to time.

3. The contractor shall be responsible for the safe custody of all the departmental materials once they are handed over to the contractor at the departmental materials once they are handed over to the contractor at the departmental stores. The cost of any materials in the custody of the contractor stolen, lost, destroyed or damaged or if rendered unfit for the work will be recovered from the contractor at the issue rate.

4. For testing the concrete and aggregate the contractor must procure the following equipments and make them available at site.

1. Steel mould for making 45cm cube of concrete (The mould will be in two halves for easy removal)

2. Slumps cone for testing consistency (slump test) the cone will be 30cm height truss casted cone with cop and bottom diameters of 10 cm and 20cm respectively. In addition a steel rod 15cm dia and 50cm in length and with tamping and rounded is to be procured.

3. For finding fineness modules and coarse aggregate hand operated over a apparatus may be procured along with weighing machine for weighing the aggregate and the sand.

4. In the case of any breach of the terms of the contract the contract will be closed at the risk and the cost of contractor in addition to the forfeiture of the EMD and security deposit.

5. The testing is to be done at the contractor's cost for all building materials and also for concrete cubes.

6. The work shall be executed and measured as per metric dimension given in the schedule of quantities drawing etc. (F.P. units where indicated are for guidance only)

7. Unless otherwise specified all the rates quoted by the contractor shall be for works at all levels of the buildings.

8. Rates for every item of work to be done under this contract shall be for all lifts and leads, heights, depths, lengths and widths

Except when specifically mentioned in the item, otherwise nothing extra will be paid on this account

The rate for all item in which use of cement is involved is inclusive of charges for curing.

SUPPLYING AND FIXING INDIAN TYPE WATER CLOSET

1. The Indian type Water Closet shall be fixed in position at floor level in a bed of concrete brick jelly in lime mortar 1:2 so as to complete by embedding the closet trap and foot rests. The existing masonry structure after dismantling the floor, making the holes etc. shall be restored to its original condition after completion of work. The foot rests should be fixed at an angle as per Standard.

2. The PVC flushing tank shall be of three gallons capacity of Indian make confirming to ISI specification supported on C.I. Brackets with necessary C.I. chain and handle for pull float hell valve ½" PVC connections to the water main and closet including pier the white glazed paint 2 coats over a priming coat of red lead.

3. The fixing of water closet shall include the dismantling of existing floor however indicated making holes in necessary walls etc. and restoring structure to original condition after completion of the work. The flushing tank and accessories will be fixed to the walls with necessary clamps and brackets in C.M. 1:4.

ADDITIONAL CONDITION FOR CONTRACTOR'S SPECIAL ATTENTION

1. If at any time the Executive Engineer shall be of the opinion that the contractor is delaying commencement of the work or violating any of the progress of the site work as defined by the tabular statement rate of progress in the article of agreement, the Executive Engineer shall so advice the contractor in writing and at the same time demand complied. If the contractor neglects to comply with such demand within seven days after the receipt of such notice it shall these or at any time thereafter be lawful for the Executive Engineer to determine the contract which determination shall carry with the forfeiture of the security deposit and the total of the amount withheld from the final bill together with value of such works as may have been executed and not paid for such proportion of such total sums as shall be assessed by the Executive Engineer.

ADDITIONAL CONDITIONS

1. Water and lighting : The contractor shall pay all fees and provide water and light as required from Municipal main or other sources and shall pay all charges therefore (including storage tanks, metre etc.) for the use of the works and workman unless otherwise arranged and decided as in writing with Executive Engineer.

The tenderer shall ensure that no damage is caused to the exiting structure / building whether it is Government owned or private owned etc. in the adjustment areas close preliminary to the proposed site and if any damage is caused doe to pipe driving etc. to the adjacent buildings it shall be rectified / compensated by the tenderer at his own cost of the satisfaction of departmental officers / owners of any private building affected (i.e) the contractor should indemnify the department against damages if any to adjacent building due to the driving.

The contractor has to make his own arrangements for procuring water for construction purpose construction and curing should be done with water free from injurious amounts of deletion materials portable water are generally considered satisfactory for curing and fixing concrete and masonry. However the water to be used should be periodically tested at contractors cost for its suitability for using the construction work and got approved from Department Engineers.

Electricity: The contractor should make his own arrangements for obtaining electricity for all types of his use like lighting, welding, pumping and mosaic and marble polishing etc.

Any damages to work resulting from rains or frame any other cause until these work is taken over by thee department after completion will made good by the contractor at his own cost.

ADDITIONAL CONDITIONS

"On evaluation of tender if it is found that if the overall quoted amount of the tender is less than 5 to 15% of the value put to tender, the contractor shall pay and additional security at 2% of the estimated value. If the tender discount exceeds 15% to 20%, the contractor shall pay an additional security deposit of 50% of the difference between the quoted amount and estimated amount failure to furnish the additional security deposit within 15 days from the date of receipt of Acceptance order and execute the Agreement shall entail cancellation of award of contract and forfeiture of E.M.D. furnished."

The Contractors are advised to inspect and examine the site and its surroundings and satisfy themselves with the nature of site, the means of access to the site, the constraints of space for stacking material / machinery, labour etc., constraints put by local regulations, if any, weather conditions at site, general ground/subsoil conditions etc. or any other circumstances which may affect or influence their tenders. No claim what so ever on account of site constraints mentioned above or any other site constraints, lack of public transport, inadequate availability of skilled, semi-skilled or unskilled workers in the near vicinity, non-availability of construction machinery spare parts and any other constraints not specifically stated here, shall be entertained from the Contractor. Therefore, the Tenderers are advised to visit site and get first-hand information of site constraints. Accordingly, they should quote their tenders. Nothing extra shall be payable on this account.

The Contractor shall carry out survey of the work area, at his own cost, setting out the layout and fixing of alignment of the building as per architectural and Structural drawings in consultation with the Engineer-in-Charge and proceed further ensuring full structural continuity and integrated and monolithic construction. Any discrepancy between the architectural drawings and actual layout at site shall be brought to the notice of the Engineer-in-charge. It shall be responsibility of the Contractor to ensure correct setting out of alignment. Nothing extra shall be payable on this account. No claims, whatsoever, shall be entertained at a later date for any errors found.

The contractor must carry out the soil test at the site at his own cost and send the report to engineer incharge to confirm the design of foundation.

Contractor shall provide all the shop drawings or layout drawings for all the coordinated services before starting any work or placing any order of any of the services etc. These shop drawings/layout drawings shall be got approved from Engineer-in-charge before implementation and this shall be binding on the contractor.

The contractor shall submit material submittals along with material sample for approval of Engineer-in-Charge prior to delivery of material at site.

The Contractor shall Obtaining of Statutory permissions where-ever applicable and required.
Pre-commissioning tests as per relevant standard specifications, code of practice, Acts and Rules wherever required shall be done by the contractor.

The Contractor shall Prepare the detailed SHOP drawings and AS BUILT drawings wherever applicable.

All materials to be provided by the Contractor shall be in conformity with the specifications laid down in the contract and where such specifications do not exist for any material to be provided by the Contractor, the same shall be as per the latest relevant IS Codes. The Contractor shall if requested by the EIC / PMC, furnish proof to the satisfaction of the EIC / PMC that the materials so comply. For materials, which are neither covered in the specification nor in the latest relevant IS Codes; the same shall be supplied as per sound engineering practice as directed by the EIC / PMC whose decision in this regard shall be final and binding on the Contractor.

The EIC / PMC may ask the Contractor for any tests including field tests to be performed on any construction material, whether such tests have been specified or not. All such tests shall be performed entirely at the Contractor's expenses including cost of materials, wastage, cartage, other incidental expenditure involved, testing charges etc. either at site or elsewhere as directed by the EIC/PMC. The opinion of the EIC / PMC on the mode of testing and the interpretation of the results thereof shall be final and binding on the Contractor and shall be without appeal.

" The work contract assigned to the contractors shall be cancelled if they engage child labour in executing works and such contractors should be black listed for three years ".

CHILD LABOUR ERADICATION ACT.

(G.O. MS. No.53/ Labour and Employment (U2) Department) / Dt. 12.05.2003.

ANNEXURE

TABLE 4 - IS 383:1970-FINE AGGREGATES

IS SIEVE DESIGNATION	PERCENTAGE PASSING FOR			
	Grading Zone 1	Grading Zone II	Grading Zone III	Grading Zone IV
10mm	100	100	100	100
4.75mm	90-100	90-100	90-100	95-100
2.36mm	60-95	75-100	85-100	95-100
1.18mm	30-70	55-90	75-100	90-100
600micron	15-34	35-59	60-79	80-100
300micron	5-20	8-30	12-40	15-50
150micron	0-10	0-10	0-10	0-15

Note 1-For crushed stone sands, the permissible limit on 150-micron IS Sieve is increased to 20 percent. This does not affect the 5 percent allowance permitted in 4.3 applying to other sieve sizes.

Note 2 - Fine aggregate complying with the requirements of any grading zone in this table is &table for concrete but the quality of concrete produced will depend upon number of factors including proportions.

Note 3 - Where concrete of high strength and good durability is required, fine aggregate conforming to any one of the four grading zones may be used, but the concrete mix should be properly designed. As the fine aggregate grading becomes progtessively finer, that is, from Grading Zones I to IV the ratio of fine should be progressively reduced. The most suitable fine to coarse ratio to be used for any particular mix will, however, depend upon the actual grading, particle shape and surface texture of both fine and coarse aggregates.

Note 4- It is recommended that fine aggregate conforming to Grading Zone IV should not be used in reinforced concrete unless tests have been made to ascertain the suitability of proposed mix proportions.

4

ABLE 1 of IS 2116-1980 GRADING OF SAND FOR USE IN MASONRY MORTARS

IS Sieve Designation	Percentage Passing by Mass
4.75 mm	100
2.36 mm	90 to 100
1.18 mm	70 to 100
600 micron	40 to 100
300 micron	5 to 70
150 micron	0 to 15

ble 1 of IS 1542:1992 - Grading of Sand for Internal Wall or External Wall or Ceiling Plaster

IS Sieve Designation (See IS 460:1985)	Percentage Passing
10mm	100
4.75mm	95-100
2.36 mm	95-100
1.18mm	90-100
600 micron	80-100
300 micron	20-65
150 micron	0-15

TE - For crushed stone sands and crushed gravel sands, the permissible limit on 150 micron sieve is increased to 20 percent. This does not affect the 5 percent allowance permitted in 5.1.

5

APPENDIX A of IS 383:1970 (Clause 0.8):

A-I. DETAILS OF INFORMATION OF FINE AGGREGATE

A-I.1 When requested by the purchaser or his representative, the supplier shall provide the following particulars:

a) Source of supply, that is, precise location of source from where the materials were obtained;
b) Trade group of principal rock type present (as in Appendix C of the code);
c) Physical characteristics (see Appendix of the code C);
d) Presence of reactive minerals; and
e) Service history, if any.

A-I.2 Subject to prior agreement, the supplier shall furnish such of the following additional information, when required by the purchaser:

i. Specific gravity,
ii. Bulk density,
iii. Moisture content,
iv. Absorption value,
v. Aggregate crushing value or aggregate impact value,
vi. Abrasion value,
vii. Flakiness-index,
viii. Elongation-index,
ix. Presence of deleterious materials,
x. Potential reactivity of aggregate, and
xi. Soundness of aggregate

APPENDIX C

(*Clause* A-1.1)

DESCRIPTION AND PHYSICAL CHARACTERISTICS OF AGGREGATES FOR CONCRETE

C-1. GENERAL HEADINGS

C-1.1 To enable detailed reports on aggregates to be framed on a comparable basis, the following general headings under which the appropriate information may be given are suggested as a guide:

a) *Trade Group* — For example, granite, limestone and sandstone (*see* **C-2.1**);

b) *Petrological Name and Description* — The correct petrological name should be used and should be accompanied by a brief description of such properties as hardness, colour, grain, imperfections, etc;

c) *Description of the Bulk* — The degree of cleanliness, that is, freedom from dust, should be stated and reference made to the presence of any pieces not representative of the bulk, such as elongated or flaky pieces;

d) *Particle Shape* — *See* **C-3**; and

e) *Surface Texture* — *See* **C-3**.

C-2. NOMENCLATURE OF ROCK

C-2.0 The technical nomenclature of rocks is an extensive one and for practical purposes it is sufficient to group together with those rocks having certain petrological characteristics in common. Accordingly, the list of trade groups given in **C-2.1** is adopted for the convenience of producers and users of stone.

C-2.1 Trade Groups of Rocks Used as Concrete Aggregate—

Names of trade groups: Granite, Gabbro, Aplite, Dolerite, Rhyolite, Basalt, Sandstone, Limestone, Granulite, Gneiss, Schist and Marble

C-2.1.1 *List of Rocks Placed Under the Appropriate Trade Groups* — The correct identification of a rock and its placing under the appropriate trade group shall be left to the decision of the Geological Survey of India or any competent geologist.

IGNEOUS ROCKS

Granite Group

Granite
Granophyre
Granodiorite
Diorite
Syenite

Gabbro Group

Gabbro
Norite
Anorthosite
Peridotite
Pyroxenite
Epidiorite

Aplite Group

Aplite
Porphyry
Quartz reef

Dolerite Group

Dolerite
Lamprophyre

Rhyolite Group

Rhyolite
Trachyte
Felsite
Pumicite

Basalt Group

Andesite
Basalt

SEDIMENTARY ROCKS

Sandstone Group

Sandstone
Quartzite
Arkose
Graywacke
Grit

Limestone Group

Limestone
Dolomite

METAMORPHIC ROCKS

Granulite and Gneiss Groups

Granite gneiss
Composite gneiss
Amphibolite
Granulite

Schist Group

Slate
Phyllite
Schist

Marble Group

Marble
Crystalline Limestone

C-3. PARTICLE SHAPE AND SURFACE TEXTURE

C-3.1 The external characteristics of any mixture of mineral aggregate include a wide variety of physical shape, colour and surface condition. In order to avoid lengthy descriptions, it may be convenient to apply to distinctive group types of aggregates some general term which could be adopted.

C-3.2 The simple system shown in Tables 6 and 7 has, therefore, been devised and is put forward in the hope that it will facilitate defining the essential features of both particle shape and surface characteristics.

C-3.3 Surface characteristics have been classified under five headings or groups. The grouping is broad; it does not purport to be a precise petrographical classification but is based upon a visual examination of hand specimens. With certain materials, however, it may be necessary to use a combined description with more than one group number for an adequate description of the surface texture, for example, crushed gravel, 1 and 2; oolites 3 and 5.

TABLE 6 PARTICLE SHAPE

(Clause C-3.2)

Classification	Description	Illustrations of Characteristic Specimens	Example
(1)	(2)	(3)	(4)
Rounded	Fully water worn or completely shaped by attrition	Fig. 1	River or seashore gravel; desert, seashore and windblown sands
Irregular or partly rounded	Naturally irregular, or partly shaped by attrition, and having rounded edges	Fig. 2	Pit sands and gravel; land or dug flints; cuboid rock
Angular	Possessing well-defined edges formed at the intersection of roughly planar faces	Fig. 3	Crushed rocks of all types; talus; screes
Flaky	Material, usually angular, of which the thickness is small relative to the width and/or length	Fig. 4	Laminated rocks

TABLE 7 SURFACE CHARACTERISTICS OF AGGREGATES

(*Clause* C-3.2)

GROUP	SURFACE TEXTURE	EXAMPLE
1	Glassy	Black flint
2	Smooth	Chert, slate, marble, some rhyolite
3	Granular	Sandstone, oolites
4	Crystalline	Fine: Basalt, trachyte, keratophyre
		Medium: Dolerite, granophyre, granulite, microgranite, some limestones, many dolomites
		Coarse: Gabbro, gneiss, granite, granodiorite, syenite
5	Honey combed and porous	Scoriae, pumice, trass

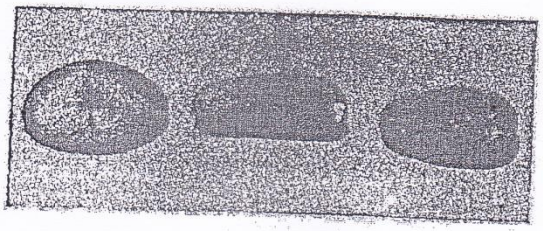


FIG. 1 PARTICLE SHAPE: ROUNDED

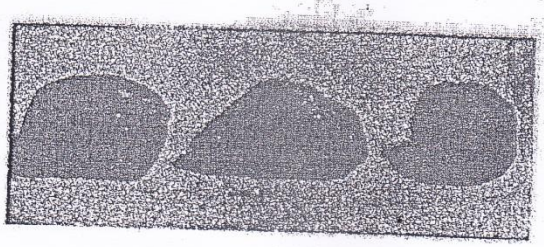


FIG. 2 PARTICLE SHAPE: IRREGULAR

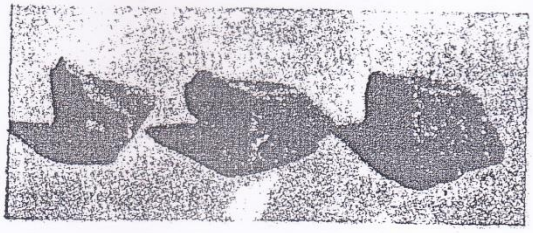


FIG. 3 PARTICLE SHAPE: ANGULAR

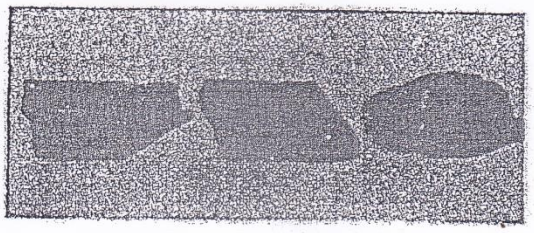


FIG. 4 PARTICLE SHAPE: FLAKY

ELECTRICAL CONDITIONS

The work should be carried out in accordance with the P.W.D, specifications, as per ISS and as per the conditions of contract.

1.	**The work should be carried out in Co-Operation with the occupants of the buildings, buildings which are occupied may not be made available of carrying out the work un -interrupted throughout the day.**
2.	**The Contractor shall not employ the labor at the age of 12 years and shall also note that he must offer employment to Ex-Serviceman extedy appears and un employed Agricultural Laborers as far as possible.**
3.	**No part of the contractor shall be sub-let without written permission of the Executive Engineer (or) shall transfer be made by power of attorney authorizing others to receive payment of the contractors behalf**
4.	**The quantities given here are those upon which the total is base but they are subject to alterations omissions deductions or additions as provided for in the conditions for this contract the need- not necessarily shown the actual quantities of work to be done. The unit rates noted in the schedule are those governing payment for extra or deductions or omissions according to the conditions of the contract as set forth in the preliminary specifications and other conditions of specification of this contact.**
5.	**It is to be especially understood that the measured works is to be taken that (not withstanding any customer paractise to the contray) according to the actual quantities and finished according to the specifications or as may be ordered-from time by the electrical Engineer and the cost calculated by measurement or weight at the necessary or contingent works connected the with. The rates quoted or for works in site and complete in every respect.**
6.	**Payment will be made on detailed measurement basis payment of any of the items in the schedule may be omitted or radically altered. No change in rate shall become payable to contractors on account of such omissions of variations in quantities.**
7.	**Time shall be considered as soon as this agreement and the contractor here by agrees to commence the works as soon as this agreement is accepted by competent authority as defined by the Tamil Nadu public works. Decode and the site (or Premises) as handed over to him as provided for in the said conditions as agreed to complete the work within the date of such handling over of the site (or premises) and to show progress as defined in the tabular statement rate of progress below subject have the clause of the standard preliminary specifications.**

8.	**If at any time the Executive Engineer shall be of opinion that the contractor is delaying the commencement of the work or violation the progress of work as defined by the statement Rate progress in the ARTICLES of agreement the Executive Engineer shall advice the contractor in writing and the same time demand and compliance. If the contractor neglects to supply with such demand within 7 days after the receipt of the Engineer to determine the contract while such determination shall with it. The fore-feiture of security Deposit and total of the amount with held from the final bill together with vale of such works as may have been executed and not paid for such proportion of such total sums as shall he assessed by the Executive Engineer.**
9.	**is to be especially understood that the measured work is to be taken net. (no withstanding any customer practice to the contractor accord the actual quantities when in place by measurement of weight at the respective prices without any additional charge for any necessary or contingent works connected there with. The rates quoted and for the works in site and complete in every respect.**
10.	**The Electrification of buildings will be deemed to be completed only if any of the items of works including finishing items testing items of work contemplated herein executed.**
11.	**The contractor shall be liable to set right all defect arising out of his faulty Electrification (or) faulty execution (or) sub-standard work noticed during the above 12 months period of his cost.**
12.	**In Case it is found necessary, the contractor should be presented at the premises at the time connecting the installations to the mains and afford all facilities for testing and connection.**
13.	**All the materials to be used in the work should be of best quality and having IS1 mark and approval for the use of each type of materials of any work should be obtained from the Executive Engineer.**
14.	**The Contractor shall make his own arrangements to transport the materials to transport the materials to the work spot at his own cost. The conveyance shall be the contractor including lifting without any claim for extra rate.**
15.	**The retrieved materials should be dispatched and handed over to the Engineer concerned with the prior intimation to him by the contactor at the contractor's cost.**
16.	**Any surplus materials remaining at the site will not be generally taken over by the department whether before or after completion or determination for contract such materials either which were originally procured by the contractor or where issued to them by property of the contractors and call however be taken over by the department if require for use on other works which are in progress only by special arrangement and the prevailing market rates viz, the rate which articles of a similar description can be produced at a given times at the stores show from public market suitable for the division for obtaining supply thereof.**

17.	**If the materials were originally used by the departments the price allowed to the contractor on requisition shall not exceed the amount charged to the contractor excluding at element of storages charges if any.**
18.	**The surplus materials which were originally issued to the contractor by the department for the use in the work shall not be removed from the site of work without getting permission of the Executive Engineer.**
19.	**The Contractor is bare of recovery under Rev-Recovered Act. For any liabilities under this contract.**
20.	**Extract of proposed amendment proposed amendment to clause 69-1 as General conditions of contract based on order issued in G.O.M.s. No. 1152/TW/19-06-80.**
21.	**The term Executive Engineer in the said conditions who shall be competent to exercise all the powers and privileges reserved here in favour of the Govt, with the previous sanction of or subject to the ratification by the Executive Engineer in cases when such sanction or ratification is necessary.**
22.	**Standard specifications: Fore detailed description for various items of wok to be executed in addition to the brief description given in the schedule at and for the rights and obligations of the contractors etc. the attention of the contractors invited to Tamil Nadu standard specifications / Tamil Nadu building practice which should be followed in all respect both in letter and spirit. The materials used for the workmanship. The mode of execution of the electrification or the work etc. should confirm to relevant specification for TNSS / TNFS (or) National building code (or) Indian standard specifications and IF rule as may be specified.**
23.	**Risk Insurance: The work under the contractor shall be maintained at the contractor risk until the work is taken even by the Executive Engineer. The Contractor shall accordingly arrange his own insurance against all natural calamities fire and other acts of God.**
23.	**The said conditions shall be read and constructed as forming part of this agreement and the parties here to till respectively. By and themselves to the conditions and stipulations and portion the agreements on their parts respectively.**
24.	**All rates quoted in the tender, shall be inclusive of sales Tax payable under the General sales Tax Act as amended from time to time (including amendment Act 28/24) and the contractor is responsible to file the sales Tax Return and pay the amount of Tax separated in additional to tendered rates due to any plea of subsequent levy or increase in Tax conditions to the contract.**

Signature of the contractor with
Seal alia Address

Executive Engineer,
TNSAMB ,Chennai-32