

**Name of Work:- Palanpur - Deesa Road from Km 0/0 to Km 1/400 (8-Lane work with Service Roads, Footpaths, Drainage Systems, Utility Shifting, Grade Correction, Junction Improvements, Road Furniture, and Other Miscellaneous Works)**

## **TECHNICAL SPECIFICATIONS**

### **1.0 PREAMBLE**

1.1 The Technical Specifications contained herein shall be read in conjunction with the other Bidding Documents as specified in this Volume.

### **1.2 Site Information**

1.2.1 The Information given here under and provided elsewhere is given in good faith by the Employer but the Contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the that the information supplied by the Employer is or insufficient.

### **2.0 GENERAL REQUIREMENTS**

The technical Specifications in accordance with which the entire work described herein after shall be constructed and completed by the Contractor shall comprise of the "Specification".

### **2.1 Part-1 General Technical Specifications**

2.1 Through "SPECIFICATION" for each item are attached with tender they are based on following.

- 1) "SPECIFICATIO FOR ROAD AND BRIDGE WORKS" (Fifth REVISION printed in year 2013) issued by the Ministry of Road Transport & Highways (MORT&H), Government of India and Published by the Indian Roads Congress, hereinafter to as MORT&H Specifications.
- 2) The General Technical Specification for Road Works.
- 3) The General Technical Specification for Bridge Works.

2.2 If particular clause (which is in corporate in "SPECIFICATION" of Specification booklets 1 to 3 above is amended /modified/added upon then the amendment /modifications/addition shall supersede the relevant clause incorporated in "SPECIFICATION".

2.3 In so far as Amended/Modified/Added Clause may Come in conflict or be inconsistent with any of the provisions of the MORT&H Specifications under reference, the Amended/Modified /Added Clause and the additional Specifications shall always prevail.

2.4 In the absence of any definite provisions on any particular issue in the aforesaid Specifications, reference may be made to the latest codes and Specification, of IRC and BIS in that order. Where even these are silent, the Construction and completion of the works shall conform to Sound engineering practice as approved by the 'Engineer' and, in case of any dispute arising out of the interpretation of the above, the decision of the 'Engineer' shall be final and binding on the Contractor.

The MORT&H Specifications for Road and Bridge works (5<sup>th</sup> Revision) will form part of the contract documents and the contractor will be legally bound to the various stipulation made therein unless and otherwise specifically related or waived partly through special clause in the contract Document.

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**INDEX FOR SPECIFICATION**

Sr. No. of item in BOQ	Brief Description of Item	Sr.No. of applicable in enclosed specification	Page No.
1	Box cutting the road surface to proper slope & camber for making a base for road work including compacting at O.M.C. and removing the excavated stuff, and depositing on the road side slopes as directed with all lead and lift.	1	
2	Construction of granular sub-base 200 mm thick by providing machine crushed B.T. material satisfying MORT&H specification (Fifth revision) of grading V including spreading in uniform layer with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC and compacting with vibratory roller to achieve the desired density etc. complete.	2	
3	Providing and laying wet mix macadam base course 250 mm thick in two layers as per MORTH specification using machine crushed B.T. chips as per required gradation, mixing with required optimum quantity of water, conveying the mix to site of work, spreading in to grade and camber with paver/ mechanical means and consolidation each layer with vibratory roller to aschieve the desired density including cost of material labour plant and equipment etc. complete.	3	
4	Providing and applying priming coat with Bitumen grade Emersion SS-1 at the rate of 7.50 kg/ 10 Sq.mt. including cost of asphalt and preparing the surface heating, and applying etc. complete.	4	
5	Earth work for embankment having CBR minimum 8% including breaking clods, dressing with all lead and lift including watering, rolling and consolidation of sub grade in layers at O.M.C to required dry density including filling the depression which occur during the process using vibratory roller 8 to 10 Tonne (E) From borrow area with All Lead & Lift.	5	
6	Rolling and watering of earth work in layers with power roller including filling in depression which occur during the process.	6	
7	Supplying and fixing reinforced concrete heavy duty nonpressure pipes with collars for culverts including setting and joining the pipes in C.M. 1:2 watering and laying (To level of slops of I.S. 458 / 1971 Class NP4 casted by vertically vibrated technology of following internal diameter. 900mm dia.	7	
8	Milling the existing bituminous pavement up to a depth of 50 mm by milling machine in a single cutting depth, to make a uniform surface without disturbing the base including diversion of traffic, removing milled materials and disposal of milled material to an approved dumping yard (within 12 km lead) including loading and unloading, all leads and lift, fuel, lubricant charges etc complete.	8	

9	Providing and laying Dense graded bituminous macadam (DBM-I) with tack coat at 2.50 Kg/10 Sq.mt. of Emulsion RS-I by mechanical sprayer and using stone chips as per MORT&H gradation and asphalt VG-40 grade @ 4.50% (As per mix design) by total weight of mix for binder by drum mix hot laid process including transporting the mix and spreading the same by paver finisher and consolidation by vibratory roller including providing and operating required drum mix plant & machinery cost of fuel, asphalt, oil, lubricant & labour charges etc. complete.	9	
10	Providing and laying thick Dense graded bituminous macadam (DBM-II) with tack coat at 2.50 Kg/10 Sq.mt. of Emulsion RS-I by mechanical sprayer and using stone chips as per MORT&H gradation and asphalt VG-40 grade @ 4.50% (As per mix design) by total weight of mix for binder by drum mix hot laid process including transporting the mix and spreading the same by paver finisher and consolidation by vibratory roller including providing and operating required drum mix plant & machinery cost of fuel, asphalt, oil, lubricant & labour charges etc. complete.	10	
11	Providing and laying 50 mm thick compacted B.M. with B.T. aggregate as per MORT&H specification using Emulsion grade RS-1 for coat at 2.5 Kg./10 Sq.mt. with mechanical sprayer and bitumen grade VG-40 for mixing at the rate 34.0 Kg/M.T. i.e. 3.4 % of total mix including heating the aggregate and asphalt by drum mix plant and spreading the same by paver finisher and consolidation with vibratory roller including providing all materials, equipments, tools and plants, oil, kerosene, fire wood, labour charges etc. complete.	11	
12	Providing and laying 30 mm thick compacted Bituminuous Concrete with mechanical sprayer, stone chips as per MORT&H gradation & VG-40 grade asphalt for mixing @ 5.50% (As per mix design) by weight of total mix for binder including heating the aggregate and asphalt by drum mix plant and spreading the same by sensor paver finisher and consolidation with vibratory roller including providing all materials, equipments, tools and plants, oil, kerosene, fire wood, labour charges etc. complete.	12	
13	Providing and laying hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 grams / Sq.mt. area. Thickness of 2.5 mm is exclusive of surface applied. Glass beads as per I.R.C. 35. The finished surface to be level uniform and free from streaks and holes.	13	

14	Cat Eye Road Stud/RPM: Supplying of Molded Twin Shanks Raised Pavement Markers made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kgs. tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 20 mm, 130 mm and 130 mm and with minimum reflective area of 13 Sqem on each side and the slope to the base shall be 35 +/-5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19+/-2 mm and height not less than 30+/-2 mm) from the body is to be a minimum value of 500 Kgf. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturers recommendation and The color of the marker should be as per the IRC 35-2015 and as directed by Engineer-in-charge.	14	
15	Cautionary Warning Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 90 x 90 x 90 cms. equilateral triangle as per design of IRC-67-2012. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint;reflectorised with Micro Prismatic Grade retro reflectivesheeting of Type-11 as per ASTM D-4956 and latest M.O.S.T. Specifications; 3.6mtr longstand post of 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 35 x 35 x 3mm; painted with bestquality epoxy coatings in black and white bends. The details of symbol foreach board shall be as per theinstruction of engineer in charge. The fixing at site shall be in 1:2:4 CC block of size 45 x 45 x 60 Cms. for each leg.including excavation, curing etc. complete under the supervision of engineer in charge. A warranty for 10 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class-C Type-11 Retro Reflective sheeting.	15	
16	Informatory Signs:- Providing and fixing Informatory Signs made out of 2mm aluminium sheet, size 80 x 60 cms rectangle, as per the design of IRC-67-2012. Pre treated with phospheting process and acid etching coated with one coat of epoxy primer and two coat of best quality epoxy paint, reflctorized with retro reflective sheeting as per the latest M.O.S.T. specification, 3.1 Mt. long stand post and frame fabricated from suitable size iron angle of 35 x 35 x 3 mm, 75 x 75 x 6 mm as required painted with best quality epoxy coatings in black and white bends. The details of symbol for each board shall be as per the instruction of engineer in charge. The fixing at site shall be in 1:2:4 CC block of size 45 x 45 x 60 cms for each leg, including excavation curing etc. complete under the supervision of Engineer-In-Charge (B) High Intensity grade.	16	



17	Regulatory / Mandatory Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 60 cms Dia Circle as per design of IRC-67-2012. Pre treated with phosphating process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ;reflectorised with Micro Prismatic Grade retro reflectivesheeting of Type 11 as per ASTM D- 4956 and latest M.O.S.T.Specifications; 3.6mtr long stand post of 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 35 x 35 x 3mm; painted with best quality epoxy coatings in black and white bends. The details of symbol for each board shall be as per the instruction of engineer in charge. The fixing at site shall be in 1:2:4 CC block of size 45 x 45 x 60 Cms. for each leg.including excavation, curing etc.complete under the supervision of engineer in charge. A warranty for 10 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class-C Type-11 Retro Reflective sheeting.	17	
18	Flexible Median Marker : Providing and Fixing of Flexible Median Marker that are made of tough, high impact resistant, injection-molded, thermoplastic body with property of flexibility to provide high durability. The dimension of Flexible Median Marker should not exceed 18.4 cm in height(including shank height), 12.5 Cm in width. , 0.65 cm in thickness and shank depth shall be 3.4 cm The body structure shall be rounded at all its corners and edges. The plastic used for molding the Flexible Median Marker should survive impact load of 5kg continuously for 750 times at room temperature. The logo of the manufacturer shall be embossed on either side of the body in the injection molding process. The Median Marker shall have flame like shaped body with, fluorescent yellow color retro-reflective sheeting of size not less than 90 Cm square, with fully reflective micro prismatic cube corners as its retro-reflective elements as per IRC 67 2012 and ASTM D4956-09 type XI specifications reflectivity values. The retro-reflective sheeting shall be one or both sides of the Flexible Median Marker and shall be edge protected with no exposed edges which will prevent edge lifting, vandalism, sheeting damage, etc. The Flexible Median Marker shall be fixed by a combination of epoxy adhesive and grouting as recommended by manufacturer and Engineer in charge.	18	

19	Standard Delineator: Providing and fixing of Standard Metal Delineator consisting of minimum retro reflective unit exposed area of 330 cm <sup>2</sup> white color, full cube corner micro prismatic non-metallic retro reflective sheeting on each side conforming with IRC 67 2022 and meeting the coefficient of retro reflection values as per ASTM D 4956 Type XI table specification. The delineator shall be painted with powder coat of minimum 40 microns thickness, on top of which retro reflective sheeting shall be pasted on both sides. The structure shall be manufactured in roll forming process and shall have height not less than 800 mm above the ground, width not less than 100 mm and shall extend not more than 300mm below the ground while being installed. height of sheeting should be minimum 150mm whereas width of sheeting should not be less than 75mm (should be placed every alternative 15cm). The front and back faces of the delineator should be curved with a radius of not more than 200 mm and with delta angle (or central angle of curve) lying between 20° and 30°, to increase the visibility of the delineator for vehicles moving in continuous curves. The delineator shall have grooves across the length to make the reflective sheets vandal-proof. The delineator is meant for application on gaps in median, traffic islands, dangerous bends, roundabouts, narrow bridges etc. or as desired by site engineer.	19	
20	Providing Supplying and fixing Jumbo Swiss type traffic bollard made out of 1.5 mm thick CRC sheet in conical shape having 188 cms, bottom dia, top dia 22 cms., with top circular direction plate of 30 cms dia for arrow fabricated as per attached drawing and coated with black epoxy powder coating and retro reflectorized three yellow strip 15 cms wide and arrow Micro Prismatic grade sheeting as per ASTM 4956-09 Type-X1 Fixing with cement concrete M-25 grade, Foundation size 30 cm*30 cm*35 cm as per the instruction of Engineer-in-charge.	20	
21	Providing and fixing of powder coating black matt finished MS pipe bollards made from 100mm O.D. & 7.5mm thick MS pipe, having length of 1050mm, 3mm deep 25mm wide groove covered by 25mm wide white retro reflective strips, hollow section shall be filled with cement concrete inclusive of excavation, fixing, refilling of excavated material, grouting with cement concrete and anchor bar, removal of debris etc. as shown in drawing and directed by Eng. in charge. (Sample must be approved.)	21	
22	ROUTE IDENTIFICATION SIGN BOTH SIDE CANTILEVER: Providing and fixing sign boards made out of 3 mm aluminium sheet; size 2 nos. of 400 x 150 cms. Rectangle as per design of IRC-67- 2021.pre treated with phosphating process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with retro reflective sheeting as per latest M.O.S.T. Specification; letters and numerals should be as per IRC-30-1968 , 8.25 m long stand post and frame fabricated from suitable size iron channel of ISMC 400 , and sub frame ISA 65 & ISA 50 and base plate 12mm thick as required; painted with synthetic enamel paint in black and white bends.The details of symbol for each board shall be as per the instruction of engineer in charge.	22	

23	Providing and erecting overhead gantry signs for road with a corrosion resistant 2mm thick aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans.	23	
24	Solar Stud: Supplying of Solar Raised Pavement Markers made of polycarbonate molded body with circular shape, solar powered, LED self illumination in active mode, 360 degree illumination and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face in passive mode. The marker shall support a load of 20000 kg tested in accordance to ASTM D 4280. The marker should be resistant to dust and water ingress according to IP 68 standards and should withstand temperatures in the range of 0 C to 70 C. Color of lighting could be provided in red or yellow (amber) as per requirement and typical frequency of blinking is 1 Hz. There should be current losses of less than 20 micro-amperes at 2.4 V in sleep-charging mode to enhance the life of the marker and a full charge should provide for a minimum autonomy of 50 hours. The height, width and length of the marker shall not be less than 10 mm x 100 mm x 100 mm. Also, the surface diameter of the marker shall not be less than 100 mm respectively. The weight of the marker shall not exceed 0.5 Kilograms. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.	24	
25	Speed Table / Rise pedestrian: Crossing Providing & laying controlled cement concrete M-40 exposed work with curing etc. complete including the cost of formwork Trapezoidal humps have a slightly raised flat section of a carriageway with ramps on both sides.	25	
26	Providing and fixing pre-cast Rubber Dye / steel Dye inter locking concrete block 60mm thick with grade of concrete M300 pneumatic compressed / vibrated mechanically and as per approved design Confirming to IS 15658 : 2006 including 35 mm Sand layer for levelling and filling the joint with sand in proper line and level as per guidlines of IRC : SP 63-2018 etc. Complete.	26	
27	Providing and laying cement concrete 1:3:6 (1-Cement : 3 coarse sand : 6- hand broken stone aggregates 40 mm nominal size) and curing complete excluding cost of formwork in (A) Foundation and Plinth	27	
28	Providing and fixing c.c m-20 grade pre-cast finished surface kerb stone of approved design including the cost of from work rubber mould (as directed by engineer incharge), curing etc. complete. The rate shall also include for erecting and fixing the pieces in position with necessary equipment and materials and include the flush pointing in (cm 1:2) for all jointof the kerb stones. CHAMFERD EDGE KERB [100mm(H) X 300mm(W) X 150mm(T)]	28	
29	Construction of cement concrete Vaccum Wet press kerb with Height= 380mm, Length=300 and width=200mm, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually.	29	

30	Construction of cement concrete Vacuum Wet press kerb stones of approved make as per approved sample of any size and any type. Kerbs shall be fixed on the foundation prepared as per approved design. The rate shall also include for erecting and fixing the pieces in position for complete kerb system with chamfered type of kerbs including necessary accessories of kerb like radius kerb, angles and quadrant kerbs, droplet kerbs etc. complete as per drawing. Kerb shall be fixed as paper joint without any jointing material. However cement mortar shall be provided at the back side of kerb stone joint. (Sample must be approved) Cost of excavation, cutting, base, side filling shall include as directed engineer - incharge in above item description as per BOQ (a) 450 mm high Plantation/ Green belt kerb.	30	
31	Construction of cement concrete Vacuum Wet press kerb on Central Verge (Both side) with Height= 680mm, Length=230 and width=235mm, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually.	31	
32	Wall painting two coats with plastic emulsion paint of approved brand and manufacturer on wall surfaces to give an even shade including thoroughly brushing the surface to remove all dirt, dust, mortar drops and other foreign matter.	32	
33	Providing and fixing steel work welded in built up section, framed work including cutting, hoisting and fixing in position and applying priming coat of red lead paint. fabrication. (Plantation/ Green belt)	33	
34	Excavation for foundation incl. sorting out & stacking of useful materials & disposing of the excavated stuff upto 50 mt. lead & all lift, watering etc. comp. loose or soft soil with machineries up to 1.5 Mt. depth.	34	
35	Providing and laying in-situ PCC M20 grade cement concrete in foundations of Railing including formwork, transporting, placing, compacting, finishing, curing, etc. complete with all leads and lifts as per drawing & specification and as directed by Engineer. (Plantation/ Green belt)	35	
36	Providing and laying in-situ PCC M20 grade cement concrete in foundations of Railing including formwork, transporting, placing, compacting, finishing, curing, etc. complete with all leads and lifts as per drawing & specification and as directed by Engineer. (Median)	36	
37	Painting two coats (excluding priming coat) on new steel and other metal surface with synthetic enamel paint, brushing to give an even shade including cleaning the surface of all dirt, dust and other foreign matter.	37	
38	Excavation for foundation in sand, gravel, clay soft soil & murrum etc. including shoring, strutting and dewatering as necessary and disposing of the excavated stuff as directed depth upto 3.0 mt.	38	
39	Refilling pipeline trenches and for manholes with available stacked excavated stuff with ramming, watering, consolidating as directed by Engineer-in-charge.	39	
40	Bedding : Providing and laying compacted granular bedding as per drawing attached.	40	
41	Supplying and fixing reinforced concrete heavy duty nonpressure pipes with collars for culverts including setting and joining the pipes in C.M. 1:2 watering and laying (To level of slops of I.S. 458 / 1971 Class NP4 of following internal diameter. (i) 300 mm dia.	41	

42	Supplying and fixing reinforced concrete heavy duty nonpressure pipes with collars for culverts including setting and joining the pipes in C.M. 1:2 watering and laying (To level of slops of I.S. 458 / 1971 Class NP4 of following internal diameter. (ii) 450 mm dia.	42	
43	Supplying and fixing reinforced concrete heavy duty nonpressure pipes with collars for culverts including setting and joining the pipes in C.M. 1:2 watering and laying (To level of slops of I.S. 458 / 1971 Class NP4 of following internal diameter. (ii) 600 mm dia.	43	
44	Providing constructing brick masonry Inlet Chamber of 750 x 600 x 1500 mm internal dimension with necessary excavation refilling 350 mm thick brick masonry in CM 1:4, 150 mm thick PCC and benching in CC 1:2:4, 12 mm thick plaster in CM 1:3 for inside and cement pointing in CM 1:3 for outside, providing and fixing pre-cast RCC frame and cover of M-30 grade as per drawing and specifications -Rate for 1.5m depth.	44	
45	Constructing Bombay Pattern Type Catch Pit of size 0.60 x 0.60 depth up to 1 mt including excavation, B.B.C.C. (1:5:10), 23 cms thick brick maso. wall in the prop. of CM (1:6) with 40 mm thick IPS flooring in the prop M15 at bottom and 15 mm thick cement plaster inside the catch pit in the proportion of CM (1:3) with out jali etc. comp. as directed.	45	
46	CatchPit Jali Fixing P/F FRC catch pit jali with frame 600mm x 600mm clear opening etc. comp.. As directed by engineer in charge.	46	
47	Providing & supplying heavy duty I.S.I. mark RCC precast machine hole frame with cover at site as per design for circular machine hole complete (A) For Circular machine hole	47	
48	Constructing Manhole with R.C.C. top slab in 1:2:4 mix (1-cement :2 coarse sand : 4-graded stone aggregate 20mm nominal size) foundation concrete 1:3:6 mix (1 cement : 3- coarse sand :6-Brick bats 40 + 50mm size) inside plastering 15mm thick with Cement Mortar 1:3 (1-Cement : 3-coarse sand) finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 mix (1-Cement :2- Coarse sand :4-stone aggregate 20mm nominal size) finished smooth complete including curing and festing (i) Inside size 900mm x 1200mm and 1.5M. deep including C.I. cover with frame size 560mm diameter total weight of cover and frame to be not less than 128 kgs. (Wt. of cover 64 Kg. and Wt. of frame 64 Kg.)(A) With 230mm thick walls of brick msonry using brick having crushing strength not less than 35Kg. / Sq.cm. in Cement Mortar 1:5 (1- Cement: 5-Coarse sand) (2) B type depth 1.50 Metre for 150mm diameter sewer.	48	
49	Raising / lowering manholes to the required level upto FRL of BC including all materials, formwork and with 16 cm thick M20 CC coping under frames of the manhole, including removing existing manhole frame cover and fixing existing manhole frame & cover or fresh heavy duty I.S.I. mark RCC precast manhole frame with cover if required, curing etc. complete as specified and as directed and item also includes all safety measures like cover the manhole with an M.S. plate during execution of each layer of C.C. pavement and cleaning the manhole from all road debris fallen inside the manhole during construction activity & certified the same from engineer in charge about cleaned manhole. (1) For the depth upto 875mm	49	



50	Raising / lowering manholes to the required level upto FRL of BC including all materials, formwork and with 16 cm thick M20 CC coping under frames of the manhole, including removing existing manhole frame cover and fixing existing manhole frame & cover or fresh heavy duty I.S.I. mark RCC precast manhole frame with cover if required, curing etc. complete as specified and as directed and item also includes all safety measures like cover the manhole with an M.S. plate during execution of each layer of C.C. pavement and cleaning the manhole from all road debris fallen inside the manhole during construction activity & certified the same from engineer in charge about cleaned manhole. (2) For the depth upto 425mm	50	
51	Carrying out a Topographic survey in full width of road showing location of inlet chamber, machine hole of Strom line & drainage line with total station instrument etc. on existing road along with level survey of road for road profile at minimum of 9 mt. class interval with chainage markings on site including C-section, L-Section & centre line marking of roads as per instruction of engineer in charge. Contractor has to do proper survey for the all utilities & submit to the Client / Consultant within 15 days of work order & Contractor is liable to make all coordination to the various agency for shifting their utilities in time & with in project limit. If any official fees to be paid to any utility agency, will be paid by client.	51	
52	Followup with various Utility company like Electricity, Gas & Telephone compene for OH to underground shifting of utilities, Shifting of Utilities which is hinderence to the Progress. Contractor has to do proper survey for the all utilities & submit to the Client / Consultant within 15 days of work order & Contractor is liable to make all co ordination to the various agency for shifting their utilities in time & with in project limit. If any official fees to be paid to any utility agency, will be paid by client.	52	
53	Removal of Tree Stumps and Roots, stacking and filling of pits complete as per Technical Specifications Clause 201 (cutting of trees by others unless otherwise directed by the Engineer)	53	
54	Earthwork in embankment including median with selected yellow soil suitable for gardening in layers of 20cm thickness including watering, ramming consolidating etc. with all leads and lifts etc. and complete.	54	
55	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge. (Melia Azadirachta)	55	
56	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge. (Dwarf bougainvillea)	56	
57	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge. (Lantana sellowiana)	57	

58	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge. (Dwarf Variegated Hibiscus)	58	
59	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge.(Seasonal Plants)	59	
60	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge.(Asparagus)	60	
61	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge. (White Pampas)	61	
62	Supplying on site plants with following specifications . Plants would be in good condition and of specified height. The rates would be inclusive of all taxes, sales tax, Octroi,transportaion etc. complete F.O.R. site. Conditions of plant would be verified at the time of selction as well delivery. All complete and as per instructions of the Engineer-in-charge.(Corean Carpet Lawn)	62	
63	Supplying, stacking and spreading of good quality organic as well as inorganic manures and fertilizers with necessary soil conditioners and amendmets. (Neem cake)	63	
64	Supplying, stacking and spreading of good quality organic as well as inorganic manures and fertilizers with necessary soil conditioners and amendmets. (Castor cake)	64	
65	Supplying, stacking and spreading of good quality organic as well as inorganic manures and fertilizers with necessary soil conditioners and amendmets. (N.P.K. 12:32:16 or 10:26:26)	65	
66	Supplying, stacking and spreading of good quality organic as well as inorganic manures and fertilizers with necessary soil conditioners and amendmets. (Vermicompost)	66	
67	Supplying, stacking and spreading of good quality organic as well as inorganic manures and fertilizers with necessary soil conditioners and amendmets. (D.A.P. Ferilizer)	67	
68	Supplying, stacking and spreading of good quality organic as well as inorganic manures and fertilizers with necessary soil conditioners and amendmets. (Pano)	68	

69	PALMS: Supplying and planting of palms as per under noted varieties, with ht. as specified in drg., including excavation of pit of size 0.9 m x 0.9 m x 0.9 m, removal of excavated earth to desired location filling the pit with soil mixture etc. as per specifications and as directed complete in all respect including watering and nurturing the trees. The trees may be planted individually in rows or in cluster as per direction in drg. and all plant material and its sizes and height/ girth and crown should be shown to the landscape architect/ Project Manager and written approval to be sought before planting. Trunk Diameter to be measured 300 mm above Polybag. Date Plam ; Height 4500 mm, Trunk Dia min. 125 mm with 4.5m C/C	69	
70	TREES: Supplying and planting of shade, ornamental, fruit, flowering trees, small, medium and large specimens suitable for Dumas region, adaptable to low water, as per under noted varieties, with ht. as specified in drawings including excavation of pit of size 0.75 m x 0.75 m x 0.75 m filling the pit with soil mixture etc. as per specifications and as directed complete in all respect including watering and nurturing the trees. The trees may be planted individually in rows or in cluster as per direction in drg. and all plant material and its sizes and height/girth and crown should be shown to the landscape architect/ Project Manager and written approval to be sought before planting. (Cost excluding soil mix). Trunk Diameter to be measured 300 mm above Polybag. Melia Azadirachta Height min 3000 mm, Trunk Dimater min. 75 mm with 6.0 m C/c	70	
71	SHRUBS: Providing, planting and developing plants/ flower bed with under noted varieties of plants (both shade and sun loving), including excavating the soil to a depth of 450mm - 600mm of required area as per plant species, removal of excavated earth to directed location, filling the excavated bed with approved soil mixture, planting the approved variety plants, providing strong stack etc. as per specification and as directed complete in all respect, including watering and nurturing the plants. Height and spread to be measured above polybag top.; Height min 600 mm, spread min 750mm planted at 0.6 m C/C.	71	
72	GROUND COVER: Providing, planting and developing ground covers with the approved variety of plants including excavating the existing soil to a maximum depth of about 300 mm, removal of excavated earth to directed location, dressing the soil in proper slopes, filling excavated bed with approved soil mixture, planting approved quality grass, including weeding out and removal of foreign matter, watering etc complete. Height and spread to be measured above polybag top. Height min 300mm, spread min 150mm planted at 0.3 m C/C.	72	
73	LAWN: Providing, planting and developing grasses with the approved variety of plants including excavating the existing soil to a maximum depth of about 500 mm, removal of excavated earth to directed location, dressing the soil in proper slopes, filling excavated bed with approved soil mixture, planting approved quality grass, including weeding out and removal of foreign matter, watering etc complete. Height and spread to be measured above polybag top. Cynodon dactylon; Carpet Effect -12inchx 12inch Patches	73	

74	Construction of Two RCC water tank of 5000 liters capacity, including excavation in all types of soil, PCC M10 bedding 100 mm thick, RCC M25 base slab 200 mm thick with adequate reinforcement, RCC M25 side walls 200 mm thick, RCC M25 top slab 100 mm thick with manhole provision, internal plastering with integral waterproofing compound, external plastering, water tightness testing, all complete as per design, drawing, and engineer's instructions.	74	
75	Supply, installation, laying, testing, and commissioning of a complete drip irrigation system for the entire 1200 m stretch of the road project, covering the central median, gardening areas, and footpath-side plantation on both sides, including providing and laying HDPE mainline of PE-100, PN-6, 63 mm dia with all ISI-marked fittings, specials, tees, reducers, bends, couplers, and end caps; providing and laying LDPE sub-mains of 32 mm dia; providing, fixing and aligning 16 mm dia laterals with factory-fitted in-line drippers of 2 LPH discharge spaced at 30 cm interval; supply and installation of isolation valves, control valves, air-release valves, flush valves, pressure-regulating valves, take-off connectors, grommets, end stoppers, and all associated drip accessories; supplying and installing filtration assembly consisting of sand filter / disc filter of adequate capacity, venturi-type fertilizer injection system, pressure gauges, by-pass arrangements, and necessary control/monitoring units; excavation of trenches in all types of soil to the required width and depth for mainline, sub-mains, and laterals, including dressing of sides, removal of excavated material, proper bedding preparation, lowering of pipelines with correct alignment and gradient, followed by backfilling with selected soil in layers, watering, ramming, and compaction to restore the surface to original condition; providing all civil works including construction of RCC valve chambers, filter stand, and supports; connecting the system to the existing water source, including supply and fixing of suction pipe, foot valve, delivery pipe, adaptors, clamps, starter valve, and all appurtenances required for ensuring a leak-proof and hydraulically efficient connection; conducting hydraulic pressure testing of the entire pipeline network to required standards; and handing over the system in fully functional condition delivering uniform and controlled water distribution throughout the median, all complete as per approved drawings, manufacturer's recommendations, MoRTH/PWD technical specifications, and as directed by the Engineer-in-Charge.	75	
76	Demolition including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift. (i) R.C.C. work.	76	
77	Demolition of Brick work and stone masonry including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift. (ii) In Cement Mortar.	77	
78	Dismantling tiled of stone floors laid in mortar including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.	78	
79	Dismantling Road Sign Board along with M.S. Angle or Pipe supports fixed in cement concrete foundation including excavation, removing concrete block, stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.	79	



80	Dismantling Gantry Board along with M.S. Angle or Pipe supports fixed in cement concrete foundation including excavation, removing concrete block, stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.	80	
81	Dismantling steel railing fixed in concrete or masonry including stacking of serviceable materials and disposal of unserviceable materials with all lead and lift.	81	
82	Providing & erecting PVC Corrugated Flexible Conduit with required nos. of coupling, PVC bushes, Check-nuts etc. complete of following sizes.(2) 25 mm	82	
83	Providing and erecting Approved make RCCBs conforming to IS: 12640 and having sensitivity of 30 mA and Short Circuit withstand capacity of 10 KA and suitable for operation on 3 phase and neutral 415V,50Hz. having characteristic of quick action & tripping with all advance feature & do not incorporate any electronic component for following Max. rating erected as directed.(ii) 40Amps. FP Cat. III Make:- Make:- L&T, Indoasian, Schneider, ABB	83	
84	Providing and erecting Mains with ISI marked, 1.5KV grade electrolyte multi stranded, annealed copper conductor with heat resistant PVC insulated conforms to IS 694, IEC - 227 erected in existing pipe of following size (Specifically for control panel, relays, power switchgears, motor starters & control wiring) with required size of copper lugs, nuts and bolts if required. (e) One wire 6.00 sq. mm	84	
85	Providing and erecting Mains with ISI marked, 1.5KV grade electrolyte multi stranded, annealed copper conductor with heat resistant PVC insulated conforms to IS 694, IEC - 227 erected in existing pipe of following size (Specifically for control panel, relays, power switchgears, motor starters & control wiring) with required size of copper lugs, nuts and bolts if required. (f) One wire 10.00 sq. mm	85	
86	Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 3 Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminum housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses, with toughened glass with company mark/name engraved or embossed 160 to 270 V, Power Factor more than 0.95, THD < 10 %, CCT 3000 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy> 100 lumens/watt . LED driver efficiency > 85 %. (fittings required LM-79 & LM-80 certificates) (NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (A) Street Light (IP-65), Surge protection -4KV integral and , Light must have 440VAC line supply with over-voltage protection. (iii) Above 60 to 90 watts Cat-III Make:- Jaquar, Havells, LT, Wipro, Luker	86	



87	Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 3 Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminum housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses, with toughened glass with company mark/name engraved or embossed 160 to 270 V, Power Factor more than 0.95, THD < 10 %, CCT 3000 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy> 100 lumens/watt . LED driver efficiency > 85 %. (fittings required LM-79 & LM-80 certificates) (NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (A) Street Light (IP-65), Surge protection -4KV integral and , Light must have 440VAC line supply with over-voltage protection. (iv) above 90 to 120 watts Cat-III Make:- Jaquar, Havells, LT, Wipro, Luker	87	
88	Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 3 Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminum housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses, with toughened glass with company mark/name engraved or embossed 160 to 270 V, Power Factor more than 0.95, THD < 10 %, CCT 3000 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy> 100 lumens/watt . LED driver efficiency > 85 %. (fittings required LM-79 & LM-80 certificates) (NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (A) Street Light (IP-65), Surge protection -4KV integral and , Light must have 440VAC line supply with over-voltage protection. (vi) above 160 to 200 watts Cat-III Make:- Jaquar, Havells, LT, Wipro, Luker	88	
89	Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 3 Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminum housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses, with toughened glass with company mark/name engraved or embossed 160 to 270 V, Power Factor more than 0.95, THD < 10 %, CCT 3000 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy> 100 lumens/watt . LED driver efficiency > 85 %. (fittings required LM-79 & LM-80 certificates) (NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.) (B) Flood Light (IP-65), Surge protection -4KV integral and , Light must have 440VAC line supply with over-voltage protection. (vii) above 200 to 250 watts Cat-III Make:- Make:- L&T, Indoasian, Schneider, ABB	89	
90	Providing and erecting Approved make Four pole moulded case circuit breaker having breaking capacity ICU of 35 KA. at 415 V. having normal current rating 125A. with Fixed thermal & magnetic release suitable to work on A.C.supply 50 c/s. with all internal connections, spreader tinned copper & complete erected in existing 16 G.M.S. housing. ICS=100% of ICU only Cat III Make:- Make:- L&T, Indoasian, Schneider, ABB	90	


91	Providing & erecting 415 V MCB Four Pole for Motor & Inductive Load (C Curve) having 10KA breaking capacity & confirms to IS :8828 in existing box having following capacity (b)40 Amp. Cat.III Make:- Make:- L&T, Indoasian, Schneider, ABB	91	
92	Providing and erecting Miniature circuit breaker single pole 0.5A to 2A system and having breaking capacity 10 KA to be erected in existing box. confirming to IS 8828/1996 with ISI Mark Cat.III Make:- Make:- L&T, Indoasian, Schneider, ABB	92	
93	Providing and erecting metallic vitrified danger notice board as per language suggested by engineer incharge for MEDIUM VOLTAGE installation to be erected as per IS-2551.	93	
94	Providing and erecting Pipe type earthing having 150 cms.long and 2.5 cms. dia. galvanised iron pipe with coupling and buried in specially prepared earth pit complete with necessary 8 SWG earth wire.	94	
95	For using salt and charcoal / coke as required for pipe type earthing.	95	
96	Supplying & erecting earth pit of minimum bore dia.150mm size approved make Earthing Electrode consisting Pipe-in-Pipe Technology as per IS 3043-1987 made of corrosion free hot dipped G.I.Pipes having Outer pipe dia of 50mm having 80-200 Micron galvanising, Inner pipe dia of 25 mm having 200-250 Micron galvanising, connection terminal dia of 12mm with constant ohmic value surrounded by highly conductive compound with high charge dissipation suitable for following type of applications with chamber and heavy duty cover. (A)(approved make OEM has to submit test certificate including value of earth resistance of installation duly stamped and signed by agency and officer Incharge has to ensure the value of earthing resistance mentioned in test Certificate) & having back filling compound of (B) Inner chemical (CCM Compound)- Resistivity:- 0.2 ohm / meter testing as per IEC 62561-2017, Voltage drop:- < 1 volt at no load & dry form, Sulphur content:- <2%(C) Back fill Compound :- Earthing compound should be capable to retain moisture for long time Necessary test report must be submitted by Agency. (a) For Electrical Installation up to 440V in normal soil Length of pipe - 1 Mtr Back filling compound - 1 Nos Bag of 15 Kg.	96	
97	Supplying & erecting IP 55 grade following size section pillar fabricated from joint less M.S. Sheet with angle iron legs made from jointless M.S. Angle with cable clamps to be buried in ground to have appropriate erection to work uniform until erected with cement concrete foundation and 45 cm high bricks work finishing with plaster etc. hinged double door internally supported on both side, with internal and outside looking arrangement with look and keys in duplicate 35 x 35 x 5 mm M.S. Angle of Two Nos. one is welded and other with nut and bolt for erecting Bakelite sheet. Painting the Section Pillar inside and out side with three tank powder coated paint. section pillar roof should be without joint with water leakage proof & tested as per IP 55 test & followed by IS 2147 of 1962 (B) 75 X 60 X 45 cm section pillar fabricated from 16 Gauge MS Sheet with angle iron legs 45 cm long made from 35 X 35 X 5 mm thick MS angle.	97	


98	Providing and erecting XLPE (IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables (A) 4 core 16 Sq. mm Make;- RR Kabel, Havells, Avocab, KEI, Johnson, Polycab	98	
99	Providing and erecting XLPE (IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables (B) 4 core 25 Sq. mm Make;- RR Kabel, Havells, Avocab, KEI, Johnson, Polycab	99	
100	Providing and erecting XLPE (IS:7098)(I)-88 ISI armoured cable multistrand / Solid Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables (C) 4 core 10 Sq. mm Make;- RR Kabel, Havells, Avocab, KEI, Johnson, Polycab	100	
101	Providing and erecting XLPE (IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables (B) 4 core 6 Sq. mm Make;- RR Kabel, Havells, Avocab, KEI, Johnson, Polycab	101	
102	Providing & laying approved make Double walled corrugated pipes (DWC) of polyethylene(conforming to IS 14930 II )with necessary connecting accessories of same material at required depth in existing trench for laying of cable. below ground / road surface for enclosing cable (A)50 mm outer dia	102	
103	Making trench in soft soil of suitable width of 90 cm deep for laying cable or locating the fault all over the run and back filling the same and making the surface as normal ground.	103	
104	Making trench in Hard Murrum / Tar Road of suitable width of 90 cm or required depth for laying any size of cable or locating the fault all over the run and back filling the same and making the surface as normal ground.(B) If additional machinery like hammer driller or JCB use [Add]	104	
105	Drilling the road without breaking the road surface (Asphalt) for laying of cable for feeding power supply by making up to following size of holes at both ends complete.	105	
106	Providing and, fixing heavy duty flange type brass cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables.(B) 2 to 4 core 6 Sq. mm	106	
107	Providing and, fixing heavy duty flange type brass cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables. (C) 2 to 4 core 10 Sq. mm	107	
108	Providing and, fixing heavy duty flange type brass cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables. (D) 2 to 4 core 16 Sq. mm	108	
109	Providing and, fixing heavy duty flange type brass cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables. (E) 2 to 4 core 25 Sq. mm	109	
110	Solder less crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner. (A) 1.5/ 2.5/4/6 Sq.mm	110	

111	Solder less crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner. (B) 10 Sq.mm	111	
112	Solder less crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner. (C) 16/25 Sq.mm.	112	
113	Supplying and erecting Flexible PVC insulated multi strand multi core 1.1 kv grade ISI marked copper wires of following size to be erected as directed. (e) 1.50 Sq.mm 3 core round PVC sheathed	113	
114	Supplying and erecting Flexible PVC insulated multi strand multi core 1.1 kv grade ISI marked copper wires of following size to be erected as directed. (h) 2.50 Sq.mm 3 core round PVC sheathed	114	
115	Supplying and erecting approved make Octagonal pole made from HR sheet steel. The pole should be made as per IS. and shall be coated with hot dip galvanizing as per IS 2629/2633/4759, suitable suspend local wind speed with integral Junction box consist of terminal plate of min 6mm Hylam sheet, standard profile 35mmX7.5mm Din-Rail for MCB Mounting, stud type terminal and arrangement for cable termination to be erected With Suitable foundation (Included) as per details given by manufacturer considering site requirement. (H) 9 Mtr. Long 70 mm Top X 155 mm bottom dia, 3 mm thickness with 260mmX260mmX16mm base plate, 4-M24 Bolts and 750mm long with necessary G.I. J Bolts .Approx Pole weight 97 kg	115	
116	Supplying, erecting, testing, commissioning approved make M.S. Polygonal High Mast Pole having following general Specification. (a) Polygonal Section fabricated from M.S. Plate confirms BSEN 10025 & Hot deep galvanized minimum 65/86 micron (as per IS 2629 /1985) Lantern carriage with ring and rubber lines for erection of luminaries of suitable site. (b) Maximum telescopic section not more than four (c) Double drum gear pipe motorized winch with 6mm dia S.S. Rod (For 16 mtr and above size) (d) Approved make L.E.D. aviation light = 1 No. Lightning arrestor = 1 No. with necessary wiring of 2.5 sq.mm 5 core ISI copper cable Unarmoured. (e) Bottom most section suitable for mounting reversible motor and switchgears having door not more than 1400mm x 300mm with waterproof gasket & hinges & locking arrangement. (f) Pole structure comprises suitable size of reversible motor, cable and necessary switchgears with control panel. (g) bottom section shall have suitable size of thickness supports ribs foundation bolts nuts etc. (h) Item not comprises the cost of lanterns. (i) Necessary Cement Concrete foundation as per IS including testing & commissioning of the entire structure for following size of High Mast poles [4] High Mast 16 Mtr. TOP A/F 150 Mm, BOTTOM A/F 400 Mm, No. of Sec. No. - 2, Bottom Thickness - 4 mm, Top Sec. - 3 mm, Size Base Plate - dia.630 mm x 20 mm thick, Foundation Bolt Size M24 x 870 mm, Qty - 12 Nos., Suitable for mounting Fitting of Light - 10 Nos.	116	



117	Supplying and erecting street light pole bracket comprising main B Class GI pipe of 4.2 cm/require outside dia. complete with suitable B Class GI sleeve tubing of approx. 45cms. length and suitable for 76.5mm/ 80mm or require size pole top having sufficient fastners for fixing the brackets and having suitable rise as per site condition as directed and spread of 2 mtr.with suitable welded stiffener reducer and with lock nut complete painted with one coat of Red oxide / PU base primer and two coats of Aluminium / PU paint. Suitable for side entry fitting brackets of following nos of arms. [a] Single Arm bracket 2 Mtr	117	
118	Supplying and erecting street light pole bracket comprising main B Class GI pipe of 4.2 cm/require outside dia. complete with suitable B Class GI sleeve tubing of approx. 45cms. length and suitable for 76.5mm/ 80mm or require size pole top having sufficient fastners for fixing the brackets and having suitable rise as per site condition as directed and spread of 2 mtr.with suitable welded stiffener reducer and with lock nut complete painted with one coat of Red oxide / PU base primer and two coats of Aluminium / PU paint. Suitable for side entry fitting brackets of following nos of arms. [B] Double Arm Bracket 2 Mtr.	118	
119	Supplying and erecting street light pole bracket comprising main B Class GI pipe of 4.2 cm/require outside dia. complete with suitable B Class GI sleeve tubing of approx. 45cms. length and suitable for 76.5mm/ 80mm or require size pole top having sufficient fastners for fixing the brackets and having suitable rise as per site condition as directed and spread of 2 mtr.with suitable welded stiffener reducer and with lock nut complete painted with one coat of Red oxide / PU base primer and two coats of Aluminium / PU paint. Suitable for side entry fitting brackets of following nos of arms. [C] Triple Arm Bracket 2 Mtr.	119	
120	Providing and erecting Annealed bare Copper wire 8 to 16 SWG.	120	
121	Supplying & erecting approved make IP 55 grade Company fabricated Timer Panel of following capacity for switch On-Off street lights on time scheduling basis made from 16G CRCA sheet duly epoxy power painted inside and outside with hinged doors and locking arrangement consisting of suitable size of 4 Pole MCB and 4 pole contactor (cat-III)with analog time switch, auto manual switch of same make and suitable input and output Bakelite terminals and with door earthing approved by Engineer in charge.(C) 63 Amp	121	
122	Supplying & erecting approved make 4 Mtr GI Tubular Pole : 4 Mtr GI Pole 89 Od 3 mm thickness pipe Powdercoat/PU Paints, 380 mm Dia ring Decorative posttop lantern Light 50 Watt fitting, with wire, MCB, Foundation, J bolts and Additional accessories,	122	

  
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