

Project : Mangaluru Smart City

Summary for Pedstrian Plaza at Maidan Road

Sr.No.	Description	Amount
1	Civil Work	4,55,45,207
2	Landscape Work	4,34,513
3	Electrical work (Including GST)	9,41,759
	Sub Total	4,69,21,479
	Provision for Third Party Damages at 1 st Year(DLP)	7,13,669
	Maintenance Cost For 2nd,3rd and 4th Year	35,88,677
	Add 3% Contengency	14,07,644
	GST @12% on SI No.1 & 2	55,17,566
	GST @12% on Provision for Third Party Damages at 1 st Year(DLP)	,82,904
	GST @12% on Maintenance Cost For 2nd,3rd and 4th Year	4,21,800
	Escalation and Tender Primium @10%	46,92,148
	Misc Roundoff	4,112
	Grand Total	6,33,50,000

**EXECUTIVE ENGINEER
MSCL MANGALURU**

**GM TECHNICAL
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**MANAGING DIRECTOR
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Project : Manglore Smart City
1.1 Abstract For Civil Works of Pedestrian Plaza

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
1	KSRRB M800-Portable barricade in construction zone KSEEB M800-43.Installation of a steel portable barricade with horizontal rail 300mm wide.2.5m in length fitted on a 'A" frame made with 45x45x5mm angle iron section,1.5m height horizontal rail painted(2 coats) with yellow and white stripes,150mm in width at an angle of 45 degree,'A" Frame painted with 2 Coats of yellow paint,complete as per IRC:SP:55-2001 Complete as per specifications. (KSRRB,18-19,24.44,Pg.No.187)	Each	145.00	2739.00	3,97,155	
2	Removing and Refixing the Existing Statue in Garden after completion of work.as directed by Architect or Engineer in Charge	LS	1.00	25000.00	25,000	
3	KSRRB 200-2. Cutting of trees girth from 600mm to 900mm including cutting of trunks, branches and removal of stumps stacking of serviceable materials earth filling in the depressions / pit, labour charges complete as per specifications. MORTH specification clause 201/Chapter 2 (KSRRB 18-19,SI No.18.2,Pg No.138)	Each	9.00	1014.20	9,128	
4	KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications. KSRRB 18-19,SI No.19.93,Pg No.150)	Nos.	12.00	2466.20	29,594	
5	KSRRB M200.Dismantling of cement concrete pavement by mechanical means using pneumatic tools,breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled material stacking serviceable and unserviceable materials separately complete as per specifications.MORTH specification No.202.(Including transporting charges,loading and unloading for lead 5km-Extra) (KSRRB,18-19,SI No.18.47,Pg.No.140)	Cum	92.16	988.9	91,137	
6	KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means : B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KSRRB 18-19,P.No. 139, I.No. 18.18)	Cum	75.20	612.7	46,075	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
7	KSRRB M200-17.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. v)Steel work in all types of Sections upto a Height of 5 m above plinth level excluding Cutting of Rivet– B. Excluding dismembering. (KSRRB 18-19,Pg.No.140,SI No.18.34)	Ton	3.63	1568.6	5,686	
8	KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KSRRB,18-19,SI No.18.23,Pg.No.139)	Cum	60.73	386.10	23,449	
9	Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge. (Rate analysis)	Sqm	1301.76	74.98	97,600	
10	KSRRB M300-14. Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications. MORTH Specification No.301 (KSRRB,18-19,SI No.19.14,Pg.No.143)	Cum	3975.68	45.10	1,79,303	
11	KSRRB M300-15. Excavation for roadway in ordinary rock by mechanical means including cutting and loading to tippers, transporting with a lead of 1.00 km and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections complete as per specifications. MORTH Specification No. 301 (KSRRB,18-19,SI No 19.15,Pg.No.144)	Cum	1530.57	61.6	94,283	
12	KSRRB 2.7 : Providing and removing shoring and strutting for protecting the sides of foundation trenches , wherever required, including cost of all materials and labour complete as per specifications. specification. No. KBS 2.5 / 2.13(KSRB 18-19,Pg.No.7,SI No.2.14)	Sqm	392.70	661.10	259,614	
13	KSRRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KSRB 18-19,2.10,Page No.7)	Cum	627.76	221.10	138,799	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
14	KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KSRRB 18-19,Page No.147,SI No.19.64)	Sqm	2569.23	6.60	16,957	
15	KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KSRB 18-19,Page No.7,SI No.2.15)	Cum	981.85	2765.40	27,15,208	
16	KSRB 4-1.7 : Providing and laying in position plain cement concrete of Mix 1:3:6 with OPC @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.69 cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications. Specification No. KBS 4.1, 4.2 4.2(KSRB,18-19,SI No.4.7,Pg.No.13)	Cum	251.67	6347.0	15,97,377	
17	Providing and laying heavy duty cobble stones 60mm thick , using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KSRB,18-19,14.6,Pg.No.103)	Sqm	1833.50	1161.6	21,29,794	
18	Providing and laying flooring using prepolished, gang saw/water cut 19mm thick granite laid with a bed of 20mm thick 14 em & JOinted with neat cement slurry mixed with pigment to match shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials, mortar and labours etc., complete as per specifications.. - do- using black granite/ Multy Red I Ruby Red I Black I Hassan Green I River Pink Granite of width not less than 900mm (KPWD 18-19,SI No.14.47.2,Pg No.110)	Sqm	458.76	2649.9	12,15,659	
19	Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	101.25	912.0	92,337	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
20	K8RRB M2200-5.18. Providing and laying Design mix M40 with OPC @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @31ts confirming to 189103-1999 Reaffirmed-2008 including cost of materials, labour, HOM curing, form works, scaffolding and centering complete as per specifications. - i) Upto 5m height (KPWD,18-19,28.7.18,Pg.No.228)	Cum	621.56	6759.3	42,01,264	
21	KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,18-19,28.7.15,Pg.No.228)	Cum	895.90	6443.80	57,73,022	
22	KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters confirming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnpillars, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KSRB 18-19,SI No.4.10.Pg No.14)	Cum	93.00	6817.80	6,34,047	
23	KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab,roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KSRB 18-19,4.12,Pg.No.14)	Cum	40.87	7074.10	2,89,130	
24	KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,18-19,4.28,Pg.No.16)	Sqm	457.13	289.30	1,32,247	
25	KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KSRB,18-19,4.31,Pg.No.16)	Sqm	3641.11	397.10	14,45,885	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
26	KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KSRB,18-19,4.34,Pg.No.17)	Sqm	351.60	321.20	112,934	
27	KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KSRB,18-19,4.30,Pg.No.16)	Sqm	335.13	495.00	1,65,889	
28	KSRB 4.9.2 : Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500 (KSRB,18-19 SI No.4.46.2,Pg No.18)	MT	170.58	77860.2	1,32,81,552	
29	KSRRB M2600-3. (ii) Providing & fixing 250 mm wide, 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification including cost of materials, labour, HOM complete as per specifications. MORTH Specification No. 2605(KSRRB,SOR 18-19,SI No.31.3)	Rm	66.00	130.90	8,639	
30	KSRB 6-2.4 : Providing and constructing burnt brick masonry with approved quality of non-modular bricks of standard size of class designation 5.0 Newton per sqmm with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KSRB,SOR 18-19,SI No.6.7)	Cum	29.95	8576.70	2,56,838	
31	KSRB 15.3: Providing 12mm thick cement plaster in single coat with cement mortar to brick masonry including rounding off corners wherever required smooth rendering, Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications. -do - cement mortar 1:4.(KSRB 18-19,SI.No.15.10)	Sqm	97.50	225.50	21,986	
32	KSRB 15-14.1 Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after throughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.do-(KSRB 18-19,SI No.15.49.1)	Sqm	278.70	121.00	33,723	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
33	KSRRB M2200- Providing Weep HolesKSRRB M2200-8. Providing weep holes in Brick masonry I Plain I Reinforced concrete abutment, wing wall I return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing force. Complete as per drawing and Technical Specifications including cost of materials, labour, HOM complete as per specifications. MORTH Specification No.2706 & 2200(KSRRB,SOR 18-19,SI No.28.10)	Nos.	1239.00	161.7	2,00,346	
34	KSRRB M2200- Filter MediaKSRRB M2200-9. Providing and laying of Filter media with granular materials /stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MORTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification including cost of materials, labour, HOM complete as per specifications. MORTH Specification No. 2504.2.2(KSRRB,SOR 18-19,SI No.28.13)	Cum	703.10	2300.1	16,17,190	
35	KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8 8.(KSRRB,SOR 18-19,24.1)	Sqm	2453.75	88	2,15,930	
36	Fabrication supplying and erecting M.S. tubular trusses of all spans as per approved drawing & design with prefabricated steel applications using quality material and are durable, reliable and corrosion and abrasion resistant. Welding shall confirm to latest structural welding code. Quality shall be on various parameters like shape, size, design gauge and polish. The entire trusses is anchored in RCC column by using 4 nos of M.S. anchor bolts at each support with 10mm thick base plate and shoe plate. The work includes cutting, straightening, placing in position of M.S. pipes and welding wherever necessary and applying one coat of redoxide primer coat to all the members including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification (KPWD 18-19,SI No 7.29).	Kg	6875.00	122.1	8,39,438	
37	Providing and fixing 6mm clear I opal white I solar I bronze I blue I green tinted multi wall poly carbonate sheet for tubular structure. The work including cost of all materials, labour charges and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lifts, transportation, loading and unloading and all other incidental charges etc. complete as per specification and directions of the engineer in charge of the work. (KPWD,SOR 18-19,SI No.8.27)	Sqm	358.00	3438.6	12,31,019	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
38	Design, supplying, erecting testing and Commissioning of passenger/hospital lift with speed of 1.0 mtrs per second, variable frequency drive with or without machine room for the available well size, operating at 415 V three phase 50 cycle AC supply, power coated or stainless steel car entrance door enclosures with flooring, car illumination, emergency light, intercom and fan as desired by the user, central opening/sides opening door with or without attendant operation, 7 segment display, kid buttons, call register indicator, fireman drive, SS handrail inside car, full length infra-red curtain in car door, automatic rescue device, voice announcing in regional language, brail buttons with one year warranty and maintenance. the work includes providing shaft scaffolding, attending minor builder works such as making niches for fixing of brackets, guide rails, counter weights etc., including lift running licence from the competent authority. (SOR 14-15, Electrical Works) Without Machine Room-SS finish for 13 Passengers	Nos.	1.00	2394500	23,94,500	
39	Direction and Place Identification Signs with size more than 0.9 sqm Size Board: Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide Clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing. (KPWD 18-19, SI No. 24.4)	Sqm	16.00	7926.6	1,26,826	
40	Providing and Fixing Advertisement Panels including illumination complete.	Sqm	84.00	3362	2,82,408	
41	Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	95.63	6000	5,73,780	
42	Providing and fixing M.S. Hand railing for Balcony/Staircase etc., with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete. The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing. (KPWD 18-19, SI No. 7.35)	Sqm	153.00	3124	4,77,972	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
43	Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged (Rate analysis)	Kg	277.72	225.5	62,626	
44	Supply, installation, testing & commissioning of Submersible pumps (1 working + 1 standby) with 10 mm thick solid handling capacity. C.I body with built in strainer & C.I impeller, coupled to motor suitable for operation on 430 V 3 pH 50 Cycle A/C power supply and lifting arrangement including complete as required. Electric control panel with change over switch, relays, electrical wiring, cabling from panel to pumps, level controller complete with all accessories as per manufacturer specifications Accessories like NRV's valves on discharge and valve and strainer in suction line, header for suction and delivery side, required cut pieces of pipes, fittings, flanges, pressure gauge, base frame and concrete foundation complete as required. Flow rate : 4 LPS (1 Working +1 Standby) Head : 10 Mts (Market Rate)	Set	1.00	135300	1,35,300	
45	KSRB 15-18.2 • Providing and applying enamel metal painttwo coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (KSRB 18-19,SI No. 15.74).	Sqm	321.00	104.5	33,545	
46	Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	826.00	865.15	7,14,614	
47	KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 em center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KSRRB 18-19,32.1)	Sqm	370.00	345.4	127,798	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
48	KSRRB M500-19. Providing and laying bituminous concrete using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision -do- using 40-60 TPH capacity H. M.P with mechanical paver grading I (50 mm to 65 mm) with 5.2% VG-30 Bitumen(KSRRB 18-19,21.22.5)	Cum	18.00	9389.6	1,69,013	
49	KSRRB M400-6.1. Construction of granular sub-base by providing close graded crushed stone aggregates of granite / trap / basalt material, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with Plate compactor to achieve the desired density, complete as per specifications. A. Plant Mix Method. - Close graded granular sub-base material as per 400-1 For Grading- II Material (RA Attached)	Cum	18.00	2640	47,520	
50	KSRRB M600-1. Providing and Constructing dry lean cement concrete mix CC 1:5:10 base with OPC 25mm and down size graded granite metal coarse aggregate at 0.86cum and fine aggregates @0.58cum over a prepared sub-base, coarse and fine aggregate conforming to IS: 383-2016, aggregate cement ratio not to exceed 15:1, Aggregate gradation after blending to be as per Table 600-1, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver, compacting with 8-10 tonnes vibratory roller, finishing and curing complete as per specifications. Clause 601 of MORTH V Revision and IS 456 Table-5 -do- with OPC at 150 kg/cum and coarse aggregate 0.86cum, fine aggregate 0.58cum using Concrete Batch mix Plant at 75 cum/hr capacity with Slip form paver with electronic sensor. (KSRRB 18-19, SI No : 22.1.1)	Cum	12.00	4452.8	53,434	
51	KSRRB M600-2. Providing and Constructing unreinforced, dowel jointed, plain cement Pavement Quality concrete for pavements using Grade concrete M40 having Flexural strength not less than 4.50 Mpa over a prepared base with OPC, coarse aggregate at 0.64 cum, fine aggregates at 0.36 cum, Coarse and fine aggregate conforming to IS:383- 2016 and Table 600-3 of MORTH V Revision, with Superplastizer at 3 lts conforming to IS 9103-2008. loading materials to batch mix plant by front end loader, mixed in a cement concrete batch mix plant as per approved mix design, transported to site in transit truck agitator 5 cum capacity, laid with Paver, compacted and finished in a continuous operation as per IRC-15 including cost for providing of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane of impermeable plastic sheet of 125 micron, groove cutting, sealant primer joint sealant, debonding strip, dowel bars at 9 kg/cum, tie rods at 1.15 kg/cum, admixtures as approved, curing compound, finishing to lines and grades, textured with texturing machine, and	Cum	36.00	6341.5	2,28,294	

Sr.No.	Description	Unit	Qty.	Rate	Amount	Remark
52	Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Earth	Cum	4878.00	76.78	3,74,533	
53	Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Debris	Cum	1530.00	77.00	1,17,810	
				Total	4,55,45,207	

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Project : Manglore Smart City
1.2 Measurement Sheet For civil works of Pedestrian Plaza

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
1	KSRRB M800-Portable barricade in construction zone KSEEB M800-43.Installation of a steel portable barricade with horizontal rail 300mm wide.2.5m in length fitted on a 'A" frame made with 45x45x5mm angle iron section,1.5m height horizontal rail painted(2 coats) with yellow and white stripes,150mm in width at an angle of 45 degree,'A" Frame painted with 2 Coats of yellow paint,complete as per IRC:SP:55-2001 Complete as per specifications. (KSRRB,18-19,24.44,Pg.No.187)						
	Box at Maidan Road	Rm	1	33			33
	Staircase at Station Road side	Rm	1	42			42
	Way between Townhall and garden	Rm	1	70			70
		Rm				Total	145
				Length	One Barricade Length		
	No. of barricades	Each		145	2.5		58
2	Removing and Refixing the Existing Statue in Garden after completion of work.as directed by Architect or Engineer in Charge	Nos.	1				1
3	KSRRB 200-2. Cutting of trees girth from 600mm to 900mm including cutting of trunks, branches and removal of stumps stacking of serviceable materials earth filling in the depressions / pit, labour charges complete as per specifications. MORTH specification clause 201/ Chapter 2 (KSRRB 18-19,SI No.18.2,Pg No.138)	Nos.	9				9
4	KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications. KSRRB 18-19,SI No.19.93,Pg No.150)	Nos.	12				12
5	KSRRB M200.Dismantling of cement concrete pavement by mechanical means using pneumatic tools,breaking to pieces not exceeding 0.02 cum in volume and stock pilling at designated locations and disposal of dismantled material stacking serviceable and unserviceable materials separately complete as per specifications.MORTH specification No.202.(Including transporting charges,loading and unloading for lead 5km-Extra) (KSRRB,18-19,SI No.18.47,Pg.No.140)						
	People Under Pass						
	Box at Maidan Road	cum	1	24	12.80	0.3	92.16
		cum				Total	92.16
6	KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KSRRB 18-19,P.No. 139, I.No. 18.18)						
	People Under Pass						
	Maidan Road-DLC	Cum	1	24	12.80	0.1	30.72
	SWD at Maidan Road -wall	Cum	4	12.80	0.15	1.5	11.52
	SWD at Maidan Road -base and slab	Cum	4	12.80	0.20	1.5	15.36

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Existing Fountain-Wall	Cum	4	8.00	0.25	0.6	4.80
	Existing Fountain-Foundation	Cum	1	8.00	8.00	0.2	12.80
		Cum				Total	75.20
7	KSRRB M200-17.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. v)Steel work in all types of Sections upto a Height of 5 m above plinth level excluding Cutting of Rivet- B. Excluding dismembering.(KSRRB 18-19,Pg.No.140,SI No.18.34)			Length	Kg/Rm		MT
	Existing MS Grill		1	145	25		3.63
8	KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KSRRB,18-19,SI No.18.23,Pg.No.139)						
	Compound Wall at Maidan Road- Station Road Side	Cum	1	29.37	0.23	1.5	10.13
	Compound Wall at Maidan Road- Town Hall Side	Cum	1	50	0.23	1.5	17.25
	Compound Wall of Garden at Town Hall side	Cum	1	70	0.23	1	16.10
	Compound Wall at Bibi Alabi Road-Taj Mahal Side	Cum	1	50	0.23	1.5	17.25
		Cum					60.73
9	Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge. (Rate analysis)						
	Footpath at Station Road Side-Maidan road	sqm	1	33.00	4.11		135.63
	Footpath at Townhall Side-Maidan Road	sqm	1	27.72	5		138.61
	Lift at Station Road Footpath	sqm	1	2.56	2.56		6.55
	Existing access way from maidan road to bibi alabi raod	sqm	1	75	2		150.00
	Walkway along compound wall	sqm	1	153	2		306.00
	Middle Walkway at Gandhi Park	sqm	1	31	2.78		86.18
	Walkway around gandhi statue	sqm	1	35.42	23.54		833.79
	Ded. Green area around statue(Hexagonal area)	sqm	-1	125			-125.00
	Ded. Green area around Tank	sqm	-1	230			-230.00
		sqm					1301.76
10	KSRRB M300-14. Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications. MORTH Specification No.301 (KSRRB,18-19,SI No.19.14,Pg.No.143)						
	People Under Pass						
	Box Portion at Maidan Road	cum	1	33.00	12.80	2.05	865.92
	Maidan Road						
	Excavation For Staircase at Station Road	cum	1	21.50	9.00	2.20	212.85
	Lift at Station Road Footpath	cum	1	2.56	2.56	2.20	14.42
	Excavation for Ramp at Town hall side	cum	1	23.80	3.00	2.20	78.54
	Staircase at Town hall side	cum	1	12.00	3.00	2.20	39.60
	For walkway paving	cum	1	55.00	10.60	0.30	174.90
	Trellis Footing	cum	24	1.20	1.20	1.50	51.84
	Proposed Garden Area	cum	1	875.00		0.60	525.00
	Proposed Paved Area	cum	1	1768.00		0.35	618.80
	Ramp						
	Footing	cum	1	1.00	23.40	2.33	54.52

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Lift at Station Road Footpath	cum	1	2.50	2.50	1.50	9.38
	Retaining Wall-1	cum	1	44.86	4.60	2.10	433.35
	Retaining Wall-2	cum	1	27.64	4.60	2.10	267.00
	Retaining Wall-3	cum	1	67.50	1.91	0.70	90.25
	Retaining Wall-4	cum	1	21.98	3.30	1.10	79.79
	Retaining Wall-5	cum	1	67.50	1.30	0.60	52.65
	Retaining Wall-6	cum	1	33.93	3.30	1.10	123.17
	SWD						
	SWD at Maidan Side-Curved	cum	1.0	31.4	1.0	0.57	17.74
	SWD at Bibi Alabi Side-Curved	cum	1.0	31.4	1.0	0.57	17.74
	SWD at Lower side of Amphi Theater-Flow towards Maidan	cum	1.0	17.0	1.0	0.57	9.61
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	cum	1.0	17.0	1.0	0.57	9.61
	SWD at Miadan Road Ramp (Garden Side)	cum	1.0	30.9	1.0	0.60	18.66
	SWD at Bibi Alabi Side (Garden Side)	cum	1.0	19.1	1.0	0.61	11.76
	SWD at Upper side of Amphi Theater-Flow towards Maidan	cum	1.0	17.7	1.0	0.54	9.54
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	cum	1.0	17.7	1.0	0.54	9.54
	SWD at Bibi albi-Garden staire case	cum	1.0	16.5	1.0	0.61	10.14
	SWD along Garden Walkway	cum	1.0	56.8	1.0	0.77	43.72
	SWD along Ramp at Bibi alabi Road(Garden Side)	cum	1.0	15.0	1.0	0.81	12.15
	SWD along Town Hall side Boundary	cum	2.0	71.1	1.0	0.74	104.52
	Sump	cum	1.0	2.3	2.3	1.70	8.99
		cum				Total	3975.68
11	KSRRB M300-15. Excavation for roadway in ordinary rock by mechanical means including cutting and loading to tippers, transporting with a lead of 1.00 km and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections complete as per specifications. MORTH Specification No. 301 (KSRRB,18-19,SI No 19.15,Pg.No.144)						
	People Under Pass						
	Box Portion at Maidan Road	cum	1	33.00	12.80	2	844.80
	Maidan road						
	Excavation For Stairecase at Station Road	cum	1	21.50	9.00	2.20	425.70
	Lift at Station Road Footpath	cum	1	2.56	2.56	2.20	14.42
	Excavation for Ramp at Town hall side	cum	1	23.80	3.00	2.20	157.08
	Stairecase at Town hall side	cum	1	12.00	3.00	2.20	79.20
	Lift at Station Road Footpath	cum	1	2.50	2.50	1.5	9.38
		cum				Total	1530.57
12	KSRB 2.7 : Providing and removing shoring and strutting for protecting the sides of foundation trenches, wherever required, including cost of all materials and labour complete as per specifications. specification. No. KBS 2.5 / 2.13(KSRB 18-19,Pg.No.7,SI No.2.14)						
	People Under Pass						
	Box Portion at Maidan Road	sqm	2	33.00		2.2	145.20
	Staire Case	sqm	1	45.00		5.5	247.50
		sqm				Total	392.70
13	KSRB 2.3: Filling available excavated earth (Exluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KSRB 18-19,2.10,Page No.7)						
	Excavation For Retaining wall	Cum					923.03
	PCC for Retaining Wall	Cum					-53.09
	Deduction of Soiling	Cum					-265.46
	Deduction of Raft						
	Retaining Wall-1	Cum	-1.00	44.86	4	0.7	-125.61
	Retaining Wall-2	Cum	-1.00	27.64	4	0.7	-77.39
	Retaining Wall-3	Cum	-1.00	67.50	1.31	0.3	-26.53
	Retaining Wall-4	Cum	-1.00	21.98	2.7	0.4	-23.74
	Retaining Wall-5	Cum	-1.00	67.50	0.7	0.25	-11.81
	Retaining Wall-6	Cum	-1.00	33.93	2.7	0.4	-36.64
	Deduction of Wall						

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Retaining Wall-1	Cum	-1.00	44.86	0.45	1.1	-22.21
	Retaining Wall-2	Cum	-1.00	27.64	0.45	1.1	-13.68
	Retaining Wall-3	Cum	-1.00	67.50	0.25	1.2	-20.25
	Retaining Wall-4	Cum	-1.00	21.98	0.28	0.5	-3.02
	Retaining Wall-5	Cum	-1.00	67.50	0.20	0.15	-2.03
	Retaining Wall-6	Cum	-1.00	33.93	0.28	0.5	-4.67
	Staire case at Station Road	Cum	0.5	12.00	2.50	3.5	52.50
	Ramp at maidan road-Down Rectangular part	Cum	1	22.50	2.50	1.5	84.38
	Ramp at maidan road-Down Triangular part	Cum	0.5	22.50	2.50	1.5	42.19
	Ramp at maidan road-Mid landing	Cum	1	5.00	2.50	1.5	18.75
	Ramp at maidan road-Up Triangular part	Cum	0.5	22.50	2.50	1.5	42.19
	Staire case at Maidan Road	Cum	1	12.00	2.50	1.5	45.00
	Amphi theater						
	Step 1	Cum	1.00	25.00	2.40	0.5	30.00
	Step 2	Cum	1.00	23.00	2.40	0.5	27.60
	Step 3	Cum	1.00	21.00	2.40	0.5	25.20
	Step 4	Cum	1.00	19.21	2.40	0.5	23.05
						Total	627.76
14	KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KSRRB 18-19,Page No.147,SI No.19.64)						
	People Under Pass						
	Box Portion at Maidan Road	sqm	1.00	33.00	11.20		369.60
	Approch Slab at Maidan Road Box	sqm	2.00	33.20	3.60		239.04
	Maidan Road						
	Station Road-Staire case-ST1						
	Waist Slab-1	Cum	1.00	2.65	5.00		13.25
	Waist Slab-2	Cum	1.00	3.10	5.00		15.50
	Waist Slab-3	Cum	1.00	1.20	5.00		6.00
	Landing 1	Cum	1.00	5.00	1.50		7.50
	Landing 2	Cum	1.00	5.00	2.50		12.50
	Landing 3	Cum	1.00	5.00	2.22		11.12
	Garden side staircase-ST2-Maidan Road						
	Waist Slab-1	Cum	1.00	4.25	2.50		10.63
	Waist Slab-2	Cum	1.00	2.36	2.50		5.89
	Waist Slab-3	Cum	1.00	0.72	2.50		1.80
	Landing1	Cum	1.00	2.50	2.50		6.25
	Landing2	Cum	1.00	5.30	2.50		13.25
	Ramp at garden side	Cum	1.00	42.50	2.50		106.25
	Walk way in Garden	sqm	1.00	55.00	5.00		275.00
	Kiosk	sqm	6.00	5.00	5.00		150.00
	Trellish Footing	sqm	24.00	1.20	1.20		34.56
	Informal Stage- Brick Work	sqm	1.00	48.00	0.23		11.04
	Garden Wall	sqm	1.00	61.00	0.23		14.03
	Lift Raft	sqm	1.00	2.50	2.50		6.25
	Lift wall	sqm	2.00	1.50	0.30		0.90
	Footing		0.00	0.00	0.00		0.00
	Retaining Wall-1	sqm	1.00	44.86	4.20		188.41
	Retaining Wall-2	sqm	1.00	27.64	4.20		116.09
	Retaining Wall-3	sqm	1.00	67.50	1.51		101.93
	Retaining Wall-4	sqm	1.00	21.98	2.90		63.74
	Retaining Wall-5	sqm	1.00	67.50	0.90		60.75
	Retaining Wall-6	sqm	1.00	33.93	2.90		98.40
	SWD						
	SWD at Maidan Side-Curved	sqm	1.00	31.40	1.00		31.40
	SWD at Bibi Alabi Side-Curved	sqm	1.00	31.40	1.00		31.40
	SWD at Lower side of Amphi Theater-Flow towards Maidan	sqm	1.00	17.00	1.00		17.00
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	sqm	1.00	17.00	1.00		17.00
	SWD at Miadan Road Ramp (Garden Side)	sqm	1.00	30.85	1.00		30.85
	SWD at Bibi Alabi Side (Garden Side)	sqm	1.00	19.12	1.00		19.12
	SWD at Upper side of Amphi Theater-Flow towards Maidan	sqm	1.00	17.67	1.00		17.67
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	sqm	1.00	17.67	1.00		17.67

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	SWD at Bibi albi-Garden staire case	sqm	1.00	16.48	1.00		16.48
	SWD along Garden Walkway	sqm	1.00	56.78	1.00		56.78
	SWD along Ramp at Bibi alabi Road(Garden Side)	sqm	1.00	15.00	1.00		15.00
	SWD along Town Hall side Boundary	sqm	2.00	71.10	1.00		142.20
	Sump	sqm	1.00	2.30	2.30		5.29
	Amphi theater						
	Step 1	sqm	1.00	25.00	2.40		60.00
	Step 2	sqm	1.00	23.00	2.40		55.20
	Step 3	sqm	1.00	21.00	2.40		50.40
	Step 4	sqm	1.00	19.21	2.40		46.10
		sqm				Total	2569.23
15	KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KSRB 18-19,Page No.7,SI No.2.15)						
	People Under Pass						
	Box Portion at Maidan Road	cum	1.00	33.00	11.20	0.50	184.80
	Approach Slab at Maidan Road Box	cum	2.00	33.20	3.60	0.50	119.52
	Maidan Road						
	Station Road-Staire case-ST1						
	Waist Slab-1	Cum	1.00	2.65	5.00	0.50	6.63
	Waist Slab-2	Cum	1.00	3.10	5.00	0.50	7.75
	Waist Slab-3	Cum	1.00	1.20	5.00	0.50	3.00
	Landing 1	Cum	1.00	5.00	1.50	0.50	3.75
	Landing 2	Cum	1.00	5.00	2.50	0.50	6.25
	Landing 3	Cum	1.00	5.00	2.22	0.50	5.56
	Garden side stairecase-ST2-Maidan Road						
	Waist Slab-1	Cum	1.00	4.25	2.50	0.50	5.31
	Waist Slab-2	Cum	1.00	2.36	2.50	0.50	2.94
	Waist Slab-3	Cum	1.00	0.72	2.50	0.50	0.90
	Landing1	Cum	1.00	2.50	2.50	0.50	3.13
	Landing2	Cum	1.00	5.30	2.50	0.50	6.63
	Ramp at garden side	Cum	1.00	42.50	2.50	0.50	53.13
	Walk way in Garden	cum	1.00	55.00	5.00	0.23	63.25
	Kiosk	cum	6.00	5.00	5.00	0.23	34.50
	Trellish Footing	cum	24.00	1.20	1.20	0.23	7.95
	Informal Stage- Brick Work	cum	1.00	48.00	0.23	0.23	2.54
	Garden Wall	cum	1.00	61.00	0.23	0.23	3.23
	Lift Raft	cum	1.00	2.50	2.50	0.23	1.44
	Lift wall	cum	2.00	1.50	0.30	0.23	0.21
	Footing						
	Retaining Wall-1	cum	1.00	44.86	4.20	0.5	94.21
	Retaining Wall-2	cum	1.00	27.64	4.20	0.5	58.04
	Retaining Wall-3	cum	1.00	67.50	1.51	0.5	50.96
	Retaining Wall-4	cum	1.00	21.98	2.90	0.5	31.87
	Retaining Wall-5	cum	1.00	67.50	0.90	0.5	30.38
	Retaining Wall-6	cum	1.00	33.93	2.90	0.5	49.20
	SWD						
	SWD at Maidan Side-Curved	cum	1.00	31.40	1.00	0.23	7.22
	SWD at Bibi Alabi Side-Curved	cum	1.00	31.40	1.00	0.23	7.22
	SWD at Lower side of Amphi Theater-Flow towards Maidan	cum	1.00	17.00	1.00	0.23	3.91
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	cum	1.00	17.00	1.00	0.23	3.91
	SWD at Miadan Road Ramp (Garden Side)	cum	1.00	30.85	1.00	0.23	7.10
	SWD at Bibi Alabi Side (Garden Side)	cum	1.00	19.12	1.00	0.23	4.40
	SWD at Upper side of Amphi Theater-Flow towards Maidan	cum	1.00	17.67	1.00	0.23	4.06
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	cum	1.00	17.67	1.00	0.23	4.06
	SWD at Bibi albi-Garden staire case	cum	1.00	16.48	1.00	0.23	3.79
	SWD along Garden Walkway	cum	1.00	56.78	1.00	0.23	13.06
	SWD along Ramp at Bibi alabi Road(Garden Side)	cum	1.00	15.00	1.00	0.23	3.45
	SWD along Town Hall side Boundary	cum	2.00	71.10	1.00	0.23	32.71
	Sump	cum	1.00	2.30	2.30	0.23	1.22
	Amphi theater						
	Step 1	cum	1.00	25.00	2.40	0.23	13.80
	Step 2	cum	1.00	23.00	2.40	0.23	12.70
	Step 3	cum	1.00	21.00	2.40	0.23	11.59

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Step 4	cum	1.00	19.21	2.40	0.23	10.60
		cum				Total	981.85
16	KSRB 4-1.7 : Providing and laying in position plain cement concrete of Mix 1:3:6 with OPC @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.69 cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications. Specification No. KBS 4.1, 4.2 4.2(KSRB,18-19,SI No.4.7,Pg.No.13)						
	For levelling course below foundation						
	People Under Pass						
	Box Portion at Maidan Road	cum	1	33.00	11.20	0.10	36.96
	Approach Slab at Maidan Road Box	cum	2	33.200	3.600	0.10	23.90
	Maidan Road						
	Station Road-Staire case-ST1						
	Waist Slab-1	Cum	1.00	2.65	5.00	0.075	0.99
	Waist Slab-2	Cum	1.00	3.10	5.00	0.075	1.16
	Waist Slab-3	Cum	1.00	1.20	5.00	0.075	0.45
	Landing 1	Cum	1.00	5.00	1.50	0.075	0.56
	Landing 2	Cum	1.00	5.00	2.50	0.075	0.94
	Landing 3	Cum	1.00	5.00	2.22	0.075	0.83
	Garden side staircase-ST2-Maidan Road						
	Waist Slab-1	Cum	1.00	4.25	2.50	0.075	0.80
	Waist Slab-2	Cum	1.00	2.36	2.50	0.075	0.44
	Waist Slab-3	Cum	1.00	0.72	2.50	0.075	0.14
	Landing1	Cum	1.00	2.50	2.50	0.075	0.47
	Landing2	Cum	1.00	5.30	2.50	0.075	0.99
	Ramp at garden side	Cum	1.00	42.50	2.50	0.075	7.97
	Walk way in Garden	cum	1	55	5.00	0.10	27.50
	Kiosk	cum	6	5	5.00	0.10	15.00
	Trellish Footing	cum	24	1	1	0.10	3.46
	Informal Stage- Brick Work	cum	1	48	0.23	0.10	1.10
	Garden Wall	cum	1	61	0.23	0.10	1.40
	Lift Raft	cum	1.00	2.50	2.50	0.10	0.63
	Lift wall	cum	2.00	1.50	0.30	0.10	0.09
	Retaining Wall Footing						
	Retaining Wall-1	cum	1.00	44.86	4.20	0.100	18.84
	Retaining Wall-2	cum	1.00	27.64	4.20	0.100	11.61
	Retaining Wall-3	cum	1.00	67.50	1.51	0.100	10.19
	Retaining Wall-4	cum	1.00	21.98	2.90	0.100	6.37
	Retaining Wall-5	cum	1.00	67.50	0.90	0.100	6.08
	Retaining Wall-6	cum	1.00	33.93	2.90	0.100	9.84
	SWD						
	SWD at Maidan Side-Curved	cum	1.0	31.4	1.0	0.10	3.14
	SWD at Bibi Alabi Side-Curved	cum	1.0	31.4	1.0	0.10	3.14
	SWD at Lower side of Amphi Theater-Flow towards Maidan	cum	1.0	17.0	1.0	0.10	1.70
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	cum	1.0	17.0	1.0	0.10	1.70
	SWD at Miadan Road Ramp (Garden Side)	cum	1.0	30.9	1.0	0.10	3.09
	SWD at Bibi Alabi Side (Garden Side)	cum	1.0	19.1	1.0	0.10	1.91
	SWD at Upper side of Amphi Theater-Flow towards Maidan	cum	1.0	17.7	1.0	0.10	1.77
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	cum	1.0	17.7	1.0	0.10	1.77
	SWD at Bibi albi-Garden staire case	cum	1.0	16.5	1.0	0.10	1.65
	SWD along Garden Walkway	cum	1.0	56.8	1.0	0.10	5.68
	SWD along Ramp at Bibi alabi Road(Garden Side)	cum	1.0	15.0	1.0	0.10	1.50
	SWD along Town Hall side Boundary	cum	2.0	71.1	1.0	0.10	14.22
	Sump	cum	1.0	2.3	2.3	0.10	0.53
	Amphi theater						
	Step 1	cum	1.0	25.0	2.4	0.10	6.00
	Step 2	cum	1.0	23.0	2.4	0.10	5.52
	Step 3	cum	1.0	21.0	2.4	0.10	5.04
	Step 4	cum	1.0	19.2	2.4	0.10	4.61
		cum				Total	251.67

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
17	Providing and laying heavy duty cobble stones 60mm thick, using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KSRB,18-19,14.6,Pg.No.103)						
	Renovation of Existing Access way from maidan road to bibi alabi road	sqm	1	75	5		375.00
	Walk way in Garden	sqm	1	55	5.00		275.00
	Paver Block at Information Stage	sqm	1	112			112.00
	Paver Block at Kiosk	sqm	1	863			863.00
	Deduction of Kiosk	sqm	-6	5	4.50		-121.50
	Under Pass Flooring						
	Miadan Road Under Pass	sqm	1	33	10.00		330.00
		sqm				Total	1833.50
18	Providing and laying flooring using prepolished, gang saw/water cut 19mm thick granite laid with a bed of 20mm thick 14 em & JOinted with neat cement slurry mixed with pigment to mach shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials, mortar and labours etc., complete as per specifications.. - do- using black granite/ Multy Red I Ruby Red I Black I Hassan Green I River Pink Granite of width not less than 900mm(KPWD 18-19,SI No.14.47.2,Pg No.110)						
	Maidan Road						
	Station Road-Staire case-ST1						
	Tread	sqm	20	5	0.3		30.00
	Riser	sqm	23	5	0.175		20.13
	Landing 1	sqm	1	5	1.5		7.50
	Landing 2	sqm	1	5	2.5		12.50
	Landing 3	sqm	1	5	2.223		11.12
	Garden side staircase						
	Tread	sqm	20	2.5	0.3		15.00
	Riser	sqm	23	2.5	0.175		10.06
	Landing1	sqm	1	2.5	2.5		6.25
	Landing2	sqm	1	5	2.5		12.50
	Ramp at garden side	sqm	1	42.5	2.5		106.25
	Townhall side Way-Staire case-Riser	sqm	10	9	0.175		15.75
	Amphi theater						
	Step 1	sqm	1	25		2.4	60.00
	Step 2	sqm	1	23		2.4	55.20
	Step 3	sqm	1	21		2.4	50.40
	Step 4	sqm	1	19.21		2.4	46.10
						Total	458.76
19	Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)						
	Under pass at Maidan Road	Sqm	1	38.36	0.3		11.51
	Ramp and Staire case	Sqm	1	16.7	0.3		5.01
	Ramp and Staire case	Sqm	1	2.65	0.3		0.80
	Kiosk Side	Sqm	2	10.5	0.3		6.30
	Kiosk Side	Sqm	6	1	0.3		1.80
	Kiosk Side	Sqm	6	2	0.3		3.60
	Kiosk Side	Sqm	1	14.25	0.3		4.28
	Kiosk Side	Sqm	1	8	0.3		2.40

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Kiosk to garden	Sqm	2	26.32	0.3		15.79
	Garden end to end	Sqm	1	27.71	0.3		8.31
	Informal Stage	Sqm	1	6	0.3		1.80
	Informal Stage	Sqm	1	29.25	0.3		8.78
	Walk way at Town Hall and garden	Sqm	1	28.53	0.3		8.56
	Walk way at Town Hall and garden	Sqm	1	8	0.3		2.40
	Walk way at Town Hall and garden	Sqm	1	1.4	0.3		0.42
	Walk way at Town Hall and garden	Sqm	2	5	0.3		3.00
	Walk way at garden	Sqm	1	55	0.3		16.50
		Sqm					101.25
20	K8RRB M2200-5.18. Providing and laying Design mix M40 with OPC @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @31ts confirming to 189103-1999 Reaffirmed-2008 including cost of materials, labour, HOM curing, form works, scaffolding and centering complete as per specifications. - i) Upto 5m height (KPWD,18-19,28.7.18,Pg.No.228)						
	Raft-Box Portion at Maidan Road	cum	1	33.00	11.20	0.70	258.72
	Side Wall-Box Portion at Maidan Road	cum	2	33.00	3.00	0.60	118.80
	Maidan Road-Box Culvert						
	Corbell(Approch Slab)-Rectangular Portion	cum	2	33.00	0.30	0.30	5.94
	Corbell(Approch Slab)-Triangular Portion	cum	1	33.00	0.30	0.30	2.97
	Fillet (Haunch)						
	Box Culvert-Maidan Road (4 nos.x 0.5)	cum	2	33.00	0.45	0.45	13.37
	Top Slab						
	Box Culvert-Maidan Road	cum	1	33.00	11.20	0.6	221.76
		cum				Total	621.56
21	KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,18-19,28.7.15,Pg.No.228)						
	Approch slab-Box Culvert-Maidan Road	cum	2	33.30	3.50	0.15	34.97
	Trellis Column footing	cum	24	1.00	1.00	0.25	6.00
	Trellis Column(Below GL=1.2m + Above GL=3.5m)	cum	24	0.30	0.30	4.7	10.15
	Trellis Beam-Longitudinal	cum	2	55.00	0.30	0.45	14.85
	Trellis Beam-Cross	cum	60	5.00	0.20	0.2	12.00
	Ramp						
	Footing	cum	1	22.80	6.20	0.65	91.88
	Long Wall W1	cum	1	22.80	0.48	5.85	63.36
	Long Wall W2	cum	1	20.00	0.45	4.725	42.53
	Long Wall W3	cum	1	22.80	0.30	2.975	20.35
	Short Wall W4	cum	1	5.30	0.48	5.85	14.73
	Lift Raft	cum	1	2.50	2.50	0.5	3.13
	Lift wall	cum	2	1.50	0.30	6	5.40
	Lift wall-GL to Roof	cum	4	1.50	0.20	4	4.80
	Roof	cum	1	1.90	1.90	0.2	0.72
	Footing						
	Retaining Wall-1	cum	1	44.86	4	0.7	125.61
	Retaining Wall-2	cum	1	27.64	4	0.7	77.39
	Retaining Wall-3	cum	1	67.5	1.31	0.3	26.53
	Retaining Wall-4	cum	1	21.98	2.7	0.4	23.74
	Retaining Wall-5	cum	1	67.5	0.7	0.25	11.81
	Retaining Wall-6	cum	1	33.93	2.7	0.4	36.64
	Wall						
	Retaining Wall-1	cum	1	44.86	0.45	5.6	113.05
	Retaining Wall-2	cum	1	27.64	0.45	5.6	69.65
	Retaining Wall-3	cum	1	67.5	0.25	1.8	30.38
	Retaining Wall-4	cum	1	21.98	0.275	3	18.13
	Retaining Wall-5	cum	1	67.5	0.2	0.75	10.13
	Retaining Wall-6	cum	1	33.93	0.275	3	27.99
						Total	895.90

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
22	KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters conforming to IS 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnspillars, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KSRB 18-19,SI No.4.10.Pg No.14)						
	Foundation						
	SWD at Maidan Side-Curved	cum	1	31.40	0.80	0.1	2.51
	SWD at Bibi Alabi Side-Curved	cum	1	31.40	0.80	0.1	2.51
	SWD at Lower side of Amphi Theater-Flow towards Maidan	cum	1	17.00	0.80	0.1	1.36
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	cum	1	17.00	0.80	0.1	1.36
	SWD at Miadan Road Ramp (Garden Side)	cum	1	30.85	0.80	0.1	2.47
	SWD at Bibi Alabi Side (Garden Side)	cum	1	19.12	0.80	0.1	1.53
	SWD at Upper side of Amphi Theater-Flow towards Maidan	cum	1	17.67	0.80	0.1	1.41
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	cum	1	17.67	0.80	0.1	1.41
	SWD at Bibi albi-Garden staire case	cum	1	16.48	0.80	0.1	1.32
	SWD along Garden Walkway	cum	1	56.78	0.80	0.1	4.54
	SWD along Ramp at Bibi alabi Road(Garden Side)	cum	1	15.00	0.80	0.1	1.20
	SWD along Town Hall side Boundary two sides	cum	2	71.10	0.80	0.1	11.38
	Sump	cum	1	2.10	2.10	0.1	0.44
	Wall						
	SWD at Maidan Side-Curved	cum	2	31.40	0.15	0.365	3.44
	SWD at Bibi Alabi Side-Curved	cum	2	31.40	0.15	0.365	3.44
	SWD at Lower side of Amphi Theater-Flow towards Maidan	cum	2	17.00	0.15	0.365	1.86
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	cum	2	17.00	0.15	0.365	1.86
	SWD at Miadan Road Ramp (Garden Side)	cum	2	30.85	0.15	0.405	3.75
	SWD at Bibi Alabi Side (Garden Side)	cum	2	19.12	0.15	0.415	2.38
	SWD at Upper side of Amphi Theater-Flow towards Maidan	cum	2	17.67	0.15	0.34	1.80
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	cum	2	17.67	0.15	0.34	1.80
	SWD at Bibi albi-Garden staire case	cum	2	16.48	0.15	0.415	2.05
	SWD along Garden Walkway	cum	2	56.78	0.15	0.57	9.71
	SWD along Ramp at Bibi alabi Road(Garden Side)	cum	2	15.00	0.15	0.61	2.75
	SWD along Town Hall side Boundary	cum	4	71.10	0.15	0.535	22.82
	Sump	cum	4	2.10	0.15	1.5	1.89
							93.00
23	KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KSRB 18-19,4.12,Pg.No.14)						
	Maidan Road						
	Station Road-Staire case-ST1						
	Steps	Cum	10.00	5.00	0.30	0.15	2.25
	Waist Slab-1	Cum	1.00	2.65	5.00	0.15	1.99
	Waist Slab-2	Cum	1.00	3.10	5.00	0.15	2.33
	Waist Slab-3	Cum	1.00	1.20	5.00	0.15	0.90

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Landing 1	Cum	1.00	5.00	1.50	0.15	1.13
	Landing 2	Cum	1.00	5.00	2.50	0.15	1.88
	Landing 3	Cum	1.00	5.00	2.22	0.15	1.67
	Garden side staircase-ST2-Maidan Road						
	Steps	Cum	10.00	2.50	0.30	0.15	1.13
	Waist Slab-1	Cum	1.00	4.25	2.50	0.15	1.59
	Waist Slab-2	Cum	1.00	2.36	2.50	0.15	0.88
	Waist Slab-3	Cum	1.00	0.72	2.50	0.15	0.27
	Landing1	Cum	1.00	2.50	2.50	0.15	0.94
	Landing2	Cum	1.00	5.30	2.50	0.15	1.99
	Ramp at garden side	Cum	1.00	42.50	2.50	0.15	15.94
	Townhall side Way-Staire case-Tread	Cum	9.00	9.00	0.30	0.15	3.65
	Townhall side Way-Staire case-Riser	Cum	10.00	9.00	0.18	0.15	2.36
						Total	40.87
24	KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,18-19,4.28,Pg.No.16)						
	Raft-Box Portion at Maidan Road-Long Side	sqm	2	33.00		0.70	46.20
	Raft-Box Portion at Maidan Road-Short Side	sqm	2	11.20		0.70	15.68
	Trellis Foundation	sqm	96	1.00		0.25	24.00
	Ramp						
	Footing -Long Wall	sqm	2	22.80		0.65	29.64
	Footing -Short Wall	sqm	4	6.20		0.65	16.12
	Lift Raft	sqm	4	2.50		0.50	5.00
	Footing			Perimeter			
	Retaining Wall-1	sqm	1	97.72		0.70	68.40
	Retaining Wall-2	sqm	1	63.28		0.70	44.30
	Retaining Wall-3	sqm	1	137.62		0.30	41.29
	Retaining Wall-4	sqm	1	49.36		0.40	19.74
	Retaining Wall-5	sqm	1	136.40		0.25	34.10
	Retaining Wall-6	sqm	1	73.26		0.40	29.30
	Foundation						
	SWD at Maidan Side-Curved	sqm	2	31.40		0.10	6.28
	SWD at Bibi Alabi Side-Curved	sqm	2	31.40		0.10	6.28
	SWD at Lower side of Amphi Theater-Flow towards Maidan	sqm	2	17.00		0.10	3.40
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	sqm	2	17.00		0.10	3.40
	SWD at Miadan Road Ramp (Garden Side)	sqm	2	30.85		0.10	6.17
	SWD at Bibi Alabi Side (Garden Side)	sqm	2	19.12		0.10	3.82
	SWD at Upper side of Amphi Theater-Flow towards Maidan	sqm	2	17.67		0.10	3.53
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	sqm	2	17.67		0.10	3.53
	SWD at Bibi albi-Garden staire case	sqm	2	16.48		0.10	3.30
	SWD along Garden Walkway	sqm	2	56.78		0.10	11.36
	SWD along Ramp at Bibi alabi Road(Garden Side)	sqm	2	15.00		0.10	3.00
	SWD along Town Hall side Boundary	sqm	4	71.10		0.10	28.44
	Sump	sqm	4	2.10		0.10	0.84
						Total	457.13
25	KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KSRB,18-19,4.31,Pg.No.16)						
	Side Wall-Box Portion at Maidan Road-Long Side	sqm	4	33.00		3.00	396.00
	Side Wall-Box Portion at Maidan Road-Short Side	sqm	4	3.00		3.00	36.00
	Trellis Column	sqm	96	0.30		4.70	135.36
	Ramp Wall						
	Long Wall W1	sqm	2	22.80		5.85	266.76
	Long Wall W2	sqm	2	20.00		4.73	189.00
	Long Wall W3	sqm	2	22.80		2.98	135.66
	Short Wall W4	sqm	2	5.30		5.85	62.01
	Lift Wall	sqm	8	1.50		6.00	72.00
	Lift Wall	sqm	8	1.50		4.00	48.00

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Wall						
	Retaining Wall-1	sqm	2	45.31		5.60	507.47
	Retaining Wall-2	sqm	2	28.09		5.60	314.61
	Retaining Wall-3	sqm	2	67.75		1.80	243.90
	Retaining Wall-4	sqm	2	22.26		3.00	133.53
	Retaining Wall-5	sqm	2	67.70		0.75	101.55
	Retaining Wall-6	sqm	2	34.21		3.00	205.23
	SWD						
	Wall						
	SWD at Maidan Side-Curved	sqm	4	31.40		0.37	45.84
	SWD at Bibi Alabi Side-Curved	sqm	4	31.40		0.37	45.84
	SWD at Lower side of Amphi Theater-Flow towards Maidan	sqm	4	17.00		0.37	24.82
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	sqm	4	17.00		0.37	24.82
	SWD at Miadan Road Ramp (Garden Side)	sqm	4	30.85		0.40	49.98
	SWD at Bibi Alabi Side (Garden Side)	sqm	4	19.12		0.41	31.74
	SWD at Upper side of Amphi Theater-Flow towards Maidan	sqm	4	17.67		0.34	24.03
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	sqm	4	17.67		0.34	24.03
	SWD at Bibi albi-Garden staire case	sqm	4	16.48		0.41	27.36
	SWD along Garden Walkway	sqm	4	56.78		0.57	129.46
	SWD along Ramp at Bibi alabi Road(Garden Side)	sqm	4	15.00		0.61	36.60
	SWD along Town Hall side Boundary	sqm	8	71.10		0.54	304.31
	Sump	sqm	8	2.10		1.50	25.20
						Total	3641.11
26	KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KSRB,18-19,4.34,Pg.No.17)						
	Maidan Road-Box Culvert						
	Corbell(Approch Slab)-Rectangular Portion	sqm	2	33.00		0.30	19.80
	Corbell(Approch Slab)-Triangular Portion	sqm	2	33.00		0.30	19.80
	Trellis Beam Longitudinal side	sqm	4	55.00		0.45	99.00
	Trellis Beam Longitudinal bottom	sqm	2	55.00		0.30	33.00
	Trellis Beam Cross-side	sqm	120	5.00		0.20	120.00
	Trellis Beam Cross- bottom	sqm	60	5.00		0.20	60.00
						Total	351.60
27	KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KSRB,18-19,4.30,Pg.No.16)						
	Top Slab						
	Box Culvert-Maidan Road	sqm	1	33.00		10.00	330.00
	Lift Slab-Bottom	sqm	1	1.90		1.90	3.61
	Lift Slab-Sides	sqm	4	1.90		0.20	1.52
						Total	335.13
28	KSRB 4.9.2 :Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps,hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500 (KSRB,18-19 SI No.4.46.2,Pg No.18)						
	Box		120	621.56	(cum)		74.59
	Approach Slab		80	34.97	(cum)		2.80
	Trellis Footing		80	6.00	(cum)		0.48
	Trellis Column		80	10.15	(cum)		0.81
	Trellis Beam		60	26.85	(cum)		1.61
	Ramp Footing		100	91.88	(cum)		9.19
	Retaining Wall/Ramp Wall		100	690.07	(cum)		69.01

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Lift Raft		100	3.13	(cum)		0.31
	Lift Wall		100	10.20	(cum)		1.02
	Lift Roof		80	0.72	(cum)		0.06
	SWD		80	93.00	(cum)		7.44
	Grade Slab		80	40.87	(cum)		3.27
				1629.39	-21.94	Total	170.58
29	KSRRB M2600-3. (ii) Providing & fixing 250 mm wide, 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification including cost of materials, labour, HOM complete as per specifications. MORTH Specification No. 2605(KSRRB,SOR 18-19,SI No.31.3)						
	Box Culvert-Maidan Road	Rm	2	33.00			66.00
						Total	66.00
30	KSRRB 6-2.4 : Providing and constructing burnt brick masonry with approved quality of non-modular bricks of standard size of class designation 5.0 Newton per sqmm with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KSRRB,SOR 18-19,SI No.6.7)						
	Kiosk wall(No. of Kiosk =6 x 4 wall)	cum	24	4.50	0.23	0.6	14.90
	Informal Stage	cum	1	48.00	0.23	0.6	6.62
	Garden Boundry	cum	1	61.00	0.23	0.6	8.42
		cum				Total	29.95
31	KSRRB 15.3: Providing 12mm thick cement plaster in single coat with cement mortar to brick masonry including rounding off corners wherever required smooth rendering, Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications. -do - cement mortar 1:4.(KSRRB 18-19,SI.No.15.10)						
	Kiosk Wall-Inside and Outer	Sqm	48	4.50		0.3	64.80
	Informal Stage	Sqm	1	48.00		0.3	14.40
	Garden wall-Arc shape	Sqm	1	61.00		0.3	18.30
		Sqm				Total	97.50
32	KSRRB 15-14.1 Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.do-(KSRRB 18-19,SI No.15.49.1)						
	Circle side existing wall-Road side	Sqm	1	75.00		0.9	67.50
	Circle side existing wall-Garden side	Sqm	1	75.00		1.6	120.00
	Column Sides (75/2=38 x 4=152 nos.)	Sqm	152	0.30		2	91.20
		Sqm				Total	278.70
33	KSRRB M2200- Providing Weep HolesKSRRB M2200-8. Providing weep holes in Brick masonry I Plain I Reinforced concrete abutment, wing wall I return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing force. Complete as per drawing and Technical Specifications including cost of materials, labour, HOM complete as per specifications. MORTH Specification No.2706 & 2200(KSRRB,SOR 18-19,SI No.28.10)						
	Box Culvert-Maidan Road	Nos	2	33		3.0	198.00
	Box Culvert-Bibi Alabi Road	Nos	2	27.721		3.0	166.00
	Ramp Wall						
	Long Wall W1	Nos	1.00	22.80		5.85	133.00
	Long Wall W2	Nos	1.00	20.00		4.73	95.00
	Long Wall W3	Nos	1.00	22.80		2.98	68.00
	Short Wall W4	Nos	1.00	5.30		5.85	31.00
	Retaining Wall						
	Retaining Wall-1	Nos	1.00	44.86		4.50	202.00
	Retaining Wall-2	Nos	1.00	27.64		4.50	124.00

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
	Retaining Wall-3	Nos	1.00	67.50		0.60	41.00
	Retaining Wall-4	Nos	1.00	21.98		2.50	55.00
	Retaining Wall-5	Nos	1.00	67.50		0.60	41.00
	Retaining Wall-6	Nos	1.00	33.93		2.50	85.00
						Total	1239.00
34	KSRRB M2200- Filter MediaKSRRB M2200-9. Providing and laying of Filter media with granular materials /stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MORTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification including cost of materials, labour, HOM complete as per specifications. MORTH Specification No. 2504.2.2(KSRRB,SOR 18-19,SI No.28.13)						
	Box Culvert-Maidan Road	cum	2	33.00	0.6	4.3	170.28
	Box Culvert-Bibi Alabi Road	cum	2	27.72	0.6	4.3	143.04
	Maidan side Ramp-Retaining Wall at Road side	cum	1	22.80	0.6	4.5	61.56
	Retaining Wall						
	Retaining Wall-1	cum	1	44.86	0.6	4.50	121.12
	Retaining Wall-2	cum	1	27.64	0.6	4.50	74.63
	Retaining Wall-3	cum	1	67.50	0.6	0.60	24.30
	Retaining Wall-4	cum	1	21.98	0.6	2.50	32.97
	Retaining Wall-5	cum	1	67.50	0.6	0.60	24.30
	Retaining Wall-6	cum	1	33.93	0.6	2.50	50.90
						Total	703.10
35	KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8 8.(KSRRB,SOR 18-19,24.1)						
	Box Culvert-Maidan Road	sqm	1	858			858.00
	Box Culvert-Bibi Alabi Road	sqm	1	720.746			720.75
	Ramp Wall						
	Long Wall W1	sqm	1	22.8		5.85	133.00
	Long Wall W2	sqm	1	20		4.73	95.00
	Long Wall W3	sqm	1	22.8		2.98	68.00
	Short Wall W4	sqm	1	5.3		5.85	31.00
	Retaining Wall						
	Retaining Wall-1	sqm	1	44.86		4.50	202.00
	Retaining Wall-2	sqm	1	27.64		4.50	124.00
	Retaining Wall-3	sqm	1	67.50		0.60	41.00
	Retaining Wall-4	sqm	1	21.98		2.50	55.00
	Retaining Wall-5	sqm	1	67.50		0.60	41.00
	Retaining Wall-6	sqm	1	33.93		2.50	85.00
						Total	2453.75
36	Fabrication supplying and erecting M.S. tubular trusses of all spans as per approved drawing & design with prefabricated steel applications using quality material and are durable, reliable and corrosion and abrasion resistant. Welding shall confirm to latest structural welding code. Quality shall be on various parameters like shape, size, design gauge and polish. The entire trusses is anchored in RCC column by using 4 nos of M.S. anchor bolts at each support with 10mm thick base plate and shoe plate. The work includes cutting, straightening, placing in position of M.S. pipes and welding wherever necessary and applying one coat of redoxide primer coat to all the members including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, letc., complete as per specification (KPWD 18-19,SI No 7.29).						
	Total Area of Walk Way		1	55	5		275.00
				area	Kg/area		KG
	Weight of Tubular section per Sqm		1	275.00	25		6875

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
37	Providing and fixing 6mm clear I opal white I solar I bronze I blue I green tinted multi wall poly carbonate sheet for tubular structure. The work including cost of all materials, labour charges and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lifts, transportation, loading and unloading and all other incidental charges etc. complete as per specification and directions of the engineer in charge of the work. (KPWD,SOR 18-19,SI No.8.27)						
	Garden walk way	sqm	1	55	6.5		358.00
38	Design,supplying,errecting testing and Commisioning of passenger/hospital lift with speed of 1.0 mtrs per second,variable frequency drive with or without machine room for the available well size,operating at 415 V three phase 50 cycle AC supply,power coated or stainless steel car entrance door enclosures with flooring,car illumination,emergency light,intercom and fan as desired by the user,central opening/sides opening door with or without attendant operation,7 segement display,kid buttons,call register indicator,fireman drive,SS handrail inside car,full length infra-red curtain in car door,automatic rescue device,voice announcing in regional langauge,brail buttons with one year warranty and maintenance.the work includes providing shaft scaffolding,attending minor builder works such as making nitches for fixing of brackets,guide rails,counter weights etc.,including lift running liecence from the componenet authority.(SOR 14-15,Electrical Works) Without Machine Room-SS finish for 13 Passengers	Nos.	1				1.00
39	Direction and Place Identification Signs with size more than 0.9 sqm Size Board: Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide Clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 x 45 x 60 em, 60 em below ground level as per approved drawing. (KPWD 18-19,SI No. 24.4)	Sqm	8	1	2		16.00
40	Providing and Fixing Advertisement Panels including illumination complete.						
	Maidan Road Under Pass						
	Size: 3.36m x 1.8m	Sqm	4	3.36		1.8	24.00
	Size: 4.2 m x 1.8m	Sqm	8	4.2		1.8	60.00
		Sqm					84.00
41	Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge						
	Station Road Side Stair case						
	Wall at Steps	Sqm	1	9.28			9.28
	Wall at Steps	Sqm	1	2.5		3.4	8.50
	Underpass Retaining Wall	Sqm	1	13		3.5	45.50
	Maid Road Side Staire case	Sqm	1	16.63			16.63
	Maid Road Side Ramp	Sqm	1	15.72			15.72
		Sqm					95.63

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
42	Providing and fixing M.S. Hand railing for Balcony/Staircase etc., with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete. The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing. (KPWD 18-19,SI No.7.35)						
	Station Road side Staire case	Sqm	1	22		1.2	26.00
	Maidan Road-garden side						
	Ramp	Sqm	1	25.28		1.2	30.00
	Common Rail at Staire case and ramp	Sqm	1	38.3		1.2	46.00
	Staire case side	Sqm	1	12.86		1.2	15.00
	Staire case side	Sqm	1	4.4		1.2	5.00
	Bibi Alabi Garden Side	Sqm	1	26.1		1.2	31.00
		Sqm				Total	153.00
43	Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @ 1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged (Rate analysis)						
	Maidan Road Staire case	Rmt	1	12.56			13.00
	Maidan Road Staire case	Rmt	1	7.44			7.00
	Ramp at maidan road	Rmt	1	50			50.00
	Ramp at maidan road	Rmt	1	20			20.00
	Staire case at maidan Road at garden side	Rmt	1	15.61			16.00
		Rmt					106.00
	Weight per meter	Length	Pi	Dia.	Thk.	Kg/Cum	Kg
	Weight of 50mm Dia SS Pipe-Handrail Main Pipe	1	3.14	0.05	0.002	7850	2.46
	Weight of 25mm Dia SS Pipe-Handrail Support Pipe	0.075	3.14	0.025	0.002	7850	0.09
		Nos.	Pi	R ²	Thk.	Kg/Cum	
	Plate	1	3.14	0.0014063	0.002	7850	0.07
	Weight of Wall Mounted Handrail per Running Meter						2.62
			Length	Kg/Rm			Kg
	Wight of Total Wall Mounted Handrail		106.00	2.62			277.72

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
44	Supply, installation, testing & commissioning of Submersible pumps (1 working + 1 standby) with 10 mm thick solid handling capacity. C.I body with built in strainer & C.I impeller, coupled to motor suitable for operation on 430 V 3 pH 50 Cycle A/C power supply and lifting arrangement including complete as required. Electric control panel with change over switch, relays, electrical wiring, cabling from panel to pumps, level controller complete with all accessories as per manufacturer specifications Accessories like NRV's valves on discharge and valve and strainer in suction line, header for suction and delivery side, required cut pieces of pipes, fittings, flanges, pressure gauge, base frame and concrete foundation complete as required. Flow rate : 4 LPS (1 Working +1 Standby) Head : 10 Mts (Market Rate)	Set					1.00
45	KSRB 15-18.2 • Providing and applying enamel metal painttwo coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (KSRB 18-19,SI No. 15.74).						
	Existing MS Fencing	Sqm	1.00	75.00		2	150.00
	MS Hand Rail	Sqm	1.00	153.00			153.00
	Hand rail-Wall Mounted-Dia 50mm Pipe	Sqm	1.00	106.00	0.157		17.00
	Hand rail-Wall Mounted-Dia 25mm Pipe	Sqm	106.00	0.075	0.0785		1.00
		Sqm					321.00
46	Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)						
	SWD at Maidan Side-Curved	Rm	1.00	31.40			31.40
	SWD at Bibi Alabi Side-Curved	Rm	1.00	31.40			31.40
	SWD at Lower side of Amphi Theater-Flow towards Maidan	Rm	1.00	17.00			17.00
	SWD at Lower side of Amphi Theater-Flow towards Bibi Alabi	Rm	1.00	17.00			17.00
	SWD at Miadan Road Ramp (Garden Side)	Rm	1.00	30.85			30.85
	SWD at Bibi Alabi Side (Garden Side)	Rm	1.00	19.12			19.12
	SWD at Upper side of Amphi Theater-Flow towards Maidan	Rm	1.00	17.67			17.67
	SWD at Upper side of Amphi Theater-Flow towards Bibi alabi	Rm	1.00	17.67			17.67
	SWD at Bibi albi-Garden staire case	Rm	1.00	16.48			16.48
	SWD along Garden Walkway	Rm	1.00	56.78			56.78
	SWD along Ramp at Bibi alabi Road(Garden Side)	Rm	1.00	15.00			15.00
	SWD along Town Hall side Boundary	Rm	2.00	71.10			142.20
		Rm					412.57
	No. of Covers (Total length/0.5)						826.00
47	KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 em center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KSRRB 18-19,32.1)						
	Box Top Area+ 1m extra on either side across the length						
	Maidan Road Box Culver	Sqm	1.00	33.00	11.2		370.00
						Sqm	370.00

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
48	KSRRB M500-19. Providing and laying bituminous concrete using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision -do- using 40-60 TPH capacity H. M.P with mechanical paver grading I (50 mm to 65 mm) with 5.2% VG-30 Bitumen(KSRRB 18-19,21.22.5)						
	Box Top Area+ 1m extra on either side across the length						
	Maidan Road Box Culver	Cum	1.00	33.00	11.2	0.05	18.00
						Cum	18.00
49	KSRRB M400-6.1. Construction of granular sub-base by providing close graded crushed stone aggregates of granite / trap / basalt material, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with Plate compactor to achieve the desired density, complete as per specifications. A. Plant Mix Method. - Close graded granular sub-base material as per 400-1 For Grading- II Material (RA Attached)						
	Maidan Road						
	Either Side of Road-Along Underpass	Cum	2.00	30.00	2	0.15	18.00
		Cum					18.00
50	KSRRB M600-1. Providing and Constructing dry lean cement concrete mix CC 1:5:10 base with OPC 25mm and down size graded granite metal coarse aggregate at 0.86cum and fine aggregates @0.58cum over a prepared sub-base, coarse and fine aggregate conforming to IS: 383-2016, aggregate cement ratio not to exceed 15:1, Aggregate gradation after blending to be as per Table 600-1, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver, compacting with 8-10 tonnes vibratory roller, finishing and curing complete as per specifications. Clause 601 of MORTH V Revision and IS 456 Table-5 -do- with OPC at 150 kg/cum and coarse aggregate 0.86cum, fine aggregate 0.58cum using Concrete Batch mix Plant at 75 cum/hr capacity with Slip form paver with electronic sensor. (KSRRB 18-19,SI No : 22.1.1)						
	Maidan Road						
	Either Side of Road-Along Underpass	Cum	2.00	30.00	2	0.1	12.00
		Cum					12.00

Sr.No.	Description	Unit	Nos	Length	Width	Depth	Quantity
51	KSRRB M600-2. Providing and Constructing un-reinforced, dowel jointed, plain cement Pavement Quality concrete for pavements using Grade concrete M40 having Flexural strength not less than 4.50 Mpa over a prepared base with OPC, coarse aggregate at 0.64 cum, fine aggregates at 0.36 cum, Coarse and fine aggregate conforming to IS:383-2016 and Table 600-3 of MORTH V Revision, with Superplastizer at 3 lts conforming to IS 9103-2008. loading materials to batch mix plant by front end loader, mixed in a cement concrete batch mix plant as per approved mix design, transported to site in transit truck agitator 5 cum capacity, laid with Paver, compacted and finished in a continuous operation as per IRC-15 including cost for providing of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane of impermeable plastic sheet of 125 micron, groove cutting, sealant primer joint sealent, debonding strip, dowel bars at 9 kg/cum, tie rods at 1.15 kg/cum, admixtures as approved, curing compound, finishing to lines and grades, textured with texturing machine, and curing including cost of						
	Maidan Road						
	Either Side of Road-Along Underpass	Cum	2.00	30.00	2	0.3	36.00
		Cum					36.00
52	Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Earth	cum	1	4878.49			4878.00
53	Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Debris	cum	1	1529.85			1530.00

**Assistant Engineer
MSCL Mangaluru**

**Executive Engineer
MSCL Mangaluru**

**General Manager Technical
MSCL Mangaluru**

Name of the Work :- Mangalore Smart City
1.3 Rate Analysis of Civil works of Pedestrian Plaza

1	KSRRB M800-Portable barricade in construction zone KSEEB M800-43.Installation of a steel portable barricade with horizontal rail 300mm wide.2.5m in length fitted on a 'A" frame made with 45x45x5mm angle iron section,1.5m height horizontal rail painted(2 coats) with yellow and white stripes,150mm in width at an angle of 45 degree,'A" Frame painted with 2 Coats of yellow paint,complete as per IRC:SP:55-2001 Complete as per specifications. (KSRRB,18-19,24.44,Pg.No.187)		
	Basic rate		2490
	Add 10% For area weightage (Mangalore City)		249
		Rate	2739.00 Each
2	Removing and Refixing the Existing Statue in Garden after complition of work.as directed by Architect or Engineer in Charge		
	Basic rate		25000
		Rate	25000.00 LS
3	KSRRB 200-2. Cutting of trees girth from 600mm to 900mm including cutting of trunks, branches and removal of stumps stacking of serviceable materials earth filling in the depressions / pit, labour charges complete as per specifications. MORTH specification clause 201/ Chapter 2 (KSRRB 18-19,SI No.18.2,Pg No.138)		
	Basic rate		922
	Add 10% For area weightage (Mangalore City)		92.2
		Rate	1014.20 Each
4	KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications. KSRRB 18-19,SI No.19.93,Pg No.150)		
	Basic rate		2242
	Add 10% For area weightage (Mangalore City)		224.2
		Rate	2466.20 Nos.
5	KSRRB M200.Dismantling of cement concrete pavement by mechanical means using pueumatic tools,breaking to pieces not exceeding 0.02 cum in volume and stock pilling at designated locations and disposal of dismantled material stacking serviceble and unserviceable materials separately complete as per specifications.MORTH specification No.202.(Including transporting charges,loading and unloading for lead 5km-Extra) (KSRRB,18-19,SI No.18.47,Pg.No.140)		
	Basic rate		899
	Add 10% For area weightage (Mangalore City)		89.9
		Rate	988.90 Cum

6	KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KSRRB 18-19,P.No. 139, I.No. 18.18)			
	Basic rate		557.0	
	Add 10% For area weightage (Mangalore City)		55.7	
		Rate	612.70	Cum
7	KSRRB M200-17.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. v)Steel work in all types of Sections upto a Height of 5 m above plinth level excluding Cutting of Rivet– B. Excluding dismembering.(KSRRB 18-19,Pg.No.140,SI No.18.34)			
	Basic rate		1426.0	
	Add 10% For area weightage (Mangalore City)		142.6	
		Rate	1568.60	Ton
8	KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KSRRB,18-19,SI No.18.23,Pg.No.139)			
	Basic rate		351.0	
	Add 10% For area weightage (Mangalore City)		35.1	
		Rate	386.10	Cum
9	Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.			
	Basic rate(RA Attached)		68.16	
	Add 10% For area weightage (Mangalore City)		6.816	
		Rate	74.98	Sqm
10	KSRRB M300-14. Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications. MORTH Specification No.301 (KSRRB,18-19,SI No.19.14,Pg.No.143)			

	Basic rate		41	
	Add 10% For area weightage (Mangalore City)		4.1	
		Rate	45.10	Cum
11	KSRRB M300-15. Excavation for roadway in ordinary rock by mechanical means including cutting and loading to tippers, transporting with a lead of 1.00 km and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections complete as per specifications. MORTH Specification No. 301 (KSRRB,18-19,SI No 19.15,Pg.No.144)			
	Basic rate		56	
	Add 10% For area weightage (Mangalore City)		5.6	
		Rate	61.6	Cum
12	KSRB 2.7 : Providing and removing shoring and strutting for protecting the sides of foundation trenches, wherever required, including cost of all materials and labour complete as per specifications. specification. No. KBS 2.5 / 2.13(KSRB 18-19,Pg.No.7,SI No.2.14)			
	Basic rate		601	
	Add 10% For area weightage (Mangalore City)		60.1	
		Rate	661.1	Sqm
13	KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KSRB 18-19,2.10,Page No.7)			
	Basic rate		201	
	Add 10% For area weightage (Mangalore City)		20.1	
		Rate	221.1	Cum
14	KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occuring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KSRRB 18-19,Page No.147,SI No.19.64)			
	Basic rate		6	
	Add 10% For area weightage (Mangalore City)		0.6	
		Rate	6.6	Sqm
15	KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KSRB 18-19,Page No.7,SI No.2.15)			
	Basic rate		2514	
	Add 10% For area weightage (Mangalore City)		251.4	
		Rate	2765.4	Cum

16	KSRB 4-1.7 : Providing and laying in position plain cement concrete of Mix 1:3:6 with OPC @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.69 cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 ems. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications. Specification No. KBS 4.1, 4.2 4.2(KSRB,18-19,SI No.4.7,Pg.No.13)			
	Basic rate		5770	
	Add 10% For area weightage (Mangalore City)		577	
		Rate	6347	Cum
17	Providing and laying heavy duty cobble stones 60mm thick, using cement and coarse sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KSRB,18-19,14.6,Pg.No.103)			
	Basic rate		1056	
	Add 10% For area weightage (Mangalore City)		105.6	
		Rate	1161.6	Sqm
18	Providing and laying flooring using prepolished, gang saw/water cut 19mm thick granite laid with a bed of 20mm thick 14 em & JOinted with neat cement slurry mixed with pigment to mach shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials, mortar and labours etc., complete as per specifications.. - do- using black granite/ Multy Red I Ruby Red I Black I Hassan Green I River Pink Granite of width not less than 900mm(KPWD 18-19,SI No.14.47.2,Pg No.110)			
	Basic rate		2409	
	Add 10% For area weightage (Mangalore City)		240.9	
		Rate	2649.9	Sqm
19	Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and coarse sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)			
	Rate Approved as per EOI by MD MSCL Mangalore,Refer Sr.No.12	Rate	912.00	Sqm

20	K8RRB M2200-5.18. Providing and laying Design mix M40 with OPC @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @31ts confirming to 189103-1999 Reaffirmed-2008 including cost of materials, labour, HOM curing, form works, scaffolding and centering complete as per specifications. - i) Upto 5m height (KPWD,18-19,28.7.18,Pg.No.228)			
	Basic rate			5996
	M35 and M40=420kg- 390kg=30kgx4.96Rs/Kg=Rs.216) For cement consumption refer "Material Component Details"Page no.0084 of KPWD SOR 18-19)			148.8
	Add 10% For area weightage (Mangalore City)			614.48
		Rate		6759.28 Cum
21	KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @31ts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,18-19,28.7.15,Pg.No.228)			
	Basic rate			5858
	Add 10% For area weightage (Mangalore City)			585.8
		Rate		6443.8 Cum
22	KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters confirming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnpillars, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KSRB 18-19,SI No.4.10.Pg No.14)			
	Basic rate			6198
	Add 10% For area weightage (Mangalore City)			619.8
		Rate		6817.8 Cum

23	KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintels and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KSRB 18-19,4.12,Pg.No.14)				
	Basic rate			6431	
	Add 10% For area weightage (Mangalore City)			643.1	
		Rate		7074.1	Cum
24	KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,18-19,4.28,Pg.No.16)				
	Basic rate			263	
	Add 10% For area weightage (Mangalore City)			26.3	
		Rate		289.3	Sqm
25	KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KSRB,18-19,4.31,Pg.No.16)				
	Basic rate			361	
	Add 10% For area weightage (Mangalore City)			36.1	
		Rate		397.1	Sqm
26	KSRB 4-6.7 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KSRB,18-19,4.34,Pg.No.17)				
	Basic rate			292	
	Add 10% For area weightage (Mangalore City)			29.2	
		Rate		321.2	Sqm
27	KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KSRB,18-19,4.30,Pg.No.16)				
	Basic rate			450	

	Add 10% For area weightage (Mangalore City)		45	
		Rate	495	Sqm
28	KSRB 4.9.2 :Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500 (KSRB,18-19 SI No.4.46.2,Pg No.18)			
	Basic rate		70782	
	Add 10% For area weightage (Mangalore City)		7078.2	
		Rate	77860.2	MT
29	KSRRB M2600-3. (ii) Providing & fixing 250 mm wide, 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification including cost of materials, labour, HOM complete as per specifications. MORTH Specification No. 2605(KSRRB,SOR 18-19,SI No.31.3)			
	Basic rate		119	
	Add 10% For area weightage (Mangalore City)		11.9	
		Rate	130.9	Rmt
30	KSRB 6-2.4 : Providing and constructing burnt brick masonry with approved quality of non-modular bricks of standard size of class designation 5.0 Newton per sqmm with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KSRB,SOR 18-19,SI No.6.7)			
	Basic rate		7797	
	Add 10% For area weightage (Mangalore City)		779.7	
		Rate	8576.7	Cum
31	KSRB 15.3: Providing 12mm thick cement plaster in single coat with cement mortar to brick masonry including rounding off corners wherever required smooth rendering, Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications. -do - cement mortar 1:4.(KSRB 18-19,SI.No.15.10)			
	Basic rate		205	
	Add 10% For area weightage (Mangalore City)		20.5	
		Rate	225.5	Sqm
32	KSRB 15-14.1 Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.do-(KSRB 18-19,SI No.15.49.1)			
	Basic rate		110	

	Add 10% For area weightage (Mangalore City)		11	
		Rate	121	Sqm
33	KSRRB M2200- Providing Weep HolesKSRRB M2200-8. Providing weep holes in Brick masonry I Plain I Reinforced concrete abutment, wing wall I return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing force. Complete as per drawing and Technical Specifications including cost of materials, labour, HOM complete as per specifications. MORTH Specification No.2706 & 2200(KSRRB,SOR 18-19,SI No.28.10)			
	Basic rate		147	
	Add 10% For area weightage (Mangalore City)		14.7	
		Rate	161.7	Nos.
34	KSRRB M2200- Filter MediaKSRRB M2200-9. Providing and laying of Filter media with granular materials /stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MORTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification including cost of materials, labour, HOM complete as per specifications. MORTH Specification No. 2504.2.2(KSRRB,SOR 18-19,SI No.28.13)			
	Basic rate		2091	
	Add 10% For area weightage (Mangalore City)		209.1	
		Rate	2300.1	Cum
35	KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8 8.(KSRRB,SOR 18-19,24.1)			
	Basic rate		80	
	Add 10% For area weightage (Mangalore City)		8	
		Rate	88	Sqm
36	Fabrication supplying and erecting M.S. tubular trusses of all spans as per approved drawing & design with prefabricated steel applications using quality material and are durable, reliable and corrosion and abrasion resistant. Welding shall confirm to latest structural welding code. Quality shall be on various parameters like shape, size, design gauge and polish. The entire trusses is anchored in RCC column by using 4 nos of M.S. anchor bolts at each support with 10mm thick base plate and shoe plate. The work includes cutting, straightening, placing in position of M.S. pipes and welding wherever necessary and applying one coat of redoxide primer coat to all the members including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification (KPWD 18-19,SI No 7.29).			
	Basic rate		111	

	Add 10% For area weightage (Mangalore City)		11.1	
		Rate	122.1	Kgs
37	Providing and fixing 6mm clear I opal white I solar I bronze I blue I green tinted multi wall poly carbonate sheet for tubular structure. The work including cost of all materials, labour charges and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lifts, transportation, loading and unloading and all other incidental charges etc. complete as per specification and directions of the engineer in charge of the work. (KPWD,SOR 18-19,SI No.8.27)			
	Basic rate		3126	
	Add 10% For area weightage (Mangalore City)		312.6	
		Rate	3438.6	Sqm
38	Design,supplying,errecting testing and Commisioning of passenger/hospital lift with speed of 1.0 mtrs per second,variable frequency drive with or without machine room for the available well size,operating at 415 V three phase 50 cycle AC supply,power coated or stainless steel car entrance door enclosures with flooring,car illumination,emergency light,intercom and fan as desired by the user,central opening/sides opening door with or without attendant operation,7 segement display,kid buttons,call register indicator,fireman drive,SS handrail inside car,full length infra-red curtain in car door,automatic rescue device,voice announcing in regional langauge,brail buttons with one year warranty and maintenance.the work includes providing shaft scaffolding,attending minor builder works such as making niches for fixing of brackets,guide rails,counter weights etc.,including lift running liecence from the componenet authority.(SOR 14-15,Electrical Works) Without Machine Room-SS finish for 13 Passengers			
	Basic rate		2394500	
		Rate	2394500	Nos.
39	Direction and Place Identification Signs with size more than 0.9 sqm Size Board: Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide Clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 x 45 x 60 em, 60 em below ground level as per approved drawing. (KPWD 18-19,SI No. 24.4)			
	Basic rate		7206	
	Add 10% For area weightage (Mangalore City)		720.6	
		Rate	7926.6	Sqm
40	Providing and Fixing Advertisement Panels including illuminiation complete.			
	Basic rate		3362	
		Rate	3362	Sqm

41	Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge			
	Basic rate(Market rate)		6000	
		Rate	6000	Sqm
42	Providing and fixing M.S. Hand railing for Balcony/Staircase etc., with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete. The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing. (KPWD 18-19,SI No.7.35)			
	Basic rate		2840	
	Add 10% For area weightage (Mangalore City)		284	
		Rate	3124	Sqm
43	Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged (Rate analysis)			
	Basic rate		205	
	Add 10% For area weightage (Mangalore City)		20.5	
		Rate	225.5	Kg
44	Supply, installation, testing & commissioning of Submersible pumps (1 working + 1 standby) with 10 mm thick solid handling capacity. C.I body with built in strainer & C.I impeller, coupled to motor suitable for operation on 430 V 3 pH 50 Cycle A/C power supply and lifting arrangement including complete as required. Electric control panel with change over switch, relays, electrical wiring, cabling from panel to pumps, level controller complete with all accessories as per manufacturer specifications Accessories like NRV's valves on discharge and valve and strainer in suction line, header for suction and delivery side, required cut pieces of pipes, fittings, flanges, pressure gauge, base frame and concrete foundation complete as required. Flow rate : 4 LPS (1 Working +1 Standby) Head : 10 Mts (Market Rate)			
	Basic rate		135300	
		Rate	135300	Set

45	KSRB 15-18.2 • Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (KSRB 18-19, SI No. 15.74).		
	Basic rate		95
	Add 10% For area weightage (Mangalore City)		9.5
		Rate	104.5
			Sqm
46	Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016, Material rate-7380, Pg.No.39)		
	Basic rate		865.15
		Rate	865.15
			Nos.
47	KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 em center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KSRRB 18-19,32.1)		
	Basic rate		314
	Add 10% For area weightage (Mangalore City)		31.4
		Rate	345.4
			Sqm
48	KSRRB M500-19. Providing and laying bituminous concrete using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision -do- using 40-60 TPH capacity H. M.P with mechanical paver grading I (50 mm to 65 mm) with 5.2% VG-30 Bitumen(KSRRB 18-19,21.22.5)		
	Basic rate		8536
	Add 10% For area weightage (Mangalore City)		853.6
		Rate	9389.6
			Cum
49	KSRRB M400-6.1. Construction of granular sub-base by providing close graded crushed stone aggregates of granite / trap / basalt material, mixing in a mechaical mix plant at OMC, carriage of mixed material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with Plate compactor to achieve the desired density, complete as per specifications. A. Plant Mix Method. - Close graded granular sub-base material as per 400-1 For Grading- II Material (RA Attached)		
	Basic rate		2400

	Add 10% For area weightage (Mangalore City)		240	
		Rate	2640	Cum
50	<p>KSRRB M600-1. Providing and Constructing dry lean cement concrete mix CC 1:5:10 base with OPC 25mm and down size graded granite metal coarse aggregate at 0.86cum and fine aggregates @0.58cum over a prepared sub-base, coarse and fine aggregate conforming to IS: 383-2016, aggregate cement ratio not to exceed 15:1, Aggregate gradation after blending to be as per Table 600-1, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver, compacting with 8-10 tonnes vibratory roller, finishing and curing complete as per specifications.</p> <p>Clause 601 of MORTH V Revision and IS 456 Table-5 -do- with OPC at 150 kg/cum and coarse aggregate 0.86cum, fine aggregate 0.58cum using Concrete Batch mix Plant at 75 cum/hr capacity with Slip form paver with electronic sensor. (KSRRB 18-19, SI No : 22.1.1)</p>			
	Basic rate		4048	
	Add 10% For area weightage (Mangalore City)		404.8	
		Rate	4452.8	Cum
51	<p>KSRRB M600-2. Providing and Constructing un-reinforced, dowel jointed, plain cement Pavement Quality concrete for pavements using Grade concrete M40 having Flexural strength not less than 4.50 Mpa over a prepared base with OPC, coarse aggregate at 0.64 cum, fine aggregates at 0.36 cum, Coarse and fine aggregate conforming to IS:383-2016 and Table 600-3 of MORTH V Revision, with Superplastizer at 3 lts conforming to IS 9103-2008. loading materials to batch mix plant by front end loader, mixed in a cement concrete batch mix plant as per approved mix design, transported to site in transit truck agitator 5 cum capacity, laid with Paver, compacted and finished in a continuous operation as per IRC-15 including cost for providing of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane of impermeable plastic sheet of 125 micron, groove cutting, sealant primer joint sealant, debonding strip, dowel bars at 9 kg/cum, tie rods at 1.15 kg/cum, admixtures as approved, curing compound, finishing to lines and grades, textured with texturing machine, and curing including cost of all materials, labour, hire charges of machineries, all lead & lift charges etc., complete as per specifications.</p> <p>Clause 601 of MORTH V Revision and IS 456 Table-5 -do- with OPC at 420 kg/cum and coarse aggregate 0.64cum, fine aggregate 0.36cum using Concrete Batch mix Plant at 75 cum/hr capacity</p>			
	Basic rate		5765	
	Add 10% For area weightage (Mangalore City)		576.5	
		Rate	6341.5	Cum
52	<p>Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Earth</p>			
	Earth		2.0x1.28x5	
	Basic rate		12.80	
	Add Loading and unloading charges (Item No 17.1 KSRRB M100-1)		57.00	
	Total Rate		69.80	

	Add 10% For area weightage (Mangalore City)		6.98	
	Total Rate	Rate	76.78	Cum
53	Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Debris			
	Debris	2.0x1.30x5		
	Baisc rate		13.00	
	Add Loading and unloading charges(Item No 17.1 KSRRB M100-1)		57.00	
	Total Rate		70.00	
	Add 10% For area weightage (Mangalore City)		7.00	
	Total Rate	Rate	77.00	Cum

**Assistant Engineer
MSCL Mangaluru**

**Executive Enginner
MSCL Mangaluru**

**General Manager Technical
MSCL Mangaluru**

Name of the Work :- Manglore Smart City
2.1 Abstract for Landscape Works of Pedestrian Plaza

SI.No	Specifications	Unit	Quantity	Rate	Amount	Remarks
1.1	SOIL MIXES and Ground Preparation					
1.1.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	389.46	140.00	54,524	
1.1.2	KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	191.82	224.40	43,045	
1.1.3	Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)					
1.1.4	Screened through sieve of I.S. designation 20 mm	Cum	389.46	224.40	87,395	
1.1.5	Screened through sieve of I.S. designation 4.75 mm	Cum	191.82	224.40	43,045	
1.1.6	KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	888.07	113.30	100,618	
1.1.7	Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	581.28	23.91	13,898	
1.1.8	Soil preparation of Lawn					
	KSRRB M300-2 Making lawns including					

SI.No	Specifications	Unit	Quantity	Rate	Amount	Remarks
	KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	680.80	17.60	11,982	
1.1.9	Bed Preparation for , Ground covers, Climbers/ creepers, Shrubs					
	Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	360.04	146.00	52,566	
1.2	Supply and Planting of Plants					
1.2.1	Plumeria Obtusa	Nos.	5.00	1020.00	5,100	
1.2.2	Zephyranthus Candida	Sqm	67.50	8.25	557	
1.2.3	Heliconia Pisttacorrum @ 450mm c/c	Nos.	75.00	20.60	1,545	
1.2.4	Alpinia Purpurata @ 450mm	Sqm	120.00	102.50	12,300	
1.2.5	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	20.00	15.60	312	
1.2.6	Ochiandra Travancorica	Nos.	25.00	305.00	7,625	
Total					4,34,513	

**Executive Engineer
MSCL Mangaluru**

**General Manager Technical
MSCL Mangaluru**

Name of the Work :- Manglore Smart City
2.2 Measurement Sheet for Landscape work of Pedestrian Plaza

Sl.No	Item	Unit	No.	L	B	H	Qty.
1.1	SOIL MIXES and Ground Preparation						
1.1.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)						
	Area at Clock tower corner	Cum	0.67	31.31	14.00	0.60	176.21
	Amphi Theater	Cum	0.67	288.00		0.60	115.78
	Two Sides of Amphi Theater	Cum	1.34	13.80	5.85	0.60	64.91
	Garden Near Walk way	Cum	0.67	27.00	3.00	0.60	32.56
	Consider 2/3rd Qty of Item No.1.1.7	Cum					389.46
1.1.2	KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)						
	Area at Clock tower corner	Cum	0.33	31.31	14	0.6	86.79
	Amphi Theater	Cum	0.33	288		0.6	57.02
	Two Sides of Amphi Theater	Cum	0.66	13.8	5.85	0.6	31.97
	Garden Near Walk way	Cum	0.33	27	3	0.6	16.04
	Consider 1/3rd Qty of Item No.1.1.7	Cum					191.82
1.1.3	Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)						
	Consider Same Qty. of Item No.1.1.2	Cum					191.82
1.1.4	Screened through sieve of I.S. designation 20 mm						
	Consider Same Qty. of Item No.1.1.1	Cum					389.46
1.1.5	Screened through sieve of I.S. designation 4.75 mm						
	Consider Same Qty. of Item No.1.1.2	Cum					191.82
1.1.6	Fine dressing of the ground.						
	Area at Clock tower corner	Sqm	1	31.31	14		438.34
	Amphi Theater	Sqm	1	288			288.00
	Two Sides of Amphi Theater	Sqm	1	13.8	5.85		80.73
	Garden Near Walk way	Sqm	1	27	3		81.00
						Total	888.07
1.1.6	KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307(KPWD SR 16-17,Page No.150,SI No.19.77)						
	Area at Clock tower corner	Cum	1	31.31	14	0.6	263.00
	Amphi Theater	Cum	1	288		0.6	172.80
	Two Sides of Amphi Theater	Cum	2	13.8	5.85	0.6	96.88
	Garden Near Walk way	Cum	1	27	3.00	0.6	48.60
						Total	581.28

Sl.No	Item	Unit	No.	L	B	H	Qty.
1.1.7	Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)						
	Consider Same Qty. of 1.1.7	Cum					581.28
1.1.8	Soil preparation of Lawn						
	KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)						
	In rows 5 cm apart in both directions						
	Area at Clock tower corner	Sqm	1	31.31	14		438.34
	Two Sides of Amphi Theater	Sqm	2	13.80	5.85		161.46
	Garden Near Walk way	Sqm	1	27.00	3		81.00
						Total	680.80
1.1.9	Bed Preparation for , Ground covers, Climbers/ creepers, Shrubs						
	Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)						
	Area at Clock tower corner	Cum	1	31.31	14	0.6	263.00
	Two Sides of Amphi Theater	Cum	1	13.80	5.85	0.6	48.44
	Garden Near Walk way	Cum	1	27.00	3	0.6	48.60
						Total	360.04
1.2	Supply and Stacking of Plants						
1.2.1	Plumeria Obtusa	Nos.					5.00
1.2.2	Zephyranthus Candida	Sqm					67.50
1.2.3	Heliconia Pisttacorrum @ 450mm c/c	Nos.					75.00
1.2.4	Alpinia Purpurata @ 450mm	Sqm					120.00
1.2.5	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm					20.00
1.2.6	Ochiandra Travancorica	Nos.					25.00

**Assistant Engineer
MSCL Mangaluru**

**Executive Enginner
MSCL Mangaluru**

**General Manager Technical
MSCL Mangaluru**

Name of the Work :- Manglore Smart City
2.3 Rate Analysis for Landscape work of Pedestrian Plaza

RATE ANALYSIS - SOFTSCAPE

1.1.1	Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)			
	Basic Rate		140	
	Rate Approved as per EOI by MD MSCL Mangalore,Refer Sr.No.27	Rate	140.00	Cum
1.1.2	KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)			
	Basic rate		204	
	Add 10% For area weightage		20.4	
		Rate	224.40	Cum
1.1.3	Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)			
1.1.4	Screened through sieve of I.S. designation 20 mm			
	Basic rate		204	
	Add 10% For area wightage		20.4	
		Rate	224.40	Cum
1.1.5	Screened through sieve of I.S. designation 4.75 mm			
	Basic rate		204	
	Add 10% For area wightage		20.4	
		Rate	224.40	Cum
1.1.6	Fine dressing of the ground.			
	Rate Approved as per EOI by MD MSCL Mangalore			
	Basic Rate		2.41	
		Rate	2.41	Per Sqm
1.1.6	KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307(KPWD SR 16-17,Page No.150,SI No.19.77)			
	Basic rate		103	
	Add 10% For area wightage		10.3	
		Rate	113.30	Cum
1.1.7	Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)			
	Basic Rate		23.91	
	Rate Approved as per EOI by MD MSCL Mangalore,Refer Sr.No.28	Rate	23.91	Cum

1.1.8	Soil preparation of Lawn KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)			
	Basic rate		16	
	Add 10% For area wightage		1.6	
		Rate	17.60	Sqm
1.1.9	Bed Prepartion for , Ground covers, Climbers/ creepers, Shrubs			
	Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)			
	Basic Rate		146	
	Rate Approved as per EOI by MD MSCL Mangalore,Refer Sr.No.29	Rate	146.00	Cum
1.2	SHRUBS: Supply and Stacking of Shrubs			
1.2.1	Plumeria Obtusa			
	Basic Rate(Market Rate)	Rate	1020.00	Nos.
1.2.2	Zephyranthus Candida			
	Basic Rate(Market Rate)	Rate	8.25	Sqm
1.2.3	Helliconia Pisttacorrum @ 450mm c/c			
	Basic Rate(Market Rate)	Rate	20.60	Nos.
1.2.4	Alpinia Purpurata @ 450mm			
	Basic Rate(Market Rate)	Rate	102.50	Sqm
1.2.5	Red cannas drawf @ 200mm c/c,Height=300mm			
	Basic Rate(Market Rate)	Rate	15.60	Sqm
1.2.6	Ochiandra Travancorica			
	Basic Rate(Market Rate)	Rate	305.00	Sqm

**Assistant Engineer
MSCL Mangaluru**

**Executive Engineer
MSCL Mangaluru**

**GM Technical
MSCL Mangaluru**

Name of the Work :- Manglore Smart City
3.1 BOQ Of Electrical system for Pedestrian Underpass

Item No.	Description	Unit	Qty	Rate	Amount	Remarks
1.0	Lighting Fixtures					
	All LED luminaires should comply 'Conformance standards for Luminaires' provided by Public works, ports & inland Water transport Department in Schedule of Rates					
1.1	LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	32	3,117.40	99,757	
1.2	LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	47	1,669.37	78,460	
1.3	LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	4	1,887.00	7,548	
1.4	LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	17	1,010.17	17,173	
1.5	LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	31	2,557.51	79,283	
2.0	LT Panel					
2.1	Feeder Pillar (FP) Supply, installation, testing and commissioning of FP Shall be conforming following IS standards – IS: 2147 – 1962 Degree of protection IP 54 with canopy. Floor / wall/ structure mounted, free standing, suitable for cable entry from bottom side, dust proof, vermin proof, 3 phase and neutral, bus bar, aluminium, neutral bus shall be of same size as phase bus bars, Short circuit capacity for the bus bars and switches shall be 10 kA, as SLD No. 1.01 (Non SOR Item)	No.	1	50,084.00	50,084	
3.0	Cables and End Terminations					

Item No.	Description	Unit	Qty	Rate	Amount	Remarks
3.1	LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	150	127.80	19,170	
3.2	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	900	97.66	87,897	
3.3	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	1,240	101.09	125,352	
3.4	End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	21	70	1,470	
3.5	End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	70	11.31	792	
3.6	End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	48	3.12	150	
4.0	Switchgear					
4.1	Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	14	1,349.63	18,895	
4.2	Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	2	1,439.26	2,879	

Item No.	Description	Unit	Qty	Rate	Amount	Remarks
4.3	Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	8	590.00	4,720	
4.4	Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	6	590.00	3,540	
4.5	Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	2	1,241.00	2,482	
5.0	Civil work					
5.1	Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	760	78	59,280	
5.2	Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	760	106	80,560	
5.3	Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	1,520	103	156,560	
6.0	Earthing system					
6.1	Chemical Earthing for grounding,conduits,IC cutouts and otherequipmentson the mter board by using copper /SS rod with earth enhancing backfill compound which is non corrosive, thermally, conductive, potential,to permissible, limits, superior, fault, conductive capacity, non toxic, weather resistance and capable of achieving ohmic value less than one ohm (Ref Electrical SOR Pg.No.64,SI No.7.23.6)	Kit	2	5,500	11,000	
6.2	Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	1300	19.50	25,350	
7.0	Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	310	30.19	9,358	
TOTAL FOR ELECTRICAL SYSTEM FOR PEDESTRIAN UNDERPASS					941,759	

Executive Engineer
MSCL Mangaluru

General Manager Technical
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Name of the Work :- Manglore Smart City
3.2 Measurement Sheet Of Electrical system for Pedestrian Underpass

Item No.	Description of Work	Unit	Nos.	L	B	D	Quantity
1	Lighting Fixtures						
1.1	LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos	32				32
1.2	LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos	47				47
1.3	LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos	4				4
1.4	LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos	17				17
1.5	LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos	31				31
2	LT Panel						
2.1	Feeder Pillar (FP) Supply, installation, testing and commissioning of FP Shall be conforming following IS standards – IS: 2147 – 1962 Degree of protection IP 54 with canopy. Floor / wall/ structure mounted, free standing, suitable for cable entry from bottom side, dust proof, vermin proof, 3 phase and neutral, bus bar, aluminium, neutral bus shall be of same size as phase bus bars, Short circuit capacity for the bus bars and switches shall be 10 kA, as SLD No. 1.01 (Non SOR Item)	Nos	1				1
3	Cables and End Terminations						

Item No.	Description of Work	Unit	Nos.	L	B	D	Quantity
3.1	LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	1	150			150
3.2	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	1	900			900
3.3	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	1	1240			1240
3.4	End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1	21			21
3.5	End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	70				70
3.6	End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	48				48
4	Switchgear						
4.1	Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	14				14
4.2	Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	2				2
4.3	Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	8				8

Item No.	Description of Work	Unit	Nos.	L	B	D	Quantity
4.4	Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	6				6
4.5	Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	2				2
5	Civil work						
5.1	Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	1	760			760
5.2	Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	1	760			760
5.3	Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	1	1520			1520
6	Earthing system						
6.1	Chemical Earthing for grounding,conduits,IC cutouts and otherequipmentson the mter board by using copper /SS rod with earth enhancing backfill compound which is non corrosive, thermally, conductive, potential,to permissible, limits, superior, fault, conductive capacity, non toxic, weather resistance and capable of achieving ohmic value less than one ohm (Ref Electrical SOR Pg.No.64,SI No.7.23.6)	Kit	2				2
6.2	Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	1	1300			1300
7	Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	1	310			310

Assistant Engineer
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General Manager Technical
MSCL Mangaluru

Name of the Work :- Manglore Smart City

3.3 Rate Analysis of Electrical system for Pedestrian Underpass

1	Lighting Fixtures			
1.1	LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)		3117	
	Basic rate		3117	
		Rate	3117	Nos.
1.2	LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)		1669	
	Basic Rate		1669	
		Rate	1669	Nos.
1.3	LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)		1887	
	Basic rate		1887	
		Rate	1887	Nos.
1.4	LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)		1010	
	Basic Rate		1010	
		Rate	1010	Nos.
1.5	LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)		2558	
	Basic Rate		2558	
		Rate	2558	Nos.
2	LT Panel			

2.1	Feeder Pillar (FP) Supply, installation, testing and commissioning of FP Shall be conforming following IS standards – IS: 2147 – 1962 Degree of protection IP 54 with canopy. Floor / wall/ structure mounted, free standing, suitable for cable entry from bottom side, dust proof, vermin proof, 3 phase and neutral, bus bar, aluminium, neutral bus shall be of same size as phase bus bars, Short circuit capacity for the bus bars and switches shall be 10 kA, as SLD No. 1.01 (Non SOR Item)			50084	
	Basic Rate				
		Rate		50084	Nos.
3	Cables and End Terminations				
3.1	LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)			127.80	
	Basic Rate				
		Rate		127.80	Rmt
3.2	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)			97.66	
	Basic Rate				
		Rate		97.66	Rmt
3.3	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)			101.09	
	Basic Rate				
		Rate		101.09	Rmt
3.4	End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)			70	
	Basic Rate				

		Rate	70.00	Nos.
3.5	End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)			
	Basic Rate		11.31	
		Rate	11.31	Nos.
3.6	End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)			
	Basic Rate		3.12	
		Rate	3.12	Nos.
4	Switchgear			
4.1	Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)			
	Basic Rate		1349.63	
		Rate	1349.63	Rmt
4.2	Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)			
	Basic Rate		1439.26	
		Rate	1439.26	Nos.
4.3	Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)			
	Basic Rate		590	
		Rate	590.00	Nos.
4.4	Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)			
	Basic Rate		590	
		Rate	590.00	Nos.
4.5	Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)			
	Basic Rate		1241	
		Rate	1241.00	Nos.
5	Civil work			

5.1	Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)		78	Rmt
	Basic rate			
		Rate	78.00	
5.2	Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)		106	
	Basic rate			
		Rate	106.00	Rmt
5.3	Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)		103	
	Basic rate			
		Rate	103.00	Sqm
6	Earthing system			
6.1	Chemical Earthing for grounding, conduits, IC cutouts and other equipments on the meter board by using copper /SS rod with earth enhancing backfill compound which is non corrosive, thermally, conductive, potential, to permissible, limits, superior, fault, conductive capacity, non toxic, weather resistance and capable of achieving ohmic value less than one ohm (Ref Electrical SOR Pg.No.64, SI No.7.23.6)		5500	
	Basic rate			
		Rate	5500.00	Kit
6.2	Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)		19.5	
	Basic rate			
		Rate	19.50	Rmt
7	Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)		30.19	
	Basic rate			
		Rate	30.19	Rmt

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**Name of the Work :- Manglore Smart City
3.4 Backup for Electrical Rate Analysis**

Item No.	Item	Unit	Qty.	Supply Rate / MRP	A		Supply rate after discount	B		Freight and Insurance	D=A+B+C	E		F	G=E+F	H=D+G	
					Standard Discount			GST on supply				Installation Rate	GST on installation				Total of Installation
				25%	35%			12%	18%	2%			5%	10%	18%		
1	Lighting Fixtures																
1.1	LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	No	1	2600			2600	312		52	2964	130		23	153	3117	
1.2	LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	No	1	1327			1327	159		27	1513	133		24	157	1669	
1.3	LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	No	1	1500			1500	180		30	1710	150		27	177	1887	
1.4	LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	No	1	803			803	96		16	915	80		14	95	1010	
1.5	LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	No	1	2033			2033	244		41	2318	203		37	240	2558	

Item No.	Item	Unit	Qty.	Supply Rate / MRP	Standard Discount	Supply rate after discount	GST on supply	Freight and Insurance	Total of Supply	Installation Rate	GST on installation	Total of Installation	Total rate
2	LT Panel												
2.1	Feeder Pillar (FP) Supply, installation, testing and commissioning of FP Shall be conforming following IS standards – IS: 2147 – 1962 Degree of protection IP 54 with canopy. Floor / wall/ structure mounted, free standing, suitable for cable entry from bottom side, dust proof, vermin proof, 3 phase and neutral, bus bar, aluminium, neutral bus shall be of same size as phase bus bars, Short circuit capacity for the bus bars and switches shall be 10 kA, as SLD No. 1.01 (Non SOR Item)	No	1	38000		38000	6840	760	45600	3800	684	4484	50084
3	Cables and End Terminations												
3.2	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Mtr	1	114	40	74	13	1	89	7	1	9	98
3.3	LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Mtr	1	118	41	77	14	2	92	8	1	9	101
4	Switchgear												
4.1	Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1	1024		1024	184	20	1229	102	18	121	1350
4.2	Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1	1092		1092	197	22	1310	109	20	129	1439

Item No.	Item	Unit	Qty.	Supply Rate / MRP	Standard Discount	Supply rate after discount	GST on supply	Freight and Insurance	Total of Supply	Installation Rate	GST on installation	Total of Installation	Total rate
4.3	Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1	528		528			528	53	10	62	590
4.4	Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1	528		528			528	53	10	62	590
4.5	Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1	1110		1110			1110	111	20	131	1241
7	Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Mtr	1	27		27			27	3	0	3	30

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Name of the Work :- Mangalore Smart City

6.0 Rate Analysis of taking out paver block

Sr.No.	Description	Unit	Quantity	Rate	Amount	Reference
1	Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.					
	Details of cost for 10 sqm.					
a	Labour					
b	Beldar	Day	0.25	446.2	111.55	KPWD 16-17 SOR, Pg No.LIV SI No.5
c	Collie	Day	1	446.2	446.2	KPWD16-17 SOR, Pg No.LIV,SI No.6
d	Sundries	LS	2.7	1.73	4.67	CPWD Pg No 62,Code No.9999
	Total				562.42	
e	Add 1% Water Charges				5.62	
	Total				568.04	
f	Add 10 % Contractor's profit				56.8	
g	Add 10 % Contractor's overheads				56.804	
	Cost of 10 sqm				681.644	
	Cost of 1 sqm				68.16	

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Name of the Work :- Manglore Smart City

4.2 Rate Analysis for Grass Paver Block

Sr.No.	Description	Unit	Qty.	Rate	Amount	References
2	Providing and laying artline grass pavers or equivalent block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.					
	Details of cost for 10.00 sqm					
A	MATERIAL					
i	Interlocking C.C. paver block	Sqm	10	1715.1	17151.14	Basant Betons, Quotation
ii	Bedding layer - 50mm thick Coarse sand (zone III)=10x0.050=0.50 cum	Cum	0.5	1700	850.00	KPWD 18-19, Material rate-0731
iii	Carriage of Coarse sand-25Km	Cum	0.5	80	40.00	
iv	Fine sand (zone IV)	Cum	0.15	1700	255.00	KPWD 18-19, Material rate-0731
v	Carriage of Coarse sand-25Km	Cum	0.15	80	12.00	
vi	Laying charges (Based on actual observation)					
B	LABOUR					
i	Mason (brick layer) 1st class	Day	0.5	466.20	233.10	KPWD 18-19, Labour rate-LIV
ii	Mason (brick layer) 2nd class	Day	0.5	456.20	228.10	KPWD 18-19, Labour rate-LIV
iii	Beldar	Day	1	446.20	446.20	KPWD 16-17 SOR, Pg No.LIV SI No.5
iv	Coolie	Day	0.5	446.20	223.10	KPWD16-17 SOR, Pg No.LIV, SI No.6
	Total				19438.64	
	Add 1 % Water charges				194.3864	
	Total				19633.03	
	Add 10 % Contractor's profit and overheads				1963.3	
	Cost for 10.00 sqm				21596.33	
	Cost for 1.00 sqm.				2159.633	
	Say				2160	

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Name of the Work :- Mangalore Smart City

Basant Betons for Paver Block Quotation

Sr.No.	Description	Unit	Basic Rate	GST 6%	Transportation	Final Rate
1	Artline grass pavers	Sqm	1400	84	231.114	1715.114

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Name of the Work :- Mangalore Smart City
4.4 Rate Analysis of Wall Mounted S.S.Handrail

Description	Unit	Quantity	Rate	Amount	References
Providing and fixing Mild Steel railing made of Hollow tubes, channels, plates etc., including welding, grinding, polishing and making curvature (wherever required) and fitting the same with necessary MS nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners, MS bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge, (for payment purpose only weight of stainless steel					CPWD Rate Analysis, Steel Work, Page N0.613
Detail of Cost for 2Kg					
Material					
Qty.=2Kg+Add wastage @ 5% =0.1					
Total =2.1 Kg					
MS hollow section round/square tubes	kg	2.1	50.85	106.785	material component, KPWD 18-19, Page X, SI.No.2021
MS bolts/square bar and Plates Labour for fabrication, assembling, erection, welding, curvating, grinding, buffing etc.	kg	1	37.28	37.28	material component, KPWD 18-19, Page VIII, SI.No.224
Blacksmith 1st class	day	0.06	466.2	27.972	KPWD 18-19, labour rates, Page LXI, SI.No.106
Beldar	day	0.2	446.20	89.24	
Drilling Operator	day	0.02	456.2	9.124	KPWD 18-19, labour rates, Page LXI, SI.No.109
Welding of Stainless steel section	LS	30	1.73	51.9	
Curvating, grinding, finishing, buffing	LS	20	1.73	34.6	
Sundries for making good wall and floor	LS	7.5	1.73	12.975	
Total				369.876	
add 1% of water charges				3.7	
Total				373.576	
Add 10% Contractor's profit and overheads				37.36	
cost of 2 kg				410.936	
cost of 1 kg				205.468	
Say				205	

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Name of the Work :- Mangalore Smart City
4.5 Rate Analysis of Pre Cast RCC Square Cover

Sr. No.	DESCRIPTION	Unit	No.	Rate	Amount
1	Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.38)	Nos.	1.00	650.00	650.00
	Transportation @ 1%	Nos.	1.00		6.5
	Fixing Charges @10%	Nos.	1.00		65
	Contractor Profit@10%	Nos.	1.00		65
	Sub Total				786.5
	Add 10% area Weightage				78.65
	Total				865.15

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Name of the Work :- Mangalore Smart City

5.1 Rate Analysis for Granular Sub Base Under Footpath

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
4.1	401	Granular Sub-Base with Close Graded Material (Table:- 400-1)					
	A	Plant Mix Method					
		Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401					
		Unit = cum					
		Taking output = 225 cum (450 tonne)					
		a) Labour					
		Mate	day	0.4	395	158	Sl.No.12,Page No.LIV,
		Mazdoor skilled	day	2	446.2	892.4	Sl.No.6,Page No.LIV,
		Mazdoor	day	8	446.2	3569.6	Sl.No.6,Page No.LIV,
		b) Machinery					
		Wet mix plant @ 60 tonne capacity per hour	hour	3	960	2880	1028
		Electric generator 100KVA	hour	6	534	3204	1321
		Water tanker 6 KL capacity 5 km lead with one trip per hour	hour	4.5	51.5	231.75	1032
		Front end loader 1 cum bucket capacity	hour	6	593	3558	1012
		Tipper 10 tonne	tonne.k m	450 x L	4	28800	
		Add 10 per cent of cost of carriage to cover loading and unloading				2880	
		Motor Grader 110 HP	hour	6	2125	12750	
		Plate Compactor	Day	1	254	254	Sl.No.65,Page No.XXXVIII
		c) Material					
		Close graded Granular sub-base Material as per table 400-1					
		For Grading-II Material					
		53 mm to 9.5 mm @ 50 per cent	cum	144	1460	210240	M-013
		9.5 mm to 2.36 mm @ 20 per cent	cum	57	1340	76380	M-017
		2.36 mm below @ 30 per cent	cum	86.4	1150	99360	M-020
		Cost of water	KL	27	40	1080	Page No.V,Sl.No.758
4.1A	(i)	Rate per cum for grading-II Material					
		d) Overhead charges @ 10% on (a+b+c)				44623.78	
		e) Contractor's profit @ 10% on (a+b+c+d)				49086.15	
		Cost for 225 cum = a+b+c+d+e				539947.7	
		Rate per cum = (a+b+c+d+e)/225				2399.767	
					say	2400	

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Project : Mangaluru Smart City

4.6 Summary for Operation & Maintenance of Pedstrian Plaza

Sr.No.	description	Total Amount Rs.
1	2nd year Operation & Maintenance	1,049,136.00
2	3rd year Operation & Maintenance	1,087,992.00
3	4th year Operation & Maintenance	1,451,549.00
	Total Operation & Maintenance Amount	3,588,677.00

**EXECUTIVE ENGINEER
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Project : Manglore Smart City
5.1.1 Abstract For O and M (DLP) of 1st Year - Pedestrian Plaza

4%

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
1	Operation & Maintenance for 1st Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard , in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00	2466.20	2564.85	2,565
2	Operation & Maintenance for 1st Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means : B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	0.80	612.7	637.21	510
3	Operation & Maintenance for 1st Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	0.46	386.10	401.54	185
4	Operation & Maintenance for 1st Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of	Sqm	10.00	74.98	77.98	780
5	Operation & Maintenance for 1st Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	25.00	45.10	46.90	1,173
6	Operation & Maintenance for 1st Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	25.00	61.6	64.06	1,602
7	Operation & Maintenance for 1st Year: KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	10.00	221.10	229.94	2,299

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
8	Operation & Maintenance for 1st Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,SI No.19.64)	Sqm	50.00	6.60	6.86	343
9	Operation & Maintenance for 1st Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	7.50	2765.40	2876.02	21,570
10	Operation & Maintenance for 1st Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills , including cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	2.50	6347.0	6600.88	16,502
11	Operation & Maintenance for 1st Year: Providing and laying heavy duty cobble stones 60mm thick , using cement and coarse sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	25.00	1161.6	1208.06	30,202
12	Operation & Maintenance for 1st Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to match shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	4.00	2649.9	2755.90	11,024
13	Operation & Maintenance for 1st Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and coarse sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	1.20	912.0	948.48	1,138
14	Operation & Maintenance for 1st Year: KSRRB M2200-5.18. Design mix M40 with OPC cement @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.18,Pa.No.224)	Cum	9.00	6759.3	7029.65	63,267

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
15	Operation & Maintenance for 1st Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.15,Pg.No.224)	Cum	11.50	6443.80	6701.55	77,068
16	Operation & Maintenance for 1st Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters confirming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnspillars, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6	Cum	1.00	6817.80	7090.51	7,091
17	Operation & Maintenance for 1st Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab,roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)	Cum	0.75	7074.10	7357.06	5,518
18	Operation & Maintenance for 1st Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.30,Pg.No.15)	Sqm	10.00	289.30	300.87	3,009
19	Operation & Maintenance for 1st Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	60.00	397.10	412.98	24,779
20	Operation & Maintenance for 1st Year: KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	3.00	321.20	334.05	1002
21	Operation & Maintenance for 1st Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	4.50	495.00	514.80	2,317

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
22	Operation & Maintenance for 1st Year: KSRB 4.9.2 : Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17, Latest Revision)	MT	2.50	77860.2	80974.61	2,02,437
23	Operation & Maintenance for 1st Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	130.90	136.14	136
24	Operation & Maintenance for 1st Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	0.23	8576.70	8919.77	2,052
25	Operation & Maintenance for 1st Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	225.50	234.52	235
26	Operation & Maintenance for 1st Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.113)	Sqm	4.00	121.00	125.84	503
27	Operation & Maintenance for 1st Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	25.00	88	91.52	2,288
28	Operation & Maintenance for 1st Year: Fabricating, supplying and erecting M.S. Tubular Truss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and welding wherever necessary, and applying one coat of red oxide primer coat to all the members including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	100.00	122.1	126.98	12,698
29	Operation & Maintenance for 1st Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification.(KPWD,SOR 16-17,25.2,Pg.No.181)	Sqm	4.00	3438.6	3576.14	14,305

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
30	Operation & Maintenance for 1st Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	4.50	6000	6240.00	28,080
31	Operation & Maintenance for 1st Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge , welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete . The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing.(KPWD 16-17,7.35,Page No.42)	Sqm	10.00	3124	3248.96	32,490
32	Operation & Maintenance for 1st Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00	225.5	234.52	2,345
33	Operation & Maintenance for 1st Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).	Sqm	10.00	104.5	108.68	1087
34	Operation & Maintenance for 1st Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	10.00	865.15	899.76	8,998
35	Operation & Maintenance for 1st Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)	Sqm	10.00	345.4	359.22	3,592
36	Operation & Maintenance for 1st Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5.5%VG-30	Cum	0.50	9389.6	9765.18	4,883

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
37	Operation & Maintenance for 1st Year: KSRRB M400-6.2. Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place methode by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)	Cum	0.30	2640	2745.60	824
38	Operation & Maintenance for 1st Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate confirming to IS:383) aggregate cement ration not to excee 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a paver with electronic sensor,compacting with 8-10 tonnes	Cum	0.20	4452.8	4630.91	926
39	Operation & Maintenance for 1st Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed, plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplastisizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuous operation including provision of contraction, expansio, construction and longitudinal joints,including groove cutting chrges, joints filler,separation memberane,	Cum	0.60	6341.5	6595.16	3,957
40	Operation & Maintenance for 1st Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Earth	Cum	50.00	76.78	79.85	3,993
41	Operation & Maintenance for 1st Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Debris	Cum	25.00	77.00	80.08	2,002
42	Operation & Maintenance for 1st Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	12.50	140.00	145.60	1,820
43	Operation & Maintenance for 1st Year: KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	5.00	224.40	233.38	1,167
44	Operation & Maintenance for 1st Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)					
a	Screened through sieve of I.S. designation 20 mm	Cum	2.50	224.40	233.38	583
b	Screened through sieve of I.S. designation 4.75 mm	Cum	2.50	224.40	233.38	583

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
45	Operation & Maintenance for 1st Year: KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	5.00	113.30	117.83	589
46	Operation & Maintenance for 1st Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	10.00	23.91	24.87	249
47	Operation & Maintenance for 1st Year: KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	10.00	17.60	18.30	183
48	Operation & Maintenance for 1st Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 18-19,19,81)	Sqm	681.00	113.30	117.83	80,244
49	Operation & Maintenance for 1st Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	6.00	146.00	151.84	911
50	Plumeria Obtusa	Nos.	1.00	1020.00	1060.80	1,061
51	Zephyranthus Candida	Sqm	10.00	8.25	8.58	86
52	Heliconia Pistacorum @ 450mm c/c	Nos.	10.00	20.60	21.42	214
53	Alpinia Purpurata @ 450mm	Sqm	10.00	102.50	106.60	1,066
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00	15.60	16.22	16
55	Ochiandra Travancorica	Nos.	1.00	305.00	317.20	317
	Lighting Fixtures					
56	Operation & Maintenance for 1st Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00	3117.40	3242.10	3,242
57	Operation & Maintenance for 1st Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00	1669.37	1736.14	1,736

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
58	Operation & Maintenance for 1st Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00	1887.00	1962.48	1,962
59	Operation & Maintenance for 1st Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00	1010.17	1050.58	1,051
60	Operation & Maintenance for 1st Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00	2557.51	2659.81	2,660
Cables and End Terminations						
61	Operation & Maintenance for 1st Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00	127.80	132.91	1,329
62	Operation & Maintenance for 1st Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00	97.66	101.57	1,016
63	Operation & Maintenance for 1st Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00	101.09	105.13	1,051
64	Operation & Maintenance for 1st Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1.00	70.00	72.80	73
65	Operation & Maintenance for 1st Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00	11.31	11.76	12
66	Operation & Maintenance for 1st Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00	3.12	3.24	3

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
	Switchgear					
67	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00	1349.63	1403.62	1,404
68	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00	1439.26	1496.83	1,497
69	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	613.60	614
70	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	613.60	614
71	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00	1241.00	1290.64	1,291
	Civil work					
72	Operation & Maintenance for 1st Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00	78.00	81.12	811
73	Operation & Maintenance for 1st Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00	106.00	110.24	1,102
74	Operation & Maintenance for 1st Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00	103.00	107.12	1,071
	Earthing system					
75	Operation & Maintenance for 1st Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00	19.50	20.28	203
76	Operation & Maintenance for 1st Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00	30.19	31.39	63
				Total		7,13,669

Executive Engineer
MSCL Mangaluru

General manager Technical
MSCL Mangaluru

Project : Manglore Smart City
5.1.2 Measurement Sheet For O and M (DLP) of 1st Year -Pedestrian Plaza

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
1	Operation & Maintenance for 1st Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00				1.00
2	Operation & Maintenance for 1st Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means : B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	1.00	2.00	2.00	0.20	0.80
3	Operation & Maintenance for 1st Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	1.00	2.00	0.23	1.00	0.46
4	Operation & Maintenance for 1st Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of	Sqm	1.00	5.00		2.00	10.00
5	Operation & Maintenance for 1st Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
6	Operation & Maintenance for 1st Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
7	Operation & Maintenance for 1st Year: KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	1.00	10.00	5.00	0.20	10.00
8	Operation & Maintenance for 1st Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occuring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,SI No.19.64)	Sqm	1.00	10.00	5.00		50.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
9	Operation & Maintenance for 1st Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	1.00	10.00	5.00	0.15	7.50
10	Operation & Maintenance for 1st Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills , ncluding cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	1.00	5.00	5.00	0.10	2.50
11	Operation & Maintenance for 1st Year: Providing and laying heavy duty cobble stones 60mm thick , using cement and coarse sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	1.00	5.00	5.00		25.00
12	Operation & Maintenance for 1st Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to mach shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	1.00	2.00	2.00		4.00
13	Operation & Maintenance for 1st Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and coarse sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	1.00	2.00	0.60		1.20
14	Operation & Maintenance for 1st Year: KSRRB M2200-5.18. Design mix M40 with OPC cement @ 390kgs , with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28-7.15, Pg.No.224)	Cum	1.00	5.00	0.60	3.00	9.00
15	Operation & Maintenance for 1st Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs , with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28-7.15, Pg.No.224)	Cum	1.00	10.00	0.23	5.00	11.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
16	Operation & Maintenance for 1st Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters conforming to IS 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnspillers, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6	Cum	1.00	2.50	2.00	0.20	1.00
17	Operation & Maintenance for 1st Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)	Cum	1.00	2.50	2.00	0.15	0.75
18	Operation & Maintenance for 1st Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.34,Pg.No.15)	Sqm	1.00	10.00	1.00		10.00
19	Operation & Maintenance for 1st Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	1.00	20.00	3.00		60.00
20	Operation & Maintenance for 1st Year: KSRB 4-6.7 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	1.00	5.00	0.60		3.00
21	Operation & Maintenance for 1st Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	1.00	3.00	1.50		4.50
22	Operation & Maintenance for 1st Year: KSRB 4.9.2 : Providing T.M.T steel reinforcement for RCC work including straightening, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17, Latest Revision)	MT	2.50				2.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
23	Operation & Maintenance for 1st Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	1.00			1.00
24	Operation & Maintenance for 1st Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	1.00	2.00	0.23	0.50	0.23
25	Operation & Maintenance for 1st Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	2.00		0.50	1.00
26	Operation & Maintenance for 1st Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.117)	Sqm	1.00	2.00	2.00		4.00
27	Operation & Maintenance for 1st Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	1.00	5.00	5.00		25.00
28	Operation & Maintenance for 1st Year: Fabricating, supplying and erecting M.S. TubularTruss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and welding wherever necessary, and applying one coat of red oxide primer coat to all themembers including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	1.00	100.00			100.00
29	Operation & Maintenance for 1st Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification.(KPWD,SOR 16-17,31.3,Pg.No.243)	Sqm	1.00	4.00			4.00
30	Operation & Maintenance for 1st Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	1.00	3.00	1.50		4.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
31	Operation & Maintenance for 1st Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete . The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing.(KPWD 16-17,7.35,Page No.42)	Sqm	10.00				10.00
32	Operation & Maintenance for 1st Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00				10.00
33	Operation & Maintenance for 1st Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).	Sqm	10.00				10.00
34	Operation & Maintenance for 1st Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	10.00				10.00
35	Operation & Maintenance for 1st Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)	Sqm	1.00	5.00	2.00		10.00
36	Operation & Maintenance for 1st Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5-50/40-20 Bitumen (KPWD 16-17,32.1,Pg.No.246)	Cum	1.00	5.00	2.00	0.05	0.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
37	Operation & Maintenance for 1st Year: KSRRB M400-6.2. Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place method by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)	Cum	1.00	2.00	1.00	0.15	0.30
38	Operation & Maintenance for 1st Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate conforming to IS:383) aggregate cement ration not to exceed 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a	Cum	1.00	2.00	1.00	0.10	0.20
39	Operation & Maintenance for 1st Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed, plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplastisizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuous operation including provision of contraction,expansio, construction and longitudinal joints,including groove cutting chrges, joints filler,separation memberane, sealent primer, joints sealant, debonding strip, dowel bars at 4.5m intervals, tie rod, admixtures as approved, curing compound,finishing to lines and grades as per drawing complete as per sprcifications MORTH specification No.602.do with M40 (420Kg per cum Cement,C.A,0.67 cum F.A.044Cum (Page No 176,SI No : 22.2.2)	Cum	1.00	2.00	1.00	0.30	0.60
40	Operation & Maintenance for 1st Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Earth	Cum	1.00	50.00	2.00	0.50	50.00
41	Operation & Maintenance for 1st Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Debris	Cum	1.00	25.00	2.00	0.50	25.00
42	Operation & Maintenance for 1st Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	1.00	5.00	5.00	0.50	12.50
43	Operation & Maintenance for 1st Year: KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	1.00	5.00	5.00	0.20	5.00
44	Operation & Maintenance for 1st Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)						
a	Screened through sieve of I.S. designation 20 mm	Cum	1.00	5.00	5.00	0.10	2.50
b	Screened through sieve of I.S. designation 4.75 mm	Cum	1.00	5.00	5.00	0.10	2.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
45	Operation & Maintenance for 1st Year: KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	1.00	10.00	5.00	0.10	5.00
46	Operation & Maintenance for 1st Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	1.00	10.00	5.00	0.20	10.00
47	Operation & Maintenance for 1st Year: KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	1.00	5.00	2.00		10.00
48	Operation & Maintenance for 1st Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 16-17,19,81	Sqm	1.00	681.00			681.00
49	Operation & Maintenance for 1st Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	1.00	5.00	2.00	0.60	6.00
50	Plumeria Obtusa	Nos.	1.00				1.00
51	Zephyranthus Candida	Sqm	10.00				10.00
52	Heliconia Pistacorum @ 450mm c/c	Nos.	10.00				10.00
53	Alpinia Purpurata @ 450mm	Sqm	10.00				10.00
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00				1.00
55	Ochiandra Travancorica	Nos.	1.00				1.00
	Lighting Fixtures						
56	Operation & Maintenance for 1st Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00				1.00
57	Operation & Maintenance for 1st Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00				1.00
58	Operation & Maintenance for 1st Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00				1.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
59	Operation & Maintenance for 1st Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00				1.00
60	Operation & Maintenance for 1st Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00				1.00
	Cables and End Terminations						
61	Operation & Maintenance for 1st Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00				10.00
62	Operation & Maintenance for 1st Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00				10.00
63	Operation & Maintenance for 1st Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00				10.00
64	Operation & Maintenance for 1st Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Nos.	1.00				1.00
65	Operation & Maintenance for 1st Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00				1.00
66	Operation & Maintenance for 1st Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00				1.00
	Switchgear						
67	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00				1.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
68	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00				1.00
69	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
70	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
71	Operation & Maintenance for 1st Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00				1.00
	Civil work						0.00
72	Operation & Maintenance for 1st Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00				10.00
73	Operation & Maintenance for 1st Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00				10.00
74	Operation & Maintenance for 1st Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00				10.00
	Earthing system						0.00
75	Operation & Maintenance for 1st Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00				10.00
76	Operation & Maintenance for 1st Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00				2.00

**Assistant Engineer
MSCL Mangaluru**

**Executive Engineer
MSCL Mangaluru**

**General Manager Technical
MSCL Mangaluru**

Project : Manglore Smart City
5.2.1 Abstract For O and M of 2nd Year - Pedestrian Plaza

8%

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
1	Operation & Maintenance for 2nd Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard , in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00	2466.20	2663.50	2,663
2	Operation & Maintenance for 2nd Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means : B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	0.80	612.7	661.72	529
3	Operation & Maintenance for 2nd Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	0.46	386.10	416.99	192
4	Operation & Maintenance for 2nd Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.	Sqm	10.00	74.98	80.97	810
5	Operation & Maintenance for 2nd Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	25.00	45.10	48.71	1,218
6	Operation & Maintenance for 2nd Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	25.00	61.6	66.53	1,663
7	Operation & Maintenance for 2nd Year: KSRB 2.3: Filling available excavated earth (Exluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	10.00	221.10	238.79	2,388

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
8	Operation & Maintenance for 2nd Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,SI No.19.64)	Sqm	50.00	6.60	7.13	356
9	Operation & Maintenance for 2nd Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	7.50	2765.40	2986.63	22,400
10	Operation & Maintenance for 2nd Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills , including cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	2.50	6347.0	6854.76	17,137
11	Operation & Maintenance for 2nd Year: Providing and laying heavy duty cobble stones 60mm thick , using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	25.00	1161.6	1254.53	31,363
12	Operation & Maintenance for 2nd Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to match shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	4.00	2649.9	2861.89	11,448
13	Operation & Maintenance for 2nd Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	1.20	912.0	984.96	1,182
14	Operation & Maintenance for 2ndYear: KSRRB M2200-5.18. Design mix M40 with OPC cement @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.18,Pg.No.224)	Cum	9.00	6759.3	7300.02	65,700

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
15	Operation & Maintenance for 2nd Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.15,Pg.No.224)	Cum	11.50	6443.80	6959.30	80,032
16	Operation & Maintenance for 2nd Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters confirming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnpillars, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6	Cum	1.00	6817.80	7363.22	7,363
17	Operation & Maintenance for 2nd Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)	Cum	0.75	7074.10	7640.03	5,730
18	Operation & Maintenance for 2nd Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.28,Pg.No.15)	Sqm	10.00	289.30	312.44	3,124
19	Operation & Maintenance for 2nd Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	60.00	397.10	428.87	25,732
20	Operation & Maintenance for 2nd Year: KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	3.00	321.20	346.90	1041

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
21	Operation & Maintenance for 2nd Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	4.50	495.00	534.60	2,406
22	Operation & Maintenance for 2nd Year: KSRB 4.9.2 : Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17,Latest Revision)	MT	2.50	77860.2	84089.02	2,10,223
23	Operation & Maintenance for 2nd Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	130.90	141.37	141
24	Operation & Maintenance for 2nd Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	0.23	8576.70	9262.84	2,130
25	Operation & Maintenance for 2nd Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	225.50	243.54	244
26	Operation & Maintenance for 2nd Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after throughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.117)	Sqm	4.00	121.00	130.68	523
27	Operation & Maintenance for 2nd Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	25.00	88	95.04	2,376

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
28	Operation & Maintenance for 2nd Year: Fabricating, supplying and erecting M.S. Tubular Truss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate. The work includes cutting, straightening, placing in position of M.S angle and welding wherever necessary, and applying one coat of red oxide primer coat to all the members including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	100.00	122.1	131.87	13,187
29	Operation & Maintenance for 2nd Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification. (KPWD, SOR 16-17, 8.27, Pg.No.48)	Sqm	4.00	3438.6	3713.69	14,855
30	Operation & Maintenance for 2nd Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	4.50	6000	6480.00	29,160
31	Operation & Maintenance for 2nd Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete. The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing. (KPWD 16-17, 7.35, Page No.42)	Sqm	10.00	3124	3373.92	33,739
32	Operation & Maintenance for 2nd Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00	225.5	243.54	2,435
33	Operation & Maintenance for 2nd Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).	Sqm	10.00	104.5	112.86	1129

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
34	Operation & Maintenance for 2nd Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	10.00	865.15	934.36	9,344
35	Operation & Maintenance for 2nd Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen pre-coated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)	Sqm	360.00	345.4	373.03	1,34,292
36	Operation & Maintenance for 2nd Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5.5%VG-30 Bitumen(KPWD 16-17,21.22.5,Pg.No.165)	Cum	18.00	9389.6	10140.77	1,82,534
37	Operation & Maintenance for 2nd Year: KSRRB M400-6.2. Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place methode by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)	Cum	0.30	2640	2851.20	855
38	Operation & Maintenance for 2nd Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate confirming to IS:383) aggregate cement ration not to excee 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a paver with electronic sensor,compacting with 8-10 tonnes vibratory roller,finishing and curing complete as per specifications.Morth specification No.601 (Page No 176,SI No : 22.1)	Cum	0.20	4452.8	4809.02	962

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
39	Operation & Maintenance for 2nd Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed, plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplastisizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuous operation including provision of contraction, expansio, construction and longitudinal joints,including groove cutting chrges, joints filler,separation memberane, sealent primer, joints sealant, debonding strip, dowel bars at 4.5m intervals, tie rod, admixtures as approved, curing compound,finishing to lines and grades as per drawing complete as per sprcifications MORTH specification No.602.do with M40 (420Kg per cum Cement,C.A,0.67 cum F.A.044Cum (Page No 176,SI No : 22.2.2)	Cum	0.60	6341.5	6848.82	4,109
40	Operation & Maintenance for 2nd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSSRRB M100-4.1- Earth	Cum	50.00	76.78	82.92	4,146
41	Operation & Maintenance for 2nd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSSRRB M100-4.1- Debris	Cum	25.00	77.00	83.16	2,079
42	Operation & Maintenance for 2nd Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	12.50	140.00	151.20	1,890
43	Operation & Maintenance for 2nd Year: KSSRRB M300-Supply at site of work well decayed farm yard manure KSSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	5.00	224.40	242.35	1,212
44	Operation & Maintenance for 2nd Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)		0.00			
a	Screened through sieve of I.S. designation 20 mm	Cum	2.50	224.40	242.35	606
b	Screened through sieve of I.S. designation 4.75 mm	Cum	2.50	224.40	242.35	606
45	Operation & Maintenance for 2nd Year: KSSRRB M300-Horticulture KSSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	5.00	113.30	122.36	612
46	Operation & Maintenance for 2nd Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	10.00	23.91	25.82	258
47	Operation & Maintenance for 2nd Year: KSSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSSRRB 19.80)	Sqm	10.00	17.60	19.01	190

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
48	Operation & Maintenance for 2nd Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 18-19,19,81)	Sqm	681.00	113.30	122.36	83,330
49	Operation & Maintenance for 2nd Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	6.00	146.00	157.68	946
50	Plumeria Obtusa	Nos.	1.00	1020.00	1101.60	1,102
51	Zephyranthus Candida	Sqm	10.00	8.25	8.91	89
52	Heliconia Pisttacorrum @ 450mm c/c	Nos.	10.00	20.60	22.25	222
53	Alpinia Purpurata @ 450mm	Sqm	10.00	102.50	110.70	1,107
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00	15.60	16.85	17
55	Ochiandra Travancorica	Nos.	1.00	305.00	329.40	329
	Lighting Fixtures					
56	Operation & Maintenance for 2nd Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00	3117.40	3366.79	3,367
57	Operation & Maintenance for 2nd Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00	1669.37	1802.92	1,803
58	Operation & Maintenance for 2nd Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00	1887.00	2037.96	2,038
59	Operation & Maintenance for 2nd Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00	1010.17	1090.99	1,091
60	Operation & Maintenance for 2nd Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00	2557.51	2762.12	2,762
	Cables and End Terminations					

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
61	Operation & Maintenance for 2nd Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00	127.80	138.02	1,380
62	Operation & Maintenance for 2nd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00	97.66	105.48	1,055
63	Operation & Maintenance for 2nd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00	101.09	109.18	1,092
64	Operation & Maintenance for 2nd Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1.00	70.00	75.60	76
65	Operation & Maintenance for 2nd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00	11.31	12.21	12
66	Operation & Maintenance for 2nd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00	3.12	3.37	3
Switchgear						
67	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00	1349.63	1457.60	1,458
68	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00	1439.26	1554.40	1,554
69	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	637.20	637

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
70	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	637.20	637
71	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00	1241.00	1340.28	1,340
Civil work						
72	Operation & Maintenance for 2nd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00	78.00	84.24	842
73	Operation & Maintenance for 2nd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00	106.00	114.48	1,145
74	Operation & Maintenance for 2nd Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00	103.00	111.24	1,112
Earthing system						
75	Operation & Maintenance for 2nd Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc- 8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00	19.50	21.06	211
76	Operation & Maintenance for 2nd Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00	30.19	32.60	65
				Total		10,49,136

Executive Engineer
MSCL Mangaluru

General manager Technical
MSCL Mangaluru

Project : Manglore Smart City
5.2.2 Measurement Sheet For O and M of 2nd Year - Pedestrian Plaza

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
1	Operation & Maintenance for 2nd Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard , in 2nd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00				1.00
2	Operation & Maintenance for 2nd Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means : B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	1.00	2.00	2.00	0.20	0.80
3	Operation & Maintenance for 2nd Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	1.00	2.00	0.23	1.00	0.46
4	Operation & Maintenance for 2nd Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.	Sqm	1.00	5.00		2.00	10.00
5	Operation & Maintenance for 2nd Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
6	Operation & Maintenance for 2nd Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
7	Operation & Maintenance for 2nd Year: KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	1.00	10.00	5.00	0.20	10.00
8	Operation & Maintenance for 2nd Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,Sl No.19.64)	Sqm	1.00	10.00	5.00		50.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
9	Operation & Maintenance for 2nd Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	1.00	10.00	5.00	0.15	7.50
10	Operation & Maintenance for 2nd Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills , ncluding cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	1.00	5.00	5.00	0.10	2.50
11	Operation & Maintenance for 2nd Year: Providing and laying heavy duty cobble stones 60mm thick , using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	1.00	5.00	5.00		25.00
12	Operation & Maintenance for 2nd Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to mach shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	1.00	2.00	2.00		4.00
13	Operation & Maintenance for 2nd Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	1.00	2.00	0.60		1.20
14	Operation & Maintenance for 2ndYear: KSRRB M2200-5.18. Design mix M40 with OPC cement @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.18,Pg.No.224)	Cum	1.00	5.00	0.60	3.00	9.00
15	Operation & Maintenance for 2nd Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.15,Pg.No.224)	Cum	1.00	10.00	0.23	5.00	11.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
16	Operation & Maintenance for 2nd Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters conforming to IS 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnspillers, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6	Cum	1.00	2.50	2.00	0.20	1.00
17	Operation & Maintenance for 2nd Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintels and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc. , including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)	Cum	1.00	2.50	2.00	0.15	0.75
18	Operation & Maintenance for 2nd Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.28,Pg.No.15)	Sqm	1.00	10.00	1.00		10.00
19	Operation & Maintenance for 2nd Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	1.00	20.00	3.00		60.00
20	Operation & Maintenance for 2nd Year: KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	1.00	5.00	0.60		3.00
21	Operation & Maintenance for 2nd Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	1.00	3.00	1.50		4.50
22	Operation & Maintenance for 2nd Year: KSRB 4.9.2 : Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17,Latest Revision)	MT	2.50				2.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
23	Operation & Maintenance for 2nd Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	1.00			1.00
24	Operation & Maintenance for 2nd Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	1.00	2.00	0.23	0.50	0.23
25	Operation & Maintenance for 2nd Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	2.00		0.50	1.00
26	Operation & Maintenance for 2nd Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after thoroughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.117)	Sqm	1.00	2.00	2.00		4.00
27	Operation & Maintenance for 2nd Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	1.00	5.00	5.00		25.00
28	Operation & Maintenance for 2nd Year: Fabricating, supplying and erecting M.S. TubularTruss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and welding wherever necessary, and applying one coat of red oxide primer coat to all themembers including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	1.00	100.00			100.00
29	Operation & Maintenance for 2nd Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification.(KPWD,SOR 16-17,8.27,Pg.No.48)	Sqm	1.00	4.00			4.00
30	Operation & Maintenance for 2nd Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	1.00	3.00	1.50		4.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
31	Operation & Maintenance for 2nd Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete . The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing.(KPWD 16-17,7.35,Page No.42)	Sqm	10.00				10.00
32	Operation & Maintenance for 2nd Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hallow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00				10.00
33	Operation & Maintenance for 2nd Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).	Sqm	10.00				10.00
34	Operation & Maintenance for 2nd Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	10.00				10.00
35	Operation & Maintenance for 2nd Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)	Sqm	1.00	30.00	12.00		360.00
36	Operation & Maintenance for 2nd Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5.5%VG-30 Bitumen(KPWD 16-17,21.22.5,Pg.No.165)	Cum	1.00	30.00	12.00	0.05	18.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
37	Operation & Maintenance for 2nd Year: KSRRB M400-6.2. Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place methode by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)	Cum	1.00	2.00	1.00	0.15	0.30
38	Operation & Maintenance for 2nd Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate confirming to IS:383) aggregate cement ration not to excee 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a paver with electronic sensor,compacting with 8-10 tonnes vibratory roller,finishing and curing complete as per specifications.Morth specification No.601 (Page No 176,SI No : 22.1)	Cum	1.00	2.00	1.00	0.10	0.20
39	Operation & Maintenance for 2nd Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed, plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplastisizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuous operation including provision of contraction, expansio, construction and longitudinal joints,including groove cutting chrges, joints filler,separation memberane, sealent primer, joints sealant, debonding strip, dowel bars at 4.5m intervals, tie rod, admixtures as approved, curing compound,finishing to lines and grades as per drawing complete as per sprcifications MORTH specification No.602.do with M40 (420Kg per cum Cement,C.A,0.67 cum F.A.044Cum (Page No 176,SI No : 22.2.2)	Cum	1.00	2.00	1.00	0.30	0.60
40	Operation & Maintenance for 2nd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Earth	Cum	1.00	50.00	2.00	0.50	50.00
41	Operation & Maintenance for 2nd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1- Debris	Cum	1.00	25.00	2.00	0.50	25.00
42	Operation & Maintenance for 2nd Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	1.00	5.00	5.00	0.50	12.50
43	Operation & Maintenance for 2nd Year: KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	1.00	5.00	5.00	0.20	5.00
44	Operation & Maintenance for 2nd Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)						
a	Screened through sieve of I.S. designation 20 mm	Cum	1.00	5.00	5.00	0.10	2.50
b	Screened through sieve of I.S. designation 4.75 mm	Cum	1.00	5.00	5.00	0.10	2.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
45	Operation & Maintenance for 2nd Year: KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	1.00	10.00	5.00	0.10	5.00
46	Operation & Maintenance for 2nd Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	1.00	10.00	5.00	0.20	10.00
47	Operation & Maintenance for 2nd Year: KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	1.00	5.00	2.00		10.00
48	Operation & Maintenance for 2nd Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 16-17,19,81	Sqm	1.00	681.00			681.00
49	Operation & Maintenance for 2nd Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	1.00	5.00	2.00	0.60	6.00
50	Plumeria Obtusa	Nos.	1.00				1.00
51	Zephyranthus Candida	Sqm	10.00				10.00
52	Heliconia Pisttacorrum @ 450mm c/c	Nos.	10.00				10.00
53	Alpinia Purpurata @ 450mm	Sqm	10.00				10.00
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00				1.00
55	Ochiandra Travancorica	Nos.	1.00				1.00
	Lighting Fixtures						0.00
56	Operation & Maintenance for 2nd Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00				1.00
57	Operation & Maintenance for 2nd Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00				1.00
58	Operation & Maintenance for 2nd Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00				1.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
59	Operation & Maintenance for 2nd Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00				1.00
60	Operation & Maintenance for 2nd Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00				1.00
Cables and End Terminations							
61	Operation & Maintenance for 2nd Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00				10.00
62	Operation & Maintenance for 2nd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00				10.00
63	Operation & Maintenance for 2nd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00				10.00
64	Operation & Maintenance for 2nd Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1.00				1.00
65	Operation & Maintenance for 2nd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00				1.00
66	Operation & Maintenance for 2nd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00				1.00
Switchgear							
67	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00				1.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
68	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00				1.00
69	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
70	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
71	Operation & Maintenance for 2nd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00				1.00
	Civil work						0.00
72	Operation & Maintenance for 2nd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00				10.00
73	Operation & Maintenance for 2nd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00				10.00
74	Operation & Maintenance for 2nd Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00				10.00
	Earthing system						
75	Operation & Maintenance for 2nd Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc- 8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00				10.00
76	Operation & Maintenance for 2nd Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00				2.00

Assistant Engineer
MSCL Mangaluru

Executive Engineer
MSCL Mangaluru

General Manager Technical
MSCL Mangaluru

Project : Manglore Smart City
5.3.1 Abstract For O and M of 3rd Year - Pedestrian Plaza

12%

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
1	Operation & Maintenance for 3rd Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 3rd class brick, internal diameter 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00	2466.20	2762.14	2,762
2	Operation & Maintenance for 3rd Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	0.80	612.7	686.22	549
3	Operation & Maintenance for 3rd Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	0.46	386.10	432.43	199
4	Operation & Maintenance for 3rd Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.	Sqm	10.00	74.98	83.97	840
5	Operation & Maintenance for 3rd Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	25.00	45.10	50.51	1,263
6	Operation & Maintenance for 3rd Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	25.00	61.6	68.99	1,725

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
7	Operation & Maintenance for 3rd Year: KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	10.00	221.10	247.63	2,476
8	Operation & Maintenance for 3rd Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occuring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,SI No.19.64)	Sqm	50.00	6.60	7.39	370
9	Operation & Maintenance for 3rd Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	7.50	2765.40	3097.25	23,229
10	Operation & Maintenance for 3rd Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggretes @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, ncluding cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	2.50	6347.0	7108.64	17,772
11	Operation & Maintenance for 3rd Year: Providing and laying heavy duty cobble stones 60mm thick, using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	25.00	1161.6	1300.99	32,525
12	Operation & Maintenance for 3rd Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to mach shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	4.00	2649.9	2967.89	11,872

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
13	<p>Operation & Maintenance for 3rd Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)</p>	Sqm	1.20	912.0	1021.44	1,226
14	<p>Operation & Maintenance for 3rd Year: KSRRB M2200-5.18.Design mix M40 with OPC cement @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.18,Pg.No.224)</p>	Cum	9.00	6759.3	7570.39	68,134
15	<p>Operation & Maintenance for 3rd Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.15,Pg.No.224)</p>	Cum	11.50	6443.80	7217.06	,82,996
16	<p>Operation & Maintenance for 3rd Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregtes @ 0.47cum, with super plasticisers @ 3 liters confirming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedastals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnspillars, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6</p>	Cum	1.00	6817.80	7635.94	7,636
17	<p>Operation & Maintenance for 3rd Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregtes @ 0.47cum, with superplastisiser @3lts confirming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab,roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, ,pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)</p>	Cum	0.75	7074.10	7922.99	5,942
18	<p>Operation & Maintenance for 3rd Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specificaitons. Specification No. KBS 4.6.2(KPWD,16-17,4.28,Pg.No.15)</p>	Sqm	10.00	289.30	324.02	3,240

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
19	Operation & Maintenance for 3rd Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	60.00	397.10	444.75	26,685
20	Operation & Maintenance for 3rd Year: KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	3.00	321.20	359.74	1079
21	Operation & Maintenance for 3rd Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	4.50	495.00	554.40	2,495
22	Operation & Maintenance for 3rd Year: KSRB 4.9.2 :Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps,hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17,Latest Revision)	MT	2.50	77860.2	87203.42	2,18,009
23	Operation & Maintenance for 3rd Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	130.90	146.61	147
24	Operation & Maintenance for 3rd Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	0.23	8576.70	9605.90	2,209
25	Operation & Maintenance for 3rd Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	225.50	252.56	253
26	Operation & Maintenance for 3rd Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after throughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.117)	Sqm	4.00	121.00	135.52	542

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
27	Operation & Maintenance for 3rd Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	25.00	88	98.56	2,464
28	Operation & Maintenance for 3rd Year: Fabricating, supplying and erecting M.S. TubularTruss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and welding wherever necessary, and applying one coat of red oxide primer coat to all themembers including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	100.00	122.1	136.75	13,675
29	Operation & Maintenance for 3rd Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification.(KPWD,SOR 16-17,8.27,Pg.No.48)	Sqm	4.00	3438.6	3851.23	15,405
30	Operation & Maintenance for 3rd Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	4.50	6000	6720.00	30,240
31	Operation & Maintenance for 3rd Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete . The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing.(KPWD 16-17,7.35,Page No.42)	Sqm	10.00	3124	3498.88	34,989
32	Operation & Maintenance for 3rd Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hallow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00	225.5	252.56	2,526

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
33	<p>Operation & Maintenance for 3rd Year: Supply, installation, testing & commissioning of Submersible pumps (1 working + 1 standby) with 10 mm thick solid handling capacity. C.I body with built in strainer & C.I impeller, coupled to motor suitable for operation on 430 V 3 pH 50 Cycle A/C power supply and lifting arrangement including complete as required. Electric control panel with change over switch, relays, electrical wiring, cabling from panel to pumps, level controller complete with all accessories as per manufacturer specifications Accessories like NRV's valves on discharge and valve and strainer in suction line, header for suction and delivery side, required cut pieces of pipes, fittings, flanges, pressure gauge, base frame and concrete foundation complete as required. Flow rate : 4 LPS (1 Working +1 Standby) Head : 10 Mts</p>	Set				
33	<p>Operation & Maintenance for 3rd Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).</p>	Sqm	10.00	104.5	117.04	1170
34	<p>Operation & Maintenance for 3rd Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)</p>	Nos.	10.00	865.15	968.97	9,690
35	<p>Operation & Maintenance for 3rd Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)</p>	Sqm	360.00	345.4	386.85	139,265
36	<p>Operation & Maintenance for 3rd Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5.5%VG-30 Bitumen(KPWD 16-17,21.22.5,Pg.No.165)</p>	Cum	18.00	9389.6	10516.35	1,89,294

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
37	<p>Operation & Maintenance for 3rd Year: KSRRB M400-6.2.Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place methode by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)</p>	Cum	0.30	2640	2956.80	887
38	<p>Operation & Maintenance for 3rd Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate confirming to IS:383) aggregate cement ration not to excee 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a paver with electronic sensor,compacting with 8-10 tonnes vibratory roller,finishing and curing complete as per specifications.Morth specification No.601 (Page No 176,SI No : 22.1)</p>	Cum	0.20	4452.8	4987.14	997
39	<p>Operation & Maintenance for 3rd Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed,plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplastisizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuos operation including provision of contraction, expansio, construction and longitudinal joints,including groove cutting chrges, joints filler,separation memberane, sealent primer, joints sealant, debonding strip, dowel bars at 4.5m intervals, tie rod, admixtures as approved, curing compound,finishing to lines and grades as per drawing complete as per sprcifications MORTH specification No.602.do with M40 (420Kg per cum Cement,C.A,0.67 cum F.A.044Cum (Page No 176,SI No : 22.2.2)</p>	Cum	0.60	6341.5	7102.48	4,261
40	<p>Operation & Maintenance for 3rd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Earth</p>	Cum	50.00	76.78	85.99	4,300
41	<p>Operation & Maintenance for 3rd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Debris</p>	Cum	25.00	77.00	86.24	2,156
42	<p>Operation & Maintenance for 3rd Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)</p>	Cum	12.50	140.00	156.80	1,960

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
43	Operation & Maintenance for 3rd Year: KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stacking complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	5.00	224.40	251.33	1,257
44	Operation & Maintenance for 3rd Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)					
a	Screened through sieve of I.S. designation 20 mm	Cum	2.50	224.40	251.33	628
b	Screened through sieve of I.S. designation 4.75 mm	Cum	2.50	224.40	251.33	628
45	Operation & Maintenance for 3rd Year: KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	5.00	113.30	126.90	634
46	Operation & Maintenance for 3rd Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	10.00	23.91	26.78	268
47	Operation & Maintenance for 3rd Year: KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	10.00	17.60	19.71	197
48	Operation & Maintenance for 3rd Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 18-19,19,81	Sqm	681.00	113.30	126.90	86,416
49	Operation & Maintenance for 3rd Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	6.00	146.00	163.52	981
50	Plumeria Obtusa	Nos.	1.00	1020.00	1142.40	1,142
51	Zephyranthus Candida	Sqm	10.00	8.25	9.24	92
52	Heliconia Pistacorum @ 450mm c/c	Nos.	10.00	20.60	23.07	231
53	Alpinia Purpurata @ 450mm	Sqm	10.00	102.50	114.80	1,148
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00	15.60	17.47	17
55	Ochiandra Travancorica	Nos.	1.00	305.00	341.60	342

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
	Lighting Fixtures					
56	Operation & Maintenance for 3rd Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00	3117.40	3491.49	3,491
57	Operation & Maintenance for 3rd Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00	1669.37	1869.69	1,870
58	Operation & Maintenance for 3rd Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00	1887.00	2113.44	2,113
59	Operation & Maintenance for 3rd Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00	1010.17	1131.39	1,131
60	Operation & Maintenance for 3rd Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00	2557.51	2864.42	2,864
	Cables and End Terminations					
61	Operation & Maintenance for 3rd Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00	127.80	143.14	1,431
62	Operation & Maintenance for 3rd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00	97.66	109.38	1,094

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
63	Operation & Maintenance for 3rd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00	101.09	113.22	1,132
64	Operation & Maintenance for 3rd Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1.00	70.00	78.40	78
65	Operation & Maintenance for 3rd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00	11.31	12.67	13
66	Operation & Maintenance for 3rd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00	3.12	3.49	3
	Switchgear					
67	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00	1349.63	1511.59	1,512
68	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00	1439.26	1611.97	1,612
69	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	660.80	661
70	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	660.80	661
71	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00	1241.00	1389.92	1,390
	Civil work					
72	Operation & Maintenance for 3rd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00	78.00	87.36	874

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
73	Operation & Maintenance for 3rd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00	106.00	118.72	1,187
74	Operation & Maintenance for 3rd Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00	103.00	115.36	1,154
	Earthing system					
75	Operation & Maintenance for 3rd Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00	19.50	21.84	218
76	Operation & Maintenance for 3rd Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00	30.19	33.81	68
				Total		10,87,992

Executive Engineer
MSCL Mangaluru

General manager Technical
MSCL Mangaluru

Project : Manglore Smart City
5.3.2 Measurement Sheet For O and M of 3rd Year - Pedestrian Plaza

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
1	Operation & Maintenance for 3rd Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 3rd class brick, internal diametre 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00				1.00
2	Operation & Maintenance for 3rd Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	1.00	2.00	2.00	0.20	0.80
3	Operation & Maintenance for 3rd Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	1.00	2.00	0.23	1.00	0.46
4	Operation & Maintenance for 3rd Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.	Sqm	1.00	5.00		2.00	10.00
5	Operation & Maintenance for 3rd Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
6	Operation & Maintenance for 3rd Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
7	Operation & Maintenance for 3rd Year: KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	1.00	10.00	5.00	0.20	10.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
8	Operation & Maintenance for 3rd Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,SI No.19.64)	Sqm	1.00	10.00	5.00		50.00
9	Operation & Maintenance for 3rd Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	1.00	10.00	5.00	0.15	7.50
10	Operation & Maintenance for 3rd Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	1.00	5.00	5.00	0.10	2.50
11	Operation & Maintenance for 3rd Year: Providing and laying heavy duty cobble stones 60mm thick, using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	1.00	5.00	5.00		25.00
12	Operation & Maintenance for 3rd Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to match shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	1.00	2.00	2.00		4.00
13	Operation & Maintenance for 3rd Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	1.00	2.00	0.60		1.20
14	Operation & Maintenance for 3rd Year: KSRRB M2200-5.18.Design mix M40 with OPC cement @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.18,Pg.No.224)	Cum	1.00	5.00	0.60	3.00	9.00
15	Operation & Maintenance for 3rd Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.15,Pg.No.224)	Cum	1.00	10.00	0.23	5.00	11.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
16	Operation & Maintenance for 3rd Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters conforming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnspillers, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6	Cum	1.00	2.50	2.00	0.20	1.00
17	Operation & Maintenance for 3rd Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)	Cum	1.00	2.50	2.00	0.15	0.75
18	Operation & Maintenance for 3rd Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.28,Pg.No.15)	Sqm	1.00	10.00	1.00		10.00
19	Operation & Maintenance for 3rd Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	1.00	20.00	3.00		60.00
20	Operation & Maintenance for 3rd Year: KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	1.00	5.00	0.60		3.00
21	Operation & Maintenance for 3rd Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	1.00	3.00	1.50		4.50
22	Operation & Maintenance for 3rd Year: KSRB 4.9.2 :Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17,Latest Revision)	MT	2.50				2.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
23	Operation & Maintenance for 3rd Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	1.00			1.00
24	Operation & Maintenance for 3rd Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	1.00	2.00	0.23	0.50	0.23
25	Operation & Maintenance for 3rd Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	2.00		0.50	1.00
26	Operation & Maintenance for 3rd Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after throughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.117)	Sqm	1.00	2.00	2.00		4.00
27	Operation & Maintenance for 3rd Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	1.00	5.00	5.00		25.00
28	Operation & Maintenance for 3rd Year: Fabricating, supplying and erecting M.S. TubularTruss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and welding wherever necessary, and applying one coat of red oxide primer coat to all themembers including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	1.00	100.00			100.00
29	Operation & Maintenance for 3rd Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification.(KPWD,SOR 16-17,8.27,Pg.No.48)	Sqm	1.00	4.00			4.00
30	Operation & Maintenance for 3rd Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	1.00	3.00	1.50		4.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
31	Operation & Maintenance for 3rd Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete . The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing.(KPWD 16-17,7.35,Page No.42)	Sqm	10.00				10.00
32	Operation & Maintenance for 3rd Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00				10.00
33	Operation & Maintenance for 3rd Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).	Sqm	10.00				10.00
34	Operation & Maintenance for 3rd Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	10.00				10.00
35	Operation & Maintenance for 3rd Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)	Sqm	1.00	30.00	12.00		360.00
36	Operation & Maintenance for 3rd Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5.5%VG-30 Bitumen(KPWD 16-17,21.22.5,Pg.No.165)	Cum	1.00	30.00	12.00	0.05	18.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
37	Operation & Maintenance for 3rd Year: KSRRB M400-6.2.Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place methode by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)	Cum	1.00	2.00	1.00	0.15	0.30
38	Operation & Maintenance for 3rd Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate confirming to IS:383) aggregate cement ration not to excee 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a paver with electronic sensor,compacting with 8-10 tonnes vibratory roller,finishing and curing complete as per specifications.Morth specification No.601 (Page No 176,SI No : 22.1)	Cum	1.00	2.00	1.00	0.10	0.20
39	Operation & Maintenance for 3rd Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed,plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplastisizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuos operation including provision of contraction, expansio, construction and longitudinal joints,including groove cutting chrges, joints filler,separation memberane, sealent primer, joints sealant, debonding strip, dowel bars at 4.5m intervals, tie rod, admixtures as approved, curing compound,finishing to lines and grades as per drawing complete as per sprcifications MORTH specification No.602.do with M40 (420Kg per cum Cement,C.A,0.67 cum F.A.044Cum (Page No 176,SI No : 22.2.2)	Cum	1.00	2.00	1.00	0.30	0.60
40	Operation & Maintenance for 3rd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Earth	Cum	1.00	50.00	2.00	0.50	50.00
41	Operation & Maintenance for 3rd Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Debris	Cum	1.00	25.00	2.00	0.50	25.00
42	Operation & Maintenance for 3rd Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	1.00	5.00	5.00	0.50	12.50
43	Operation & Maintenance for 3rd Year: KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	1.00	5.00	5.00	0.20	5.00
44	Operation & Maintenance for 3rd Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)						
a	Screened through sieve of I.S. designation 20 mm	Cum	1.00	5.00	5.00	0.10	2.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
b	Screened through sieve of I.S. designation 4.75 mm	Cum	1.00	5.00	5.00	0.10	2.50
45	Operation & Maintenance for 3rd Year: KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	1.00	10.00	5.00	0.10	5.00
46	Operation & Maintenance for 3rd Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	1.00	10.00	5.00	0.20	10.00
47	Operation & Maintenance for 3rd Year: KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	1.00	5.00	2.00		10.00
48	Operation & Maintenance for 3rd Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 16-17,19,81	Sqm	1.00	681.00			681.00
49	Operation & Maintenance for 3rd Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	1.00	5.00	2.00	0.60	6.00
50	Plumeria Obtusa	Nos.	1.00				1.00
51	Zephyranthus Candida	Sqm	10.00				10.00
52	Heliconia Pisttacorrum @ 450mm c/c	Nos.	10.00				10.00
53	Alpinia Purpurata @ 450mm	Sqm	10.00				10.00
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00				1.00
55	Ochiandra Travancorica	Nos.	1.00				1.00
	Lighting Fixtures						0.00
56	Operation & Maintenance for 3rd Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00				1.00
57	Operation & Maintenance for 3rd Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00				1.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
58	Operation & Maintenance for 3rd Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00				1.00
59	Operation & Maintenance for 3rd Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00				1.00
60	Operation & Maintenance for 3rd Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00				1.00
	Cables and End Terminations						0.00
61	Operation & Maintenance for 3rd Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00				10.00
62	Operation & Maintenance for 3rd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00				10.00
63	Operation & Maintenance for 3rd Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00				10.00
64	Operation & Maintenance for 3rd Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1.00				1.00
65	Operation & Maintenance for 3rd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00				1.00
66	Operation & Maintenance for 3rd Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00				1.00
	Switchgear						

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
67	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00				1.00
68	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00				1.00
69	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
70	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
71	Operation & Maintenance for 3rd Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00				1.00
	Civil work						0.00
72	Operation & Maintenance for 3rd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00				10.00
73	Operation & Maintenance for 3rd Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00				10.00
74	Operation & Maintenance for 3rd Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00				10.00
	Earthing system						
75	Operation & Maintenance for 3rd Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00				10.00
76	Operation & Maintenance for 3rd Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00				2.00

Assistant Engineer
MSCL Mangaluru

Executive Engineer
MSCL Mangaluru

General Manager Technical
MSCL Mangaluru

Project : Mangalore Smart City
5.4.1 Abstract For O and M of 4th Year - Pedestrian Plaza

16%

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
1	Operation & Maintenance for 4th Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 4th class brick, internal diameter 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00	2466.20	2860.79	2,861
2	Operation & Maintenance for 4th Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	0.80	612.7	710.73	569
3	Operation & Maintenance for 4th Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	0.46	386.10	447.88	206
4	Operation & Maintenance for 4th Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.	Sqm	10.00	74.98	86.97	870
5	Operation & Maintenance for 4th Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	25.00	45.10	52.32	1,308
6	Operation & Maintenance for 4th Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	25.00	61.6	71.46	1,786
7	Operation & Maintenance for 4th Year: KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	10.00	221.10	256.48	2,565

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
8	Operation & Maintenance for 4th Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,SI No.19.64)	Sqm	50.00	6.60	7.66	383
9	Operation & Maintenance for 4th Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	7.50	2765.40	3207.86	24,059
10	Operation & Maintenance for 4th Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	2.50	6347.0	7362.52	18,406
11	Operation & Maintenance for 4th Year: Providing and laying heavy duty cobble stones 60mm thick, using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	25.00	1161.6	1347.46	33,686
12	Operation & Maintenance for 4th Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to match shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	30.00	2649.9	3073.88	92,217
13	Operation & Maintenance for 4th Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	7.50	912.0	1057.92	7,934
14	Operation & Maintenance for 4th Year: KSRRB M2200-5.18.Design mix M40 with OPC cement @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.18,Pg.No.224)	Cum	9.00	6759.3	7840.76	70,567

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
15	Operation & Maintenance for 4th Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.15,Pg.No.224)	Cum	11.50	6443.80	7474.81	,85,960
16	Operation & Maintenance for 4th Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters confirming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnpillars, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6	Cum	1.00	6817.80	7908.65	7,909
17	Operation & Maintenance for 4th Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts confirming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintles and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)	Cum	0.75	7074.10	8205.96	6,154
18	Operation & Maintenance for 4th Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.28,Pg.No.15)	Sqm	10.00	289.30	335.59	3,356
19	Operation & Maintenance for 4th Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	60.00	397.10	460.64	27,638
20	Operation & Maintenance for 4th Year: KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	3.00	321.20	372.59	1118

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
21	Operation & Maintenance for 4th Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	4.50	495.00	574.20	2,584
22	Operation & Maintenance for 4th Year: KSRB 4.9.2 :Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps,hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17,Latest Revision)	MT	2.50	77860.2	90317.83	2,25,795
23	Operation & Maintenance for 4th Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	130.90	151.84	152
24	Operation & Maintenance for 4th Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	0.23	8576.70	9948.97	2,288
25	Operation & Maintenance for 4th Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	225.50	261.58	262
26	Operation & Maintenance for 4th Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after throughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.117)	Sqm	4.00	121.00	140.36	561
27	Operation & Maintenance for 4th Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	150.00	88	102.08	15,312

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
28	Operation & Maintenance for 4th Year: Fabricating, supplying and erecting M.S. TubularTruss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and welding wherever necessary, and applying one coat of red oxide primer coat to all themembers including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	100.00	122.1	141.64	14,164
29	Operation & Maintenance for 4th Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification.(KPWD,SOR 16-17,8.27,Pg.No.48)	Sqm	4.00	3438.6	3988.78	15,955
30	Operation & Maintenance for 4th Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	40.00	6000	6960.00	278,400
31	Operation & Maintenance for 4th Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete . The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing.(KPWD 16-17,7.35,Page No.42)	Sqm	10.00	3124	3623.84	36,238
32	Operation & Maintenance for 4th Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00	225.5	261.58	2,616
33	Operation & Maintenance for 4th Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).	Sqm	10.00	104.5	121.22	1,212

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
34	Operation & Maintenance for 4th Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	10.00	865.15	1003.57	10,036
35	Operation & Maintenance for 4th Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen pre-coated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)	Sqm	337.50	345.4	400.66	1,35,224
36	Operation & Maintenance for 4th Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5.5%VG-30 Bitumen(KPWD 16-17,21.22.5,Pg.No.165)	Cum	16.88	9389.6	10891.94	183,801
37	Operation & Maintenance for 4th Year: KSRRB M400-6.2.Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place method by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)	Cum	0.15	2640	3062.40	459
38	Operation & Maintenance for 4th Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate confirming to IS:383) aggregate cement ration not to exceed 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a paver with electronic sensor,compacting with 8-10 tonnes vibratory roller,finishing and curing complete as per specifications.Morth specification No.601 (Page No 176,SI No : 22.1)	Cum	0.20	4452.8	5165.25	1033

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
39	Operation & Maintenance for 4th Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed,plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplastisizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints,including groove cutting charges, joints filler,separation memberane, sealent primer, joints sealant, debonding strip, dowel bars at 4.5m intervals, tie rod, admixtures as approved, curing compound,finishing to lines and grades as per drawing complete as per sprcifications MORTH specification No.602.do with M40 (420Kg per cum Cement,C.A,0.67 cum F.A.044Cum (Page No 176,SI No : 22.2.2)	Cum	0.60	6341.5	7356.14	4,414
40	Operation & Maintenance for 4th Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSSRRB M100-4.1-Earth	Cum	50.00	76.78	89.06	4,453
41	Operation & Maintenance for 4th Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSSRRB M100-4.1-Debris	Cum	25.00	77.00	89.32	2,233
42	Operation & Maintenance for 4th Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	12.50	140.00	162.40	2,030
43	Operation & Maintenance for 4th Year: KSSRRB M300-Supply at site of work well decayed farm yard manure KSSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	5.00	224.40	260.30	1,302
44	Operation & Maintenance for 4th Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)					
a	Screened through sieve of I.S. designation 20 mm	Cum	2.50	224.40	260.30	651
b	Screened through sieve of I.S. designation 4.75 mm	Cum	2.50	224.40	260.30	651
45	Operation & Maintenance for 4th Year: KSSRRB M300-Horticulture KSSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	5.00	113.30	131.43	657
46	Operation & Maintenance for 4th Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	10.00	23.91	27.74	277

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
47	Operation & Maintenance for 4th Year: KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	10.00	17.60	20.42	204
48	Operation & Maintenance for 4th Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 16-17,19,81	Sqm	681.00	113.30	131.43	,89,502
49	Operation & Maintenance for 4th Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	6.00	146.00	169.36	1,016
50	Plumeria Obtusa	Nos.	1.00	1020.00	1183.20	1,183
51	Zephyranthus Candida	Sqm	10.00	8.25	9.57	96
52	Heliconia Pisttacorrum @ 450mm c/c	Nos.	10.00	20.60	23.90	239
53	Alpinia Purpurata @ 450mm	Sqm	10.00	102.50	118.90	1,189
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00	15.60	18.10	18
55	Ochiandra Travancorica	Nos.	1.00	305.00	353.80	354
	Lighting Fixtures					
56	Operation & Maintenance for 4th Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00	3117.40	3616.18	3,616
57	Operation & Maintenance for 4th Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00	1669.37	1936.46	1,936
58	Operation & Maintenance for 4th Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00	1887.00	2188.92	2,189

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
59	Operation & Maintenance for 4th Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00	1010.17	1171.80	1,172
60	Operation & Maintenance for 4th Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00	2557.51	2966.72	2,967
Cables and End Terminations						
61	Operation & Maintenance for 4th Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00	127.80	148.25	1,482
62	Operation & Maintenance for 4th Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00	97.66	113.29	1,133
63	Operation & Maintenance for 4th Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00	101.09	117.27	1,173
64	Operation & Maintenance for 4th Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1.00	70.00	81.20	81
65	Operation & Maintenance for 4th Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00	11.31	13.12	13
66	Operation & Maintenance for 4th Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00	3.12	3.62	4
Switchgear						

Sr.No.	Description	Unit	Total Qty.	Basic Rate	Final Rate	Amount
67	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00	1349.63	1565.57	1,566
68	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00	1439.26	1669.54	1,670
69	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	684.40	684
70	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00	590.00	684.40	684
71	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00	1241.00	1439.56	1,440
	Civil work					
72	Operation & Maintenance for 4th Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00	78.00	90.48	905
73	Operation & Maintenance for 4th Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00	106.00	122.96	1,230
74	Operation & Maintenance for 4th Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00	103.00	119.48	1,195
	Earthing system					
75	Operation & Maintenance for 4th Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessary suitable size clamps, nails, guttas/spacers etc-8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00	19.50	22.62	226
76	Operation & Maintenance for 4th Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00	30.19	35.02	70
				Total		14,51,549

Executive Engineer
MSCL Mangaluru

General manager Technical
MSCL Mangaluru

Project : Manglore Smart City
5.4.2 Measurement Sheet For O and M of 4th Year - Pedestrian Plaza

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
1	Operation & Maintenance for 4th Year: KSRRB M300- Half brick circular tree guard KSRRB M300-14. Half brick circular tree guard, in 4th class brick, internal diameter 1.25 metres, and height 1.2 metres, above ground and 0.20 metre below ground, bottom two courses laid dry, and top three courses in cement mortar 1:6 (1 cement 6 sand) and the intermediate courses being in dry honey comb masonry, as per design complete, complete as per specifications.	Nos.	1.00				1.00
2	Operation & Maintenance for 4th Year: KSRRB M200-12.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. i) Lime /Cement Concrete. I. By Manual Means :B. Cement Concrete Grade M-15 & M-20. MORTH Specification No. 202. (KPWD 16-17,P.No. 137, I.No. 18.18)	Cum	1.00	2.00	2.00	0.20	0.80
3	Operation & Maintenance for 4th Year: KSRRB M200-14.2. Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts complete as per specifications. ii) Dismantling brick/Tile work B. In cement mortar. MORTH Specification No. 202.(KPWD,16-17,18.23,Pg.No.137)	Cum	1.00	2.00	0.23	1.00	0.46
4	Operation & Maintenance for 4th Year: Taking out existing CC interlocking paver blocks from footpath/ central verge, including removal of rubbish etc., disposal of unserviceable material to the dumping ground, for which payment shall be made separately and stacking of serviceable material within 50 metre lead as per direction of Engineer-in-Charge.	Sqm	1.00	5.00		2.00	10.00
5	Operation & Maintenance for 4th Year: KSRRB M300-14. Excavation for roadwork in all types of soil with hydraulic excavator of 0.9 bucket capacity including cutting and loading in tippers,trimming bottom and side slopes,in accordance with requirements of lines and grades and cross sections,and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH specification No.301 (KPWD,16-17,19.14,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
6	Operation & Maintenance for 4th Year: Excavation in Ordinary Rock using Hydraulic Excavator CK-90 and Tippers with Disposal KSRRB M300-15. Excavation for roadway in ordinary rock with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, transporting to embankment site and trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections and transporting disposal location up to a lead of 5.00Km and complete as per specifications. MORTH Specification No. 301(KPWD,16-17,19.15,Pg.No.143)	Cum	1.00	10.00	5.00	0.50	25.00
7	Operation & Maintenance for 4th Year: KSRB 2.3: Filling available excavated earth (Excluding Rock)in sides of foundations up to plinth in layers not exceeding 20cms in depth,compacting each deposited layer by ramming after watering with lead upto 50m and lift up to 1.5m including cost of all labour complete as per specification No.KSB 2.9(KPWD 16-17,2.10,Page No.6)	Cum	1.00	10.00	5.00	0.20	10.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
8	Operation & Maintenance for 4th Year: KSRRB 300-Compaction KSRRB 300-58. Compaction of original ground with maximum of 6 passes of 8 to 10 tonnes power roller including filling in depression occurring during rolling including cost of all labour, HOM of machinery complete as per specifications. MORTH / Chapter 3 (KPWD 16-17,Page No.149,SI No.19.64)	Sqm	1.00	10.00	5.00		50.00
9	Operation & Maintenance for 4th Year: KSRB 2.8 : Providing and Filling in foundation with granite / trap broken metal 100mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification. No. KBS. (KPWD 16-17,Page No.6,SI No.2.15)	Cum	1.00	10.00	5.00	0.15	7.50
10	Operation & Maintenance for 4th Year: KSRB 4-1.7 : Providing and laying in position plain cement concrete of mix 1:3:6 with OPC cement @ 220kgs, with 20mm and down size graded granite metal coarse aggregates @0.84cum and fine aggregates @ 0.56cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM of machinery, curing complete as per specifications. Specification No. KBS 4.1, 4.2(KPWD,16-17,4.7,Pg.No.13)	Cum	1.00	5.00	5.00	0.10	2.50
11	Operation & Maintenance for 4th Year: Providing and laying heavy duty cobble stones 60mm thick, using cement and course sand for manufacture of blocks of approved size, shape and colour with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (KPWD,16-17,14.6,Pg.No.101)	Sqm	1.00	5.00	5.00		25.00
12	Operation & Maintenance for 4th Year: Providing and laying flooring using prepolished, water cut/gang saw 19mm thick granite laid over bed of 20mm thick 1:4 cm & jointed with neat cement slurry mixed with pigment to match shade of granite slabs including laying POP on finished surface and cleaning the surface, including the cost of all materials and labours etc., complete as per specifications. - using silver grey granite / Multy Red / Ruby Red / Black / HassanGreen Granite of width not less than 900mm	Sqm	1.00	3.00	10.00		30.00
13	Operation & Maintenance for 4th Year: Providing and laying heavy duty Tactile Tiles (Direction and Stop tiles-300 x 300 mm) 60mm thick and Yellow in colour , using cement and course sand for manufacture of blocks of approved size, shape with a minimum compressive strength of 281 kg per sqm over 50mm thick sand bed (average thickness) and compacting with plate vibrator having 3 tons compaction force thereby forcing part of sand underneath to come up in between joints, final compaction of paver surface joints into its final level, including cost of materials, labour and HOM of machineries complete as per specifications. (Non SOR Item)	Sqm	1.00	25.00	0.30		7.50
14	Operation & Maintenance for 4th Year: KSRRB M2200-5.18.Design mix M40 with OPC cement @ 390kgs, with 20mm and down size graded granite metal coarse aggregates @0.68cum and fine aggregates @ 0.45cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.18,Pg.No.224)	Cum	1.00	5.00	0.60	3.00	9.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
15	Operation & Maintenance for 4th Year: KSRRB M2200-5.15. Design mix M30 with OPC cement @ 360kgs, with 20mm and down size graded granite metal coarse aggregates @0.69cum and fine aggregates @ 0.46cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008 - i) Upto 5m height,(KPWD,16-17,28.7.15,Pg.No.224)	Cum	1.00	10.00	0.23	5.00	11.50
16	Operation & Maintenance for 4th Year: KSRB 4.2.1 : Providing and laying in position reinforced cement concrete of Design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70 cum and fine aggregates @ 0.47cum, with super plasticisers @ 3 liters conforming to is 9103-1999 reaffirmed-2008 at machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in foundation for footings, pedestals, retaining walls, return walls, walls (any thickness) including attached pilasters, columnspillers, posts, struts, buttresses, bed blocks, anchor blocks & plinths etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6	Cum	1.00	2.50	2.00	0.20	1.00
17	Operation & Maintenance for 4th Year: KSRB 4.2.7 : Providing and laying in position reinforced cement concrete of design mix M25 with OPC cement @ 340kgs, with 20mm and down size graded granite metal coarse aggregates @0.70cum and fine aggregates @ 0.47cum, with superplasticiser @3lts conforming to IS9103-1999 Reaffirmed-2008, machine mixed, concrete laid in layers not exceeding 15 cms thick, vibrated for all works in ground floor level for grade slab, roof slabs, staircase, lintels and beams retaining walls, return walls, walls (any thickness) including attached pilasters, columns, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete but excluding cost of reinforcement as per specifications. Specification No. KBS 4.1, 4.6 (KPWD 16-17,4.12,Pg.No.13)	Cum	1.00	2.50	2.00	0.15	0.75
18	Operation & Maintenance for 4th Year: KSRB 4-6.1 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for foundations, footings, bases of columns for mass concrete including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.28,Pg.No.15)	Sqm	1.00	10.00	1.00		10.00
19	Operation & Maintenance for 4th Year: KSRB 4-6.4 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for vertical surface such as walls at any thickness, including attached pilasters, buttresses, plinth cills and string courses cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2(KPWD,16-17,4.31,Pg.No.15)	Sqm	1.00	20.00	3.00		60.00
20	Operation & Maintenance for 4th Year: KSRB 4-6.7 :Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for sides and soffits of beams, beam haunchings, cantilever girders, bressumers and lintels not exceeding 1m in depth including cost of all materials, labour complete as per specifications. Specification No. KBS 4.6.2.(KPWD,16-17,4.34,Pg.No.15)	Sqm	1.00	5.00	0.60		3.00
21	Operation & Maintenance for 4th Year: KSRB 4-6.3 : Providing and removing centering, shuttering, strutting, propping etc., and removal of form work for flat surface such as suspended floors, roofs, landings, balconies and likes, thickness above 200 mm including cost of all materials, labour complete as per Specification. Specification No. KBS 4.6.2.(KPWD,16-17,4.30,Pg.No.15)	Sqm	1.00	3.00	1.50		4.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
22	Operation & Maintenance for 4th Year: KSRB 4.9.2 :Providing T.M.T steel reinforcement for RCC work including straighting, cutting, bending, hooking, placing in position, lapping and/or welding wherever required, tying with binding wire and anchoring to thr adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications. Specification No. KBS4.6.3. do with TMT bars Fe500(KPWD,16-17, Latest Revision)	MT	2.50				2.50
23	Operation & Maintenance for 4th Year: KSRRB M2600-3. (ii) Providing & fixing 20 mm thick compressible fibre board in expansion joint complete as per drawing & Technical Specification complete as per specifications MORTH Specification No. 2605.(KPWD,SOR 16-17,31.3,Pg.No.243)	Rm	1.00	1.00			1.00
24	Operation & Maintenance for 4th Year: KSRB 6-5.4 : Providing and constructing burnt brick masonry with approved quality of modular bricks of standard size of class designation 5.0Newton per sqmm (table moulded) with cement mortar 1:4 for basement and superstructure including cost of materials, labour charges, scaffolding, curing complete as per specifications. Specification No. KBS 6.2.(KPWD,SOR 16-17,6.7,Pg.No.27)	Cum	1.00	2.00	0.23	0.50	0.23
25	Operation & Maintenance for 4th Year: KSRB15-3.2 : Providing 12mm thick cement plaster in single coat with cement mortar 1:4, to brick masonry including rounding off corners wherever required smooth rendering, : Providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications.(KPWD,SOR 16-17,15.10,Pg.No.113)	Sqm	1.00	2.00		0.50	1.00
26	Operation & Maintenance for 4th Year: KSRB 15-14.1 : Providing and applying two coats with oil bound washable distemper of approved brand and shade on wall surface including priming coat with distemper primer after throughly brooming the surface free from mortar drops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour, complete as per specifications.(KPWD 16-17,15.49,Page No.117)	Sqm	1.00	2.00	2.00		4.00
27	Operation & Maintenance for 4th Year: KSRRB 800-1. Painting two coats after filling the surface with synthetic enamel paint in approved shades on new plastered concrete surfaces, with materials, labour complete as per specifications. MORTH Chapter 8.(KPWD,SOR 16-17,24.1,Pg.No.181)	Sqm	1.00	30.00	5.00		150.00
28	Operation & Maintenance for 4th Year: Fabricating, supplying and erecting M.S. TubularTruss of span upto 10m. The bottom and top member is provided with 50x50x6mm double equal angles, welded back to back and in between top and bottom line, in areas of mid section is provided with 50x50x6mm equal single angle for vertical and inclined members and at supporting ends 40x40x5mm single angle is provided. All the members are welded together with 6mm gusset plate as per Drawing. The entire truss is anchored in RCC column by using 4 Nos. of M.S. anchor bolts at each support, with 10mm thick base plate and shoe plate.The work includes cutting, straightening, placing in position of M.S angle and wleding wherever necessary, and applying one coat of red oxide primer coat to all themembers including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, with all lead and lift, transportation, etc., complete as per specification. (Page No. 40 Item No. 7.29 of CSR 2015-16).	Kg	1.00	100.00			100.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
29	Operation & Maintenance for 4th Year: Providing and fixing 6mm Bronze Multi wall poly carbonate sheet for Tubular structure. The work including cost of all materials, labour charges, and hire charges of machineries for cutting, welding, grinding and erection equipments, complete as per specification.(KPWD,SOR 16-17,8.27,Pg.No.48)	Sqm	1.00	4.00			4.00
30	Operation & Maintenance for 4th Year: Heritage painting on wall surface as per the specified location in Architectural drawing and as directed by Architect or Engineer in charge	Sqm	0.50	10.00	8.00		40.00
31	Operation & Maintenance for 4th Year: Providing and fixing M.S. Hand railing with 50mm dia. M.S. hollow pipe of 14 gauge, welded to 20mmx20mm M.S. square rod placed vertically, spaced at 100mm at regular intervals of 600mm. These vertical rods laterally tied to 3 horizontal rods spaced at equal interval. These assembly is fixed to concrete by using expansion bolts and welding the same to reinforcement bars and making good the surface. All the joints and sections should be cut to length, welded and grinded wherever necessary etc., complete . The work includes cost of all materials, labour charges for all items of work, hire charges for welding, cutting and grinding equipment, and electricity charges, etc., complete as per specification and drawing.(KPWD 16-17,7.35,Page No.42)	Sqm	10.00				10.00
32	Operation & Maintenance for 4th Year: Providing and fixing M.S. wall mounted hand rails of 14-gauge pipes of Dia 50mm for Ramps or Staircase are made out of mild steel hollow pipes, using 25mm dia pipe for Horizontal support @1.20 mtr c/c are fixed to the RCC wall by drilling with bolts and 100mm dia MS base plates 10mm gauge for fixing of Horizontal pipes support with 4 - Nos anchor bolts including cutting, welding, bending wherever necessary with suitable caps @ tops, bottoms & corners finishing with mat / shining etc., complete including cost and conveyance of all materials, labour for all items of work, HOM of equipment with all lead and lift, loading and unloading, transportation charges and all other incidental charges etc., complete as per specification and directions of the Engineer-in-charge of the work. Ramps or Staircase for physically challenged	Kg	10.00				10.00
33	Operation & Maintenance for 4th Year: KSRB 15-18.2 : Providing and applying enamel metal paint two coats (excluding priming coat) over new steel or other metal surface brushing to give an even shade after cleaning oil, grease, dirt and other foreign matter, including cost of materials, labour, complete as per specifications. (Page No. 120 Item No. 15.74 of SR 2015-16).	Sqm	10.00				10.00
34	Operation & Maintenance for 4th Year: Rectangular shape 500x450 mm precast R.C.C. Gratings (CPWD 2016,Material rate-7380,Pg.No.39)	Nos.	10.00				10.00
35	Operation & Maintenance for 4th Year: KSRRB M2700- Mastic Asphalt KSRRB M2700-1. Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 5100.5 complete as per specifications. MORTH Specification No. 515 & 2702(KPWD 16-17,32.1,Pg.No.246)	Sqm	0.50	30.00	22.50		337.50

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
36	Operation & Maintenance for 4th Year: KSRRB M500-19. Providing and laying bituminous concrete 50 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using 40-60 TPH capacity H.M.P. with mechanical paver grading I (50-65mm) with 5.5%VG-30 Bitumen(KPWD 16-17,21.22.5,Pg.No.165)	Cum	0.50	30.00	22.50	0.05	16.88
37	Operation & Maintenance for 4th Year: KSRRB M400-6.2.Construction of granular sub base by providing close graded crushed stone aggregate of granite/trap/basalt material,spreading in uniform layers with motor on prepared surface,mixing by mix in place methode by rotavator at OMC, and compacting with vibratory power roller to achieve the desired density,complete as per specification. B.By Mix in Place Methode. Close graded granular sub base material as per 400-1 For Grading II material (Page No 155,SI No : 20.5.2)	Cum	0.50	2.00	1.00	0.15	0.15
38	Operation & Maintenance for 4th Year: KSRRB M600-1.Construction of dry lean cement concrete mix M15 with 1:5:10 OPC cement @160Kgs,with 25mm and down size graded granite/trap/basalt metal coarse aggregate at 0.86cum and fine aggregate @ 0.58cum Sub-base over prepared sub grade with (coarse and fine aggregate confirming to IS:383) aggregate cement ration not to excee 15:1. Aggregate gradation after blending to be as per Table 600-1, cement content to be determined during trail length construction, concrete strength not to be less than 10Mpa at 7 days,mixed in a batching plant,transported to site,laid with a paver with electronic sensor,compacting with 8-10 tonnes vibratory roller,finishing and curing complete as per specifications.Morth specification No.601 (Page No 176,SI No : 22.1)	Cum	1.00	2.00	1.00	0.10	0.20
39	Operation & Maintenance for 4th Year: KSSRRB M600-2.Construction of unreinforced,dowel jointed,plain cement concrete pavement over a prepared sub base with 25mm and down size graded granite metal coarse aggregate with superplasticizer at 3 lts confirming to IS9103-1999 reaffirmed 2008(Coarse and fine aggregate conforming to IS:383) mixed in a batching and mixing plant as per approved mix design,transported to site,laid with a fixed form or slip form paver spread,compacted and finished in a continuous operation including provision of contraction, expansio, construction and longitudinal joints,including groove cutting chrges, joints filler,separation memberane, sealent primer, joints sealant, debonding strip, dowel bars at 4.5m intervals, tie rod, admixtures as approved, curing compound,finishing to lines and grades as per drawing complete as per sprcifications MORTH specification No.602.do with M40 (420Kg per cum Cement,C.A,0.67 cum F.A.044Cum (Page No 176,SI No : 22.2.2)	Cum	1.00	2.00	1.00	0.30	0.60
40	Operation & Maintenance for 4th Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Earth	Cum	1.00	50.00	2.00	0.50	50.00
41	Operation & Maintenance for 4th Year: Extra Lead for Disposing off unserviceable materials upto 5 Km beyond initial Lead Item No 17.4 KSRRB M100-4.1-Debris	Cum	1.00	25.00	2.00	0.50	25.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
42	Operation & Maintenance for 4th Year: Supplying and stacking of good earth at site including royalty and carriage upto 5 k.m. lead complete (earth measured in stacks will be reduced by 20% for payment). (Non SOR Item)	Cum	1.00	5.00	5.00	0.50	12.50
43	Operation & Maintenance for 4th Year: KSRRB M300-Supply at site of work well decayed farm yard manure KSRRB M300-11. Supply at site of work well decayed farm yard manure, from any available source, approved by the engineer in charge including screening and stackin complete as per specifications. MORTH Specification No. 308.2(Page No.152,SI.No.19.90)	Cum	1.00	5.00	5.00	0.20	5.00
44	Operation & Maintenance for 4th Year: Supplying and stacking at site dump manure from approved source, including carriage upto 5 k.m. lead complete (manure measured in stacks will be reduced by 8% for payment) : (KBSR 19.90)						
a	Screened through sieve of I.S. designation 20 mm	Cum	1.00	5.00	5.00	0.10	2.50
b	Screened through sieve of I.S. designation 4.75 mm	Cum	1.00	5.00	5.00	0.10	2.50
45	Operation & Maintenance for 4th Year: KSRRB M300-Horticulture KSRRB M300-Spreading of sludge farm yard manure or/ and good earth KSRRB M300-1. Spreading of sludge farm yard manure or/ and good earth in required thickness (cost of sludge, farm yard manure or/and good earth to be paid for separately) complete as per specifications. MORTH Specification No. 307 (KPWD SR 16-17,Page No.150,SI No.19.77)	Cum	1.00	10.00	5.00	0.10	5.00
46	Operation & Maintenance for 4th Year: Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge (Non SOR item)	Cum	1.00	10.00	5.00	0.20	10.00
47	Operation & Maintenance for 4th Year: KSRRB M300-3.Making lawns including ploughing and breaking of clod,removal of rubbish,dressing and supplying doobs grass roots and planting at 15 cm apart,including supplying and spreading of farm yard manure at rate of 0.18cum per 100 sqm complete as per specifications. MORTH Specification No.307 (KSRRB 19.80)	Sqm	1.00	5.00	2.00		10.00
48	Operation & Maintenance for 4th Year: Maintenance of lawns or Turfing of slopes (rough grassing) for a period of one year including watering etc complete including cost of all materials, scaffolding HOM of machineries with all lead and lifts, labour charges including implementation of Environmental and Social Safeguards & as per design, drawing, technical specifications and directions of Engineer-in-charge.(KPWD 16-17,19,81	Sqm	1.00	681.00			681.00
49	Operation & Maintenance for 4th Year: Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately). (Non SOR Item)	Cum	1.00	5.00	2.00	0.60	6.00
50	Plumeria Obtusa	Nos.	1.00				1.00
51	Zephyranthus Candida	Sqm	10.00				10.00
52	Heliconia Pistacorum @ 450mm c/c	Nos.	10.00				10.00
53	Alpinia Purpurata @ 450mm	Sqm	10.00				10.00
54	Red cannas drawf @ 200mm c/c,Height=300mm	Sqm	1.00				1.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
55	Ochiandra Travancorica	Nos.	1.00				1.00
	Lighting Fixtures						0.00
56	Operation & Maintenance for 4th Year: LED Bollard Light Supply,Installation, testing & commissioning of 6W LED Bollard light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ABD010064) (Non SOR Item)	Nos.	1.00				1.00
57	Operation & Maintenance for 4th Year: LED Step Light Supply,Installation, testing & commissioning of 3W LED Step light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASE010034) (Non SOR Item)	Nos.	1.00				1.00
58	Operation & Maintenance for 4th Year: LED Spike Light Supply,Installation, testing & commissioning of 6W LED Spike light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. ASK010066) (Non SOR Item)	Nos.	1.00				1.00
59	Operation & Maintenance for 4th Year: LED Down Light Supply,Installation, testing & commissioning of 12W LED Down light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for outdoor application. (Equivalent to K-light make, Lime Light quote HSN code 9405) (Non SOR Item)	Nos.	1.00				1.00
60	Operation & Maintenance for 4th Year: LED Batten Light Supply,Installation, testing & commissioning of 40W LED Polycarbonate cover light fixture with all required accessories and LED driver to complete the job. Light fixture shall be suitable for indoor application(IP65) (Equivalent to Panasonic Cat. Ref. No. PBTM05407) (Non SOR Item)	Nos.	1.00				1.00
	Cables and End Terminations						
61	Operation & Maintenance for 4th Year: LT cable Supplying and laying of of 1.1 kV LT UG cable having aluminium conductor PVC insulated, extruded inner sheathed, galvanised, steel strips (except 2C x 10 sq. mm wire armoured) as per IS-3975:1990 and extruded PVC outer sheathed armoured cable as per IS - 1554 Part 1:1988 & conforming to GTP of GROUP B 4 Core x16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.5,7.5.4 & sl no 7.8, 7.8.1)	Rmt	10.00				10.00
62	Operation & Maintenance for 4th Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx16 sq.mm A2XFY Aluminium Conductors (Non SOR Item)	Rmt	10.00				10.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
63	Operation & Maintenance for 4th Year: LT cable Supply, installation ,testing & commissioning the cable underground or on wall/floor/ceiling/structure member or on cable trays or down through PVC pipes using MS spacers and GI saddles, cable clamp etc. complete in all respect. Cable, conforming to IS: 1554/Part 1/1998, XLPE, Aluminium/Copper stranded conductor, armoured, 1100 V class. 3Cx2.5 sq.mm 2XWY Copper Conductors (Non SOR Item)	Rmt	10.00				10.00
64	Operation & Maintenance for 4th Year: End Termination Supply and fixing of heavy duty cable glands suitable for UG cable of 1.1kV class (metal only) 19/20mm (Ref Electrical SOR SI No.7.14.1)	Rmt	1.00				1.00
65	Operation & Maintenance for 4th Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 16 Sq.mm PVC Aluminium Conductor (Ref Electrical SOR SI No.7.21,7.21.6)	Nos	1.00				1.00
66	Operation & Maintenance for 4th Year: End Termination Supplying tinned copper lugs and crimping and wiring to terminal point for wire of following sizes 2.5 sq. mm copper conductor (Ref Electrical SOR SI No.7.21.2)	Nos	1.00				1.00
Switchgear							
67	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of 3 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601932) (Non SOR Item)	Nos	1.00				1.00
68	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of 4 module PVC distribution Boards, Weatherproof cabinets(IP65) with all accessories required to complete the job. (Equivalent to Legrand Cat. Ref. No. 601994) (Non SOR Item)	Nos	1.00				1.00
69	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 10A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
70	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 16A DP MCB, 10kA (Ref Electrical SOR SI No.317)	Nos	1.00				1.00
71	Operation & Maintenance for 4th Year: Supply, installation, testing and commissioning of MCB in existing distribution board. 32A TPN MCB, 10kA (Ref Electrical SOR SI No.319)	Nos	1.00				1.00
Civil work							
72	Operation & Maintenance for 4th Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (ordinary) (Ref Electrical SOR SI No.7.9.1)	Rmt	10.00				10.00
73	Operation & Maintenance for 4th Year: Digging of trench of 0.6m deep x 0.5m wide refilling the trench to the required ground level and consolidating etc. , complete. (As per civil SR KSRB I-2, P-7) In soil (Hard) (Ref Electrical SOR SI No.7.9.2)	Rmt	10.00				10.00

Sr.No.	Description	Unit	No.	L	B	H	Total Qty.
74	Operation & Maintenance for 4th Year: Providing and filling sand in excavated trench to cover already laid UG cable to a depth of 150mm all-around the cable. (Ref Electrical SOR SI No.7.10)	Rmt	10.00				10.00
Earthing system							
75	Operation & Maintenance for 4th Year: Supply and running GI conductor for grounding and (along with other wires in conduits system of wiring) using necessasary suitable size clamps, nails, guttas/spacers etc- 8 SWG (Ref Electrical SOR SI No.7.22.3)	Rmt	10.00				10.00
76	Operation & Maintenance for 4th Year: Supply and laying of PVC conduit pipe 2mm/2.5mm wall thickness. ISI marked. 25mm (Ref Electrical SOR SI No.2)	Rmt	2.00				2.00

**Assistant Engineer
MSCL Mangaluru**

**Executive Engineer
MSCL Mangaluru**

**General Manager Technical
MSCL Mangaluru**