

BRIHANMUMBAI MUNICIPAL CORPORATION

Subject:-

P/L 355 MM dia (OD) HDPE PIPE (PN6 CLASS - PE80 GRADE IS 14333) TO CORRECT GRADE AND ALIGNMENT BY HDD METHOD FROM Bendre Chowk TO JUNCTION of Sai baba nagar, Sahakar Nagar MHADA Layout, Chemubr IN 'M/W' WARD.

BILL OF QUANTITIES

Sr. No.	Schedule Item No.	Description	Total Qty	Unit	Rate	Total Cost
1	R2-SE-1-1	Excavation for foundations, substructures, basements, tanks, sumps, walls, chambers, manholes, trenches, poles, pits & general building works in all types of soils, vegetable earth, soft murum, running sand, shingle, turf clay, loam, peat, ash, shale, slag, chalk, garbage, muddy / marshy / slushy soil, marine clay, reclaimed land etc. for depths/lifts upto 2.0 M measured from the ground level, including dressing/trimming the sides, leveling and ramming of bottoms, manual dewatering, removing rank vegetation, backfilling in layers not more than 200 mm thickness, watering, consolidating, compacting to achieve not less than 97% Modified Proctor density conforming to relevant I-S, stacking the selected material in measurable heaps for future use within owners space or disposing within an initial lead of 150 m as directed, loading, unloading, leveling excluding shoring, strutting etc. complete as directed by Engineer-in-Charge. Note: 1) The rate includes the handling/supporting the existing utilities such as cables, drains, pipes, water mains etc. 2) It also includes the royalty and other taxes applicable if any.	260.00	CuM	468.00	121680.00
2	R2-SE-1-1-a	do-do-as per item R2-SE-1-1 for lift from 2.0 to 4.0m.	170.00	CuM	638.00	108460.00
3	R2-SE-1-1-j	Extra over above for item no. R2-SE-1-1 to R2-SE-1-1-i for relevant lift of excavation in soft/ disintegrated rock, road carriageway, sand stone, stiff clay, gravel, cobblestone, hard laterite, water bound macadam, wet mix macadam, asphalt mix carpet of any type, pitching, soling, paths and hardcore, lime concrete, plain cement concrete, stone masonry and all types of brick/ block masonry below ground level	160.00	CuM	429.00	68640.00
4	R2-SE-1-1-u	Extra over above for item no. R2-SE-1-1 to R2-SE-1-1-i for relevant lift of excavation in hard rock and reinforced concrete by chiseling for sewerage works by manual operations, pneumatic breaker, hammer, driller, compressor breaker, etc. including dressing/ trimming the sides, leveling of bottoms,	90.00	CuM	2100.00	189000.00
5	R2-SE-1-1-ae	Extra over above for item no. R2-SE-1-1 to R2-SE-1-1-if or relevant lifts of excavation in hard rock and reinforced concrete by splitter machine	90.00	CuM	4970.00	447300.00
6	R2-RW-10-55	Excavation in Reinforced OR pavement grade concrete M-20 & above by using modern machinery (poclain with rock breaker, etc.) including with stacking of excavated material within 150 m radius etc complete upto any depth as specified & as directed, by the Engineer.	45.00	CuM	1525.00	68625.00
7	R2-HE-8-27-a	Cutting of existing cement concrete road upto specified depth by using Diamond Saw machine etc. complete in all respects and as directed by Engineer In Charge. Note : The charges for supplying water and electricity are exclusive of the rate workedout upto 350 mm depth of cutting	290.00	Rmt	1486.00	430940.00
8	R2-SE-1-4-b	Providing and removing closed shoring and strutting in the trenches/pits for all depths as per specifications/drawings and or as directed by Engineer-in-charge by including walling, struts, open poling boards, horizontal sheeting, runners, dog spikes by using timber etc. complete.	25.00	CuM	8586.00	214650.00
9	R2-SE-1-5-a	Leaving shoring in trenches. (New or old) including dog spikes.	5.00	CuM	15561.00	77805.00
10	R2-RW-10-27	P/L R.M.C. M-10 C.C. having avg. compressive strength 13.5 Mpa grade in foundation / encasement/ pavement with or without chequered design including formwork, mixing in batching plant, placing vibrating with plate or needle curing etc. complete as directed by the Engineer. C/s. has to make his own arrangement for water for curing with Hessian cloth etc. & will not be paid separately. (MINIMUM CEMENT CONTENT 220 Kg/m ³ .)	5.00	CuM	6452.00	32260.00
11	R2-RW-10-26	-do- -do- M 15 c.c. For full encasement or cradle -do- -do-	20.00	CuM	6893.00	137860.00
12	R2-CS-MW-3-b	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level upto floor five level in all shapes and sizes in :Cement mortar 1:4 (1 cement : 4 coarse sand)	10.00	CuM	6930.00	69300.00
13	R2-CS-MW-18	Uncoursed rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20mm nominal size) upto plinth level in 1:6 cement mortar	10.00	CuM	4326.00	43260.00
14	R2-SE-4-4	Providing 20 mm thick cement plaster in cement mortar 1:2 including neat cement rendering, with approved water proofing compound in a proportion as specified by the manufacturer's per bag of cement.	10.00	SqM	389.00	3890.00
15	R2-SE-5-1-a	Providing & laying 150mm dia stoneware pipes of SP2 class including jointing with CM(1:1), filleting etc. complete as specified & directed.	70.00	m	657.00	45990.00
16	R2-SE-5-11-a	Providing, Laying and Jointing 160mm OD Double Wall Corrugated (DWC) PE pipes of SN8 class with R/R joint with PE coupler as per ISO21138-3 complete as specified and directed	10.00	Rmt	702.00	7020.00
17	R2-SE-14-1-b	Providing, Laying and Jointing of 355 mm dia(OD) HDPE pipe (PN6 Class- PE80 grade:IS14333) to correct grade and alignment from 3m upto 5m depth including boring, Pilot inclined dilling from existing ground level upto required depth (invert level) on rig side of proposed gravity sewer line (i.e. entry side) and Final inclined boring from existing ground level upto required depth (invert level) or vice-a-versa on pipe side (i.e. exit side) of proposed gravity sewer line using Horizontal Directional Drilling method in any type of ground including soft soil, mixed ground and soft/ hard rock. Length of gravity sewer line between inner faces of two consecutive proposed manholes will be considered for measurement.	190.00	Rmt	58606.00	11135140.00

18	R2-SE-6-2-b	Constructing on sewer brick masonry conical manholes 1.5M dia. at bottom 0.56 M. dia. at top, built in brick masonry in cement mortar 1:3, plastered both inside and outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 300 mm thick M.15 cement concrete in foundation and in haunches and channels finished smooth with 20mm thick cement plaster in cement mortar 1:1 and providing C.I. steps (weighing 5.4 kg each) staggered at 300 mm. c/c including 75mm wide vata all round the external portion of the manhole and the foundation concrete in cement mortar 1:1 and supporting the incoming pipes with brick masonry wherever necessary including C.I. extra heavy duty (EHD) airtight circular frame & cover (minimum 230 Kg.) with hinge/chain resting on 30 cm high cement concrete M.20 cap with necessary centering etc. all complete as per standard specifications and directions including finishing the cap with cement plaster on both sides 1:2 and neat cement rendering so as to give a smooth surface in line and level with the brick masonry surface and as per drawing DyCh.E.(Sewerage) P&D's office without excavation depth upto 2.3 M.(Depth of Manhole measured from top of manhole cover to Invert level of manhole)	6.00	no.	90305.00	541830.00
19	R2-SE-6-2-c	Extra for above manhole per metre depth above 2.3M and upto 5 M including safety chain and extra C.I steps on other side of benching-do-do-	2.00	MD	34099.00	68198.00
20	R2-SE-6-8	Constructing on sewer brick masonry scraper manhole 1.5M x 1.5M at bottom and 1.2 M x 0.9M at top, including C.I. EHD airtight rectangular frame and cover weighing minimum 900 kg complete as per description in Item No.R2-SE-6-1 depth	1.00	Nos.	226634.00	226634.00
21	R2-SE-12-15	Extra for providing locking arrangement to C.I. EHD Circular manhole frame and cover above the rate of providing and fixing C.I. EHD Circular manhole frame and cover.	6.00	Nos.	1038.00	6228.00
22	R2-SE-7-1	Providing 150 mm dia stoneware pipes of SP2 class in vertical drop of 0.6M including 150 mm dia stone ware pipe fixed in brick masonry of the manhole at required level & providing 150 mm dia stone ware right angled bend, 150 mm x 150 mm x 150 mm S.W. double tee junction including cutting, jointing & filleting as per detailed specifications, encased in half brick thick masonry in cement mortar (1:3) all round the pipes double tee, bend and extra brick work below bend upto the foundation of the manhole and tapering portion of the manhole, plastering the	14.00	Nos.	4220.00	59080.00
23	R2-SE-9-1	Providing R.C.C. Spun vent shaft 7.3M in height embedded in M15 cement concrete including flue chamber etc.complete without excavation.The height of the vent shaft to be measured from its bottom upto the top as per the drawing and as specified and directed	1.00	No	52114.00	52114.00
24	R2-SE-12-10	Cutting down masonry work in lime or cement mortar plaster etc. Complete	10.00	CuM	471.00	4710.00
25	R2-CS-MW-22	Coursed rubble masonry (first sort) with hard stone in foundation and plinth with :	10.00	CuM	5149.00	51490.00
26	R2-RW-7-37	(a) To carry out total station survey of the road with reference to existing co-ordinate system by establishing control stations by establishing temporary bench mark from permanent bench mark, marking centre line of the road by nails, carrying out detailed levelling, plotting cross sections longitudinally at 20 mtr. intervals with levels at every 4 mtr. cross distance, preparing drawings on Auto cad to the scale of 1:500 and supplying 2 hard copies and 1 soft copy in C.D. form.. etc. complete upto 18.3 mtr wide road. co-ordinate system by establishing control stations by establishing temporary bench mark from permanent bench mark, marking centre line of the road by nails, carrying out detailed levelling, plotting cross sections longitudinally at 20 mtr. intervals with levels at every 4 mtr. cross distance, preparing drawings on Auto cad to the scale of 1:500 and supplying 2 hard copies and 1 soft copy in C.D. form.. etc. complete upto 18.3 mtr wide road.	1.00	upto 500 m.	20182.50	20182.50
27	R2-RW-10-28	Supply & filling sand, metal GRAVELLY SAND Corresponded to CLASS II/ CLASS III GRADING of TABLE 100.1of new road specifications-2006 in trenches upto required depth & watering, ramming etc. complete as directed	60.00	CuM	1905.00	114300.00
28	R2-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighting barricating to all lifts & lead maintenance of diversion etc. complete.(metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no 210).	40.00	CuM	2547.00	101880.00
29	R2-RW-2-22	Rebate for not using motor grader / paver for laying of Granular Sub base in RW-2-21	40.00	CuM	-93.00	-3720.00
30	R2-RW-2-20	Providing & laying, spreading & compacting graded crushed stone aggregate to Wet Mix Macadam satisfaction including premixing the material with water to OMC in mechanical mix (pug mill) carriage of mix material by tipper to site laying in uniform layer of 75mm to 100mm(compacted thickness each)with sensor paver finisher on prepared subbase & compacting with vibratory roller (10 tonne) to achieve desired density including lighting, guarding barricating & maintenance of diversion etc. as directed by the Engineer, (Rebate for not using sensor paver should be taken, (metal gradation from 53mm to 75mm micron as per MCGM Road Specifications clause no.240).	30.00	CuM	2937.00	88110.00

31	R2-RW-10-32	Providing and laying Dry Lean Concrete base including providing coarse and fine aggregate to the specified gradation using minimum cement content 150 kg/cum of concrete with OPC 43 grade cement, mixing of concrete as per approved design mix using mechanised batch mix plant of appropriate capacity, transporting and laying with self propelled paver with electronic sensor device and compacting with vibratory roller of minimum 80- 100 KN static weight to give desired compacted density and average compressive strength of 10 MPa at 7 days and curing with liquid curing compound and sprinkling water and covering with moist hessian cloth or ponding of water for 7 days including providing construction joints, including all material, labour, machinery with all leads and lifts etc. complete as specified and as directed by the Engineer. B) Laying by paver with electronic sensor device.	30.00	CuM	4481.00	134430.00
32	R2-RW-10-18	Providing & laying waterproof paper of 40 GSM including overlap (to be not less than 10cm) etc. complete as specified as directed	150.00	Sq.M	11.00	1650.00
33	R2-RW-10-33	Providing & laying M-40 C.C.avg. compressive strength 45 MPa and avg. flextural strength of 5.0 MPa (As per IRC 15-2002.N.1.6) procured from M.C.G.M. approved R.M.C. plant including use of approved make of plasticizer/ retarder & Contractor's water with ice flakes and transported by transit mixer and placing at work site. Compacting, finishing, initial curing by approved curing compound & Contractor's water and tarring the sides of slab with hot bitumen as specified and directed (w/c ratio 0.4 maximum)(vata for curing will be paid separately.) (MINIMUM CEMENT CONTENT 350 kg/m ³)	50.00	CuM	7968.00	398400.00
34	R2-RW-10-05	Providing & laying R.C.C. running beam in M-40 cement concrete including required formwork mixing, compacting & curing, etc. complete reinforced with 12mm dia.(Minimum 4 Nos.)M.S. main bars & 6mm Dia M.S. rings at 15cm c/c to be anchored in slipper slab properly with M.S. reinforcement as per drawing etc. complete as specified(Steel will not be paid separately).Contractor has to make his own arrangement for potable water for construction/curing with hessian cloth, etc. & will not be paid separately. Beam Size: a) 23cm x 27.50cm.	110.00	RMT	805.00	88550.00
35	R2-RW-10-11	Cutting of construction & dummy joints of M-35 C.C. & above slab by mechanical means within 10 to 16 hrs.of casting of bay/slab as directed. A) transverse dummy joints 100mm deep or 1/3 thickness of concrete pavement & 6 mm wide	60.00	RMT	59.00	3540.00
36	R2-RW-10-12	Cutting of construction & dummy joints of M-35 C.C. & above slab by mechanical means within 10 to 16 hrs.of casting of bay/slab as directed. B) Longitudinal construction joints 100mm deep or 1/3rd thickness of slab & 6 mm wide	60.00	RMT	59.00	3540.00
37	R2-RW-10-13	Providing & fixing in position premoulded asphalt filler 12mm thick confirming to I.S. 1838 of 1983 for placing of the expansion joint,around manholes & waterentrances, etc put to the required depth & 25mm below the camber,etc. complete as directed.	35.00	SqM	352.00	12320.00
38	R2-RW-10-14	Providing & placing 5 mm thick thermocol in dummy & construction joints immediately after cutting of joints & removing the same before dressing of dummy & construction joints etc. complete, as directed	15.00	SqM	76.00	1140.00
39	R2-RW-10-15	Providing & fixing high density polythene pipe of approved quality to fit around the dowel bars of 32mm dia at the end of expansion joints, fully greased inside, cotton waste the pipe around the dowel bars & the pipe duly capped at the end as directed.(H.D.P. pipe shall be 30cm in length) As shown in the drawing.	200.00	Each	31.00	6200.00
40	R2-RW-10-16	Providing & fixing in position mild steel in tie bars of 12mm dia 55cm long & 45cm C/C whenever directed including handling , wrapping with paper for half length,fixing straightening, wastage etc. complete in all respect as directed.	0.10	MT	63226.00	6322.60
41	R2-RW-10-17	Providing & fixing in position M.S. dowel bars of 32mm dia 55cm long & 30cm C/C whenever directed including handling, fixing, etc. complete(no extra payment will be made for applying bitumen & grease to dowel bars).	0.70	MT	62904.00	44032.80
42	R2-RW-10-19	Providing & constructing cement vatas in c/m 1:10 at 0.6m * 0.6mc/c admeasuring 0.09m at bottom, 0.04m at top & 0.075m deep & maintaining the same throughout 14 days curing & removing the same thereafter as directed.	150.00	SqM	78.00	11700.00
43	R2-RW-10-23	Dressing of M-35 & above new C.C.pavement,dummy,transverse, longitudinal & expansion joints with hot rubberised sealing compound confirming to IS 1834-1984 after proper cleaning with compressed air,applying required primer & providinga layer of lime powder over hot sealing compound etc. complete as directed.A) Sealing 6mm wide dummy/transverse joints with a depth of 100mm/1/3rd thickness of concrete pavement.	60.00	Rmt	92.00	5520.00
44	R2-RW-10-24	Dressing of M-35 & above new C.C.pavement,dummy,transverse, longitudinal & expansion joints with hot rubberised sealing compound confirming to IS 1834-1984 after proper cleaning with compressed air,applying required primer & providinga layer of lime powder over hot sealing compound etc. complete as directed.B) Sealing of 6mm wide longitudinal joint with depth of 100mm or 1/3rd thickness of concrete pavement.	60.00	Rmt	92.00	5520.00
45	R2-RW-10-25	Dressing of M-35 & above new C.C.pavement,dummy,transverse, longitudinal & expansion joints with hot rubberised sealing compound confirming to IS 1834-1984 after proper cleaning with compressed air,applying required primer & providinga layer of lime powder over hot sealing compound etc. complete as directed.C) Sealing of 25mm wide expansion joints with avg. depth of 12mm.	130.00	Rmt	60.00	7800.00

46	R2-RW-3-11	Providing & fixing 80 mm thick interlocking unishape concrete pavers (monolithic-single layer precast concrete blocks) of gray cement coloured in the carriageway having average crushing strength 50N/sq.m.m. as per technical specification, placed on average compacted thickness of 25 mm, uniformly graded river sand cushioning with proper compacting with mechanical compactor with the proper level, grade and camber etc. complete as specified and as directed by the Engineer.	50.00	Sq.m	871.00	43550.00
47	R2-RW-5-44	P/L hot Premix Dense bituminous macadam with 4.50% bitumen content of grade VG-40 to the required line, level and camber rolling with 10/12M.T. power, vibratory roller & sensor paver etc. complete as specified and as directed to thickness of 50mm. with anti stripping agent at 1% by weight of bitumen using grading II of "MORTH" (As per prevailing MCGM specifications for Roadworks clause no.354)	50.00	Sq.m	450.00	22500.00
48	R2-RW-5-40	P/L hot premix Bituminous concrete with 6.00% of bitumen grade VG-40, surface coat by mix design as per MORTH to the compacted thickness of 40mm, using new material to the required line, level and camber rolling with power vibratory roller & sensor paver, etc. Complete as specified and as directed with lime filler 2% by weight and anti stripping agent @ 1% of bitumen by weight etc. complete (As per prevailing MCGM specifications for Roadworks clause no.364)	50.00	Sq.m	450.00	22500.00
49	R2-RW-5-20	Providing and applying PRIME COAT with CATIONIC BITUMEN EMULSION(SS) @ 7to12 Kg. of 10 Sqmt over prepared surface to receive bituminous mix by applying PRIMER with mechanical spray bitumen, including cleaning of road surface etc. completed, as directed for Low Porosity surface & the primed surface shall be allowed to cure for at least 24 hours or any other higher period, as is found to be necessary to allow all the moisture or volatiles to evaporate before any subsequent bituminous surface treatment or mix is laid (As per prevailing MCGM specifications for Road works ClauseNo.313,curing as per 313.5)	50.00	Sq.m	57.00	2850.00
50	R2-RW-5-23	Providing and applying TACK COAT with CATIONIC BITUMENE MULSION(RS) @ 0.2 to 0.25Kg. of Sq. mt over prepared surface to receive bituminous mix by applying TACKCOAT with mechanical spray bitumen, including cleaning of road surface etc. completed, as directed For NORMAL BITUMINOUS SURFACES & the tack coat shall be left to cure until all the volatile shave evaporated before any subsequent construction is started, which is indicated by change in colour from brown to black (As per prevailing MCGM specifications for Road works Clause No. 314, curing as per 314.3.4)	50.00	Sq.m	33.00	1650.00
51	R2-RW-5-24	Providing and applying TACK COAT with CATIONIC BITUMEN EMULSION (RS) @ 0.25 to 0.30 Kg. of Sq.mt over prepared surface to receive bituminous mix by applying TACK COAT with mechanical spray bitumen, including cleaning of road surface etc.completed, as directed for DRY & HUNGRY BITUMINOUS SURFACES (As per prevailing MCGM specifications for Roadworks Clause No. 314)	50.00	Sq.m	35.00	1750.00
52	R2-RW-5-32	P/L Mastic Asphalt25mm. thick as per I.S. code No. 5317/2002.(As per prevailing MCGM specification for Roadworks Clause No. 365)	50.00	Sq.m	615.00	30750.00
53	R2-SE-12-14	Pumping out water from drainage trenches by 10 H.P. pump per shift of 8 hours.	10.00	per shift	2394.00	23940.00
54	R2-SWD-15-A	Providing and laying RMC (Ready Mixed Concrete) M-15 grade Plain cement concrete in foundation including boxing,curing by any means, etc. complete as specified and/or as directed by Engineer-in-Charge.	10.00	CuM	6764.00	67640.00
55	R2-SWD-35	Cutting down existing cement / lime concrete works by any means in pavement, bedding below foundation, coping, walls arches, stone, brick pavement coping etc. of any thickness of any height / depth above or below ground level etc.complete, as specified & as directed by Engineer-in-Charge.	10.00	CuM	1314.00	13140.00
56	R2-SWD-36	Cutting down completely RCC slab, walls, beams , columns, arches, piles, pile caps of any thickness and or size of any height / depth by any means below or above ground level including cutting down steel reinforcement, removing and stacking them properly as direcfd etc.complete, as specified & as directed by Engineer-in-Charge.	10.00	CuM	1588.00	15880.00
57	R2-SWD-178	Providing & placing in position controlled Ready Mix Concrete of grade M- 40 in raft slab by using Ordinary Portland Cement including transportation to site anywhere in Mumbai including curing by any means etc. complete as directed by Engineer-in-Charge. (Reinforcement & Formwork shall be paid separately).	10.00	CuM	7777.00	77770.00
58	R2-SWD-179	Providing & placing in position controlled Ready Mix Concrete of grade M- 40 in walls and deck slab above or below ground level at any height / depth by using Ordinary portland Cement including Transportation anywhere in Mumbai including curing by any means etc complete as directed by Engineer-in-Charge. (Reinforcement & Formwork will be paid separately).	10.00	CuM	9569.00	95690.00
59	R2-CS-CW-7-b	Walls (any thickness) including attached butteresses, ,retaining wall, shear wall, diaphragm wall , trench,pit walls, etc	10.00	CuM	10518.00	105180.00
60	R2-CS-CW-30-c	Suspended floors, roofs, landings, balconies and access platform. (Centering & Shuttering)	20.00	sqm	568.00	11360.00
61	R2-CS-CW-35-b	Providing and fixing in position steel bars reinforcement of various diameters for R.C.C. pile, pile caps, footings,raft,retaining wall,shear wall, lift wall, foundations, slabs, beams, columns, canopies, staircases, newels, chajjas, lintels, pardies, coping, fins, arches, etc. as per detailed designs, drawings and bar bending schedules,including straightening, cutting, bending, hooking the bars, binding with wires or tack welding, supporting as required etc. all complete at all levels. HYS D steel bars (Fe 415)	1.00	MT	73279.00	73279.00
Total Estimated cost =					Rs.	15872950.90

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<small>sd/-</small> S.E.(S.P.)P&D, ES	<small>sd/-</small> A.E.(S.P.)P&D, ES	<small>sd/-</small> E.E.(S.P.)P&D, ES
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