

**Detailed Project Report on "Ujjain Underground Sewerage Scheme"**

<b>SUB-ESTIMATE NO : 02 Sewer Lines including Sewer Appurtenances, Allied Works</b>									
<b>MEASUREMENT &amp; ABSTRACT SHEET</b>									
<b>Sr. No</b>	<b>Description of Item</b>	<b>Unit</b>	<b>No.</b>	<b>L</b>	<b>B</b>	<b>D</b>	<b>Qty</b>	<b>Rate</b>	<b>Amount</b>
<b>Cleaning of Jungle</b>									
1.0	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m out side the periphery of the area cleared (10 % total length of alignment is considered )								
	Zone 1,2 and 3	100 Sqm	98000.0		0.8		801.5	341.0	273326.9
	(MP,UADD ISSR-12-13, Vol-II, P.No 20, I.No.2.31)								
<b>Demolishing of CC, BT and WBM Road</b>									
2.0	Demolishing CC/RCC work by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 m lead lift of 0.0 to 1.5 m								
	Zone 1,2 and 3	Cum	1.0	635866.4	1.62	0.3	308423.3	703.0	216821597
	(MP,UADD ISSR-12-13, Vol-I, P.No. 152, I.No.15.16.1)								
3.0	Cutting of Water Bound macadam road and making good the same including supply of extra quantities of material i.e. aggregate, morrum screening and labour required	Cum	1.0	61656.6	1.62	0.3	29906.2	693.0	20724989
4.0	Cutting of Bituminous road and making good the same including supply of extra quantities of material i.e. aggregate, morrum screening and labour required	Cum	1.0	221292.9	1.62	0.3	107336.8	1495.0	160468590
<b>Sub Total for Demolishing</b>									<b>398015175</b>
<b>Earthwork</b>									
5	Earth work in excavation for pipe trench in all kinds of soil and WBM in area including drssing, watering and ramming and disposal of Excavated earth lead upto 50 meters and lift upto 1.5m, disposal earth to be leveled, neatly dressed. lift of 0. to 1.5 m								
	TM-1	Cum	1.00	15900	2	1.5	47810		
	TM-1(A)			2950	1.6		7080		
	TM-2			11500	2		32438		
	TM-2(A)			1500	1.4		3150		
	TM-3			3000	1.4		6300		
	Zone - 1,2 and 3 (Network)			946710	0.8		1107366		
				Net Qty					1204145
	(MP,UADD ISSR-12-13, Vol-I, P.No. 151, I.No.15.1 & 15.2)								
6	Earth work in excavation for pipe trench in all kinds of rocks in areas including dressing, stacking of useful material and disposal of unserviceable one up to 50m lead and lift up to 1.5m.								
	a)Soft rock with or without blasting or bituminous pavement lift of 1.5 to 3.0 m								
	TM-1			15900	2.4	1.5	57240.00		
	TM-1(A)			2950	2	1.5	8850.00		
	TM-2			11500	1.43	1.5	24725.00		
	TM-2(A)			1500	1.8	1.5	4050.00		
	TM-3			3000	1.8	1.5	8100.00		
	Zone - A,B,C	Cum		946710	1.18	1.5	1675392.03	211	353507718
	Lift of 3.0 to 4.5 m								
	TM-1			15900	2.73	1.5	65190.00		
	TM-1(A)			2950	2.4	1.5	10620.00		
	TM-2			11500	1.7	1.5	29325.00		
	TM-2(A)			1500	2.2	1.5	4950.00		
	TM-3			3000	2.2	1.5	9900.00		
	Zone - A,B,C	Cum		946710	1.58	1.5	2243418.03	216	484578294
	(MP,UADD ISSR-12-13, Vol-I, P.No. 152, I.No.15.3, a,b,c)								
	b) Excavation in hard rock including 50m lead and 1.5m lift Blasting Prohibited (i.e. wedge and chisel) Lift of 4.5 to 6.0 m								
	TM-1	Cum		15900	3.103	1.5	73994.70		
	TM-1(A)			2950	2.800	1.5	12390.00		

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<b>Sr. No</b>	<b>Description of Item</b>	<b>Unit</b>	<b>No.</b>	<b>L</b>	<b>B</b>	<b>D</b>	<b>Qty</b>	<b>Rate</b>	<b>Amount</b>	
	TM-2			11500	3.080	1.5	53138.40			
	TM-2(A)			1500	2.600	1.5	5850.00			
	TM-3			3000	2.600	1.5	11700.00	524	82306304	
	(MP,UADD ISSR-12-13, Vol-I, P.No. 157, I.No.15.26.6, c)									
Sub total for Earthwork									<b>1075847376</b>	
<b>Close &amp; Open Timbering</b>										
7	Close timbering /steel in case of shafts, wells, cesspits, manholes and the like including strutting, shoring and packing cavaties (wherever required) etc complete (Measurment to be taken of the face area timbered)									
	a) Depth not exceeding 1.5 m									
	TM-1	Sqm	2	15900		1.5	47700			
	TM-1(A)	Sqm	2	2950		1.5	8850			
	TM-2	Sqm	2	11500		1.5	34500			
	TM-2(A)	Sqm	2	1500		1.5	4500			
	TM-3	Sqm	2	3000		1.5	9000			
	Zone - A,B,C	Sqm	2	945211		1.5	2835633			
				Total Qty			2940183			
				Considered as 15 % of above Qty			441027	102	44984800	
	b) Depth exceeding 1.5 m but not exceeding 3.0 m									
	TM-1	Sqm	2	15900		1.5	47700			
	TM-1(A)	Sqm	2	2950		1.5	8850			
	TM-2	Sqm	2	11500		1.5	34500			
	TM-2(A)	Sqm	2	1500		1.5	4500			
	TM-3	Sqm	2	3000		1.5	9000			
	Zone - A,B,C	Sqm	2	945211		1.5	2835633			
				Total Qty			2940183			
				Considered as 15% of above Qty			441027	108	47630965	
	(MP,UADD ISSR-12-13, Vol-II, P.No. 18, I.No.2.17.1, 2.17.2 & 2.17.3)									
8	Open Timbering in trenches including strutting and shoring complete (Measurement to be taken of the face area timbered) only in trunk main									
	Up to 1.5m	Sqm	2	34850		1.5	51.00	104550	5332050	
	More than 1.5m and Up to 3.0 m	Sqm	2	34850		1.5	53.00	104550	5541150	
8(A)	Portable Barricade in Construction Zone (Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45x45x5 mm angle iron section, 1.5 m height, horizontal rail painted (2 coats) with yellow and white stirrups, 150 mm in width at an angle of 45 Degrees 'A' frame painted with 2 coats of yellow paint, Complete as per IRC:SP:55-2001	Each					600.00	2353	1411800	
	ISSR Vol-III Road and Bridge UADD, 8.22 Page no. 73									
8(b)	drum Delineator in construction zone( Provison of metal drum/ empty bitumin drum delineator, 300 mm in diameter, 800 mm high, filled with earth for stability, painted in circumferencial strip of alternate black and white 100 mm wide fitted with reflectors 3 Nos. of 7.5 cm dia all as per IS:SP:55-2001	Each					47500.00	379	18002500	
	ISSR Vol-III Road and Bridge UADD, 8.22 Page no. 73									
<b>Sub Total for Timbering and Barricading</b>									<b>122903265</b>	
<b>PCC and GSB &amp; Filling For Bedding</b>										
9	Filling the moorum for pipe bedding or over the pipe including supply of pipe									
	Zone- 1,2 &3 TM1 TM2 TM3	Cum	1	980060	0.82	0.1	80159	625.00	50099631	
	(MP,UADD ISSR-12-13, Vol-I, P.No. 151, I.No.15.9)									
10	Providing and laying mechanically mixed cement concrete with crushed stone aggregate including centering and shuttering (with 20mm nominal size grade stone aggregate)									
	P.C.C. M-20									
	Below pipes	Cum	1	980060	0.82	0.2	160319	4778	766003322	

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11	Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with on prepared surface, mixing by mix in place method at OMC, and compacting with vibratory roller to achieve the desired density, complete in all respect and as per relevant clauses of section-400.	Cum	1	980060	0.82	0.1	80159	614	49217878
	Grading-II Material								
	I.S.S.R Vol-III Road and Bridge Page No. 30 (4.1)								
Sub Total for Filling									865320831
<b>Encasing and Houching work only in Trunk Main -1</b>									
12	For encasing /Honching works to be provided in only lengths where cover above pipe is in the range of less than 0.6 m and the total length as above category is 9600 m. Width for encasing is considered as Do+150 mm on both sides	Cum	1	7500	2	0.3	4510.39	4778	21550628
	(MP,UADD ISSR-12-13, Vol-I, P.No. 153, I.No.15.18 (a) iii)								
<b>DWC/HDPE Pipes</b>									
13	Providing and supply of DWC HDPE Pipes of renowned duly tested inclusive of all taxes related to central, state and municipal, inclusive of excise duty, Inspection Charges, Transportation charges, transit insurances/ loading and unloading and stacking at site/store etc. complete.								
	Zone-1,2 &3								
	200/295mm Dia	Rmt		626708				767	480685036
	400/480mm Dia	Rmt		225103				1524	343056972
	(MP,UADD ISSR-12-13, Vol-I, P.No. 133, I.No.12.2)								
Sub Total for DWC/HDPE Pipe									823742008
<b>NP-3 &amp; NP-4 Pipe</b>									
14	Providing, Laying and Jointing non-Pressure (NP-3) RCC socket & Spigot pipes with rubber gasket joints including testing of joints (Conforming to IS: 458-1988, ISI marked (Laying as per IS: 783: 1985)								
	Zone-1,2 &3								
	500 mm Dia	Rmt		86576				2117	183281392
	(MP,UADD ISSR-12-13, Vol-I, P.No. 139, I.No.13.3)								
15	Providing, Laying and Jointing non-Pressure (NP-4) RCC socket & Spigot pipes with rubber gasket joints including testing of joints (Conforming to IS: 458-1988, ISI marked (Laying as per IS: 783: 1985)								
	Zone 1,2&3								
	600 mm Dia	Rmt		6824				3512	23965888
	<b>TM-1</b>								
	800 mm Dia	Rmt		4059				5440	22080960
	1000 mm Dia	Rmt		1624				7075	11489800
	1200 mm Dia	Rmt		1540				9608	14796320
	1600 mm Dia	Rmt		2670				14625	39048750
	1800 mm Dia	Rmt		3359				17126	57526234
	2000 mm Dia	Rmt		2648				20500	54284000
	<b>TM-1(A)</b>								
	1000 mm Dia	Rmt		2950				7075	20871250
	<b>TM-2</b>								
	800 mm Dia	Rmt		1690				5440	9193600
	1000 mm Dia	Rmt		1866				7075	13201950
	1200 mm Dia	Rmt		3007				9608	28891256
	1600 mm Dia	Rmt		4937				14625	72203625
	<b>TM-2(A)</b>								
	800 mm Dia	Rmt		1500				5440	8160000
	<b>TM-3</b>								
	800 mm Dia	Rmt		3000				5440	16320000
Sub Total for NP-3&NP-4 Pipes									575315025
<b>Filling over Pipe</b>									

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16	Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20cm. In depth including consolidation of each layer by ramming watering, lead up to 50m and lift up to 1.5m in all kinds of soils								
	Excavated Qty						5328706.13		
	Deductions								
	For 250/295 mm Dia pipe Vol.	Cum		626708	0.785	0.09	42835.14		
	For 400/480 mm Dia pipe Vol.	Cum		225103	0.785	0.2304	40733.77		
	For 500 mm Dia pipe Vol.	Cum		86576	0.785	0.25	16999.20		
	For 600 mm Dia pipe Vol.	Cum		9824	0.785	0.36	2777.68		
	For 800 mm Dia pipe Vol.	Cum		1690	0.785	0.64	849.49		
	For 1000 mm Dia pipe Vol.	Cum		5925	0.785	1.00	4653.50		
	For 1200 mm Dia pipe Vol.	Cum		4631	0.785	1.44	5237.55		
	For 1600 mm Dia pipe Vol.	Cum		7607	0.785	2.56	15294.82		
	For 1800 mm Dia pipe Vol.	Cum		3359	0.785	3.24	8547.63		
	For 2000 mm Dia pipe Vol.	Cum		2648	0.785	4.00	8318.96		
	For moorum bedding below pipe						80159.41		
	For PCC below pipe						160318.82		
	For encasing /Honching works						4510.39		
		Cum		Total deduction Qty			391236.34		
		Cum		Net Qty			4937469.79	29	143186624
	(MP, UADD ISSR-12-13, P.No. 151, I.No.15.8								
<b>Pumping out water Only in Trunk Main 1&amp;2</b>									
	Pumping out water caused by springs, tides or river seepage, broken water mains or drains or well or the like (Considered 5 HP pump working 4 Hours per day for 180 Days)								
	(MP, UADD ISSR-12-13, P.No. 151, I.No.15.7)	KL	1	547.5	72		39420	51	2010420
<b>Sub Total for Sewer Line</b>									<b>4028164678</b>
<b>MAN HOLES</b>									
<b>Demolishing of Road for Manhole</b>									
1	Demolishing CC/RCC work by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 m lead								
	MHR1	Cum	2839	2.1	2	0.3	3577.1		
	MHR2	Cum	8518	2.1	2	0.3	10732.7		
	MHC1	Cum	17036	2.1	2.1	0.3	22538.6		
	MHC2	Cum	79	2.1	2.1	0.3	104.5		
	MHC3	Cum	157	2.4	2.4	0.3	271.3		
	MHC4	Cum	243	2.4	2.4	0.3	419.9		
	MHC5	Cum	393	2.7	2.7	0.3	859.5		
	MHC6	Cum	866	2.7	2.7	0.3	1893.9		
	MHC7	Cum	62	2.7	2.7	0.3	135.6		
	RCC Special Type	Cum	42	3.00	3.00	0.3	113.4		
		Cum		Total Qty			40646.6	703	28574554
	(MP,UADD ISSR-12-13, Vol-I, P.No. 152, I.No.15.16.1)								
<b>Earthwork for Manhole</b>									
2	Earth work in excavation for pipe trench in all kinds of soil and WBM in area including drssing, watering and ramming and disposal of Excavated earth lead upto 50 meters and lift upto 1.5m, disposal earth to be leveled, neatly dressed.								
	lift of 0.0to 1.5 m								
	For all Manholes in Zone-1,2 & 3	Cum					175934		
	(MP,UADD ISSR-12-13, Vol-I, P.No. 156, I.No.15.1 & 15.26.1)	Cum		Ded. of demolishing of CC/RCC Qty			40647		
		Cum		Net Qty			135288	129.10	17465631
3	Earth work in excavation for pipe trench in all kinds of rocks in areas including dressing, stacking of useful material and disposal of unserviceable one up to 50m lead and lift up to 1.5m.								
4	Excavation in hard soil/moorum - moorum mixed with boulder etc including 50 m lead and 1.5 m lift with dressing.								
	lift of 1.5 to 3.0 m	Cum					6885	230	1583552

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	(MP,UADD ISSR-12-13, Vol-I, P.No. 157, I.No.15.1 & 15.26.2)								
<b>Sub Total for Manhole Earthwork</b>									<b>19049183</b>
<b>MHR-1</b>									
5	Constructing Brick masonry manhole in cement mortar 1:4 (1cement:4 fine sand) RCC top slab Cement Concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size, foundation in cement concrete grade M-7.5 (Nominal Mix) with stone aggregate 40mm nominal size, inside plastering 12 mm thick with cement mortar 1:3 (1 cement:3 coarse sand) finished with a floating coat of neat cement and making channels in Cement Concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size including finishing the channel to shape, curing etc. with CI cover with frame etc.								
	Man hole with above specifications having inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg)								
	Man holeType-MHR-1	Each	2839				2839	7290	20696310
	(MP,UADD ISSR-12-13, Vol-I, P.No. 143, I.No.15.1 & 14.2.1)								
<b>MHR-2</b>									
6	Man hole with above specifications having inside size 90x80 cm and 60 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg):								
	Man holeType-MHR-2	Each	8518				8518	8028	68382504
	(MP,UADD ISSR-12-13, Vol-I, P.No. 143, I.No.15.1 & 14.2.2)								
<b>MHC-1&amp;2</b>									
7	Construction of circular type manhole 900 mm internal dia. at bottom, 560 mm dia at top total depth of manhole 900 mm in brick masonry with 1:5 cement mortar (1 cement : 5 fine sand), 12 mm thick Cement plaster 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement. 22.5 cm foundation in cement concrete grade M-10 (Nominal Mix) with stone aggregate 40mm nominal size, RCC top slab cement concrete M-20 (Nominal Mix) with stone aggregate 20mm nominal size and making channel in cement concrete grade M-15 (Nominal Mix) with stone aggregate 20mm nominal size neatly finished, curing fixing of ISI marked heavy duty SFRC cover etc. complete as per standard design								
a	Man holeType-MHC - 1 ( Depth range 0.61 to 0.90 m)	Each	17036				17036	6913	117769868
b	Man holeType-MHC - 2 (Depth range 0.91 to 1.65 m.)	Each	79				79	10847	856913
	(MP,UADD ISSR-12-13, Vol-I, P.No. 144, I.No.14.5 & 14.5.1)								
<b>Sub Total for MHC-1&amp;2</b>									<b>118626781</b>
<b>MHC-3&amp;4</b>									

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8	Construction of circular type manhole 1200 mm internal dia at bottom, 560mm dia at top in brick masonry class designation 40 with 1:4 cement mortar 1:4 (1 cement : 4 Coarse sand) 1680 mm depth, 12mm thick cement plaster 1:3 cement plaster (1 cement : 3 Coarse sand) finished with a floating coat of neat cement. 30cm thick foundation in cement concrete grade M-10 (Nominal Mix) with stone aggregate 40mm nominal size, RCC grade M-20 (Nominal Mix) with stone aggregate M-20 nominal size on top slab and making channel in cement concrete grade M-15 (Nominal Mix) with stone aggregate 20 mm nominal size neatly finished, curing and fixing of SFRC cover and frame (heavy duty HD-20) 560mm internal dia conforming to IS 12592								
	Man holeType-MHC - 3 ( Depth range 1.66 to 1.68 m.)	Each	157				157	13215	2074755
	Man holeType-MHC - 4 ( Depth range 1.69 to2.29 m.)	Each	243				243	18615	4523445
	(MP,UADD ISSR-12-13, Vol-I, P.No. 146, I.No.14.10 & 14.11)								
<b>Sub Total for MHC-3&amp;4</b>									<b>6598200</b>
<b>MHC-5,6&amp;7</b>									
9	Construction of circular type of manhole 1500 mm internal dia. at bottom, 560 mm dia at top, total depth of manhole 2650mm in brick masonry with 1:5 cement mortar ( 1 cement : 5 fine sand), 12 mm thick Cement plaster 1:3 (1 cement : 3 coarse sand ) finished with a floating coat of neat cement. 30 cm thick foundation in Cement concrete grade M-7.5 (Nominal Mix) with stone aggregate 40 mm nominal size, RCC Cement Concrete grade M-20 (Nominal Mix) with 20mm Nominal size on top slab and making channel in cement concrete grade M-15 (Nominal Mix) with stone aggregate 20 mm nominal size neatly finished, curing fixing of ISI marked reinforced concrete heavy duty cover (including transportation of cover) complete. as per standard design (Drawing No. 15 )								
	Man holeType-MHC - 5 ( Depth range 2.30 to 2.65 m.)	Each	393				393	19683	7735419
	Man holeType-MHC - 6 ( Depth range 2.66 to 4.25 m.)	Each	866				866	28441	24629906
	Man holeType-MHC - 7 ( Depth range 4.26 to 9.75 m.)	Each	62				62	34662	2149044
	(MP,UADD ISSR-12-13, Vol-I, P.No. 144, I.No.14.4, 14.4.2 & 14.4.3)								
<b>Sub Total for MHC-5,6&amp;7</b>									<b>34514369</b>
<b>RCC Special Type Manhole</b>									
10	RCC Special Type manhole with drop manhole arrangement including high flood protection arrangement	Each	42				42	145000	6090000
<b>Foot Rest in Manhole</b>									
11	Providing MS/CI foot rests and fixing in manhole with CC blocks of Cement Concrete grade M-10 (Nominal Mix) with stone aggregate 20 mm nominal size of size 20x20x10cm								
	With 20mm round bar foot rest (average weight of 1 foot rest 1.85kg)	Kg	30236		4	1.85	223746.4	71	15885994
	(MP,UADD ISSR-12-13, Vol-I, P.No. 144, I.No.14.4, 14.4.2 & 14.4.3)								
<b>Filling over Pipe</b>									
12	Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20cm. In depth including consolidation of each layer by ramming watering, lead up to 50m and lift up to 1.5m in all kinds of soils								
	Total Earth work excavation Qty						26572		
	Deduction for manhole								

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	MHR1	Cum	2839	0.9	0.8	3		6132.24		
	MHR2	Cum	8518	0.9	0.8	3		18398.88		
	MHC1	Cum	17036	0.785	0.53	3		21379.83		
	MHC2	Cum	79	0.785	0.53	3		99.14		
	MHC3	Cum	157	0.785	0.77	3		286.32		
	MHC4	Cum	243	0.785	0.77	3		443.16		
	MHC5	Cum	393	0.785	1.06	3		981.88		
	MHC6	Cum	866	0.785	1.06	3		2163.63		
	MHC7	Cum	62	0.785	1.06	3		154.90		
	RCC Special Type	Cum	42	0.785	9.00	4.5		1335.29		
	(MP,UADD ISSR-12-13, Vol-I, P.No. 151, I.No.15.8)		Total Quantity					50040	29	1451159.742
<b>Additional Trammsporation of Earth</b>										
13	Extra for every additional lead up to 50 m or part thereof over item 18.1 to 18.3. (For transportation of surplus excavated stuff									
	Total Qty excavated stuff to be transported						50040			
a	Lead up 500 m, 50 % of total Qty (Rs.49 per 50 m)	Cum					25020.00	490	12259798	
b	Lead up 1000 m, 30% of total Qty (Rs.49 per 50 m)	Cum					15012.00	980	14711757	
c	Lead up 1500 m, 20% of total Qty (Rs.49 per 50 m)	Cum					10008.00	1470	14711757	
	(MP,UADD ISSR-12-13, Vol-I, P.No. 151, I.No.15.5)									
<b>Sub Total for Additional Transportation</b>									<b>41683313</b>	
<b>Total For Manhole</b>									<b>361552368</b>	
<b>Trenchless Technology</b>										
Sno.	Item	Unit	No.	L	B	H	Quantity	Rates	Amount(Rs.)	
<b>Dewatering Pits</b>										
1	<b>Dewatering of pits or ground by dewatering pumps inclusive of all consumables, diesel, oil, petrol &amp; Lubricants etc. and disposal of water</b>									
	In all Type of Soil	H-P-Hour					720	48	34560	
	SOR for Construction Contract Employing Trenchless technology 2014 Page-16									
<b>Pipe Jacking</b>										
2	<b>Installation of Product Pipe by Manual Jacking Method including making of entry and exits pits, all related civil works like excavation shoring/strutting etc., Manual shielding excavation lowering of pipe segments in the jacking pit, laying and jointing of product pipe line through jacking process from the jacking pit and restoration of site after project completion as per the instructions of the Engineer-in-charge all complete except the cost of the pipe. (upto 100 meter of installation length)</b>									
	Above 1500mm and upto 1800mm									
	In hard Soil	m					15	68000	1020000	
	In stoney Soil	m					135	92000	12420000	
	Above 1800mm and upto 2200mm									
	In hard Soil	m					15	102000	1530000	
	In stoney Soil	m					135	130000	17550000	
	SOR for Construction Contract Employing Trenchless technology 2014 Section 2.4									
<b>Sub Total for Pipe Jacking</b>									<b>32520000</b>	
<b>Pipe Ramming</b>										
3	<b>Installation of Product Pipe by Pipe ramming method including making of entry and exits pits, all related civil works like excavation shoring/strutting etc. and restoration of site after complition (Up to 100m)</b>									
	Pipes above 450mm and up to 600mm									
	In hard soil	m					20	35438	708760	
	In hard Rock						180	51883	9338940	
	SOR for Construction Contract Employing Trenchless technology 2014 Page-59 Section 2.2									

Detailed Project Report on "Ujjain Underground Sewerage Scheme"

SUB-ESTIMATE NO : 02 Sewer Lines including Sewer Appurtenances, Allied Works									
MEASUREMENT & ABSTRACT SHEET									
Sr. No	Description of Item	Unit	No.	L	B	D	Qty	Rate	Amount
	Sub Total for Pipe Ramming								10047700
	Sub Total for Trenchless								42602260
	Total For Sewer line and Appurtenances								4432319306