

GOVERNMENT OF UTTARAKHAND

**Technical Assistance to UDD, Uttarakhand on SWM Schemes for
Uttarakhand Urban Local Bodies**



Volume II – Bill of Quantity, Drawings and Quotations

DETAILED PROJECT REPORT

ON

INTEGRATED SOLID WASTE MANAGEMENT (ISWM) PROJECT FOR RISHIKESH CLUSTER

(Document Number: UDD-CD-SWM-001)

Estimated cost = ₹ 3440.41 Lac
 Estimated cost ⇒ ₹ 1758.01 Lac
 ₹ 1682.30 Lac
 ₹ 1566.18 Lac

37.10 34.40

Estimated Capital Cost- ₹ 38.58 Crores

February, 2020

DSC-1, UUSDIP
(Tata Consulting Engineers Ltd.)
 In JV with Rodic Consultants Pvt. Ltd.
 Project Office-899/2, 1st floor
 Kaulagarh Road, Near Kishan
 Nagar Chowk, Dehradun, 248001

IPMU, UUSDIP, 777, Saatvik Tower
 Rajendra Nagar, Kaulagarh Road,
 Dehradun-248001

REVISION STATUS

REV. NO.	DATE	DESCRIPTION
R3	18/02/2020	Revised after scrutiny of AE, UDD
R2	27/11/2019	Revised after primary scrutiny of AE, UDD
R1	05/09/2019	Revised incorporating Client Comments
R0	30/04/2019	For submission to UUSDIP and UDD for Review and Comment

Volume No.	Contents
Volume - I	Main Report
Volume - II	Bill of Quantity, Drawings and Quotations

(Details of cluster)

	<u>Rishikesh</u> (1)	<u>Dotwala</u> (2)	<u>Muniki Reti</u> (3)	<u>Swangashram</u> (4)	<u>Narendra Nagar</u> (5)
S1	₹ 1174.46	₹ 299.18	₹ 30.63	₹ 61.91	—
NS1	₹ 1318.11	₹ 341.41	₹ 75.02	₹ 23.47	₹ 11.54

Total S1 = ₹ 1566.18 Lacs

NS1 = ₹ 1758.01 Lacs

Am:

TATA CONSULTING ENGINEERS LIMITED

Annexure I & II – BOQ, Drawings and Quotations

List of Sub-Work for Rishikesh Town

- Subwork 1: Vehicle for Collection and transportation
- Subwork 2: Construction of Open Shed 200 sq. m at Decentralized Transfer Centre at 2 places
- Subwork 3: Construction of Leachate Collection Tank at Decentralized Waste Transfer Centre at 2 Places
- Subwork 4: Procurement of Portable compactor along with hook loader for Transfer and secondary transportation for Municipal Solid Waste at 2 places in Rishikesh
- Subwork 5: Construction of 200 sq.m. shed at Dry waste collection center at 4 places in Rishikesh
- Subwork 6: Construction of Internal Road and KC Drain at Dry waste collection center at 4 places in Rishikesh
- Subwork 7: Construction of Entrance Gate at Dry waste collection Centre at 4 places in Rishikesh
- Subwork 8: Construction of Barbed Wire Fencing at Dry waste collection Centre at 4 places in Rishikesh
- Subwork 9: Construction of Leachate Tank at Dry waste collection Centre at 4 places in Rishikesh
- Subwork 10: Construction of Dry waste segregation bins at Dry waste collection Centre at 4 places in Rishikesh
- Subwork 11: Site Development and Barbed Wire Fencing at Processing Site
- Subwork 12: Construction of Internal Road with KC drain at Processing Site
- Subwork 13: Construction of Entrance Gate at Processing Site (Entrance and Exit)
- Subwork 14: Construction of Septic Tank at Processing Site
- Subwork 15: Construction of Weigh Bridge at Processing Site
- Subwork 16: Construction of Weigh Bridge Cabin at Processing Site
- Subwork 17: Construction of Admin Building at Processing Site
- Subwork 18: Construction of Compost Shed 2100 sq.m at Processing Site
- Subwork 19: Construction of Dry Waste Shed 1020 sq.m at Processing Site
- Subwork 20: Construction of Windrow Platform 1800 sq.m at Processing Site
- Subwork 21: Construction of Leachate Tank at Processing Site
- Subwork 22: Construction of Approach Road at Processing Site
- Subwork 23: Construction of Store Room at Processing Site
- Subwork 24: Construction of Security Cabin at Processing Site
- Subwork 25: Construction of Garage Shed at Processing Site
- Subwork 26: Construction of Electric Substation Shed at Processing Site
- Subwork 27: Construction of Sanitary Landfill at Processing Site
- Subwork 28: Construction of Ground Level Service Reservoir at Processing Site
- Subwork 29: Construction of Leachate Drain around SLF at Processing Site
- Subwork 30: Electrical at Processing Site
- Subwork 31: Machineries and Equipments at Processing Site
- Subwork 32: IEC Activity for Rishikesh

Rishikesh

Sr. No.	Description	Unit	Quantity	Unit Rate	Amount in Rs. Lakhs		
					DSR	SOR	NSI
Collection and Transportation							
1	Auto Tipper	nos	10	625000			62.50
Decentralised Transfer Centre in 2 areas							
2	Construction of open shed (200 sq.m. x 2 Nos.)	sq. m	400		58.30 58.32		0.04 0.05
3	Construction of Leachate Tank (2 Nos.)	nos		1.18			
4	Stationary Compactor with Hook Loader	set	2				150.00
Dry Waste Collection Centre in 4 areas							
5	Construction of open shed (200 sq.m. x 8 Nos.)	sq. m	800 1800		116.60 116.60 232.30		0.08 0.10 0.19
6	Construction of Internal Drain including KC drain (30 m x 8 Nos.)	m	120 240			8.59 17.18	
7	Construction of Entrance Gate (8 Nos.)	nos	48	229	4.57		
8	Barbed Wire fencing (104 m x 8 Nos.)	m	41832	3.35	337.85		
9	Construction of Leachate Tank (8 Nos.)	nos	48		2361.71		
10	Dry waste segregation bins (28 x 8 Nos.)	nos	4224				18.15
Processing and Disposal Facility							
Civil and Electrical							
11	Site Clearance and barbed wire fencing				25.06		270.00
12	Construction of Internal road including KC drain	m	1465			92.77 104.90	
13	Construction of Entrance Gate	nos	2	1.14			
14	Construction of Septic Tank	nos	1	0.71			0.04
15	Construction of Weigh Bridge	nos	1		6.41 6.42		5.69
16	Construction of Weigh Bridge Cabin	sq. m.	10.5		3.83		0.03
17	Construction of Admin Building as per drawing	sq. m.	17		6.67 6.45		0.11
18	Construction of Compost shed (70x30)	sq. m.	2100		198.97		0.02
19	Construction of Dry Waste shed (34x30)	sq. m.	1020		106.46 106.61		0.79
20	Construction of Windrow Platform (60x30)	sq. m.	1800		42.62 42.72		
21	Construction of Leachate Tank	nos	1	4.37			
22	Construction of Approach Road	m	50				
23	Construction of Store Room (10x10)	sq. m.	100		12.43 13.34	4.19 3.97	0.03
24	Construction of Security Cabin	sq. m.	10.5		3.71 3.83		0.03
25	Construction of Garage	sq. m.	200		29.15 29.16		1.80
26	Construction of Electrical Sub station Shed	sq. m.	300		35.11 38.13		0.44
27	Construction of Sanitary Landfill	sq. m.	46200		179.45 423.85	141.16 22.95	307.62 306.40
28	Construction of Ground level Service	nos	1			2.65	1.22

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DSR SOR NSI NSI
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Sr. No.	Description	Unit	Quantity	Unit Rate	Amount in Rs Lakhs	
	Reservoir (20KL)					
29	Provision of Locally available tree & Plants				1.90	1.00
30	Leachate Collection Drain around SLF				(5.24)	—
31	Electrical				(45.40)	(75.61)
	Machineries for facility				9.59	68.61
32	Diesel Generator	nos	1		—	23.80
33	Wet Waste Processing Machineries	Unit	1		—	327.87
34	Dry Waste Processing Machineries	Unit	1		—	88.43
35	Leachate Treatment Plant (100 KLD)	Unit	1		—	114.18
36	Skid Steer Loader	nos	4	185000	—	74.00
	IEC ACTIVITY					27.80
37	IEC Activity					
	TOTAL COST (in lakhs)			Total	140.22 1265.4 9	142.91 151.8 7
	Add Cost Index on DSR Item (Rishikesh)				857.71	255.86 0.06
	Add 1% Labour cess on DSR items				857.71	255.86 0.06
	Add 3% contingency on schedule (DSR+SOR) items				25.73	7.59
	Total Capital cost				883.44	260.42 68.51

SI = ₹ 883.44 + ₹ 291.02 = ₹ 1174.46 Lacs
 NSI = ₹ 1275.11 + ₹ 4300 = ₹ 1318.11 Lacs

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Subwork 1: Vehicle for Collection and transportation

ABSTRACT SHEET

Item No.	Item Description	Unit Nos.	Quantity	Rate in Rs.	Amount in Rs.
1	Auto Tipper	Nos.	10	6,25,000	62,50,000

MEASUREMENT SHEET

Item No.	Item Description	Unit	Quantity
1	Auto Tipper	Nos.	10

Auto Tipper Requirement

Sr. No	Details	2019
1	Population (2019)	122521
2	Number of households	26026
3	Household cover by one Auto Tipper	1000
4	Number of Auto Tipper required	27
5	Existing Auto Tipper	17
6	Additional Requirement	10

Assumption and calculation:

- Auto Tipper provided for every 1000 households.
- Capacity of Auto Tipper: 850 kg
- Density of MSW : 500 kg/cum
- Carrying Capacity of Auto Tipper: 1.7 cum
- No. of Trips per day: 2 Nos.

• SI - Nil
 MS1 - Rs 62.50 lac

Joby. ER



Day waste shed

Subwork 2: Construction of Open Shed 200 sq. m at Decentralized Transfer Centre at 2 places

S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
1	Civil Work Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m; including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m. All kinds of soil.									
	Upto 1.5 meter depth									
	For column foundation (250x300)	10	1.4	1.4	1.95	38.22				
	For PCC of Plinth Beam	1	46.92	0.43	0.25	5.04				
	Side Drain	1	67.04	0.96	0.4	25.74				
						69.01	Cum	252.3	17410.53	DSR Item No_2.8.1
2	Earth work in surface excavation not exceeding 30 cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including getting out and disposal of excavated earth upto 50 m and lift upto 1.5 m, as directed by Engineer-in-Charge:	1	20	10		200.00	Sqm	92.55	18510.00	DSR Item No_2.1.1
3	150 mm THK Well compacted stone soling voids should be filled and compacted with stone chipping and sand filling 60-90 mm stone size	1	20	10	0.15	30.00				
	For Grade Slab	1	5	3	0.15	2.25				
	For Entrance					32.25	Cum	1873.00	60404.25	UNIT ESTIMATE
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level : 1:3:6 (1 Cement : 3 coarse sand (zone-III): 6 graded stone aggregate 40 mm nominal size).	10	1.4	1.4	0.075	1.47				
	in column foundation									

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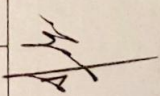
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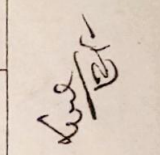


S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
	Below plinth beam	1	50.75	0.43	0.075	1.64				
	Plinth Protection	1	65.84	1	0.1	6.58				
	Below Side Drain	1	67.04	0.96	0.075	4.83				
	For Entrance	1	5	3	0.1	1.50				
	For Flooring over soiling	1	20	10	0.075	15.00				
						31.02	Cum	6126.25	190021.37	DSR Item No_4.1.6
3	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete. 40 mm thick with 20 mm nominal size stone aggregate	1	20	10		200.00	Sqm	498.35	99670.00	DSR Item No_11.3.1
4	Providing and fixing glass strips in joints of terrazo/ cement concrete floors 40 mm wide and 4 mm thick Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. (Note - Cement content considered in this item is @ 330 kg/cum. *Excess/ less cement used as per design mix is payable/recoverable separately).					1000.00	RM	75.15	75150.00	DSR Item No_11.13.1
5	All works upto plinth level									
	Column foundation	10	1.2	1.2	0.35	5.04				
	Column 250x300	10	0.25	0.3	1.5	1.13				
	Plinth beam	1	50.75	0.23	0.3	3.50				
						9.67	Cum	7997.3	77307.90	DSR Item

S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference No_5.33.1
	All works above plinth level upto floor V level									
	Column (250x300) above plinth	10	0.25	0.3	6	4.50				
	Column (230x230) above plinth Stool Column	3	0.23	0.23	3	0.48				
	Band Lintel	1	60.92	0.23	0.23	3.22				
	Tie Beam	1	81	0.25	0.3	6.08				
	Chajja for Rolling shutter	1	5	0.75	0.15	0.56				
						14.84	Cum	9400.85	139473.53	DSR Item No_5.33.2
6	Centering and shuttering including strutting, propping etc. and removal of form work for									
	Foundations, footings, bases for columns									
	sides of foundation	10	4.8		0.35	16.8	sqm	284.85	4785.48	DSR Item No_5.9.1
	Columns, piers, abutments, pillars, posts and struts									
	Sides of column above foundation									
	Columns (250x300)	10	1.1		7.5	82.5				
	Column (230x230) above plinth Stool Column	3	0.92		3	8.28				
						90.78	sqm	733.7	66605.29	DSR Item No_5.9.6
	Lintels, beams, plinth beams, girders, bressumers and cantilevers									
	Sides of Plinth Beam	10	50.8		0.6	30.45				
	Sides of band lintel	0								
	Sides of tie beam	10	60.9		0.7	42.03				
		10	81.0		0.9	68.85				
		0								
	Weather shade, Chajjas, corbels etc., including edges									
						141.33	sqm	552.05	78023.88	DSR Item No_5.9.5


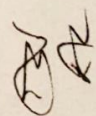
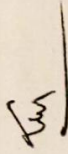






S. N	Item Description	N	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
7	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level and above. Thermo-Mechanically Treated bars of grade Fe-500D or more.	1	5	0.75		3.75	Sqm	766.75 (693.05) 766.75	2875.31	DSR Item No_5.9.19 (5.9.19)
	Consider 1.5 % of Total volume					2885.2	Kg	83.5	240916.74	DSR Item No_5.22.6
	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in.									
	Wall-1 of Outer Drain	1	46.58	0.23	0.3	3.21				
	Wall-2 of Outer Drain	1	44.92	0.23	0.15	1.55				
						4.76	Cum	6376.25	30374.92	DSR Item No_6.1.1
8	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level									
	Cement mortar 1:6 (1 cement : 6 coarse sand)									
	Center line	1	60.92	0.23	3	42.03				
	Deduction for Rolling shutter	1	5	0.23	3	-3.45				
						38.58	Cum	7590.45	292876.00	DSR Item No_6.4.2
9	12 mm cement plaster of mix :1:6 (1 cement: 6 fine sand) on internal Surface									
	Internal side	1	60		3	180.00				
	Deduct rolling shutter opening	1	5		3	-15.00				
						165.00	Sqm	254.25	41951.25	DSR Item No_13.1.2

S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
10	12 mm cement plaster of mix : 1:4 (1 cement: 4 fine sand) in drain									
	wall -1	1	46.58		0.53	24.69				
	wall-2	1	44.92		0.53	23.81				
	Bottom	1	45.52	0.3		13.66				DSR Item No_13.1.1
						62.15	Sqm	266.85	16584.99	
11	20 mm cement plaster of mix :1:4 (1 cement: 4 fine sand) on External Surface									
	External side	1	61.84		3	185.52				
	Deduct rolling shutter opening	1	5		3	-15.00				DSR Item No_13.3.1
						170.52	Sqm	365.25	62282.43	
12	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.									DSR Item No_13.80
						335.52	Sqm	115.15	38635.13	
13	Finishing walls with water proofing cement paint of required shade :New work (Two or more coats applied @ 3.84 kg/10 sqm)									DSR Item No_13.44.1
						170.52	Sqm	91.25	15559.95	
14	Distemping with oil bound washable distemper of approved brand and manufacture to give an even shade :New work (two or more coats) over and including water thinnable priming coat with cement primer									DSR Item No_13.41.1
						165.00	Sqm	153.45	25319.25	
15	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete									DSR Item No- 10.2
						9668.0	Kg	101.75	983719.0	
						0			0	

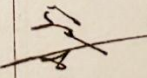

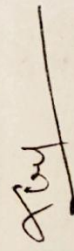






S. N	Item Description	No	Length	Breadth	Height	Qty	Unit	Rate	Amount	Item Reference
16	Providing and fixing pre-coated galvanized iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.					244.00	Sqm	627.55	153122.20	DSR Item No- 12.5
17	Painting on G.S. sheet with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade : New work (two or more coats) including a coat of approved steel primer but excluding a coat of mordant solution					244.00	Sqm	138	33672.00	DSR Item No- 13.53.1
18	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete. On steel work					322.27	Sqm	189.75	61150.10	DSR Item No- 13.52.1
19	Providing and fixing 15 cm wide, 45 cm overall semi-circular plain G.S. sheet gutter with iron brackets 40x3mm size, bolts, nuts and washers etc., including making necessary connections with rain water pipes complete. 0.80 mm thick with zinc coating not less than 275 gm/m ²					41.20	RM	765	31518.00	DSR Item No- 12.7.1

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S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
20	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes.					50	RM	305.05	15252.50	DSR Item No- 12.41.2
21	110 mm diameter Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion.					12	Nos	129.85	1558.20	DSR Item No- 12.42.5.2
	Bend 87.5°					6	Nos	113.8	682.80	DSR Item No- 12.42.6.2
	Shoe (Plain)					48	Nos	50	2400.00	NSI
22	Providing & Fixing MS Clamp to hold wall mounted Rain water pipe in position including making necessary holes and fittings etc.					1	per cm dept h per 100 m	557.65	557.65	DSR Item No- 5.28
23	Providing and fixing in position 12mm thick bitumen impregnated fiber per cm board conforming to IS: 1838, including cost of primer, sealing compound depth per Grade-A in expansion joints.									
24	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.									



S. N	Item Description	No	Length	Breadth	Height	Qty	Unit	Rate	Amount	Item Reference
25	80x0.90 mm M.S. laths with 0.90 mm thick top cover					15	Sqm	2654.25	39813.75	DSR Item No- 10.6.3
26	Providing and fixing ball bearing for rolling shutters					1	each	419.85	419.85	DSR Item No- 10.7
				Total of DSR Items					2916204. ²⁵	29,15,236.75
				Total of NSI Items					2400.00	or Rs.
									2918604. ²⁵	
	TOTAL								5837208. ⁵	

TOTAL at 2 Places

SI- RS 29.15 laths X 2 = 583.30 lath
 NSI RS 0.02 - 1 XL 6.00 l

for 2.70m

Stone Soling		No	Qty	Unit	Rate	Amount	Item Reference
S.N	Item Description						
	Details of cast 3 m X6 m and 150 mm thick area	1	2.7	Cum	850	2295.00	DSR_7753
1	Stone Boulder 50 mm to 200 mm	1	0.54	Cum	850	459.00	DSR_7754
2	Gravel 5 mm to 10 mm to fill voids	1	0.27	Cum	1953.05	527.32	DSR_2.27
3	Sand Filling	1	2	Day	558	1116.00	DSR_0114
4	Beldar to spread boulder & Gravel			Total		4397.32	
				15%		659.60	580.50
	Add 15% CPOH			Total		5056.92	4477.82
				Total per Cum		1873.00	1843.63

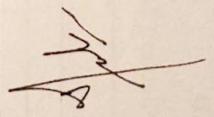
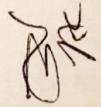

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on Rs 3870

for Bay B 1843.63/c

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Qty Calculation of Truss of Open Shed (20x10)						
Size of shed	10	x	20	m		
No of trusses	5	Nos				
No of Bays	4	Nos				
length of bay/ purlin	5	m				
No. of purlins	12	Nos				
Width of building/ Width of truss	10	m				
No of columns per bay	2	Nos				
Length of top chord / sag rod	12.2	m				
Steel quantities of Trusses						
Description	Units	Nos.	Length m	Total length m	Weight per meter 'kg/m'	Total weight ' kgs'
Top & bottom chord (2 L 75X75X8 @17.8kg/m)	kg	5	24	120	17.8	2136
Chord members (2L 50X50X6 @ 9Kg/m)	kg	5	23	115	9	1035
purlins (MC 150 @ 16.8Kg/m)	kg	48	5	240	16.8	4032
Tie members (MC 150 @ 16.8Kg/m)	kg	22	5	110	16.8	1848
sag rod (12 dia @0.89kg/m)	kg	4	12.2	48.8	0.89	43.432
Cap plate (300x300x16thk@ 11.3kg/No)	kg	10	Nos		11.3	113
Total weight of truss =						9668
Area of GI roof sheet cover	244	sqm				


Subwork 3: Construction of Leachate Collection Tank at Decentralized Waste Transfer Centre at 2 Places

S. N	Item Description	No	Length h	Breadth h	Height/Depth	Qty	Unit	Rate	Amount	Item Reference
	Size		1.5	1.5	1.5					
	Wall thick		0.2							
1	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in-charge. Upto 1.5 meter depth	1	2.5	2.5	1.5	9.375	Cu m	181.85	1704.844	DSR_Item No_2.6.1
2	Beyond 1.5 meter upto 3.0 meter	1	2.5	2.5	0.3	1.875	Cu m	271.89	509.7938	DSR_Item No_2.6.1 + 2.26.1
3	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level: 1:4:8 (1 Cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size)	1	2.5	2.5	0.1	0.625	Cu m	5789.6	3618.5	DSR_Item No_4.1.8
4	Providing and laying in position machine batched and machine mixed design mix M-30 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge.									
	Bottom of tank	1	2.3	2.3	0.2	1.058				
	Wall-1	2	1.7	0.2	1.5	0.51				
	Wall-2	2	1.7	0.2	1.5	0.51				
						2.078	Cu m	9470.6	19679.91	DSR_Item No_5.33.2 + 5.34.1

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S. N	Item Description	No	Length	Breadth	Height/Depth	Qty	Unit	Rate	Amount	Item Reference
5	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level and above									
	Thermo-Mechanically Treated bars of grade Fe-500D or more.									
	Consider 1.5 % of Total volume					245	Kg	83.5	20431.16	DSR Item No. 5.22.6
6	Centering and shuttering including strutting, propping etc. and removal of form for all heights: Foundations, footings, bases of columns, etc. for mass concrete									
	Sides of Foundation	2	4.6		0.2	1.84	Sq m	284.85	524.124	DSR Item No. 5.9.1
7	Centering and shuttering including strutting, propping etc. and removal of form for all heights: Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.									
	Wall-1	4	1.7		1.5	10.2				
	Wall-2	4	1.7		1.5	10.2				
	Total					20.4	Sq m	609.3	12429.72	DSR Item No. 5.9.2
	Total at 2 Places								58898.04	
									117796.08	



 AK

 Twp

 S1- B3 0.59 bcs X2 = 1.18

 NSI - Nil

Subwork 4: Procurement of Portable compactor along with hook loader for Transfer and secondary transportation for Municipal Solid Waste at 2 places in Rishikesh

Item No.	Item Description	Unit	Quantity Per Set	Number of Set (nos.)	Rate in Rs. Per set	Amount in Rs.
1	Solid Waste Portable Compactor with integral 10.5 Cum Container unit including Hydraulic Loading Bucket/ Shovel arrangement as per technical specifications enclosed.	Nos	2	1	7500000	7500000
2	Hook loader mounted on 16.2 T GVW BS - IV Truck Chassis capable of handling the compactor unit with 10.5 cum volume container unit as per technical specifications.	Nos.	1			
Total cost for 1 Set						7500000
Total cost for 2 Sets						1,50,00,000

Pg No: 1/8




S1 - Nil

MSI - Rs 150,00,000

Subwork 5: Construction of 200 sq.m. shed at Dry waste collection center at 4 places in Rishikesh

S. N	Item Description	N o	Lengt h	Breadt h	Height	Qty	Unit	Rate	Amount	Item Reference
1	Civil Work Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m. All kinds of soil									
	Upto 1.5 meter depth	10	1.4	1.4	1.95	38.22				
	For column foundation (250x300)	1	46.92	0.43	0.25	5.04				
	For PCC of Plinth Beam	1	67.04	0.96	0.4	25.74				
	Side Drain						Cum	252.3	17410.53	DSR Item No_2.8.1
2	Earth work in surface excavation not exceeding 30 cm in depth but exceeding 1.5 m in width as well as 10 sqm on plan including getting out and disposal of excavated earth upto 50 m and lift upto 1.5 m. as directed by Engineer-in-Charge.	1	20	10		200.00	Sqm	92.55	18510.00	DSR Item No_2.1.1
3	150 mm THK Well compacted stone soling voids should be filled and compacted with stone chipping and sand filling 60-90 mm stone size									
	For Grade Slab	1	20	10	0.15	30.00				
	For Entrance	1	5	3	0.15	2.25				
							Cum	1873.00	60404.25	UNIT ESTIMATE
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level : 1:3:6 (1 Cement : 3 coarse sand (zone-III): 6 graded stone aggregate 40 mm nominal size).									
	in column foundation	10	1.4	1.4	0.075	1.47				




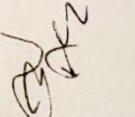
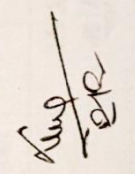




S. N	Item Description	N	Lengt h	Breadt h	Height	Qty	Unit	Rate	Amount	Item Reference
	Below plinth beam	1	50.75	0.43	0.075	1.64				
	Plinth Protection	1	65.84	1	0.1	6.58				
	Below Side Drain	1	67.04	0.96	0.075	4.83				
	For Entrance	1	5	3	0.1	1.50				
	For Flooring over soiling	1	20	10	0.075	15.00				
						31.02	Cum	6126.2 5	190021.37	DSR Item No_4.1.6
3	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete 40 mm thick with 20 mm nominal size stone aggregate	1	20	10		200.00	Sqrm	498.35	99670.00	DSR Item No_11.3.1
4	Providing and fixing glass strips in joints of terrazo/ cement concrete floors 40 mm wide and 4 mm thick machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge."(Note :- Cement content considered in this item is @ 330 kg/cum."Excess/less cement used as per design mix is payable/recoverable separately).					1000.0 0	RM	75.15	75150.00	DSR Item No_11.13.1
5	All works upto plinth level									
	Column foundation	10	1.2	1.2	0.35	5.04				
	Column 250x300	10	0.25	0.3	1.5	1.13				
	Plinth beam	1	60.75	0.23	0.3	3.50				
						9.67	Cum	7997.3	77307.90	DSR Item

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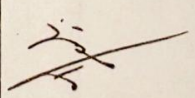
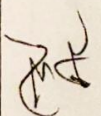
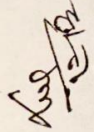
S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
	All works above plinth level upto floor V level									No_5.33.1
	Column (250x300) above plinth	10	0.25	0.3	6	4.50				
	Column (230x230) above plinth Stool Column	3	0.23	0.23	3	0.48				
	Band Lintel	1	60.92	0.23	0.23	3.22				
	Tie Beam	1	81	0.25	0.3	6.08				
	Chajja for Rolling shutter	1	5	0.75	0.15	0.56				
						14.84	Cum	9400.85	139473.53	DSR Item No_5.33.2
6	Centering and shuttering including strutting, propping etc. and removal of form work for Foundations, footings, bases for columns sides of foundation	10	4.8		0.35	16.8	sqm	284.85	4785.48	DSR Item No_5.9.1
	Columns, piers, abutments, pillars, posts and struts									
	Sides of column above foundation	10	1.1		7.5	82.5				
	Columns (250x300)	3	0.92		3	8.28				
	Column (230x230) above plinth Stool Column					90.78	sqm	733.7	66605.29	DSR Item No_5.9.6
	Lintels, beams, plinth beams, girders, bressumers and cantilevers									
	Sides of Plinth Beam	10	50.8		0.6	30.45				
	Sides of band lintel	10	60.9		0.7	42.03				
	Sides of tie beam	10	81.0		0.9	68.85				
						141.33	sqm	552.05	78023.88	DSR Item No_5.9.5
	Weather shade, Chajjas, corbels etc., including edges									

S. No	Item Description	No	Lengt h	Breadt h	Height	Qty	Unit	Rate	Amount	Item Reference
7	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level and above. Thermo-Mechanically Treated bars of grade Fe-500D or more.	1	5	0.75		3.75	Sqm	766.75	2875.31	DSR Item No_5.9.19
	Consider 1.5 % of Total volume					2885.2 3	Kg	83.5	240916.74	DSR Item No_5.22.6
	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:									
	Wall-1 of Outer Drain	1	46.58	0.23	0.3	3.21				
	Wall-2 of Outer Drain	1	44.92	0.23	0.15	1.55				
						4.76	Cum	6376.2 5	30374.92	DSR Item No_6.1.1
8	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level									
	Cement mortar 1:6 (1 cement : 6 coarse sand)									
	Center line	1	60.92	0.23	3	42.03				
	Deduction for Rolling shutter	1	5	0.23	3	-3.45				
						38.58	Cum	7590.4 5	292876.00	DSR Item No_6.4.2
9	12 mm cement plaster of mix :1:6 (1 cement: 6 fine sand) on Internal Surface									
	Internal side	1	60		3	180.00				
	Deduct rolling shutter opening	1	5		3	-15.00				
						165.00	Sqm	254.25	41951.25	DSR Item No_13.1.2

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S. N	Item Description	No	Lengt h	Breadt h	Height	Qty	Unit	Rate	Amount	Item Reference
10	12 mm cement plaster of mix : 1:4 (1 cement: 4 fine sand) in drain wall -1 wall-2 Bottom	1 1 1	46.58 44.92 45.52		0.53 0.53 0.3	24.69 23.81 13.66	Sqm	266.85	16584.99	DSR Item No_13.1.1
11	20 mm cement plaster of mix :1:4 (1 cement: 4 fine sand) on External Surface External side Deduct rolling shutter opening	1 1	61.84 5		3 3	185.52 -15.00		365.25	62282.43	DSR Item No_13.3.1
12	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer; over the plastered wall surface to prepare the surface even and smooth complete.					170.52	Sqm	115.15	38635.13	DSR Item No_13.80
13	Finishing walls with water proofing cement paint of required shade :New work (Two or more coats applied @ 3.84 kg/10 sqm)					170.52	Sqm	91.25	15559.95	DSR Item No_13.44.1
14	Distemping with oil bound washable distemper of approved brand and manufacture to give an even shade :New work (two or more coats) over and including water thinnable priming coat with cement primer					165.00	Sqm	153.45	25319.25	DSR Item No_13.41.1
15	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete					9668.00	Kg	101.75	983719.00	DSR Item No- 10.2



S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
16	Providing and fixing pre-coated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) 0.50 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.					244.00	Sqm	627.55	153122.20	DSR Item No- 12.5
17	Painting on G. S. sheet with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade. New work (two or more coats) including a coat of approved steel primer but excluding a coat of mordant solution					244.00	Sqm	138	33672.00	DSR Item No- 13.53.1
18	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete On steel work					322.27	Sqm	189.75	61150.10	DSR Item No- 13.52.1
19	Providing and fixing 15 cm wide, 45 cm overall semi-circular plain G. S. sheet gutter with iron brackets 40x3mm size, bolts, nuts and washers etc., including making necessary connections with rain water pipes complete. 0.80 mm thick with zinc coating not less than 275 gm/m ²					41.20	RM	765	31518.00	DSR Item No- 12.7.1

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S. N	Item Description	No	Length h	Breadth h	Height	Qty	Unit	Rate	Amount	Item Reference
20	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes.					50	RM	305.05	15252.50	DSR Item No-12.41.2
21	110 mm diameter Providing and fixing on wall face unplasticised - PVC moulded fittings/ accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion.					12	Nos	129.85	1558.20	DSR Item No-12.42.5.2
	Bend 87.5°					6	Nos	113.8	682.80	DSR Item No-12.42.6.2
	Shoe (Plain)					48	Nos	50	2400.00	NSI
22	Providing & Fixing MS Clamp to hold wall mounted Rain water pipe in position including making necessary holes and fittings etc.						per cm dept			
23	Providing and fixing in position 12mm thick bitumen impregnated fiber per cm board conforming to IS: 1838, including cost of primer, sealing compound depth per Grade-A in expansion joints. Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.					1	h per 100 m	557.65	557.65	DSR Item No- 5.28
24										





Qty Calculation of Truss of Open Shed (20x10)						
Size of shed	10	x	20		m	
No of trusses	5	Nos				
No of Bays	4	Nos				
length of bay/ purlin	5	m				
No. of purlins	12	Nos				
Width of building/ Width of truss	10	m				
No of columns per bay	2	Nos				
Length of top chord / sag rod	12.2	m				
Steel quantities of Trusses						
Description	Units	Nos.	Length (m)	Total length m	Weight per meter "kg/m"	Total weight ' kgs'
Top & bottom chord (2 L 75X75X8 @17.8kg/m)	kg	5	24	120	17.8	2136
Chord members (2L 50X50X6 @ 9Kg/m)	kg	5	23	115	9	1035
purlins (MC 150 @ 16.8Kg/m)	kg	48	5	240	16.8	4032
Tie members (MC 150 @ 16.8Kg/m)	kg	22	5	110	16.8	1848
sag rod (12 dia @0.89kg/m)	kg	4	12.2	48.8	0.89	43.432
Cap plate (300x300x16thk@ 11.3kg/No)	kg	10	Nos		11.3	113
Area of GI roof sheet cover	244	sqm			Total weight of truss	9668

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TATA CONSULTING ENGINEERS LIMITED

Subwork 6: Construction of Internal Road and KC Drain at Dry waste collection center at places in Rishikesh

600m x 1.80m

S. N	Item Description	No	Length	Breadth	Height	Qty	Unit	Rate	Amount	Item Reference
1	Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with three wheel 80-100 kN static roller in stages to proper grade and camber, applying and brooming, stone screening/binding materials to fill-up the interstices of coarse aggregate, watering and compacting to the required density Grading 1 as per Technical Specification Clause 404.	1	30	3.75	0.1	11.25	cu m	1818.8	20461.5	MORD Block 33 Doiwala_item No_ 4-7-1-B
						16.80			307701.34	
	Grading 1 By Mechanical Means	1	30	3.75	0.1	11.25	cu m	1897.6	21348	MORD Block 33 Doiwala_item No_ 4-7-2-B
2	Concrete with cement, coarse sand and 40 mm gauge stone ballast in proportion 1:3:6 in foundations and floors including supply of all material, labour and T&P etc required for proper completion of the work, as per drawings and technical specifications Clause 802, 803, 1202 & 1203	1	30	3.75	0.1	11.25	cu m	4445.8	50015.25	MORD Block 33 Doiwala Item No_ 11-4-1-1

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S. N	Item Description	No	Length	Breadth	Height	Qty	Unit	Rate	Amount	Item Reference
3	Construction of Un-reinforced, Cement concrete pavement, thickness as per design, over a prepared sub base with 43 grade cement or any other type PCC Grade M-30, coarse and fine aggregates conforming to IS: 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a concrete mixer of not less than 0.2 cum capacity and appropriate weigh batcher using approved mix design, laid in approved fixed side formwork (Steel channel, laying and fixing of wedges, steel plates including levelling the formwork and laying and fixing of 125 micron thick polythene film, as per drawing), spreading the concrete with shovels, rakes, compacted using needle, and plate vibrators, finished in continuous operation and curing of concrete slabs for 14 days, using curing compound where specified and water finishing to lines and grade as per drawings and technical specifications	1	30	3.75	0.15	16.875	cu m	5,375.40	90709.875	Misc Block 33 Doiwala Item No_ 2-3

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