URINE DIVERTING DRY TOILET

Male & Female Toilet in Non-Expansive Region

A. SUB STRUCTURE

1. EXCAVATION AND EARTH WORK	Birr		-
2. CONCRETE WORK	Birr		-
TOTAL A……	**Birr**		-

B. SUPERSTRUCTURE

1. CONCRETE WORK	Birr		-
2. BLOCK WORK	Birr		-
3. ROOFING	Birr		-
4. CARPENTRY & JOINERY	Birr		-
5. METAL WORK	Birr		-
6. STRUCTURE STEEL WORK	Birr		-
7. FINISHING	Birr		-
8. PAINTING	Birr		-
TOTAL B……	**Birr**		-

C.UTILITIES / FACILITIES

9. SANITARY INSTALLATION	Birr		-
10. ELECTRICAL INSTALLATION	Birr		-
11. OUTDOOR FACILITIES	Birr		-
TOTAL C……	**Birr**		-
TOTAL A+B+C……	Birr		-
TOTAL CARRIED TO GRAND SUMMARY…	**Birr**		-
10% COTINGENCY……..	Birr		-
GRAND TOTAL……	**Birr**		-

Item No	Description	Unit	Qty	Unit Rate	Amount

BILL OF QUANTITIES

FOR

URINE DIVERTING DRY TOILET FOR MALE & FEMALE
FOR NON - EXPANSIVE SOIL REGION
ADAMA

A.	SUBSTRUCTURE				
1	EXCAVATION AND EARTH WORK				-
2	CONCRETE WORK				-
	Total Carried to Summary				-
B.	SUPERSTRUCTURE				
1	CONCRETE WORK				-
2	BLOCK WORK				-
3	ROOFING				-
4	CARPENTRY & JOINERY				-
5	METAL WORK				-
6	STRUCTURE STEEL WORK				-
7	FINISHING				-
8	PAINTING				-
	Total Carried to Summary				-
C.	UTILITIES / FACILITIES				
9	SANITARY INSTALLATION				-
10	ELECTRICAL INSTALLATION				-
11	OUTDOOR FACILITIES				-
	Total Carried to Summary				-
	Total Carried to Summary (A + B+C)				-

Item No	Description	Unit	Qty	Unit Rate	Amount
	A. SUB STRUCTURE				
	1.0 EXCAVATION AND EARTH WORK				
1.01	Site clearing and removing the top 200 mm thick soil	m^2	452.43		
1.02	Bulk excavation in ordinary soil to a depth of 1500 mm from reduced level.	m^3	167.26		
1.03	Pit Excavation for footing to a depth not exceeding 1500mm in ordinary soil	m^3	33.68		
1.04	Ditto item 1.03 but exceeding 1500mm not exceeding 3000mm	m^3			
1.05	Trench excavation in ordinary soil for masonry foundation to depth of 1500 mm from reduced level.	m^3			
1.06	Fill around foundation and building in non expansive material 80% from the site and 20% selected materials from outside well rolled and compact in layers not exceeding 200 mm thick.	m^3	56.10		
1.07	Fill under hard core with imported selected materials from out side well rolled and compacted in layers not exceeding 200 mm thick.	m^3	19.58		
1.08	Cartaway surplus excavated material to appropriate tip	m^3	299.68		
1.09	250mm thick basaltic stone hardcore well rolled, consolidated and blinded with crushed stone .	m^2	91.61		
	Total Carried to Summary				-
	2.0 CONCRETE WORK				
2.01	50mm lean concrete quality C-5, 150 kg of cement/m3,				
	a :- Under footing	m^2	24.22		
	b :- Under floor slab & beams	m^2	112.96		
2.02	Reinforced concrete quality C-25,minimum cement content of 360 kg of cement/m3 filled in to form work and vibrated around rod reinforcement (formwork and reinforcement measured separately)				
	a :- To footing	m^3	5.22		
	b :- To Foundation column	m^3	1.31		
	c :- To grade beam	m^3	12.42		
	d :- To 100mm thick ground floor slab	m^2	43.58		
	e :- To Concrete Pavement	m^3	5.56		
2.03	Formwork shall be timbered or steel or a combination of two, sufficient to contain the wet concrete without leakage. Enough to support temporary loading and pressure from placing Compaction or vibration without displacement or appreciable deflection.				
	a :- Footing pad	m^2	24.92		
	b :- Foundation column	m^2	27.68		
	c :- Grade beam	m^2	72.81		
2.04	Mild steel bar reinforcement according to structural drawings. Reinforcement shall be free from dirt, oil, grease, paint, readers and any other substances which may affect the reinforcement and concrete bond (price include cutting bend)				
	a :- Dia.8 deformed bar	kg	918.48		
	b :- Dia.12 deformed bar	kg	591.82		
	c :- Dia.14 deformed bar	kg	583.48		
	Total Carried to Summary				-

Item No	Description	Unit	Qty	Unit Rate	Amount
	B. SUPER STRUCTURE				
	1.0 CONCRETE WORK				
1.01	C-25 reinforced concrete with a minimum cement content of 360kg/m3 to be poured into formwork around reinforcement bar (unless otherwise described. formwork and reinforcement measured separately)				
	a :- To elevation columns	m^3	4.16		
	b :- To floor beams	m^3	7.42		
	c :- To top tie beam	m^3	5.51		
	d :- To 150mm thick suspended slab	m^3	13.42		
	e :- To Staircase	m^3	4.97		
1.02	Formwork shall be timbered or steel or a combination of two, sufficient to contain the wet concrete without leakage. Enough to support temporary loading and pressure from placing Compaction or vibration without displacement or appreciable deflection.				
	a :- To elevation columns	m^2	80.48		
	b :- To floor beams	m^2	75.32		
	c :- To top tie beams	m^2	72.29		
	d :- To suspended slab	m^2	89.47		
	e :- To Staircase	m^2	36.93		
1.03	Mild steel reinforcement according to structural drawings. Price includes cutting, bending, placing in position and tying wire and required spacers. Labor cost only.				
	a :- Dia. 8 deformed bar	kg	1,383.00		
	b :- Dia. 10 deformed bar	kg	214.85		
	c :- Dia. 12 deformed bar	kg	1,459.26		
	d :- Dia. 14 deformed bar	kg	477.55		
	Total Carried to Summary				-
	2.0 BLOCK WORK				
2.01	Class C, 190mm thick HCB wall which can satisfy the designed strength , bedded in cement mortar (1:3).Price shall include mortar bed.	m^2	277.78		
	Total Carried to Summary				-
	3.0 ROOFING				
3.01	Roof cover in percolated or galvanized EGA - 400, 0.6mm thick fixed to RHS lattice purlins,price shall include ridge cap, UV resistance washers and G-28 flat sheet dev. (Purlins measured separately and roof measured in horizontal plane)	m^2	150.41		
3.02	:- G-28 Galvanized sheet metal gutter of dev. Length 530mm price includes two coats of anti-rust and synthetic paint	ml	36.42		
3.03	:- Ditto item 3.02 but coping with gutter flashing dev. length 300mm.	ml	36.42		
3.04	:- Ditto item 3.02 but coping with capping dev. length 420mm.	ml	2.00		
3.05	:- Ditto item 3.02 but fixing for flashing dev. length 350mm.	ml	0.60		
3.06	:- Ditto item 3.02 but coping with flashing dev. length 420mm.	ml	2.00		
	Total Carried to Summary				-
	4.0 CARPENTRY & JOINERY				
4.01	Supply and fix dia.60mm eucalyptus wood for screen on the front with c /c spacing of 15mm , price include all necessary accessories to complete the work.	ml	608.00		
	Total Carried to Summary				-

Item No	Description	Unit	Qty	Unit Rate	Amount
5.0	**METAL WORK**				
	Metal window and doors made of 38x1.5mm LTZ profiles shown on the drawings, price include approved quality locks and all iron mongry works, two coats of anti rust, three coats of synthetic paint, 1mm thick ribbed sheet and door stopper. All according to d				
5.01	Doors				
	a :- D1 size 1000x660mm covered with 1mm thick ribbed sheet	pcs	28.00		
	b :- D2 size 2140x860mm covered with 1mm thick ribbed sheet	pcs	26.00		
5.02	Provide metal grill with 440mm width for cover of half ditch concrete pipe as per the detail drawing and the engineers direction.	ml	13.07		
5.03	Provide channel section of 60x60mm with thickness of 1.5mm for placing eucalyptus welded 45° joints with recesses of 10mm on top to fix eucalyptus beams with nails.	ml	46.72		
5.03	Provide RHS section of 60x60mm with thickness of 1.5mm for fixing the channel section welded 45° joints.	ml	33.92		
	Total Carried to Summary				-
6.0	**STRUCTURE STEEL WORK**				-
	Supply, fabricate and mount steel truss according to the structural drawing .Price shall include one coat of antirust and two coats of syntactic enamel painting and all other necessary accessories.				
6.01	RHS TRUSS				
	a :- 25x25x2.5.mm.	kg	2,797.53		
6.02	RHS Purlins				
	a :- 30x30x2.5.mm.	kg	578.35		
6.03	Bolts with nuts				
	a :- Dia. 16mm J-bolt .Dev length =400 mm with washer and nut	pcs	88.00		
6.04	Metal plates				
	a :- 2(200x200x5 mm)	pcs	44.00		
	Total Carried to Summary				-
7.0	**FINISHING**				
7.01	Apply pointing				
	a :- Internal HCB wall.	m^2	155.87		
	b :- External HCB wall.	m^2	136.00		
7.02	Two coats of plastering in 1:3 ratio cement mortar to receive terrazzo wall tiles	m^2	53.66		
7.03	Supply and lay 20 mm thick & 400x400mm terrazzo tile flooring. The pattern of the tile and the entire work shall be approved by the engineer. Price shall include cement mortar (1:3) bed and grouting. Provide appropirate sloping	m^2	2.56		
7.04	Supply and lay 20 mm thick & 200x200mm terrazzo tile flooring. The pattern of the tile and the entire work shall be approved by the engineer. Price shall include cement mortar (1:3) bed and grouting. Provide appropirate sloping	m^2	98.74		
7.05	Supply and fix 20 mm thick & 200x200mm terrazo wall tiles with cement mortar (1:2) .	m^2	53.66		
7.06	50 mm thick smooth finished cement screed (1:3) floor finish with glass crack protection. Price include all accessories all as per engineers instruction.	m^2	101.30		
7.07	Supply and fix 30mm thick and 220mm wide edge chamfered and with water drip grooved terrazzo window sill with a minimum slope. Quality of terrazzo shall be approved by the engineer.	ml	45.00		
7.08	1200mm wide cobble stone pavement around the building. Price shall includes red ash dia 400mm half ditch concrete pipe as per the detail drawing and the engineers direction.	m^2	110.89		
7.09	Apply cement wash plastering to receive oil paint.	m^2	291.87		
	Total Carried to Summary				-
8.0	**PAINITING**				
8.01	Apply oil paint to cement wash wall surface. Price shall include pre - cleaning & preparation of the surface.	m^2	291.87		
	Total Carried to Summary				-

Item No	Description	Unit	Qty	Unit Rate	Amount
9.0	**SANITARY INSTALLATION INSIDE THE UDDT- HOUSE BUILDINGS AND THE NEAR SURROUNDING AS REINFORCED CONCRETE WORKS FOR SPECIAL SANITARY EQUIPMENT.**				
	All fixtures which differs from that specified below is subject to the owner's approval, based on samples, catalogues and brochures presented by the contractor. All external part of sewerage pipes (arches, branches) as well fittings of water supply pipes(elbows, arches, reduction T-parts etc.) should be calculated as straight pipes.Unit price shall include all the necessary fixing bracketsor hooks and all assistnace civil works such as chiselling of walls, floors, beams and etc.				
9.1.0	**Water supply, valves and accessoires**				
9.1.1	Supply and install galvanised steel pipes as shown in the drawings pipe diameter 20 mm	m	14.00		-
9.1.2	Supply and install 20 mm Water Meter of approved standard. Complete with all the necessary connection fittings. Q = 0.6 m^3/h	No	2.00		-
9.1.3	Supply and install Brass smell tap 3/4"	No	8.00		-
9.2.0	**Sanitary equipment**				
9.2.1	Supply and fix Tabor ceramic Urine Diversion Dry (Ecosan Turkish) toilet. Price shall include all assistance civil works and all necessary accessories	No	24.00		-
9.2.2	Supply Tabor ceramic Urine Diversion Dry (Ecosan Turkish) style toilet.	No	2.00		-
9.2.3	Deliver and fit prefabricated reinforced concrete hand wash basins. Concrete soap dishes, and openings for sewage pipes-/ including connection, have to be calculated in the given unit price. It is understood that the final surface of the concrete is visible Concrete volume/ basin: 0.1 m Reinforcement: Diameter 6/ basin: 9.08 kg Diameter 8/ basin: 5.5 kg Diameter 10/ basin: 1.17 kg To be done in accordance to the attached drawings.	No	4.00		
9.2.4	Supply and install plugs for faecal hole for toilet as shown in the drawings. - upper diameter: 220 mm - lower dimaeter: 180 mm - length of the stick: 800 mm Material: timber-/ wood construction	No	26.00		-
9.2.5	Supply and fix Tabor urinals in the male UDDT-building	No	6.00		-
9.3.0	**Pipes and accessoires**				
9.3.1	Supply and fix PVC-U, PN6 Urine connection pipes including fittings and fixtures Price shall include all the necessary accessories and assistance civil work. Pipe diameter 50 mm	m	20.00		-
9.3.2	Supply and fix PVC-U, PN6 Urine collecting pipe including fittings and fixtures with 2 cleaning holes at the start of the pipe Price shall include all the necessary accessories and assistance civil work. Pipe diameter 75 mm	m	16.00		-
9.3.3	Supply and fix PVC-U, PN6 Urine collecting pipe including fittings, fixtures and excavation work with 2 cleaning holes Price shall include all the necessary accessories and assistance civil work. Pipe diameter 110 mm	m	24.00		-
9.3.4	Supply and fix floor drain with forged chrome plated strainer outlet. Pipe diameter 50 mm	No	8.00		-
9.3.5	Supply and fix floor drain with forged chrome plated strainer 100 x 100 mm. Outlet pipe diameter 75 mm	No	4.00		-
9.3.6	Supply and install sink effluent for handwash basin with basket strainer, siphon and connection pipe (1 m) Fittings and accessories are included. Pipe diameter 50 mm	No	8.00		-
9.3.7	Supply and fix PVC-U, PN6 grey water connection pipe as shown in the drawings. Price shall include all the necessary accessories and assistance civil work diameter 50 mm	m	3.00		-

Item No	Description	Unit	Qty	Unit Rate	Amount
9.3.8	Supply and fix PVC-U, PN6 grey water collection pipe as per Technical Specification Price shall include all the necessary accessories and assistance civil work pipe diameter 50 mm	m	11.00		-
9.3.9	Supply and fix PVC-U, PN6 grey water collection pipe as per Technical Specification Price shall include all the necessary accessories, excavation, backfilling and assistance civil work. Pipe diameter 75 mm	m	22.00		-
9.3.10	Supply and fix PVC-U, PN6 grey water ground collection pipe as per Technical Specification Price shall include all the necessary accessories, excavation, backfilling and assistance civil work. Pipe diameter 110 mm	m	18.00		-
9.4.0	**Installation outside the UDDT-House buildings (urine storage tanks and grey water treatment)** **Water supply pipes, valves and accessoires**				
9.4.1	HDPE of PN16 water distribution pipes, including necessary fitting, including excavation to an average depth of 1,000 mm and a width of 600 mm and 150 mm thick sand bedding around the pipe, backfilling etc. and all details as per Technical Specification. Pipe diameter 25 mm	m	53.00		-
9.4.2	Gate valves PN16 European standard with adaptors diameter 1"	No	2.00		-
9.4.3	Warning tape for the HDPE-pipe	m	50.00		-
9.5.0	**Installation for storage of urine nearby the UDDT-Houses**				
9.5.1	Excavation of pit for Urine storage tanks and Urine manholes UMH1 and UMH2 as shown in the drawings	m^3	21.00		-
9.5.2	Supply and install Urine short time storage tanks Volume: 1.0 m³ Material: Glass Fiber Supplier: Ethio Fiber Glas, Addis Ababa or similar as shown in the drawings	No	2.00		-
9.5.3	Supply, bedding, backfilling and compaction of sand for urine short term storage tank as shown in the drawings	m^3	10.00		-
	Construction of beam above short-term urine storage tank as shown in the drawings. Size: 2000 x 2000 x 1200 mm Construction of slab, for long term urine tank Size: 8020 x 8080 x 100 mm Construction of manholes (UMH1-/UMH2-/ in accordance to the attached schema) Size: 1200 x 1200 x 200 mm <u>Attention:</u> The below described works includes the quantities for 2 urine storage tanks, 1 slab and 2 manholes-/ sizes and desciption above.				
9.5.4	Site clearing	m^2	24.50		-
9.5.5	Bulk excavation in ordinary soil to a depth of 1500 mm from reduced level.	m^3	55.40		-
9.5.6	50 mm lean concrete under ground floor slab	m^3	71.90		-
9.5.7	Beam Reinforced concrete (C30)	m^3	0.86		-
9.5.8	Slab construction Reinforced concrete (C30)	m^3	3.3		-
9.5.9	RCC manhole Reinforced concrete (C30)	m^3	17.92		-
9.5.10	Formworks for the above mentioned RCC works	m^2	78.30		-
	Mild steel reinforcement in accordance to the attached structural drawings. Price includes cutting, bending, placing in position and tying wire and requires spacers. Labor costs only				
9.5.11	Beam				
	a Dia. 6 deformed bar	kg	12.68		-
	b Dia. 10 deformed bar	kg	42.33		-
9.5.12	Slab construction				
	a Dia. 8 deformed bar	kg	172.62		-

Item No	Description	Unit	Qty	Unit Rate	Amount
9.5.13	Manhole UMH 1,2,10				
a	Dia. 8 deformed bar	kg	2.07		-
b	Dia. 10 deformed bar	kg	320.10		-
c	Dia. 12 deformed bar	kg	350.40		-
9.6.0	Manhole UMH 10				
9.6.1	Deliver and fit a twice reinforced concrete slab 10/10 Inlcuding upcoming walls HBC and upper reinforced ring construction 4x10, 8/25. Manhole size: 1200 x 1200 x 1000 Cap-/ Revision: Steel plate 8,0 mm, twice painted with rust protection. Soil and excavation works to be inlcluded in the given unit price.	No	1.00		
9.6.2	Manhole UMH 3,4,5,6,7,8,9				
a	Bulk excavation in ordinary soil to a maximum depth of 1500 mm from street level.	m^3	4.50		-
b	Deliver and fit prefabricated concrete manholes, including: R-C base, slab and cover. The given unit price has to include excavation of pit, cartaway and backfilling. Dia:1000 mm 1.0 - 1.5 meter depth To be installed in accordance to the attached schema. Attention: The pipe inside the manhole shall be closed(no open section) nad has one cleaning hole by a cap(T_connection incl. revision hole).	No	7.00		-
9.7.0	**Connection pipes**				
9.7.1	Connection pipe between the two short-term storage tanks PN6, PVC-U, including excavation to an average depth of 700 mm and a width of 400 mm and 100 mm thick sand bedding all around the pipe, backfilling etc. and all details as shown in the drawings pipe diameter 110 mm	m	13.00		-
9.7.2	Connection pipe between the storage tank and the manhole UMH PN6, PVC-U including excavation to an average depth of 1800 mm and a width of 600 mm and 150 mm thick sand bedding around the pipe, backfilling etc. and all details as per Technical Specification pipe diameter 110 mm	m	4.00		-
9.7.3	Deliver and fit for the manhole UMH1-/ UMH2 1 inlet, 1 outlet, 1 valve with spindle, 1 key for spindle pipe material PN6, PVC-U pipe diameter 110 mm, as shown in the drawings	No	2.00		-
9.7.4	Connection pipe between the manholes UMH1 and UMH2, PN6, PVC-U including excavation to an average depth of 1800 mm and a width of 800 mm and 150 mm thick sand bedding all around the pipe, backfilling etc. and all details as shown in the drawings. pipe diameter 110 mm	m	13.00		-
9.7.5	Test of watertightness in accordance to the technical standard DIN-EN 1610	No	1.00		-
9.8.0	**Installation for treatment of grey water**				
9.8.1	Construction of sedimentation tank for greywater treatment as shown in the drawings Size: 2440 x 1600 x 1600 mm including bedding material, formwork, construction, installation of the inlet, outlets and vent as well as the test of water tightness				
9.8.2	Site clearing	m^2	13.00		-

Item No	Description	Unit	Qty	Unit Rate	Amount
9.8.3	Bulk excavation in ordinary soil to a depth of 1500 mm from reduced level. It is understood, that the excavation material is to be used for the following soil works, backfilling etc.	m^3	16.50		-
9.8.4	50 mm lean concrete under ground floor slab	m^3	2.60		-
9.8.5	Reinforced concrete (C25) (To be done in strict accordance to the above mentioned concrete works)	m^3	3.30		-
9.8.6	Formworks for the above mentioned RCC works	m^2	29.90		-
	Mild steel reinforcement in accordance to the attached structural drawings. Price includes cutting, bending, placing in position and tying wire and requires spacers. Labor costs only				
a	Dia. 8 deformed bar	kg	0.70		-
b	Dia. 10 deformed bar	kg	196.92		-
c	Dia. 12 deformed bar	kg	223.85		-
9.8.7	Supply and install gravel (4 - 8 mm grain size) as shown in the drawings	m^3	22.00		-
9.8.8	Supply and install gravel (8 - 16 mm grain size) as shown in the drawings	m^3	15.00		-
9.8.9	Supply and install percolation pipes as shown in the drawings including fittings pipe diameter 110 mm	m	34.00		-
9.8.10	Coverage of the infiltration bed with topsoil from the excavation work	m^3	6.00		-
9.8.11	Supply and plant reed plants on the percolation area as shown in the drawings 5 plants per m²	No	140.00		-
9.8.12	Deliver and fit the corner stones-/ surrounding for the sediment area. Natural stones, sizes: 150 x 400 mm This position includes needed earth and soil works, to be done in accordance to the attached drawings.	m^3	1.85		-
9.8.13	Deliver and fit surrounded gravel beds for drainage. Size: 1200 x 1000 x 400 Surrounding material: Natuarl stone, sizes: 150 x 400 To be filled with crash gravel, stone size 16/32 Excavation, backfilling and compaction works to be included in the given unit price.	No	4.00		-
	Sub total				-

Item No	Description	Unit	Qty	Unit Rate	Amount
9.9.0	**Urine sewer system**				
	Construction of urine sewer system				
9.9.1	Urine drainage pipe PN6, PVC with connection to manhole including excavation of the trench to an average depth of 1400 mm (1800 - 1000 mm) width 800 mm and 150 mm thick sand bedding around the pipe and backfilling as shown in the drawings	m	31.00		-
9.9.2	Urine drainage pipe PN6, PVC with connection to manhole including excavation of the trench to an average depth of 800 mm (1000 - 600 mm) width 800 mm and 150 mm thick sand bedding around the pipe and backfilling as shown in the drawings	m	245.00		-
9.9.3	Warning tape for the PVC-U-pipe	m	245.00		-
	Sub total				-
9.10.0	**Treatment - urine storage and compost site**				
	Temporary urine storage - phase I				
9.10.1	Site clearing , preparation of land for tank installation as shown in the drawings	m^2	20.00		-
9.10.2	Urine tank V = 5.0 m^3 glass Fiber Material: Glass Fiber Supplier: Ethio Fiber Glass or similar 2 adaptors as shown in the drawings incl. supply and installation	No	2.00		-
9.10.3	Test of watertightness	No	1.00		-
9.11.0	**Rebuilding of 2 storage tanks and installation in the final location, extension by 2 tanks - phase II**				
9.11.1	Site clearing, preparation of land for tank installation as shown in the drawings	m^2	50.00		-
9.11.2	Deliver and fit for manhole UMH10 2 valves and installation as shown in the drawings. Chequered steel plate, pipe PN6, PVC-U, pipe diameter 110 mm Construction, bedding material and installation with all accessories	No	1.00		-
9.11.3	Excavation work for urine storage tanks as shown in the drawings. It is understood the the excaveted material is to be used for the following soil works, backfilling etc.	m^3	56.00		-
9.11.4	Foundation for urine storage tanks Concrete (100 mm) with bedding (250 mm hard core material, 50 mm lean concrete) as shown in the drawings.	m^3	7.00		-
9.11.5	Dismantiling of urine tank and installation in the pit at the storage tank location as shown in the drawings.	No	2.00		-
9.11.6	Urine tank V = 5.0 m^3 glass Fiber Material: Glass Fiber Supplier: Ethio Fiber or similar 3 adaptors as shown in the drawings incl. supply and installation	No	2.00		-
9.11.7	Connection pipe between manhole UMH10 to tanks and between tanks with fittings as shown in the drawings. PVC-U, PN 6 pipe diameter 110 mm Supply and installation with all fittings and accessories	m	10.00		-
9.11.8	Backfilling of the construction pit with sand 4 - 8 mm as shown in the drawings. Supply and backfilling of sand	m^3	39.00		-
9.11.9	Test of watertightness .	No	1.00		-
9.12.0	**Enlargement with additional 4 storage tanks - phase III (this is an optional item)**				
9.12.1	Excavation work for Urine storage tanks as shown in the drawings.	m^3	56.00		-
9.12.2	Foundation for urine storage tanks Concrete (100 mm) with bedding (250 mm hard core material, 50 mm lean concrete) as shown in the drawings.	m^3	7.00		-

Item No	Description	Unit	Qty	Unit Rate	Amount
9.12.3	Urine tank V = 5.0 m³ glass Fiber Material: Glass Fiber Supplier: Ethio Fiber Glass or similar 2 adaptors as shown in the drawings incl. supply and installation	No	4.00		-
9.12.4	Connection pipe between existing and four new tanks with fitting as shown in the drawings. PVC-U, PN6 pipe diameter 110 mm Supply and installation with all fittings and accessories	m	9.00		-
9.12.5	Backfilling of the construction pit with sand 4 - 8 mm as shown in the drawings. Supply and backfilling of sand	m^3	39.00		-
9.12.6	Test of watertightness.	No	1.00		-
9.13.0	**Compost site**				
9.13.1	Preparation of land for composting place as shown in the drawings.	m^2	130.00		-
9.13.2	Excavation works for 4 compost ditches Depth 1,400 mm in accordance to the attached schema.	m^3	58.00		-
9.13.3	Cobble stones with sand joints (width > 2 cm) at the bottom of the compost ditch 100 x 100 mm in accordance to the attached schema.	m^2	39.00		-
9.13.4	Natural stone wall at the side of compost ditches Width of wall: 700 up to 400 mm to be done in accordance to the attached schema	m^3	45.00		-
9.13.5	Deliver and fit a reinforced concrete ring above the natural stone wall. Ring size:150 x 100 x 400 mm Material: reinforced concrete, as per Technical Specification	m^3	3.12		-
9.13.6	Cornerstones as surrounding for the composting place 150 x 400 mm Material: natural stone to be done in accordance to the attached schema	m	46.00		-
9.13.7	Cobble stones on the composting places 100m x 100 mm This position also includes the needed soil works, different layer etc. To be done in accordance to the attached schema	m^2	130.00		-
9.13.8	Fence for storage area with Entrance gate Height: 2,000 mm Entrance gate: 2 x 1,000 x 2,000 mm Material: eucalyptus with corrugated iron sheet. to be done in accordance to the attached schema	m	17.00		-
9.13.9	Storage building with two doors 4,800 x 3,000 mm Height: 2,500 mm Material: eucalyptus beams with corrugated iron To be done in accordance to the attached schema	No	1.00		-
9.13.10	Flood protection wall-/ earth dyke. made of excavation and additional material Height, up to 2.0 m Length , up to 40.0 m Base, up to 1.5 m The soil has to be compacted by shuffle water until final acceptance by the supervisor.	m^3	120.00		-
	Sub total				-

Item No	Description	Unit	Qty	Unit Rate	Amount
9.14.0	**Consumables**				
	Consumables and accesoires				
9.14.1	Deliver forged chrome plated strainers for floor drain.	No	10.00		-
9.14.2	Deliver forged chrome plated strainers 100 x 100 mm for floor drain	No	6.00		-
9.14.3	Bins with lid Volume 120 liters as per technical Specification	No	50.00		-
9.14.4	Sack barrow Transport capacity: 200 kg max. Height: 1,000 mm as per Technical Specification	No	2.00		-
9.14.5	Dust bins for waste Volume 10 liters as per Technical Specification	No	26.00		-
9.14.6	Water basket with cup Volume 10 liters as per Technical Specification	No	10.00		-
9.14.7	Transport buckets for ash and soil Volume 10 liters as per Techical Specification	No	4.00		-
9.14.8	Cups for adding ash volume 150 - 200 ml as per Technical Specification	No	4.00		-
9.14.9	Locks with key as per Technical Specification	No	2.00		-
9.14.10	Barrow transport capacity: 150 kg	No	1.00		-
9.14.11	Pair of gloves sizes as per Technical Specification	No	10.00		-
9.14.12	Pair of rubber gloves sizes as per Technical Specification	No	4.00		-
9.14.13	Protection goggles	No	2.00		-
9.14.14	Handpump and hose (10 meter) as per Technical Specification	No	2.00		-
9.14.15	Benzine p and hose (20 m) - optional Q = 60 m^3/h HP 6.5 as per Technical Specification	No	1.00		-
9.14.16	Jerry can Volume 20 Liters	No	10.00		-
9.14.17	Plastic rope for fixing of jerry cans	m	20.00		-
9.14.18	Funnel diameter 200 mm	No	2.00		-
9.14.19	Broom for cleaning	No	8.00		-
9.14.20	Mop for cleaning	No	4.00		-
9.14.21	Fiber brush for cleaning	No	4.00		-
9.14.22	Wire brush for cleaning	No	4.00		-
9.14.23	Shovel for the Compost	No	2.00		-
9.14.24	Spade for Compost	No	2.00		-
9.14.25	Dungfork	No	2.00		-
9.14.26	Hoe for Compost	No	2.00		-
9.14.27	Watering can Volume: 10 Liters	No	4.00		-
9.14.28	Wiremesh for compost mesh diameter 15 mm	No	2.00		-
9.14.29	Thermometer 0 - 80 °C It is understood that the thermometer ia made out of steel. The contractor is obliged to deliver at least one sample before final acceptance.	No	1.00		-
	Sub total				-
	Total Carried to Summary				-

Item No	Description	Unit	Qty	Unit Rate	Amount
10.0	**ELECTRICAL INSTALLATION WORKS** The contractor is obliged to purchase , samples of each material before starting the installation. The supervisor will approve purchasing according to the previously submitted samples. All damaged objects, the contractor has to replace by new at his own expenses.(lamps, sockets etc..) Cost includes all necessary ditches cuttings(horizontal-/ vertical) plastering works and connection materials. Needed equipment such as connection high voltage, scaffolding etc. has to be provided by the contractor.				
	Supply and Install ;				
10.1	Feeder cables				
10.1.1	PVC sheathed PVC insulated cable type SIEMENS; NYY0.6/1KV or equivalent and of 3 * 2.5 mm sq. from MDB to each flourescent lamps	m	80.00		-
10.1.2	3 * 4.0 mm sq. from MDB to each incandscent lamps	m	20.00		-
10.2.0	Conduits and Pipes				
10.2.1	PVC pipe of 16mm diameter-/ protection for cable. To be installed in accordance to the attached electrification drawings inside wall-/concrete. Protection earth cable-/ ditch depth 80,0 cm.	m	80.00		-
10.2.2	PVC pipe of 25mm diameter-/ protection for cable. To be installed in accordance to the attached electrification drawings inside wall-/concrete. Protection earth cable-/ ditch depth 80,0 cm.	m	20.00		-
10.3.0	Distribution Boards				
10.3.1	Flush mounted MDB, in steel enclosure, with lockable door and with phase, neutral and earth bus bars of rating 25A consisting of 1 pc main ACB of 20A/1P 1 pc ACB of 10A/1P 1 pc ACB of 16A/1P	No	1.00		-
10.4.0	Light Fitting and Lamps (Use specified types or equivalent)				
10.4.1	Fluorescent fitting Type Philips, TMS 022/136 IC + 1 * TLD 36W/ 840 lamps	No	6.00		-
10.4.2	Galvanized Steel pole of 0.8m high AGL(above ground level) up to the fitting , free fixed door or trap including removable panel with camps or connectors for power cable and protective fuse holder with 1 * 6A . Price to include foundation work of concrete of diameter 500 * 500mm of circular as shown on the detail drawing circular as shown on the detail drawing. Use Globe on the fitting with 300mm in dia. and plastic stand to connect with the GaSt pole of the incandscent lamp of rating 60 W of Philips type or equivalent product	No	2.00		-
10.4.3	Incandscent lamp of rating 40 W of Philips type or other Equivalent with holder to be installed on the wall as shown on the drawing.	No	2.00		-
10.5.0	Light points and Switches				
10.5.1	Flush mounted light points fed through PVC insulated conductors of 3 * 2.5 mm sq. Inside PVC conduits of 16 mm diameter, including junction boxes with covers insulating screw cap connectors.	No	8.00		-
10.5.2	Light Points on top of galvanized steel stand fed through PVC insulated conductors of 3 * 2.5mm sq. inside PVC conduits of 25 mm diameter, including junction boxes with covers insulating screw cap connectors	No	2.00		-
10.6.0	Extra over light points or switches for (Type Legrand Suno or equivalent)				
10.6.1	Flush mounted double switch 77 40 05 + 77 40 41	No	2.00		-
10.7.0	Socket Outlets points				
10.7.1	Flush mounting 10-16A/1P double socket outlet points fed through PVC insulated conductors of 3 * 2.5 mm sq. inside PVC conduits of 16 mm daimeter conduit including junction boxes with covers ,and insulating screw cap connectors.	No	2.00		-

Item No	Description	Unit	Qty	Unit Rate	Amount
10.8.0	Extra over double socket points (Type Legrand, Suno or equal)				
10.8.1	Flush mounting 10-16A/1P twin , 77 40 25 + 77 40 42	No	2.00		-
	Total Carried to Summary				-
11.0	**OUTDOOR FACILITIES**				
	In Adama a sample area of approximatly 1550 m2 for pavement works and gardening shall be executed. This area functions as demonstration object for different kind of surface designs with different materials.				
11.1.0	Earth and soil works				
11.1.1	Earth excavation with an excavator for the pavement area to a depth of 30cm and storage of excavated material on site.	m^3	160.00		-
11.1.2	Removing and dispose of existing plant material that is dead or in decline and level the surface according the drawing	m^2	1,400.00		-
	Sub total				-
11.2.0	Pavement The trachyt stone should be not shaped and laid broken - coursed on 5cm chrushed sand underneath by 20cm sub base course. The cost includes the sand bedding and natural stone pavement.				
11.2.1	Supply and lay down the stones in 5cm sand bed, fill the joints with stone chips, compact the paved area and clean the site.	m^2	150.00		-
11.2.2	Supply and lay down shaped stones (9/11cm) in 5cm sand bed, fill the joints with stone chips, compact the paved area and clean the site (for parking area)	m^2	210.00		-
	Sub total				-
11.3.0	Dry wall and sitting area Building dry wall and sitting areas without mortar with Trachyt stone.				
11.3.1	Supply Trachyt stones and construct dry wall (hight at beginning of wall ca. 30cm, increase hight up to 100cm in middle of wall) and sitting areas according to the drawings	m^3	150.00		-
	Sub total				-
11.4.0	Planting plants: Supply and store the plants, prepare planting beds with fertilizer, planting the plants according the drawings and water them. Attention: Watering, twice/day-/ remove fall down, cleaning the area, cutting the lawn, general maintenance of the described area, has to be included in the given unit price! Time period: 2 MONTHS				
11.4.1	Lawn, Kukuju supply and planting	m^2	720.00		-
11.4.2	Phoenix reclinata Coffee palm 150cm, supply and planting	No	10.00		-
11.4.3	Carica papaya Papaya 70-90cm, supply and planting	No	75.00		-
11.4.3	Mangifera indica Mango tree 80-100, supply and planting	No	40.00		-
11.4.4	Arundo donax Reed 100-150cm, supply and planting	No	300.00		-
11.4.5	Pennisetum purpureum Elephant grass, supply and planting	No	40.00		-
11.4.6	Sempervivum arachnoideum supply and planting	No	20.00		-
11.4.7	Agave, supply and planting	No	15.00		-
11.4.8	Hedge, supply and planting	No	900.00		-
11.4.9	Polystichum acrostichoides, Christmas fern, supply and planting	No	5.00		-
11.4.10	Acacia tortilis	No	5.00		-
	Sub total				-
11.5.0	Tree protection Protect the trees against damage caused by animals with 4 wooden stakes around the trees wrapped with wire mash.Distance between wooden stakes 50cm, hight until 150cm.				
11.5.1	Supply and install wooden stakes (5-8cm diameter and 200cm hight around the trees and cover it with wire mash (150cm hight)	No	16.00		-
	Sub total				-

Item No	Description	Unit	Qty	Unit Rate	Amount
	Total Carried to Summary				-