

Beerato Haffir Dam rehabilitation

SUMMARY		
No.	DESCRIPTION	AMOUNT IN TOTAL
1	Site clearing and mobilisations	
2	Silt trap	
3	Spillway channel	
4	Channel connecting dam and silt trap	
5	Care taker room	
6	Pipeline	
7	Inlet channel	
8	Solar pannels	
9	2 latrines	
10	Eath and geomembrane Work	
11	Other rehabilitaion structures	
12	Visibility	
	TOTAL	
	Tax (3%)	
	Grand Total	

SILT TRAP					
SN	Description	Unit	Quantity	Unit price	Amount
1	level and remove if any deposit silt in the silt trap with these specified dimensions (31mx23mx0.2m) Compact and level the base surface. to eliminate future settlement. Engineer to approve before any construction to start	M ³	142.6		
2	Provide well compacted gravel stone foundations(31mx23mx0.2m) to receive concrete slabs.	Cum	142.6		
3	Construct and place 0.15 m thick RCC concrete Slab(1:2:4) on the top of the gravel stones.Provide Hight yeild steel strength.Provide 12 mm bar, 0.3 m c/c spacing in both directions. Engineer to approve.	Cum	106.95		
4	Construct 8 RCC column (1:2:4) from foundation to top of the silt trip, with dimensions of (2.5mx0.4mx0.3m).Provide 12mm vertical bars at 35cm c/c and 8mm tie bar 30cm c/c.	M ³	2.4		
5	Constructuoin of RCC middle beam (1:2:4) with dimensions (108 m x 0.4 m x 0.2 m) reinforced with 4 #12 mm and #8mm links at 0.3 m C/C.	Cum	8.64		
6	Constructuoin of RCC top beam (1.2.4) with dimensions (108 m x 0.4 mx 0.2m) reinforced with 6 #12mm bars and #8mm links at 30cm C/C.	Cum	12		
7	Construction of rubble stone mansonry walls with dimensions of (108 m x 2.5 m x 0.4 m), jointed between stones filled cement/ sand mortar(1:3 ratio).	Cum	108		
8	5cm thick Plastering and finishing with water proof murum blind to prevent leakage and water absorption (internally on the walls and floor), cement, mortar (ratio 1:3)	M ²	345.6		
	Total of Silt trap				

Construction of spillway

SN	Description	Unit	QTY	Unit price	Amount
1	Cut trees and other deposit materials on the structure. take the actual level of the spillway taking the reference from the the natural ground level. starting from the edge of the silt trap with dimension of (15m x 6m x 0.1m) up to beyond the embarkement as per the drawings.	M ³	9		
2	0.2 m thick approved hardcore filling spread, well rammed and compacted in to receive 0.15 m layer of concrete surface bed as per drawings.	M ³	18		
3	Construct and place 0.15 m thick RCC concrete Slab(1:2:4) on the top of the approved hardcore filling spread. Providing Hight yeild steel strength of 10 mm bar dia., 0.35 m c/c spacing in both directions.	M ³	13.5		
4	Rehabilitation of masonry wall for the channel removing old plaster and apply new plaster with 1:3 ratio. with a hieght of 1.5m, width of 0.5m and length of 30 m which is the addition of the two oposite walls of rubble stones. Flow the drawing and the Approval of the Engineer.	M ³	22.5		
Total					

Channel connected between silt-trap and the Dam

SN	Description	Unit	QTY	Unit price	Amount
1	Remove all the existing structures and level it using leveling instrument taking the reference from the inlet channel of the water pan/catchment. Removing length of the connecting channel is 8m long in general which 5m from the pan and 3m from the silt trap. while the complete length of the channel is 23m with a width of 6m. and the engineer must approve it.	M ³	10.88		
2	provide 0.2m thick approved hardcore filling spread, well rammed and compacted. To receive 0.2 m layer of concrete surface bed as per drawings.	Cum	9.6		
3	Construct and place 0.2 m thick RCC concrete Slab (1:2:4) on the top of the gravel stones and top slab cover. Provide High yield steel strength. Provide 12 mm bar, 0.25 m c/c spacing in both directions. Engineer to approve.	Cum	9.6		
4	Construction of RCC walls (16 m x 1.1 m x 0.2 m). provide two lines and opposite bar mesh. Follow the drawing and Engineer to approve before concreting. Provide 10 mm vertical bars at 0.15 m c/c and 10 mm distribution bar 0.3 m c/c. the engineer must approve before concreted it.	Cum	3.52		

5	Rehabilitating and repairing of remained existing masonry wall for the channel removing old plaster and apply new plaster with 1:3 ratio. with a hieght of 1.5m, width of 0.5m and length of 30 m which is the addition of the two oposite walls of rubble stones. Flow the drawing and the Approval of the Engineer.	M ³	69		
Final Channel Total					

Construction of inlet

SN	Description	Unit	QTY	Unit price	Amount
1	Cut trees and other deposit materials on the structure. take the actual level of the spillway taking the refference from the the natural ground level. starting from the edge of the silt trap with dimension of (12m x 6m x 0.1m) up to beyond the embarkement as per the drawings.	M ³	7.2		
3	Repair and construct the preveous base slab of the inlet channel and place 5cm thick plain concrete (1:2:4) on the top of the preveous base slab.	M ³	3.6		
4	Rehabilitating and repairing of masonry wall for the channel removing old plaster and apply new plaster with 1:3 ratio. with a hieght of 1.5m, width of 0.5m and length of 24 m which is the addition of the two oposite walls of rubble stones. Flow the drawing and the Approval of the Engineer.	M ³	18		
Total					

BEERATO EARTH AND GEOMEMBRANE WORK

S. NO	DESCRIPTION	Unit	QTY	U.PRICE	AMOUNT (USD)
1	backfill and compact the slopes of the dam and Level it with compacting erroded areas on the slopes and other damaged areas need extra backfilling and comapction each 0.2m by watering some areas like the inlet slope of the dam during the work.	M ³	120		
2	Increase 0.4m to the height of the pathway between dam and the embankment insuring the leveling and compact well each 0.2m with watering during the compaction avoiding collapse during the trench excavtion and install of the geomembrane.	M ³	506		
3	Increase the space between the dam and the embankment by cutting and removing back minimum of 2m using truck loade(sheewal)	M ²	312		
4	excavation of trenching baried geomembrane for anchoring its edges and backfillig with compacteing it	M ³	109		
5	Intalling the Geomembrane with this specification HDPE UV 1.5 mm Thickness + 200 square meter overlapping And the contractor must test the quality of the HDPE it should have be UAE or KSA high quality geomembrane.	M ²	6516		
6	Construction of rubble stone mansony walls at the four corners of the dam with dimensions of (24 m x 0.5 m x 0.4 m), jointed between stones filled cement/ sand mortar(1:3 ratio). And 4cm of plastering applied on it.	M ³	5.76		
	Total				

Caretaker Room					
No	Description of works	Unit	QTY	Unit Cost	Total Cost
1	Site Clearing	M ²	36		
2	Excavation of found trench 0.4m x 0.6m depth.	M ³	3.84		
3	Rubble stone foundation wall in cement & sand mortar 1:4 (0.9 m x 0.4m wide) min. 30cm above ground level.	M ³	5.76		
4	R.C (1:2:4 mix) in ground beam (0.4m x 0.15m), with 4No. Y12 re-bars & R6 links @ 300 mm c/c.	M ³	0.96		
5	15cm thick murrum or other approved backfill material, well compacted and leveled.	M ³	11.2		
6	15 cm thick stone hardcore filling well compacted and leveled.	M ³	3.2		
A	SUB-TOTAL A				
1	Superstructure works including conc. floor slab				
2	Mass concrete (1:3:6 mix) in conc. floor slab 10cm thick.	M ³	1.6		
3	20cm thick cement block walling laid in cement & sand mortar 1:4 mix ratio.	M ²	51.2		
4	R.C (1:2:4 mix) in lintel beam(0.2m*0.15m) with 4No. Y12 re-bars & R6 links @ 250 mm c/c.	M ³	0.48		
B	SUB-TOTAL B				
1	Roofing:30 Gauge galvanized corrugated iron sheets fixed to timber Purlins	M ²	19.5		
2	ceiling	M ²	16		
C	SUB-TOTAL C				
	Plastering and other finishing				
1	External & internal plastering, 25 mm thick, cement / sand mix 1:5, with wood float finish.	M ²	96		
2	Apply two coats white wash and distemper paint to the ceiling and plastered wall surface.	M ²	96		
3	provide floor tiles (iranian, 40cm*40cm)	M ²	16		

D	SUB-TOTAL D				
	Doors & Windows				
1	Supply and fix metal door (2m x 1.2 m) complete with frame, hinges & locks and to include two coats of gloss paint.	No.	1		
2	Supply and fix metal windows (0.8m x 0.8m) complete with burglar bars, hinges, locks and to include two coats of paint.	No.	1		
E	SUB-TOTAL E				
1	Electrical installation works	LS	1		
F	SUB-TOTAL F				
GRAND TOTAL					

INSTALLATION OF SOLAR PANNELS

No	Descriptions	unit	QTY	unit price	Amount
1	Main equipment (Supply and install)				
1.1	Electrical Solar water Pump with 2.6 kw, 3-ph motor capable of delivering 150 m ³ per day at 15 depth along with 2.2-5.5kw ABB Solar Inverter Control Unit	No	1		
1.2	415watt Solar panels (Germany made) which re arranged in two rows and four columns	PCS	8		
1.3	Supply Solar module panels and support structures to safely carry all the solar panels strategic to the solar rays and to withstand high wind speed (40 km/h), corrossion resistant of 4" inch pipes or coated, Excavating column foundation upto 0.6m deep, 0.5m width and 0.5m length, short columns must not shorter than 0.8m above the ground. Engineer to approve before solar pannels are connected.	LS	1		
2	Accessories (supply and install)				
2.1	4.0mm ² Flat Submersible Drop Cable	M	100		
2.2	4.0mm ² x 4Core U/G Cable	M	25		
2.3	3" rubber Pan/cachment pipes – complete with adopters	Ring	4		
2.4	3" Gate valve	No.	2		
2.5	3" non return valve	No	2		
2.6	Float switch	No	1		
2.7	1.5mm ² x 2core Underground cable	M	25		
2.8	Splicing Kit	No	1		
2.9	Installation sundries and any other fittings required for satisfactory installation of the pump but not specifically contained else where in this BoQ	LS	1		
3	4" x 6" Pan Cover	No	1		
3.1	4mm ² x 1 Core Earth Cable	M	15		
3.2	Earth Rod c/w Clamp	No	1		
3.3	B Meters DN40 water meter	No	1		

3.4	adaptor metal box	No	1		
3.5	Installation charges.	LS	1		
4	Supply and construct fencing of the solar site with C.H.S. posts and 50mm diamond wire mesh 4mm wires. Price includes digging for foundation, concrete foundation works, supply and erection of corner posts at bend points, intermediate posts, mesh wire, 4mm galvanized mild steel straining wires, etc... . The cost also includes painting work and Double leaflet gate with dimensions 2 x 1830 mm x 2075 mm	M	30		
Grand Total					

OTHER STRUCTURE REHABILITATIONS

No.	Description	Unit	Quantity	Unit price	Amount
1	Rehabilitation of the elevated water tank giving the consideration: repairing any defects on its surface, performing screeding the inside of the reservoir and repainting it if there is any leaks existing	M ²	203		
2	Rehabilitation of the sand filter repairing any defects on its surface and repainting it	M ²	33		
3	Rehabilitation of community water point by repairing any defects on its surfaces	M ²	17		
4	Rehabilitation of people consumption water tank/ water filtered collection tank elevated base including repairing surface defects.	M ²	19		
5	Rehabilitation of animal troughs repairing any defects on it.	M ²	145		
6	Replacing failed pipelines and installation of new pipelines which are directly connecting concrete elevated water tank and the community water point with its accessories	M ²	60		
TOTAL					

PIPELINE WORKS					
No.	Description	Unit	QTY	Unit rate	Amount
1	Supply of Ø 2" HDPE PN10 Class B 200 m long transmission network buried at 0.70 m below ground including necessary fittings and controlling chambers.	M	300.00		
2	Excavation of trench lines for installation of Ø 2" HDPE PN10 Class B pipeline at the mean depth of 0.70 m.	M ³	56.00		
3	Install of Ø 2" HDPE PN10 transmission pipe line and also fix and protect the pipe with a bed and cover layer of silty sand compacted at 85 Proctor complete	M	300.00		
4	With the relicts of excavation back fill the trench complete	M ³	56.00		
	Total pipeline				
	GRAND TOTAL				

SANITARY WORKS

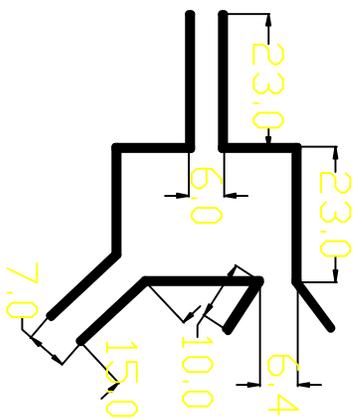
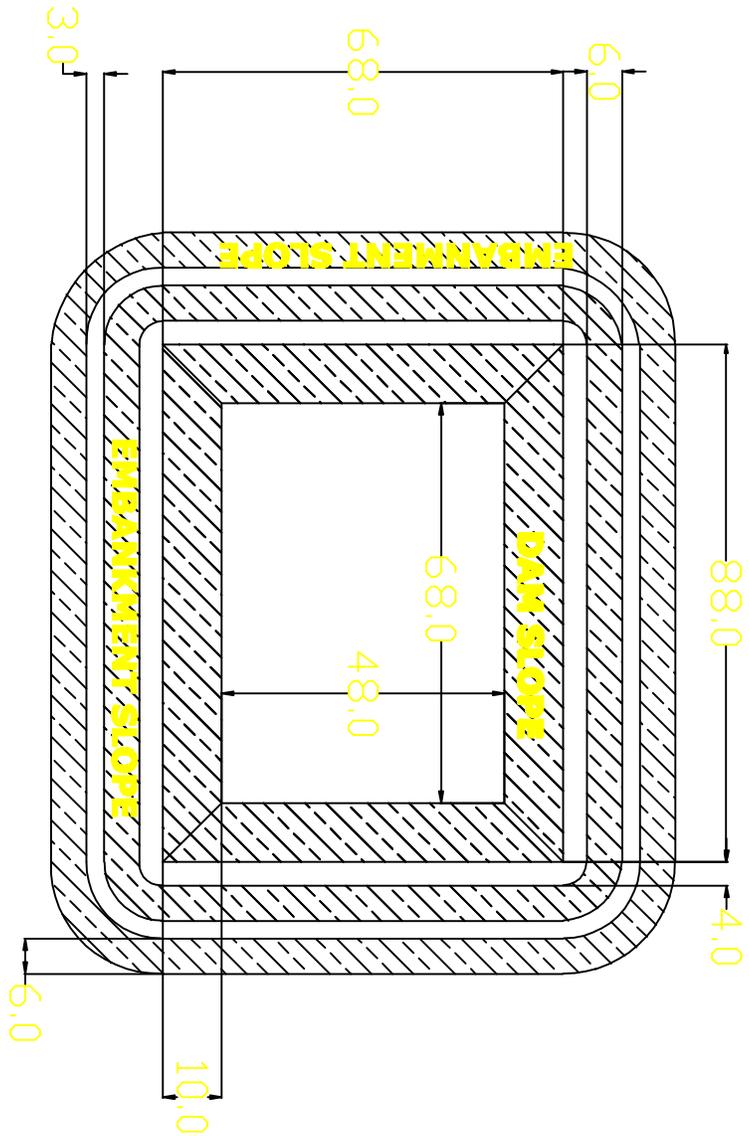
No	Item Description	Unit	QTY	Unit Rate US\$	Amount
1	Excavation of pit latrine with dimensions of (1.4 m wide x 2.4 m long and 3 m deep) and all surplus excavated materials should be cart away from twin latrine area.	M ³	10.08		
	Construct septic tank rubble stone wall jointed cement sand mortar with a ratio (1:2:3), and depth of 0.6m and a width of 0.5m to carry the concrete slab, the contractor must follow the design and the engineer approve it.	M ³	6		
2	Excavate and install sewage pipe sloped trenches 0.3 m wide 3 m long and 0.5 m deep at average depth at the back side of the latrine building including all compaction and backfill works	M ³	0.72		
3	Provide and install 4 inch PVC pipes 3 m long from the toilets to septic tank	M	3		
4	Construct 0.5m x 0.5m x 0.8 deep RCC collection Chambers with movable concrete lid	No	2		
5	The dimension of the latrines (1.4 m x 2.4m x 3m) and engineer must approve before and after concreted 0.20 m of R.C.C concrete cover slab at the top of the latrine with a ratio of (1:2:3) smoothing by trowel. 14mm diameter bars, with a spacing of 20c/c.	M ³	1.2		
6	Provide and install 3" PVC air ventilation pipe with height of 50cm above the roof	No	1		
7	Installation of 1/2" GI Pipes branching from the distribution lines to the latrines upto a length of 30 m with all necessary fittings, connections and control chambers.	No	10		
	super structure				
8	Excavation of found trenches 0.4 m x 0.5 m depth.	M ³	7.4		
9	Rubble stone foundation wall in cement & sand mortar 1:4 (1m x 0.4 m wide) min. 0.3 m above the	M ³	4.56		

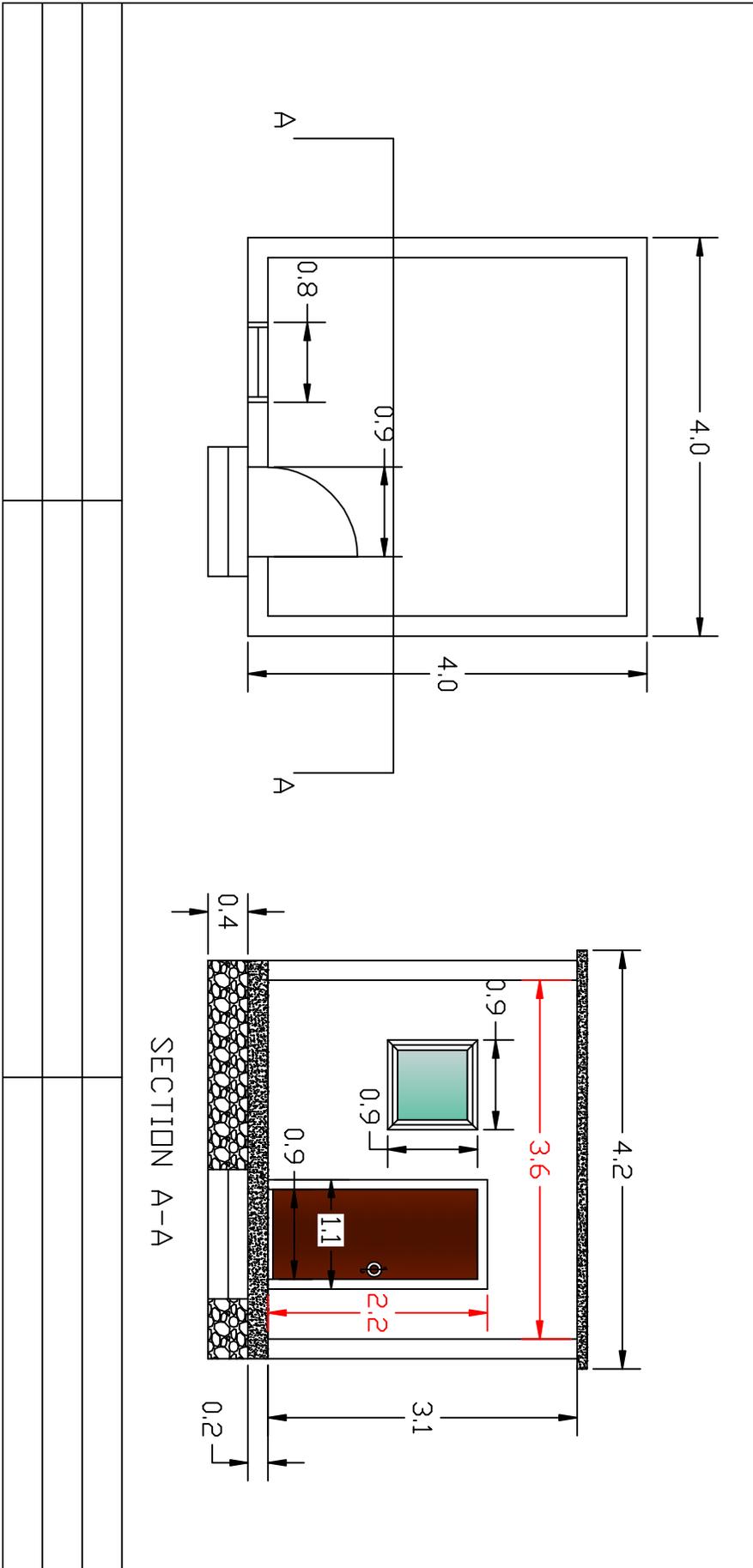
10	R.C.C foundation beam (1:2:3 mix) above the rubble stone foundation (0.4 m x 0.15 m x 11.4 m), with 4No. Y12 re-bars & R6 links @ 300 mm c/c.	M ³	0.684		
11	0.15m thick murrum or other approved backfill material, well compacted and leveled.	M ³	0.96		
12	0.15 m thick stone hardcore filling well compacted and leveled.the engineer must above it before concreted it.	M ³	0.72		
13	Mass concrete (1:3:6 mix) in conc. floor slab 10cm thick.	M ³	0.72		
14	construction of cement block wlls of 0.2 m thick jointed with cement & sand mortar 1:3 mix ratio.	M ³	30.78		
15	R.C.C (1:2:4 mix) in lintel beam (0.15 m*0.15 m*16) with 4No. Y12 re-bars & R6 links @ 300 mm c/c.	M ³	0.342		
16	Roofing:30 Gauge galvanized corrugated iron sheets fixed to timber Purlins	M ²	6.25		
Plastering and other finishing					
17	External & internal plastering, 25 mm thick, cement / sand mix 1:3, with wood float finish.	M ²	61.56		
18	Apply two coats of white washing and distempering to the wall surfaces.and before the engineer above it.	M ²	61.56		
19	Provide floor tiles (iranian, 40cm*40cm)	M ²	7.4		
Doors & Windows					
20	Supply and fix metal door (2 m x 1.2 m) complete with frame, hinges & locks and to include two coats of gloss paints.	pcs	1		
21	Open ventilation window at the top levels of the wall with dimensions (0.4m x 0.3m)	No	1		
Total cost of one latrine					
Grand Total (two latrines)			2		

No.	Description	Unit	QTY	Unit price	Amount
1	Billboard (3.5m*1.5M)	Pcs	1		
2	Visiblity on elevated ta	Lump sum	1		
	Total				

Beerato Haffir Dam designs

<p>DESIGNED BY:</p>		<p>1. ALL DIMENSIONS ARE IN METERS 2. INLET, OUTLET, OVER FLOW, AND SILT TRAP HAVE RCC BASE SLAB</p>
<p>SCALE:</p>		<p>REHABILITATION OF BEERATO CATCHMENT</p>
<p>APPROVED BY:</p>		<p>OD/NAME</p>





Technical Specification for the Dam Rehabilitation

Dams location: Ceel Xume and Beerato villages in Odwayne District

1. Geomembrane installation

- **Subgrade Preparation and Compaction:**

Before continuing with all other tasks, the bed, as well as the sides of the embankment, must be levelled, compacted and prepared for laying the lining plastic. Any rocks, large stones, or other projections on the embankment's bed and sides that could damage the lining plastic should be removed.

Compacted soil Cover shall not contain sharp, angular stones or any objects that could damage the liner, to avoid any puncture problems of fill settlement under the structure, all the superficial materials should be removed from the bottom of the dam and re-filled with smoothly compacted fine quality soil.

- **Geomembrane Liner Placement**

The geomembrane should be placed as soon as possible after subgrade preparation is done, if it is left exposed sometimes to the elements, the subgrade can be eroded and/or softened, which may result in requiring re-work and likely re-compacting again.

To improve the permeability of the bed (water retention area) and sides of the embankment dam, a geomembrane plastic of 1.5 mm thickness should be laid on the upstream side of the embankment. HDPE geomembrane liner cover should be used on water retention bed and for full-face up to 2m upstream of the embankment.

- **Installation procedure**

- The geomembrane rolls are unrolled from the trench towards the embankment and the geomembrane bed. Temporarily fixed/ ballast weights should be put on the liner to avoid it slipping down and wind uplifting.
- Installation starts with covering the embankments.
- Ensure that no pebbles or sharp objects are trapped under the geomembrane, whilst the plastic sheets are being unrolled.
- The geomembrane must be installed with some slack to allow for some shrinkage and dimensional variations due to temperature changes and prevent overstretching in case of differential settlement.

- **Embankment and Stability of slopes**

A maximum of 1 m of the current embankment should be cut, this will help for the support of anchorage trenches and avoiding washback soils. Directly after unfolding the geomembrane, some temporary ballast needs to be installed in the anchor trench and on the geomembrane in order to avoid the geomembrane slipping down the slope or being lifted by the wind.

Once positioned, geomembrane plastic sheets along the sloped embankment, temporary ballasting can be done with sandbags (connected or not by ropes) located along the edges of the panel, primarily to secure the panel from overturning /moving out of position due to wind. For the batter slopes, geomembrane panels were secured into position by anchoring the geomembrane into a trench positioned at the top of the batter slope, minimum trenches 0.7m deep and 0.5m as per drawings

The anchor trenches should be backfilled as soon as possible because the weight of the geomembrane, combined with thermal expansion and contraction movements, will cause the geomembrane to be pushed down the slope. Once this occurs, repositioning the geomembrane and achieving the minimum amount of liner needed in the trench becomes extremely difficult.

- **Welding specifications**

A variety of welding techniques may be used to create a watertight connection between separate geomembrane plates. The quality of a geomembrane is partly determined by the quality of the proper panel welding.

The geomembranes should be assembled to ensure a watertight, resistant, and durable seam. The overlap between HDPE geomembrane panels should be at least 15 cm wide and joined by thermal welding (wedge welding or hot-air welding which ever available).

2. Earth and Civil Engineering works

Preparation of the site and removing any unwanted materials shall be the first priority of the construction, and the rehabilitation of the protection fence should be embraced with the dam surroundings.

Construction of a new inlet channel and silt trap and removal existing ones, the new inlet should be constructed with the help of break velocity (energy dissipators) to the inlet blocks on the inlet structure.

Construction of new spillway for the higher pool levels during high rainy seasons, the size of the spillway cannot strong enough to hold outflow water due to the its current dimensions,

new design of spillway was prepared as shown on the drawings. erosion protection boulders are vital immediate after the spillway, as soon as water come out from the spillway structure, they usually damage on the embankment if these structures properly placed, to control scouring and protect embankment foundation damage, boulders should be placed as per the design.

- **Concreting**

The finished concrete shall be dense durable and free from cracks and honeycombing.

- **Mixing, Transporting and Placing**

All concrete shall be made in a mechanical mixer. Concrete shall be placed within 30 minutes of completing the mixing or agitation. Mixing may be continued in the mixer or agitator up to a maximum period of 90 minutes and for not less than the period required to achieve an even consistency of the mix. All concrete shall be compacted by a mechanical vibrator and a slump test shall be carried out on each batch mixed, unless otherwise approved by the Project Manager's Representative or site supervisor Engineers.

- **Concreting in difficult weather conditions**

Concreting during hot or cold weather conditions shall comply with the established requirements of good practice. During wet weather adequate covering shall be provided to both materials and concrete.

- **Curing**

All concrete shall be properly cured for a minimum 10 days, by wetting or by use of an approved curing membrane.

- **Finishes to Concrete**

All exposed faces of concrete shall be hard, smooth and free from honeycombing and other blemishes. All projections shall be rubbed down with carborundum stone. The normal finish to slabs and screeds, unless otherwise specified, shall be formed by wood floating the accurately levelled or screened surface.

- **Making Good**

Any section of the work which, in the opinion of the Project Manager, does not conform to the requirements or clear intent of this Specification, or to the requirements of established good practice, shall be made good or removed and replaced as directed by the Project Manager at the expense of the Contractor.

- **Ready Mixed Concrete**

Ready mixed concrete shall comply with the requirements of this Specification and to those other requirements of BS 5328 which do not conflict with the Specification.

- **Approval**

As soon as possible after the commencement of the Contract, the Contractor shall submit to the Project Engineer for his approval a list of his proposed suppliers, sources of materials and proposed standards. No materials, plant or equipment shall be procured for the Contract without first obtaining the Project engineer's approval. Samples of materials shall be submitted to the technical engineers/ site supervisor for approval. Materials subsequently supplied shall conform to the quality of the samples which have been approved by the Engineer. No standards, method of manufacture or specification shall be changed without the approval of the Project Engineer. Where possible, plant shall be supplied to the same standards or to compatible standards.

TENDERS DECLARATION FORM

“Call for tender for the provision of interim staff services for the European Institute of Innovation and Technology”

1- Bidder Info

The tender is submitted by

Name of the tenderer ¹	
Address	
City	
Postcode	
Country	
Website	
E-mail	

The contact person for this tender is

Name	
Position/function	
Office address	
Telephone	
E-mail	

The person authorized to represent the tenderer and to sign the contract is

Name	
Position/function	
Office address	
Telephone	
E-mail	

¹ Please indicate the official name of the company/organisation/institution etc.

2. STATEMENT

I, the undersigned, being the authorized signatory of the above tenderer, hereby declare that we have examined and accepted the terms and conditions included in the tender specifications and its Annexes.

We propose to provide the requested services on the basis of our offer.

Signature

Name

Date