

National Competitive Procurement for Construction of Maniyafushi Mariculture Research and Development Facility

Reference Number: (IUL)13-K/13/2018/155
Project Number: TES/2018/W-26

New scope of work

In addition to the scope identified in the bidding document and technical specifications, please find the scope of additional works mentioned in Addendum_1_Revision

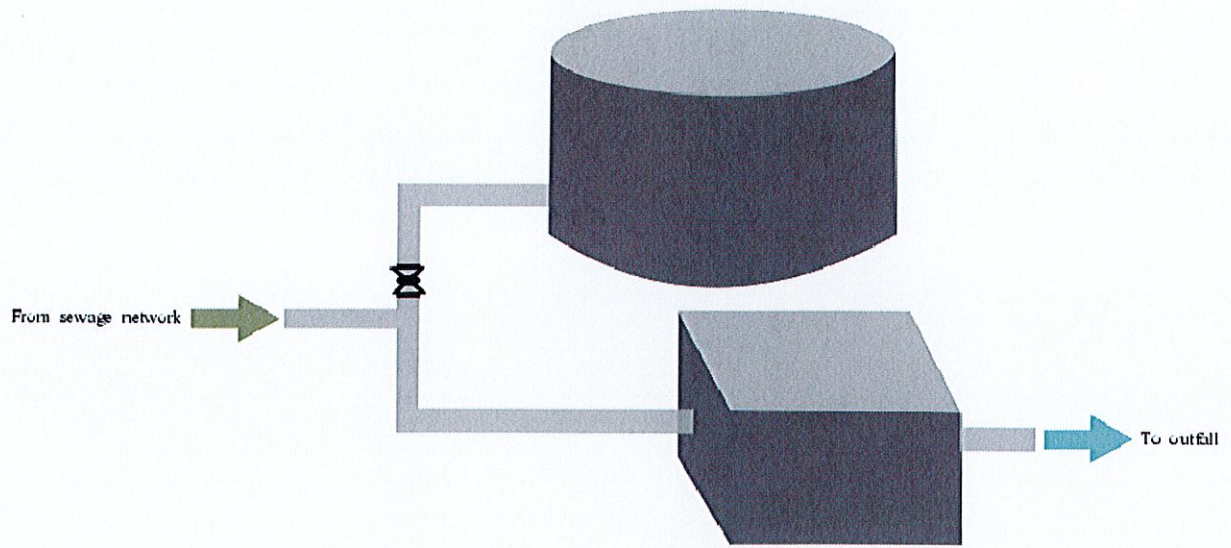
Sewage treatment plant installation, connecting to the sewer network, and extension of sewage outfall pipeline

1. The contractor shall provide the specification for an activated sludge sewage treatment plant suitable for a facility with a maximum of 50 individuals at any given time
2. The contractor shall obtain any authorisations required for the installation and operation of the STP.
3. The contractor shall procure and install the sewage treatment plant upon approval from the client.
4. All house plumbing (except for the hatchery waste water) should be connected to the sewage treatment set up
5. The contractor shall estimate the lengths of pipelines in the sewage network based on the information provided.
6. The sewage treatment plant should be connected to the existing septic tank and outfall set up, so as to allow for an emergency outfall
7. The existing outfall pipe should be extended by a length of 550 ft, so that the outfall is extended off the reef edge



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Schematic diagram of sewage treatment plant connections with emergency outfall



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Location of sewage treatment plant



Note: the sewage treatment plant is not to scale with respect to the map

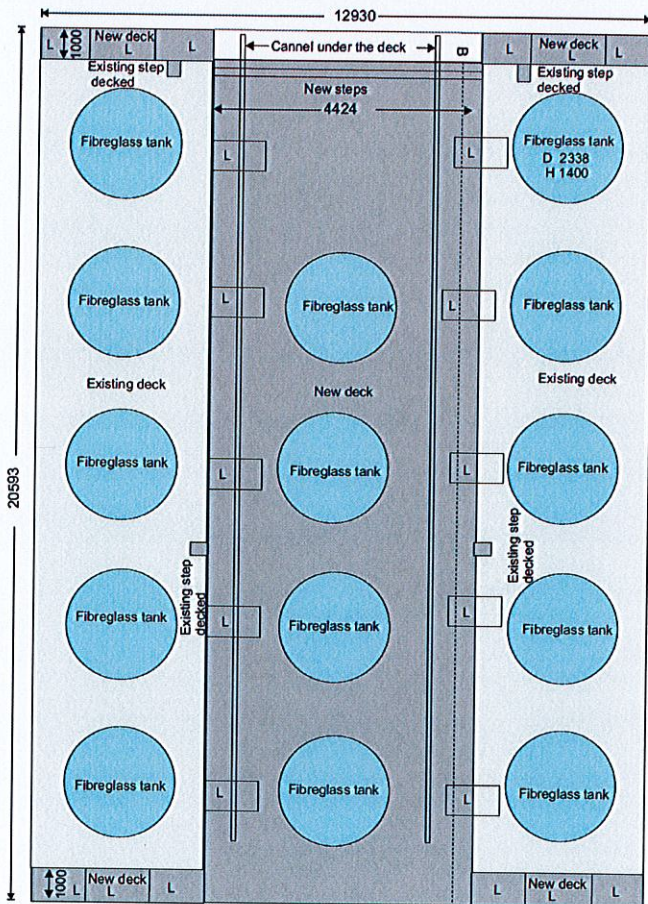


Hatchery deck completion, fiberglass coating and painting

1. The contractor shall construct a wooden deck to cover the remaining portion of the hatchery in accordance with the schematic provided (size: 4424mm x 20,593mm, and four sides of the existing deck with size: 1000 mm x 4,253 mm, marked "new deck" on the diagram in dark grey shade), using marine plywood 18mm in thickness.
2. The frames of the deck shall be constructed with 2" x 6" timber.
3. The entire deck (both the old and the newly constructed) shall be triple coated with fiberglass mats and double coated with epoxy paint (blue colour).
4. The contractor shall construct two wooden steps measuring 4424 mm (length), 12" x 8" steps, triple coated with fiberglass mat and double coated with Epoxy paint.

Hatchery deck details

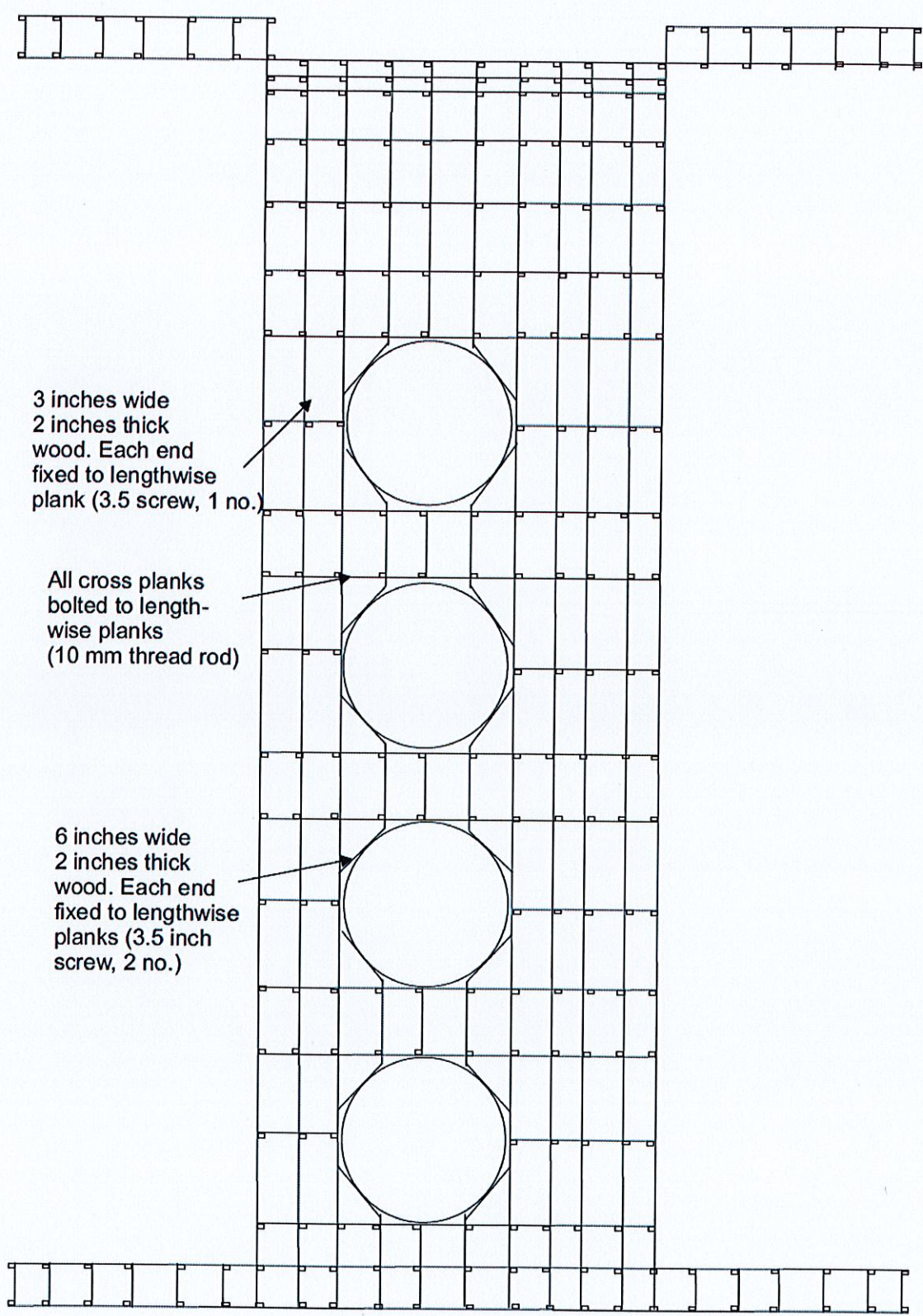
Please note that these details were provided in the Addendum1_Revision document set



Deck

L: Excess hole lid 1212 x 1000. Both side fibre-coated.
2 grooves at both ends to insert handles. 8 SS handles to be provided.

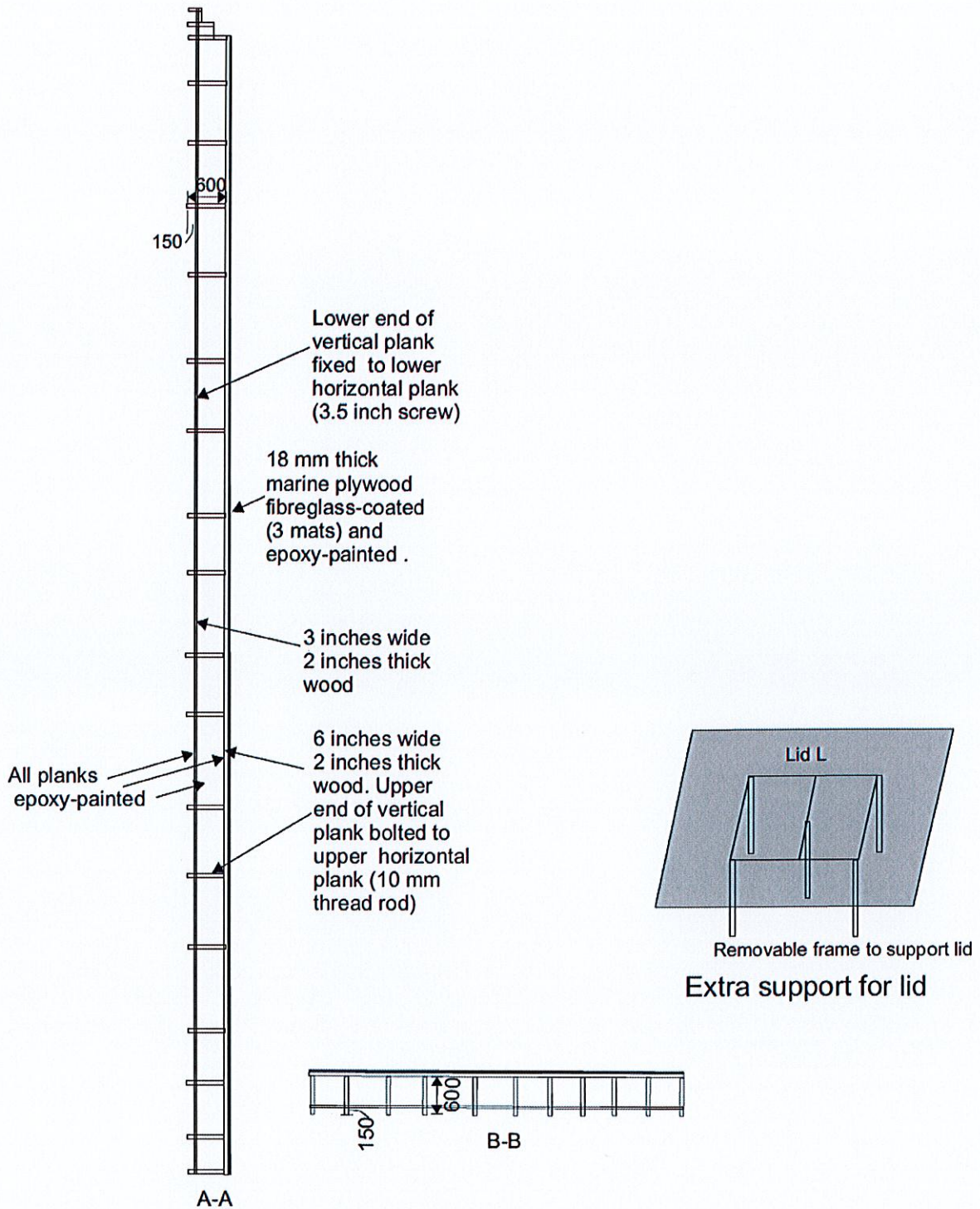
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Deck frame: top

Jel





Deck frame: sections

Hatchery wastewater disinfection

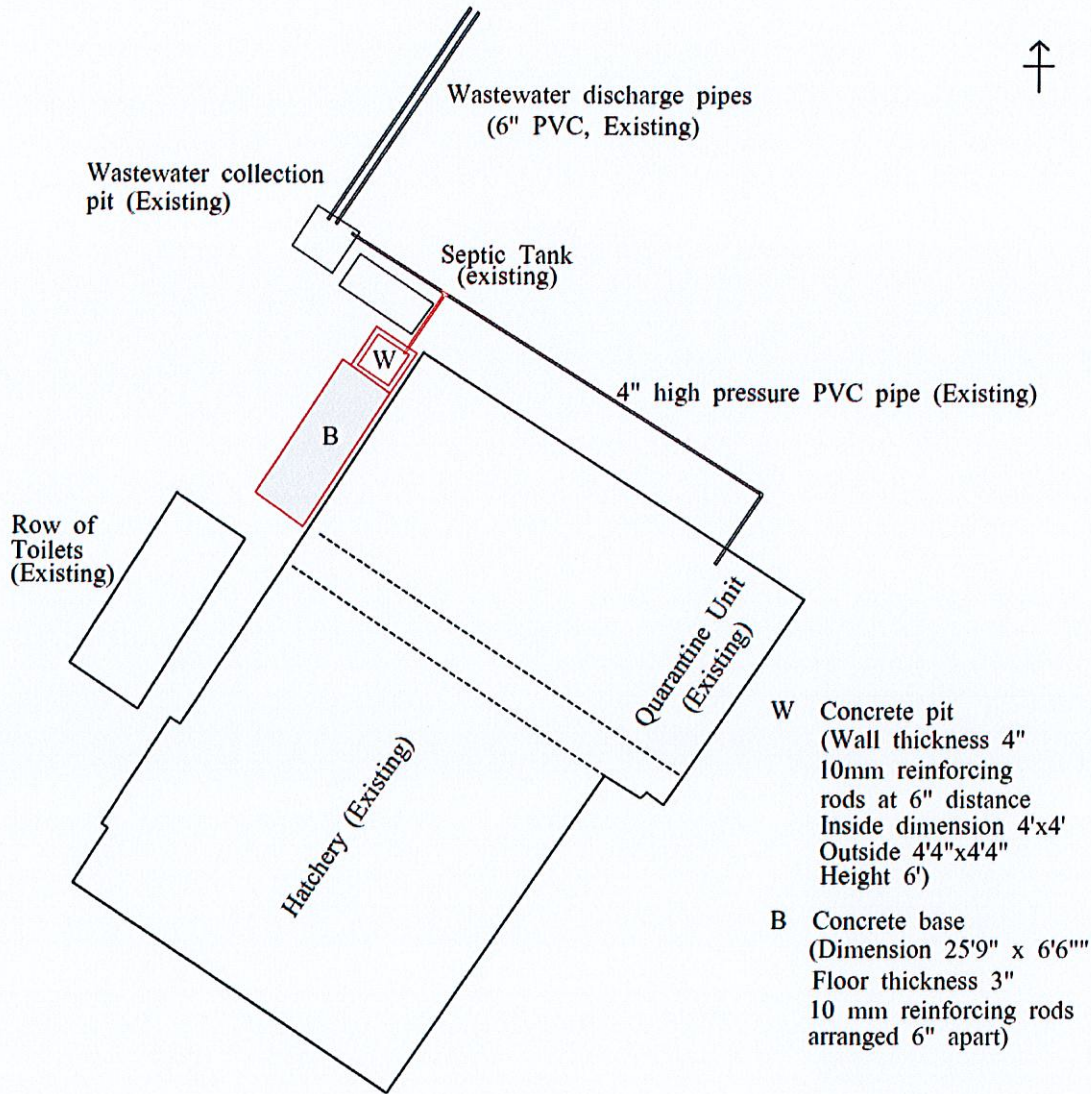
1. The contractor shall fill the existing underground concrete tank measuring 12.5'x8'x4'10", with sand or small debris generated from the demolition works



2. The contractor shall fill the existing underground concrete tank inside the Quarantine Unit of the Hatchery, measuring 5'9"x 4'9" with sand or small debris generated from the demolition works
3. The contractor shall construct a 25'9" x 6'6" concrete floor at 3" thickness, with 10mm reinforcing rods arranged 6" distance apart.
4. The contractor shall place fiberglass tanks provided by the client on the concrete surface constructed
5. The contractor shall construct the concrete pit (marked "w" on the schematic)
6. The contractor shall connect the two fiberglass tanks together with high pressure PVC pipe (2")
7. The contractor shall fix a 4" ball valve on the existing pipeline (4" pipe at ground level) coming from the quarantine unit to the existing wastewater collection pit. The contractor shall connect this pipeline (at ground level) to the concrete pit (w) with 4" high pressure PVC pipe. There shall be a 4" ball valve on the pipe
8. The contractor shall install an electrical pump (P) to pump water from the waste water collection pit (w) to the fiberglass tanks (pipe H high pressure 2"pvc pipe, foot valve, union connection). The pipeline shall be buried at 6" depth except the foot valve end and fiberglass tank end
9. An elbow and standpipe of height 8' (standpipe removable) shall be put on the two existing 6"pvc pipe between the waste water collection pit and reef edge. Water coming from the fiberglass tank should be discharged into these standpipes. The standpipes are supported by two GI pipe (1.5" dia) poles (height 10', 3' in concrete base). Standpipes are clipped to two horizontal GI pipes (1.5" dia., length 5') fixed to the poles.



Schematic of the hatchery wastewater treatment area

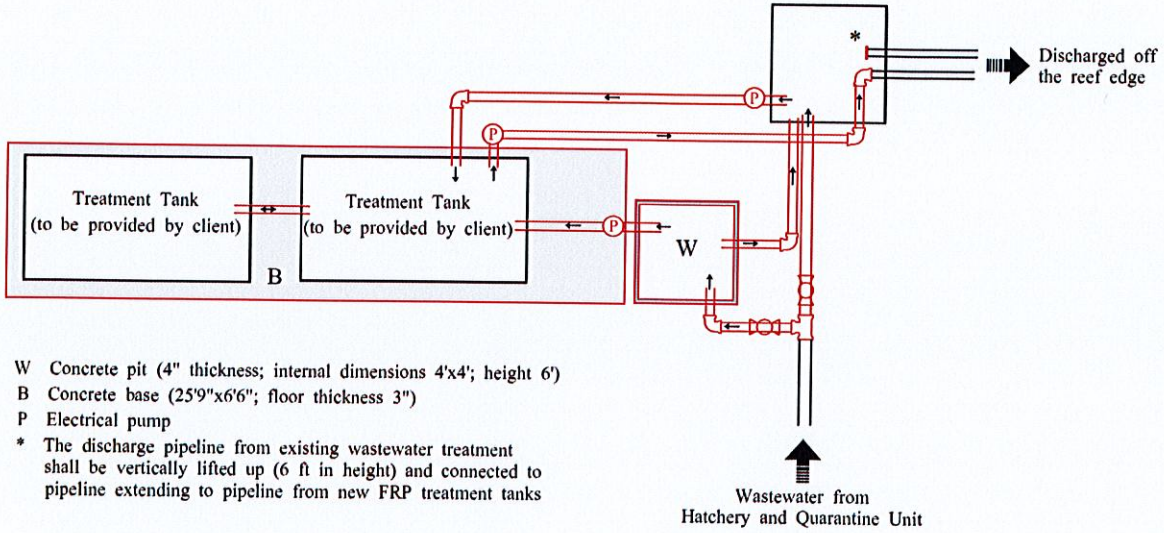


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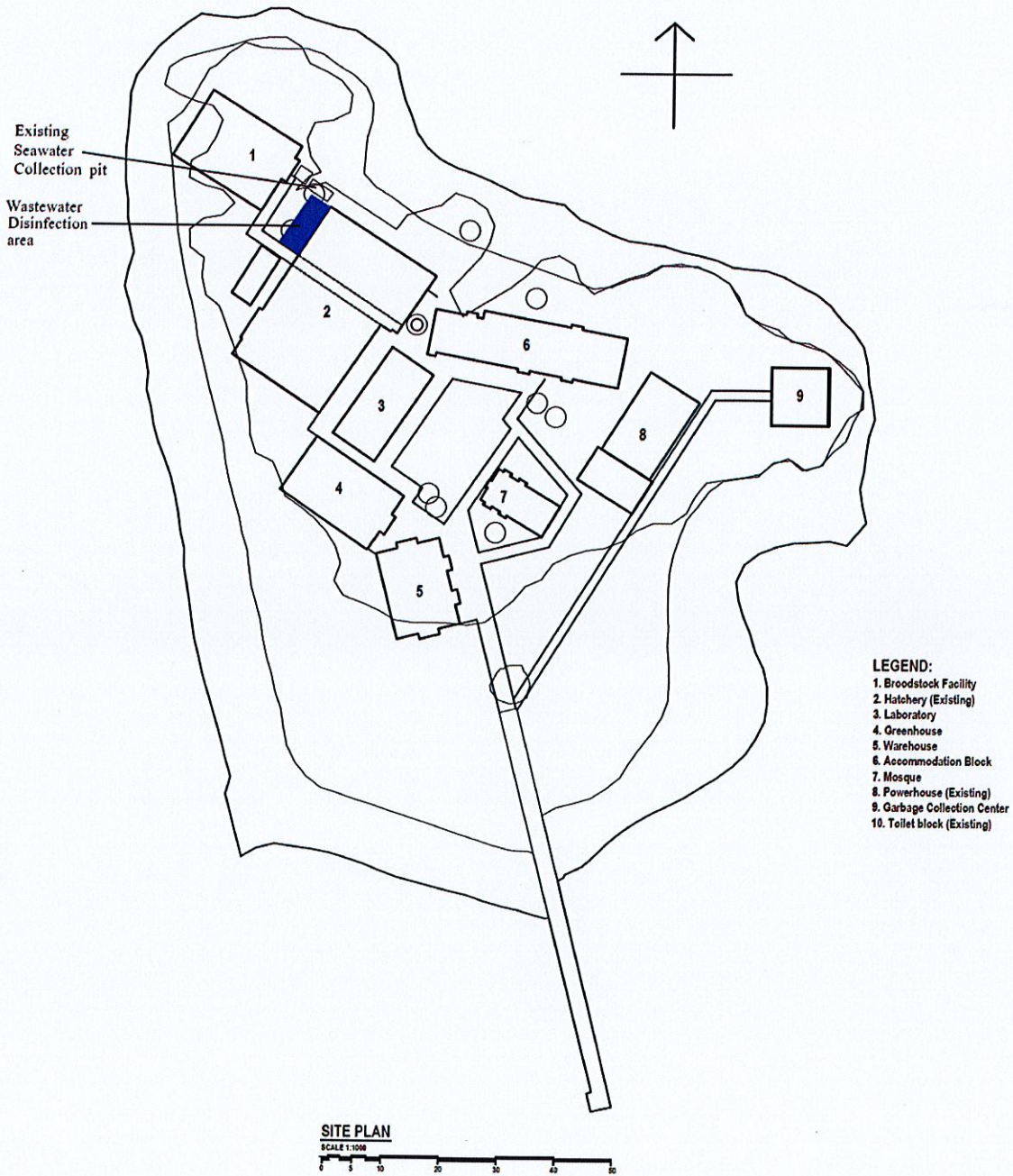


10.

Pipeline details for new hatchery wastewater treatment system



Location of the hatchery wastewater disinfection area



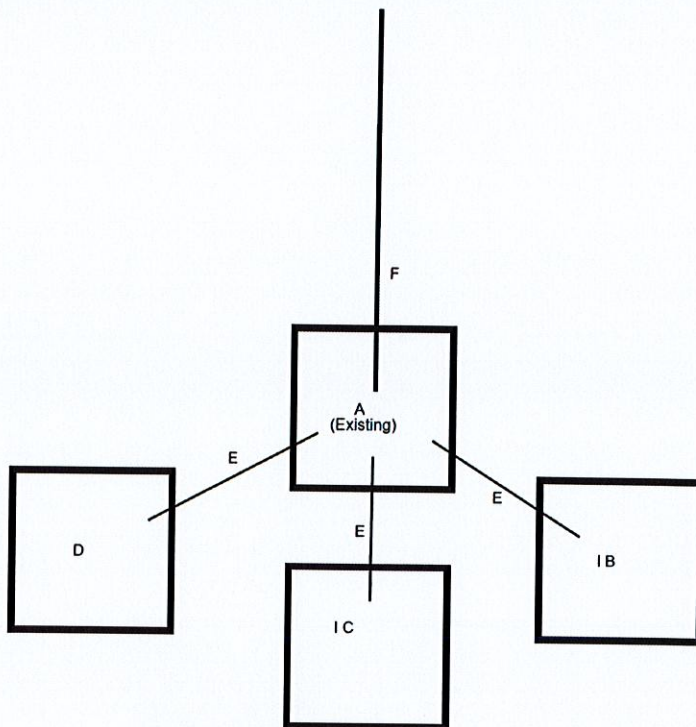
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Saltwater intake well construction and connection to the existing intake well

1. The contractor shall construct three concrete wells, measuring 4' 5" x 4' 5" x 8' height (marked B, C and D on the diagram, well A and intake pipe F existing) with a wall thickness of 5 inches. The wells should be reinforced with 10 mm reinforcing rods at 6" x 6" distance. The inside dimensions of the wells should measure 4' x 4'
2. The contractor shall deploy the wells on the lagoon side of the existing well and connect the wells to the existing well A using 9' length of 4" high pressure PVC pipes. The connection is at the bottom. A pvc high pressure 4" standpipe should be placed at each end of each bottom connection pipe.
3. Each well shall have a concrete lid constructed in 4 parts, each with a thickness of 3 inches and reinforced with 6mm reinforcement rods laid 4"x 4" apart.
4. The wells shall be open bottom, filled with a 6" layer of coral rubble

Schematic of the new intake wells and connections to the existing well



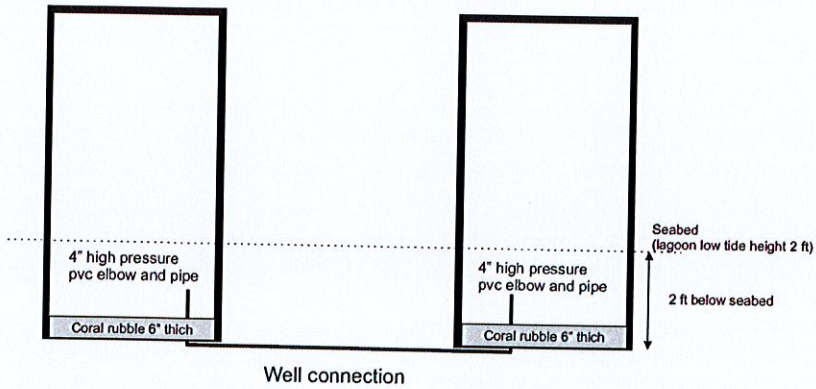
Well arrangement

A, B, C, D: Concrete wells .
Wall thickness 5 inches
Reinforcing rods 10 mm, 6" x 6" distance
Inside dimension 4 ft x 4 ft
Outside dimension 4ft 5 inches x 4 ft 5 inch
Height 8 ft
E: 4 inc high pressure pvc pipe connecting wells. Length 9 ft
F: 6 inch pvc main pipe going to hatchery (existing)

Schematic of the new intake wells and connections to the existing well



Lid
Concrete lid in 4 parts
Lid thickness 3 inches
Reinforcing rod 6 mm at 4 inch distance



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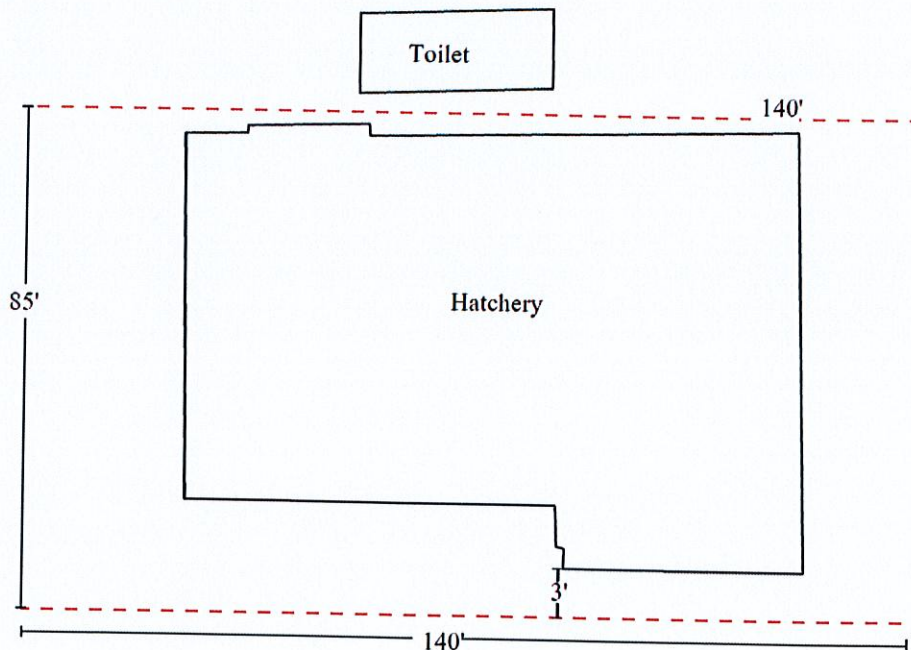
Installation of the power distribution system

1. The contractor shall quote for electrical system designing, approval from authorities, installation and commissioning of all components of the power grid in accordance with the load calculations provided in the Electrical Design Study, to the standard acceptable to Maldives Energy Authority and STELCO.
2. The contractor shall quote to supply, install, test and commission a fully operational power network that meets the power requirement of the existing buildings and the new buildings on site.
3. The above includes, all sizes of cables pipe trenches, ducts, roadside distribution boxes and the components of the distribution boxes and panel boards
4. The complete grid means the connection from the power generation to the additional panel boards for the grid within the power station and up to the buildings and connections within the buildings
5. The contractor shall present the design calculations and schematic drawings for approval prior to the execution of work
6. The contractor shall submit the as built electrical drawings upon completion of the project during hand over

Fencing off hatchery, and additional works

1. The existing hatchery building should be fenced off from the construction site, so as to minimize dust and other particles from entering the hatchery during construction phase.
2. The fence shall be prepared with canvas, and should reach the roof height (approximately 18' in height).
3. The contractor shall construct a concrete rim measuring 2" (width) x 3" (height) around the existing 3' x 2.5' footbath at the entrance of the hatchery

Details of hatchery fencing



Details of demolition works

1. The following are details of demolition works that need to be carried out:

- Two storey accommodation block (dimensions: 30' x 31')
- Temporary hatchery (dimension: 30' x 29')
- Temporary live feed culture facility (dimensions: 24' x 25')
- Concrete tank (dimensions 33' x 9')
- Staff mess (dimensions: 30' x 23')
- Mosque (dimensions: 26' x 18')

8e



Clarification

1. Please confirm whether ground water can be used for construction

Ground water should not be used for construction. Contractor shall source potable water by other means. RO plants can be used to produce water onsite

2. Please confirm whether rock sand can be used for concrete works

Crushed rock sand could be used. Samples of sand and sieve analysis report of sand to be submitted and approved by consultant to see proportion of fine dust. All material shall be approved by the engineering consultant

3. Please confirm whether blocks/bricks casted by local sand can be used for masonry works

The use of local sand for the casting of blocks/bricks is acceptable, but plastering shall be done with rock or river sand.

4. Please provide dewatering methods allowed on the island if possible

The contractor shall lay a dewatering pipe to the island lagoon, in accordance with EPA guidelines

5. Please provide the finishing materials schedule

Contractor needs to compile one as per the drawings and get it approved by the project consultant

6. Please provide the distances from electrical main DB to the individual buildings (Note: revised DB location layout is provided in Addendum1\drawings\Power_Design_Study, however autoCAD file is required to measure the distances)

Please refer to the "Installation of the power distribution system" section of the 15_New_Scope.doc provided.

An AutoCAD file of the site plan is provided.

7. Please provide the MEP drawings for broodstock and laboratory buildings

See attachment 7_Broodstock_MnE.pdf and 7_Broodstock_MnE.dwg for the broodstock building drawings. See attachment 7_Lab_MnE.pdf and 7_Lab_MnE.dwg for the laboratory building drawings.

8. Please provide the AutoCAD file for broodstock building and accommodation block drawings

See attachment 8_Broodstock_AnS.dwg for the broodstock building drawings.

See attachment 8_Staff_Accommodation_AnS.pdf and 8_Staff_Accommodation.dwg for the accommodation building drawings.

9. Addendum 1: Accommodation block architectural and structural drawings are missing. Please provide the drawings in AutoCAD format

See attachment 8_Staff_Accommodation_AnS.pdf and 8_Staff_Accommodation.dwg for the accommodation building drawings.

10. Fibre tanks are shown in the drawings for broodstock, laboratory and green house buildings, however this item is not stated in the BOQ. Please confirm whether we have to quote for this item

All fiberglass tanks will be provided by the client. These include the tanks required for broodstock facility, greenhouse, laboratory building and water treatment system. Contractor does not have to quote for this item.

11. Laboratory BOQ staircase railings are not stated in the BOQ. Please confirm whether we have to quote for this item

This item should be quoted

12. Warehouse building staircase railing details are not shown in the drawing

This item should be quoted

13. In accommodation block BOQ, AC component is not given. Please confirm this omission

AC with an adequate capacity to be installed in all the rooms.

AC with an adequate capacity should also be installed in all rooms in the 1st and 2nd floors of the Laboratory building (8 rooms in total)

The contractor shall have the ACs approved by the client prior to installation

14. Please provide the details such as whether hollow or solid, and thickness of polycarbonate roofing sheets

Solid polycarbonate sheets with a thickness of 4mm should be used.

15. With the new addendum 1 revision, new information such as existing hatchery building fencing requirement, painting of new deck with Epoxy paint, etc. have been provided. Please provide the complete new scope of works and BOQs so that it can be ensured that the whole of the scope required can be priced.

See attachment 15_New_Scope for the new scope in addition to the scope of the original announcement. The contractors shall generate BOQs based on the information provided.

16. Please provide the BOQ for the power house extension, hatchery deck, waste water submerged well for water intake, sewage treatment plant and lightning protection system.

Powerhouse extension is already complete.

Lightning protection system: This falls within the electrical design scope. The information provided in the Electrical Design Study may be used as a guide.

Remaining works (hatchery deck completion, wastewater treatment system, water intake system and sewage treatment system) to be quoted in accordance with the new scope information provided

17. Please provide the powerhouse main fuel tank and day tank details (type of tank and installation details)

Please refer to the "Installation of the power distribution system" section of the 15_New_Scope.doc provided, and the electrical design study as a guide.

Tanks shall be constructed using Steel Nile (fuel storage tank grade).

For the fuel pipe, ATSM Schedule of pipes (40mm) shall be used.

Storage tanks should be constructed in accordance with Maldives Energy Authority guidelines on fuel storage tank construction

Please provide details of powerhouse attenuator

Please refer to the "Installation of the power distribution system" section of the 15_New_Scope.doc provided.

18. Please provide list of components of the electrical network that needs to be quoted for

Please refer to the "Installation of the power distribution system" section of the 15_New_Scope.doc provided.

19. Please provide the details of the existing hatchery building

Hatchery details are not part of the scope of this project. The details required for the hatchery works are provided in the relevant sections.

20. Please specify the fine filling material that need to be used for the filling of existing underground concrete tank filling (Addendum 1 revision)

Sand and small debris from demolishing carried out on site can be used as filling material for both underground tanks

21. Please clarify the availability of material storage and accommodation within the site premises

The contractor shall construct temporary accommodation and mess as well as material storage during construction phase. Toilet facility will be provided by the client.

22. Please confirm whether temporary electricity and water can be obtained from site

Contractor shall make arrangements for the provision of temporary electricity and water during construction phase

23. Please provide the existing jetty access and details for transportation of men and material

Existing jetty (200 ft x 8 ft of workable width) from the reef edge to the island can be used for transportation of men and material.

No vehicles are available on site. Small pick-up, forklift, and small excavators can be used on jetty.

Contractor shall make arrangements for transporting material delivered to the island.

The contractor may create a bed for loading/offloading heavy machinery and equipment.

24. Please clarify how the demolished debris of the existing buildings need to be cleared from the island. Do the debris need to be disposed to Thilafushi Island?

Suitable demolished material can be used for backfilling purposes. Contractor shall make arrangements to transport remaining material to be disposed of at Thilafushi.

25. Kindly provide the list of usable approved machineries that can be used on the island



Standard construction machinery and equipment can be used on site. Contractor shall make arrangements to load and offload any machinery that cannot be transported by the Jetty

26. Technical specifications mention “fixed mix concrete plant” use for the concrete mixture work. Shall we use one or three bag concrete mixture mobile plant instead of fixed mix concrete plant? Please confirm

Mobile concrete mixer, preferably diesel engine powered 3 bag mixers for large volumes of concrete to produce the grade of concrete required. 01 bag mixer could be used for small volumes and mortar mixing for masonry and plastering

27. Please provide the prime cost for tiles according to the size of tiles

Homogenous tiles to be used, sizes to be proposed by contractor as samples during construction. Special tile adhesives with plastic properties, to be used to avoid popping up due to shrinkage of tile grout. Therefore, bidder to find prime rate based on the above quality

28. BOQ don't have an item to rate the cost for testing. Where this rate should be considered?

Items not in BOQ, which bidder feels as considerable amount, to be added as “additions”. Normally comes as site management costs or preliminaries.

29. The BOQ mention the rate for “painting” but the rate is different for the “internal painting” and “external painting”. Since we will consider this painting as internal only. Please confirm

Price of exterior paint application could be more than, interior painting, therefore, bidder to price accordingly to cover costs of the whole works.

30. In the technical specification mention the waterproofing work. There is no any indication with the BOQ. Please provide the detail drawing mention where necessary

Water proofing work is for toilets and all underground parts of the buildings. Please refer to drawings provided.

The item labeled “Damp Proofing” under the “ground work” section refers to waterproofing. Waterproofing admixtures shall be used on concrete floor slabs. Waterproofing material shall be applied on concrete surfaces and the screed in the wet labs.

31. What is the type of timber for roof, cladding, etc.

Timber : Termite Treated Timber.

Cladding: Lysaght or C-Deck Cladding available from Maldives or equivalent imported. Sample to approve by Client prior to procurement and supply.

32. Please provide the detail drawings for doors and windows

Please refer to door and window schedules in drawings. Sample doors to be presented by bidder to approve by client.

33. Do we need to include extension of powerhouse (Civil works)?

The civil works component of the powerhouse extension is completed. Contractors shall not quote for civil works component.

34. Do we need to include gen sets, if that please let us know the number of gen sets?

Please refer to the “Installation of the power distribution system” section of the 15_New_Scope.doc provided.

35. Do we need to include Fuel tanks and fuel lines?

Contractors shall quote for the construction of fuel tanks and installation of fuel lines.



Electrical Design Queries

Please refer to the "Installation of the power distribution system" section of the 15_New_Scope.doc provided for queries 1 – 12 of the electrical design queries.

1. As per electrical basic design study report, in distribution schematic diagram, 4 core 35 sqmm cable was mentioned for B1, B2 and B3 feeders, but in the voltage drop calculation, it was mentioned as 50 sqmm cable
2. Voltage drop calculation was considered for length of the cables individually, but in looping system (i.e.) Panel board to B1 DB, B2 DB and B3 DB shall we calculate the voltage drop from the panel board to B3 DB (Last termination point) based on that we can size the cables and breakers
3. Shall we consider 4 core 70 sqmm cable for panel board to B1 DB and further looping will be considered as 4 core 50 sqmm cable.
4. The outgoing B feeder line was 160A TPN MCCB, but the incoming B1 DB was 80A TPN MCCB. Shall we increase the incoming breaker size in B1 DB because then only we can loop the other DBs like B2 and B3 DB.
5. Shall we propose individual cables for B1 DB and B2 DB because the loads are more in these DBs as per electrical load chart? If any main cable damage or maintenance between panel board to B1 DB then the total B feeder lines will be blocked out (i.e. B2 DB and B3 DB) due to looping system.
6. As per load calculation, feeder A having 99 Amps of actual load. But breaker was sized as 100 A TPN MCCB. Shall we increase the breaker size to minimum 1.25 times of actual load?
7. More over 4 core 35 sqmm cable was considered for Feeder A. It is having 100A actual load, therefore shall we propose 4 core 50 sqmm cable?
8. As per panel single line diagram, DG1 as mentioned as 200KW. Is it 200KW? If so then the breaker sizing of 250A TPN MCCB is not sufficient.
9. Mosque loads are considered very less in the load chart i.e. 1.08 kW only. Is this okay for the mosque building?
10. Warehouse loads are not mentioned in the load chart
11. Individual block/ building sub-D.Bs and respective cables are not mentioned in the electrical SLD
12. Diesel tank pipe specifications are not mentioned in the drawing. i.e. GI pipe/ heavy duty pipes, etc
13. Is there any mechanical ventilation considered for power house?

The physical construction work has been completed for the powerhouse building. It is not part of the scope of this construction project.

14. Trench or pipeline shall be considered for underground electrical cables?

Pipeline shall be considered for electrical cables

