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

Date:

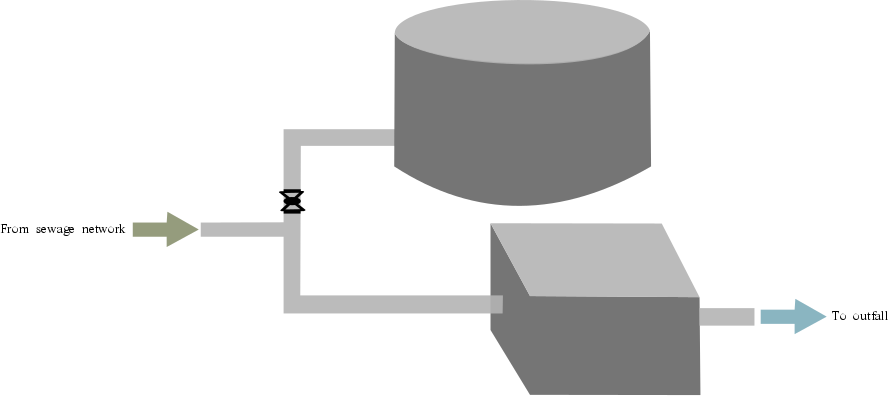
# Scope of Additional Works

In addition to the scope identified in the bidding document and technical specifications, please find the scope of additional works for which quotations are required by the bidder

# 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

## Schematic diagram of sewage treatment plant connections with emergency outfall



## Location of sewage treatment plant

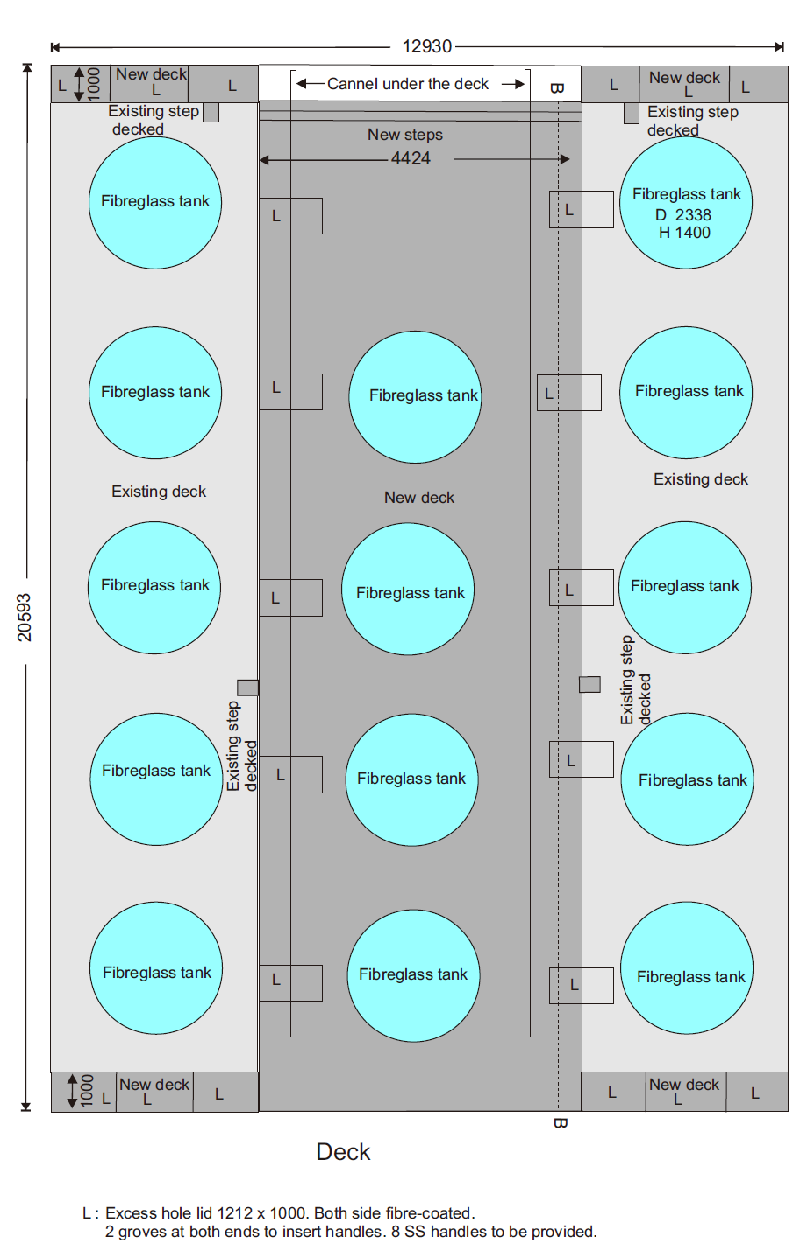
Note: the sewage treatment plant is not to scale with respect to the map

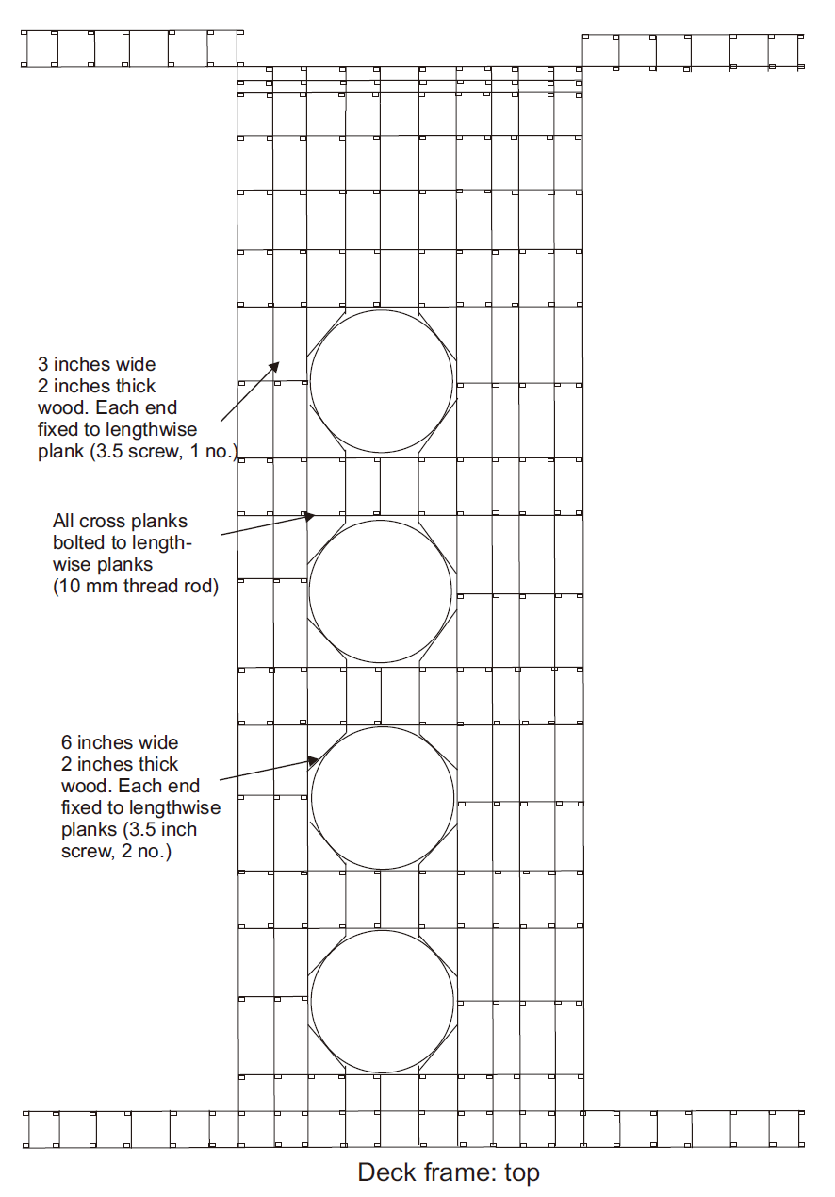
# Hatchery deck completion, fiberglass coating and painting

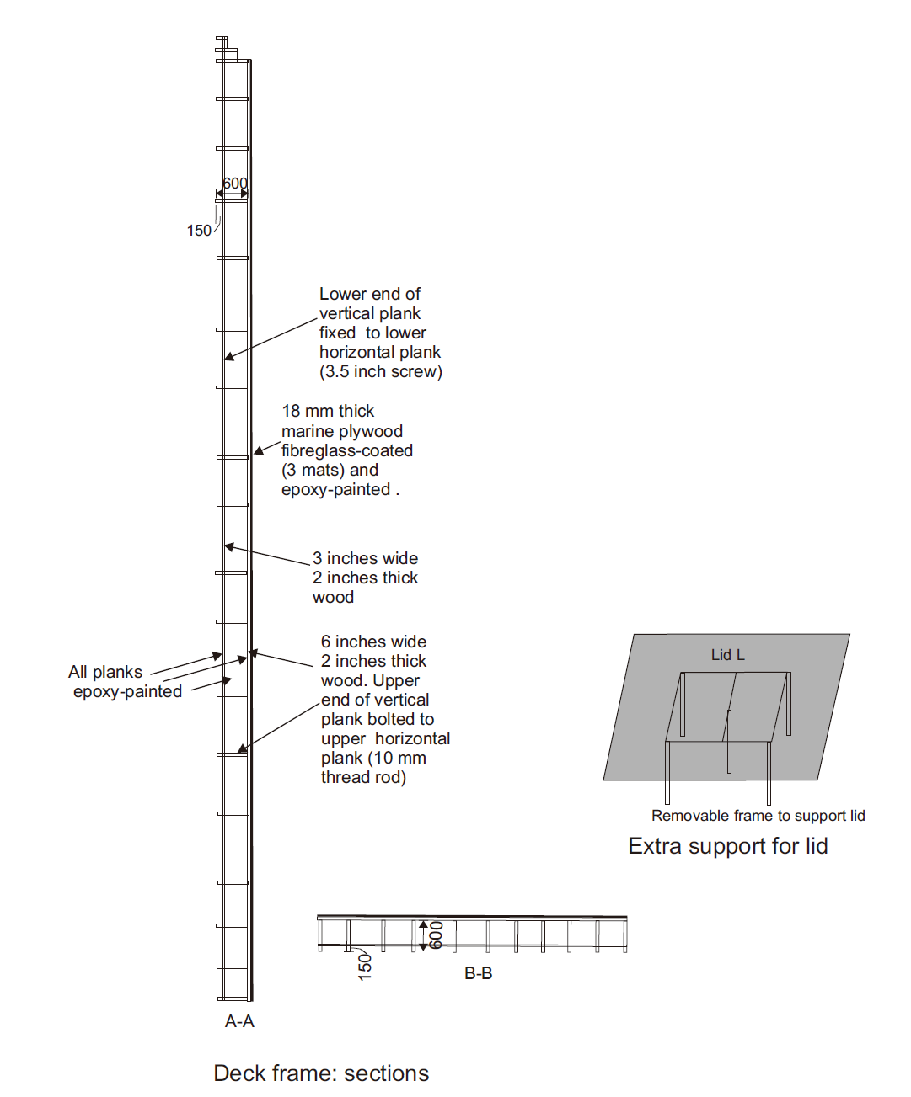
1. The contractor shall construct a wooden deck to cover the remaining portion of the hatchery in accordance with the schematic provided (size: 4424mm x 20,593mm, and four sides of the existing deck with size: 1000 mm x 4,253 mm, marked “new deck” on the diagram in dark grey shade), using marine plywood 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



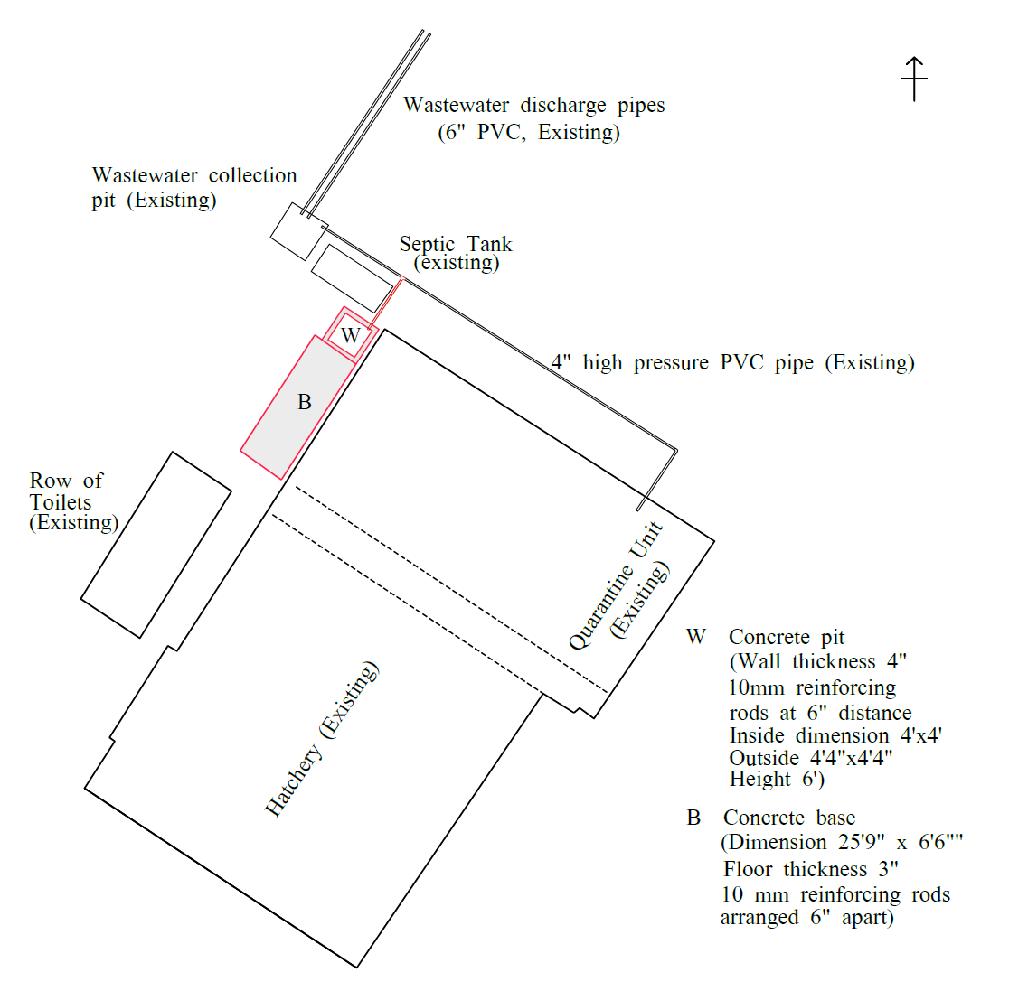




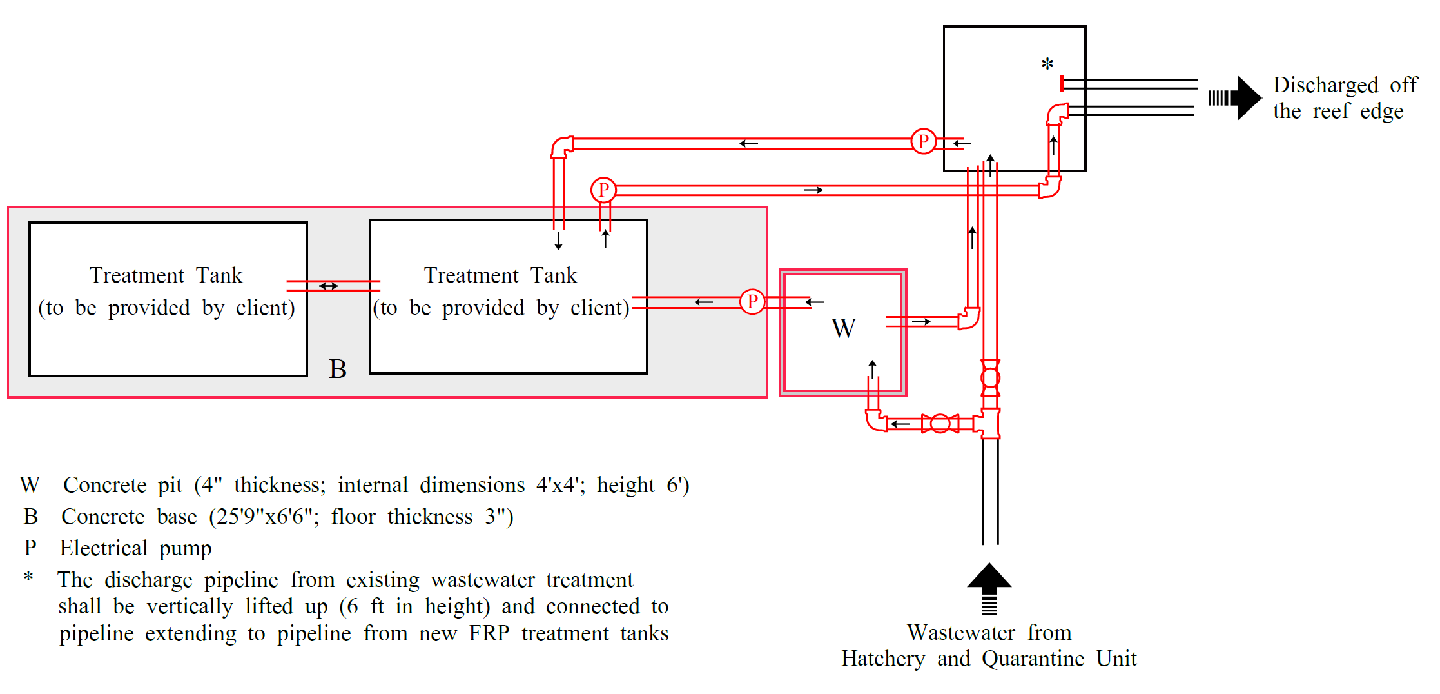
# Hatchery wastewater disinfection

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.

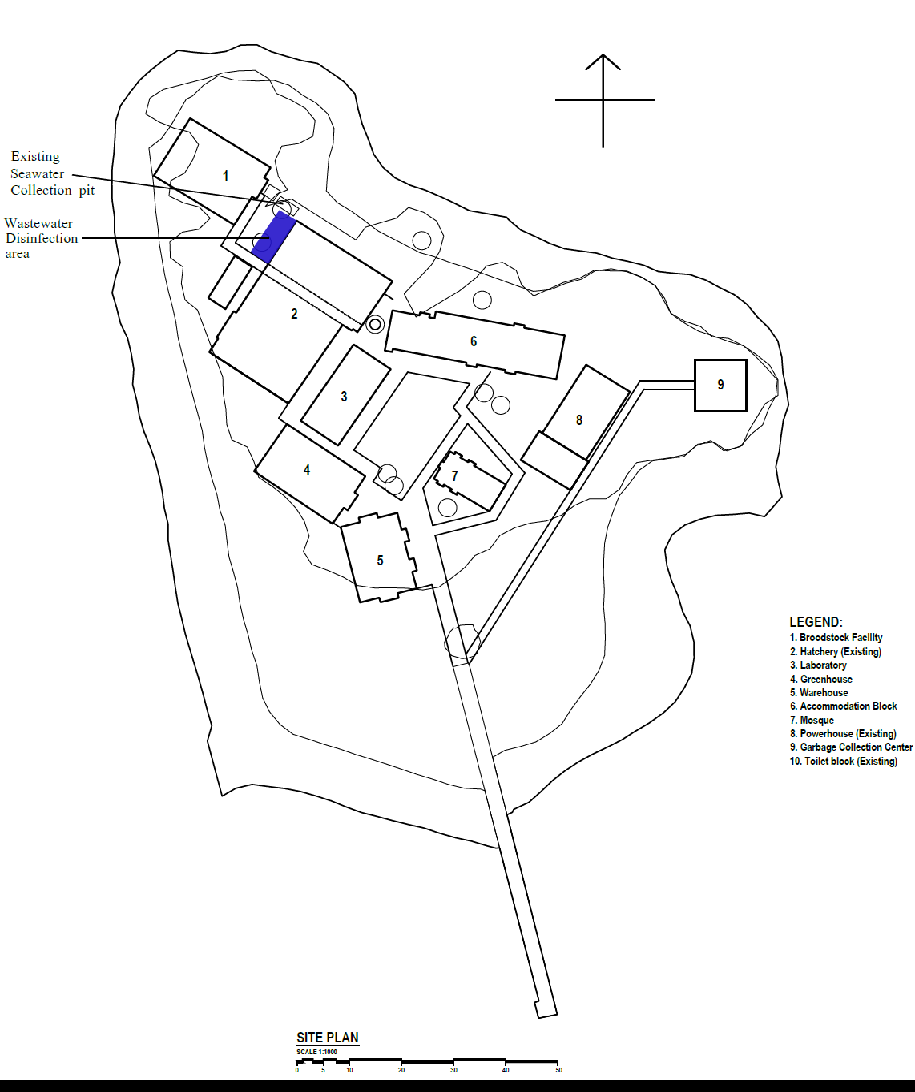
## Schematic of the hatchery wastewater treatment area



## Pipeline details for new hatchery wastewater treatment system



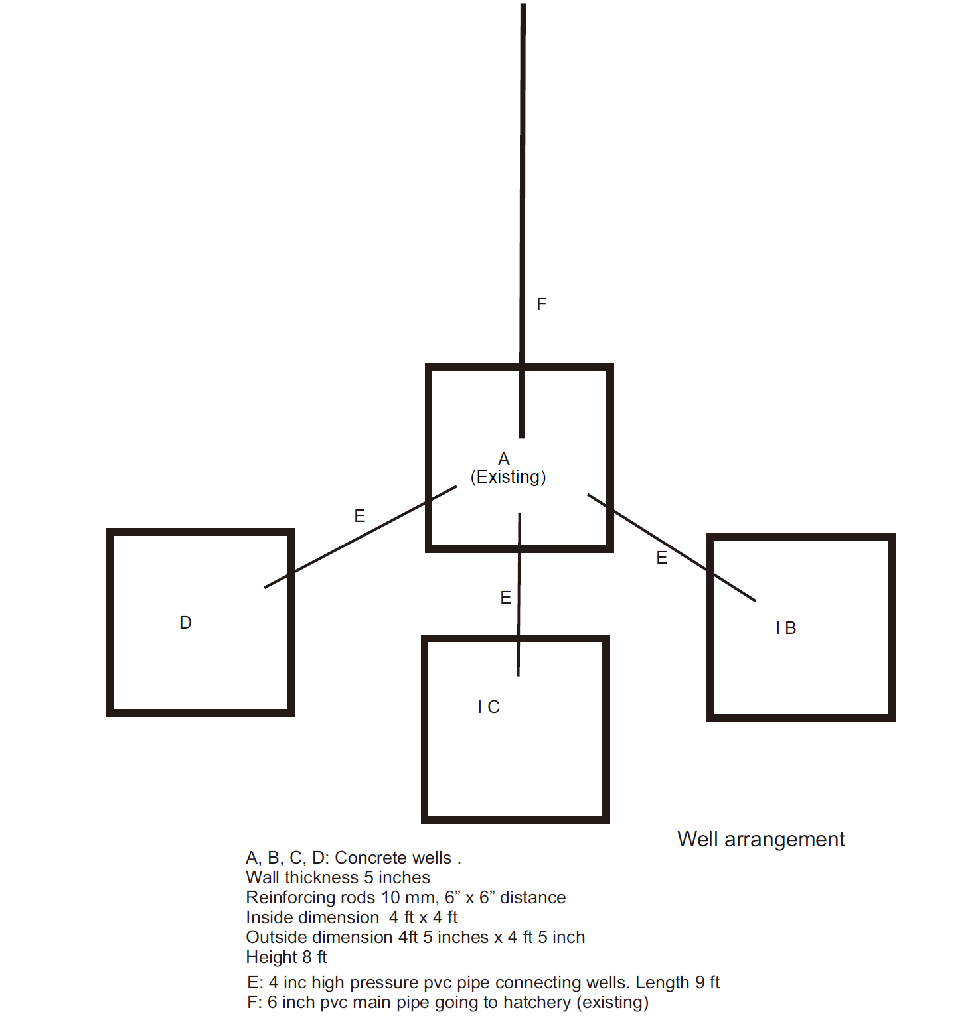
## Location of the hatchery wastewater disinfection area



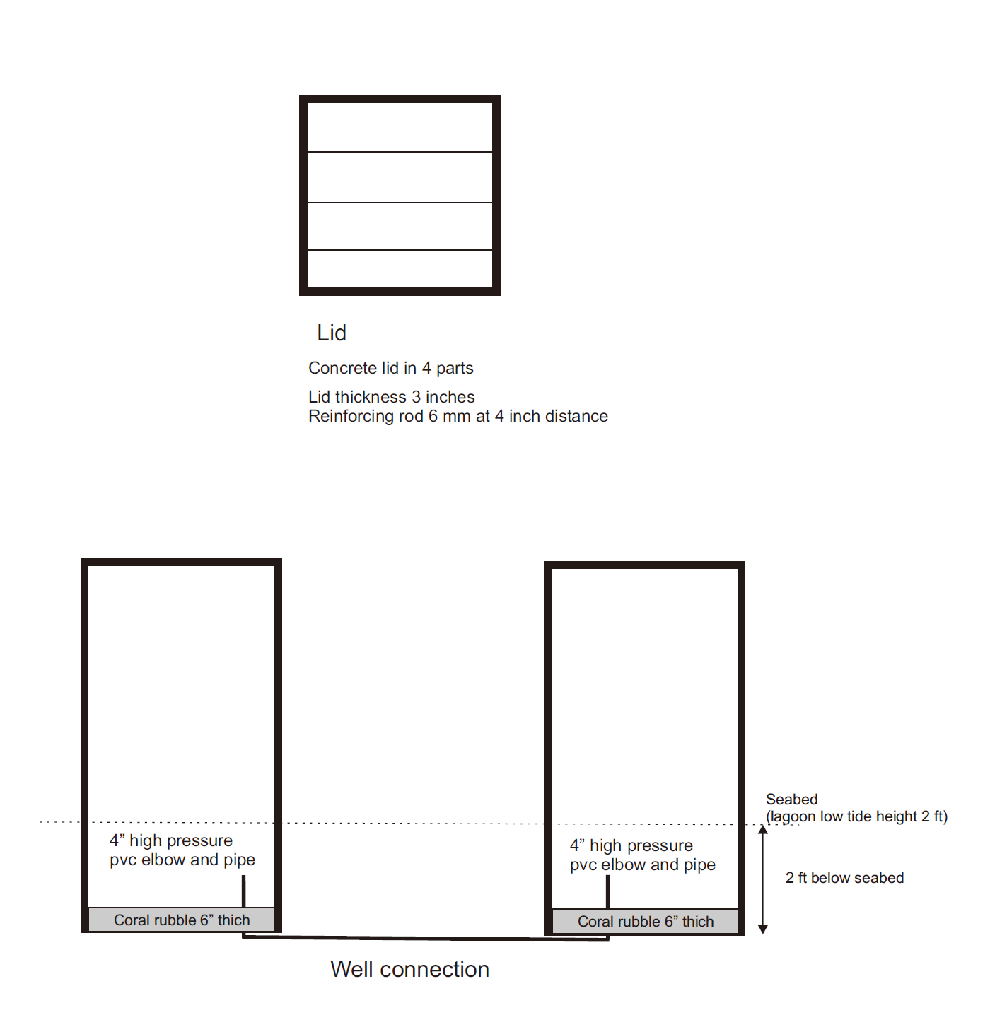
# Saltwater intake well construction and connection to the existing intake well

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



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



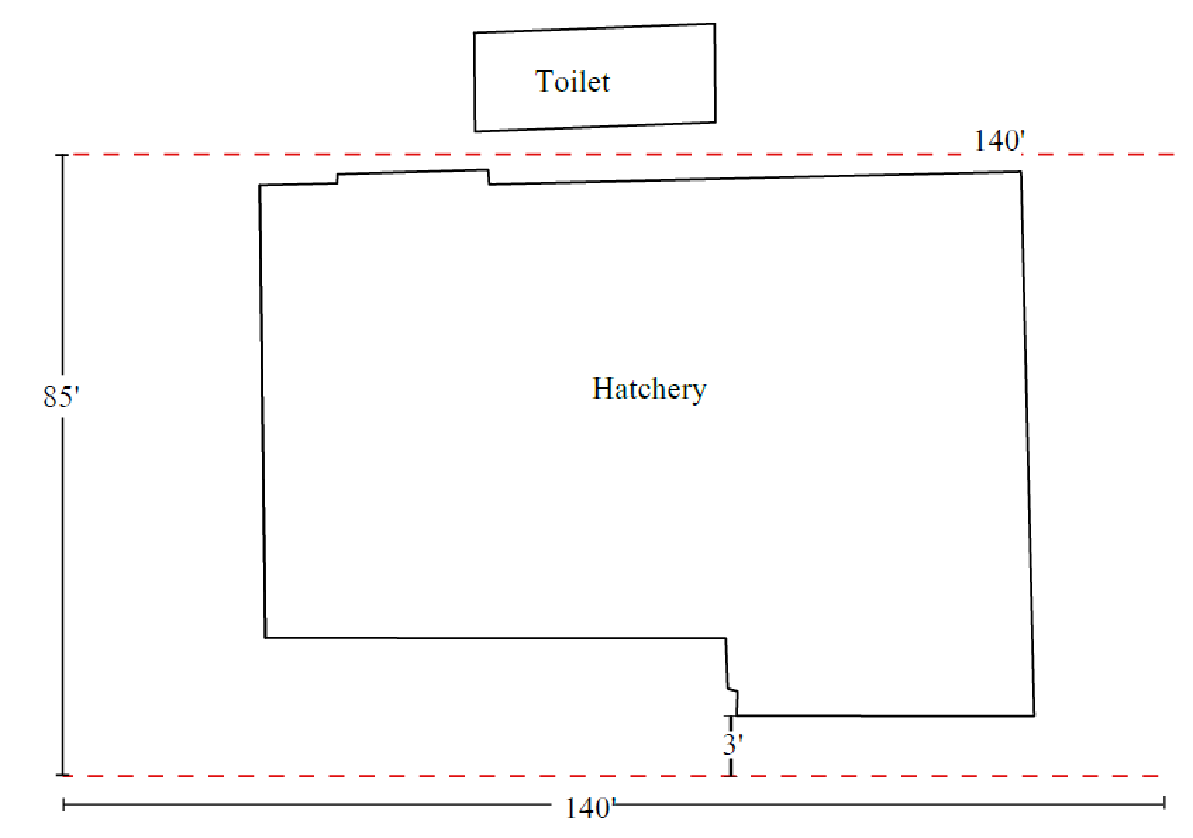
# Installation of the power distribution system

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’)