

*Submerged Pumpset
based
Floating Pontoon Pumping Station*

*Time Saving & Meander Proof Solution
for Permanent Raw Water Intake
in Irrigation & Water Supply;
De-Watering of Mines etc.*



Why Floating Pontoon Pumping Stations...?

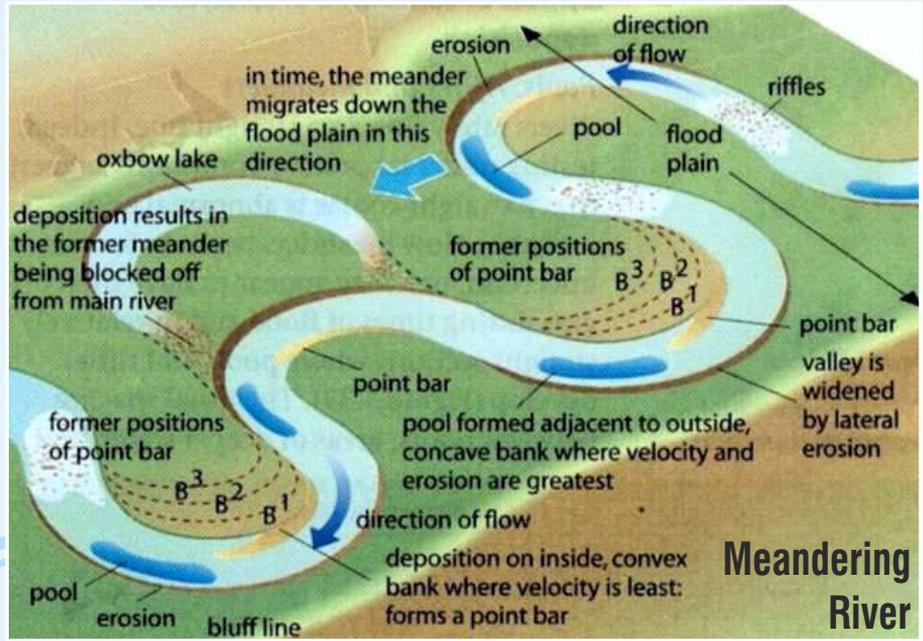


Situation :

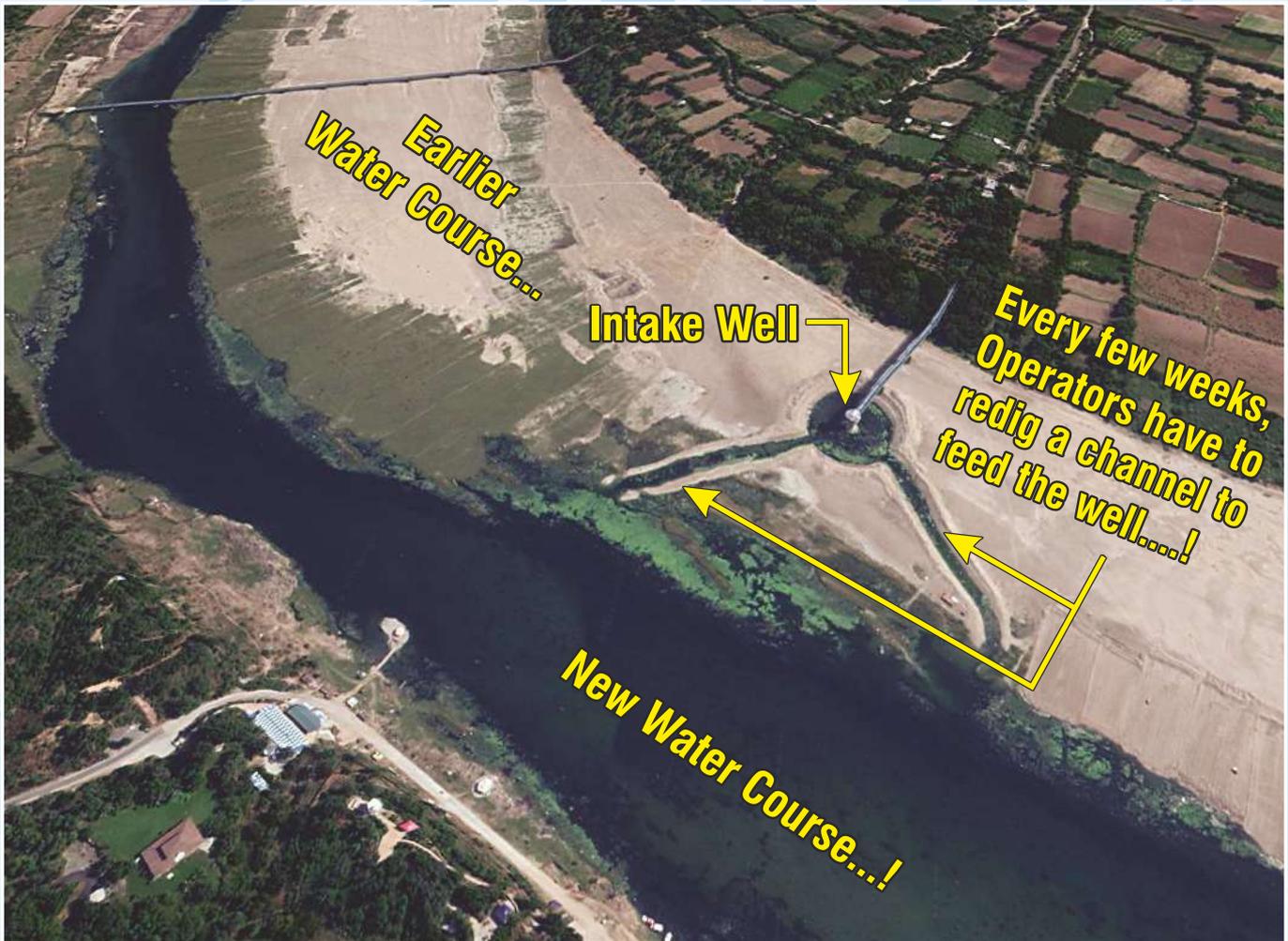
The Water Source **Changes** it's **Course** every season - **Meandering Water Course..!**

Quandry :

Where to Construct the Fixed Intake Well (to ensure that Water always comes in to the Well)...?

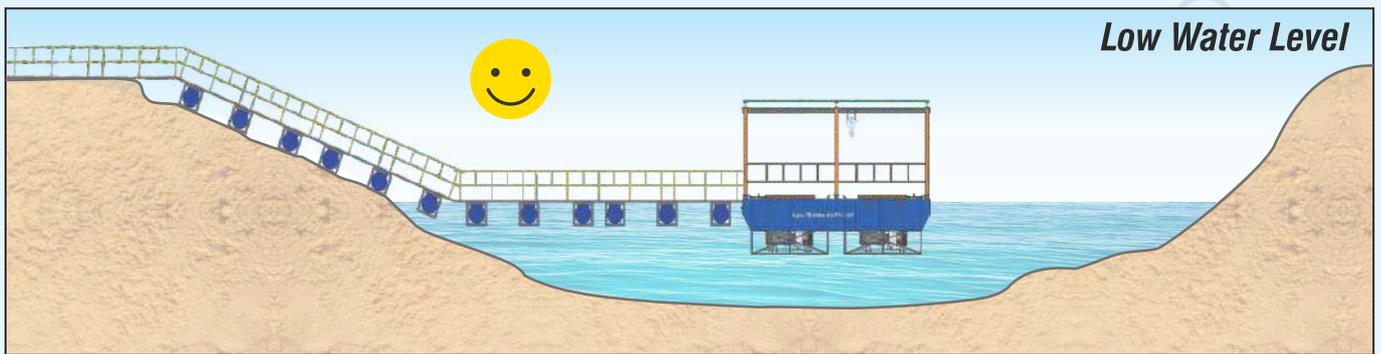
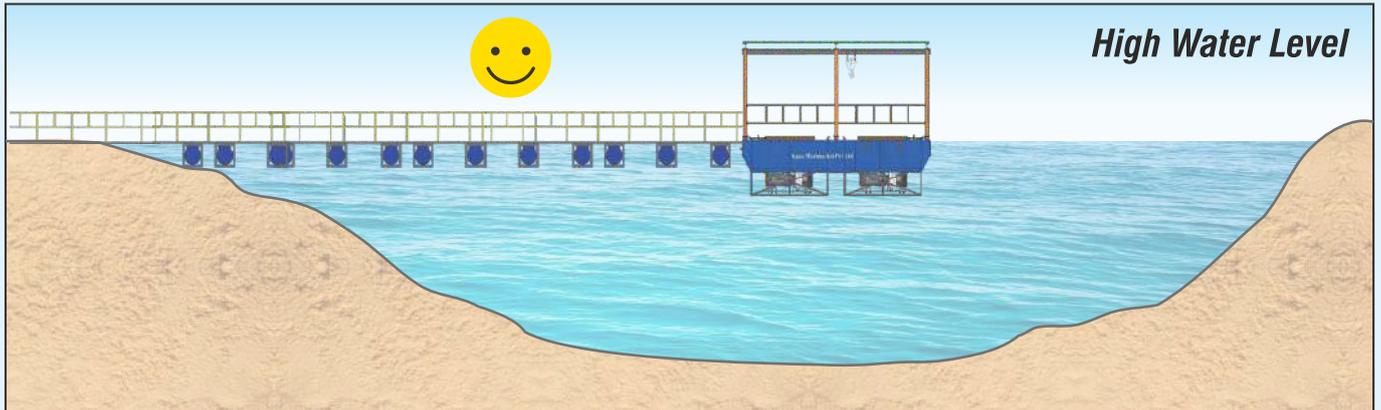


Meandering River



Solution :

Instead of a **Fixed Well**, go for a **Submerged Pump based Floating Pontoon Station** as it can be **easily Shifted / Re-Located** depending on the Water Course....



24 x 7 x 365 Water Supply is ASSURED Irrespective of Rise or Fall & Shifting of Water Course



Avoids the need for Time Consuming & Risky
(Incase of Meandering River) RCC Intake well



Avoids issues of **Land Acquisition**
(for Pumping Station)



Eliminates Inundation & Flooding issues faced with Land-based Traditional Pumping Stations

Ease of...



...Assembly & Re-Location
at Site in Water

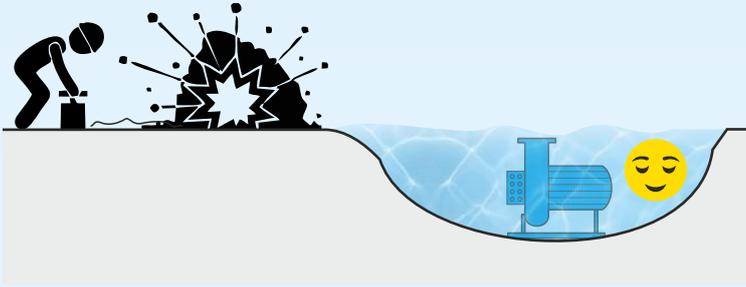


...Transport, Loading
& Docking



...Skidding Around at &
usage at **Multiple Sites**

Why Submerged Pumps for Floating Pontoon Pumping Stations...?



Mines : during **Blasting**, sharp high speed debris often impact (& damage) Pumps & Motors exposed to Air (like in Conventional Coupled pumps) - however, in case of Submerged pumps; Water absorbs much of the momentum (of such debris) & hence hugely lessens the damage....



Eliminates Suction Lift Problems like **Priming, NPSH & Cavitation**



No need for Frequent Periodic....



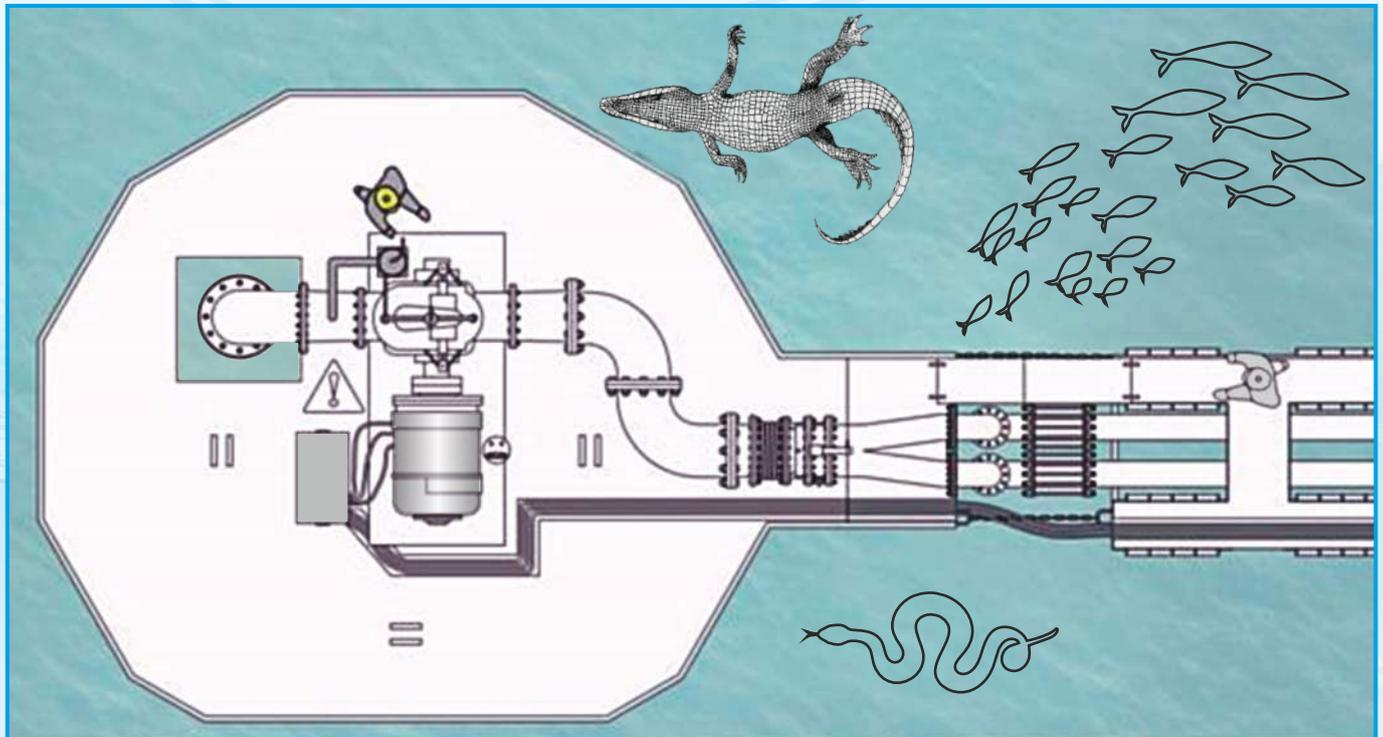
Shafts &/or Coupling



Gland Packing



Oil &/or Grease

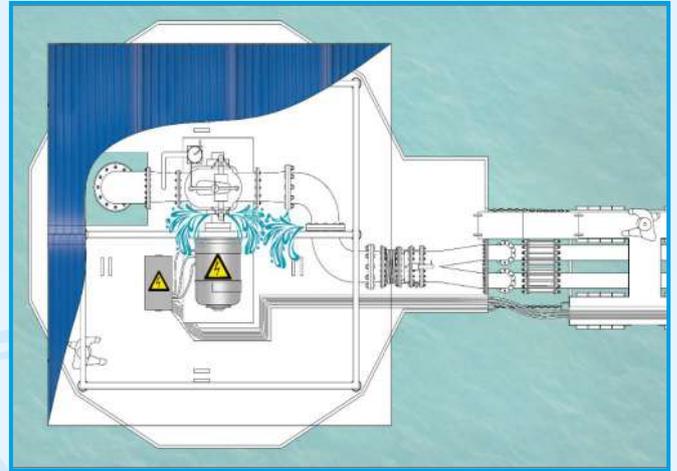
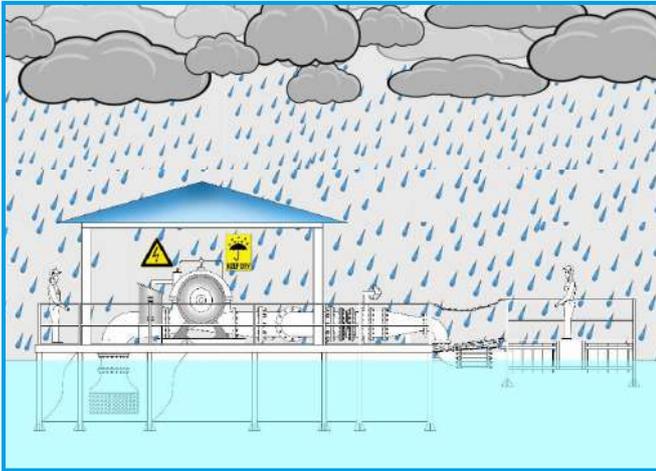


Conventional Coupled Pumps **require the Operator to go upto the Pump frequently** (during each Start/Stop & Frequently for Routine Maintenance) Exposing them to **Increased Risk of Exposure to Aquatic Creatures.**



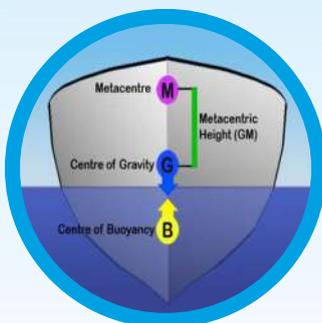
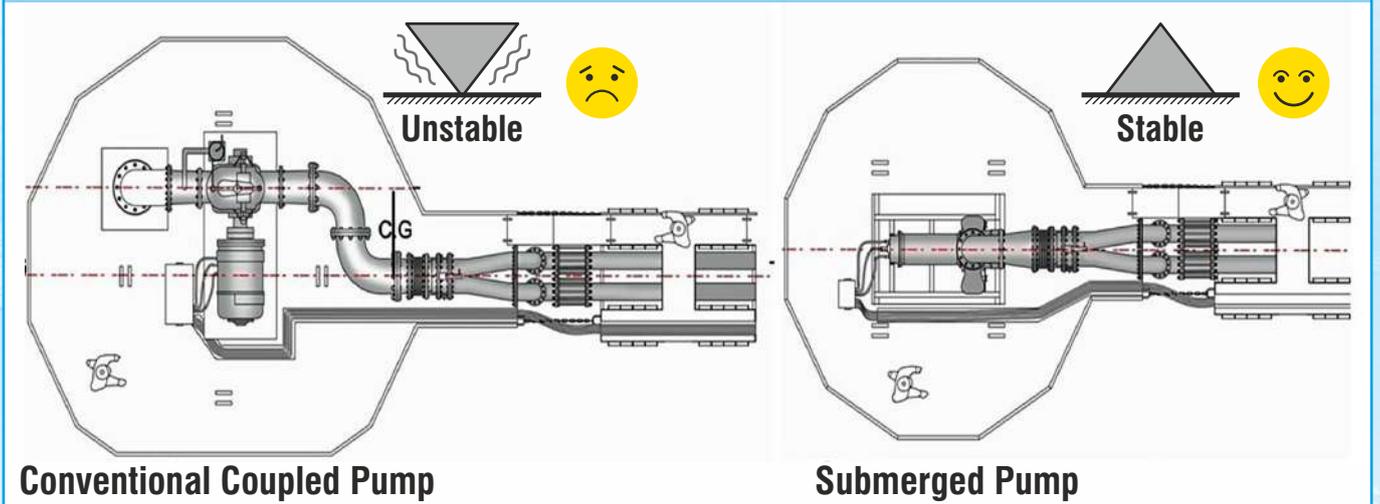
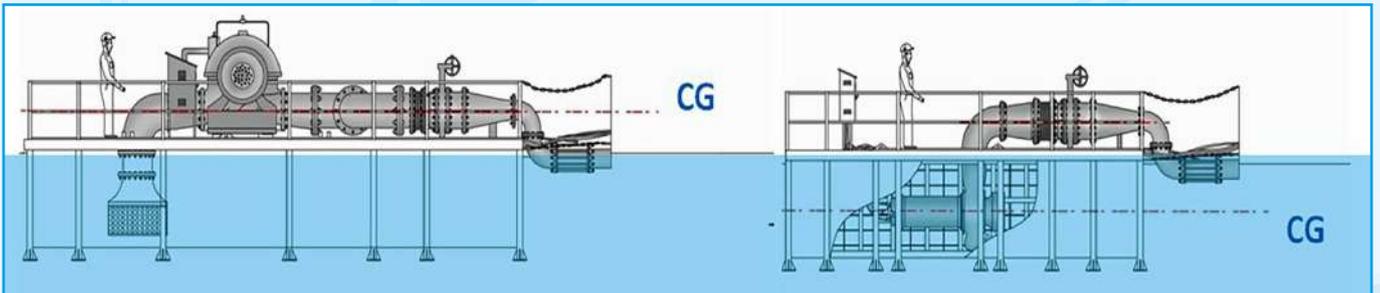


Motors of Conventional Coupled Pumps need to be Protected from...



...Rains, Storms & Splashing Waves !

...Water Sprays !
(Frequently Emanating from Pipeline Leakages)



Excellent Stability :

Submerged Pumps will have **Lower Risk of Toppling & Better Lateral Stability** due to favourable **Center of Gravity (CG)** & **Low Roll Center (LRC)**

Why Aqua's [Submerged Pumps + Floating Pontoon] Pumping Stations...?

Remotely Operatable Pumps



Ultra Low ManPower Requirement



No need of Valve Opening / Closing during pump Start/Stop

Requires **NO** Special Pre – Post / Ancillary-Auxillary Operations; like :

- Suction Priming during Pump StartUp,
- Operating & Maintaining the Forced Water Lubrication systems operation,

Requires **No** Periodic Consumables; like :

- Oil,
- Grease,
- Gland Rope Packing,
- Coupling Rubber/ Pins,
- Sleeves, etc



Requires **No** Routine Maintenance; like :

- Frequent Oiling,
- Re-Greasing,
- Gland Leakage Rate Checking, Tightening & Gland Rope replacement,
- Checking (& Correcting) Shaft Alignment, etc.



Intelligent InBuilt Monitoring

Easily Remote Control # of your Pumpset's Health

#requires additional communication hardware



Enhanced Safety...

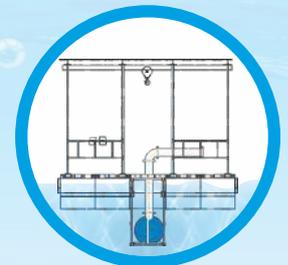
Robust, Safe & Stable Design meets **AS3962 - 2001** standards – **Australian Standards** Guidelines for Design of **Marinas**.



Australian STANDARD

The centre of the structural steel frame of the pump pontoons have a **Low-Slung chassis** hence the **Pump sits below the deck** of the pontoon :

- 1) this lowers the **Centre of Gravity (CG)** & **Low Roll Centre (LRC)** for Increased Stability & also
- 2) Prevents the pump sliding under the pontoon which otherwise may cause load imbalance, tipping or roll over.



Manned Areas are fitted with Safety Hand Rails & Toe Guards.

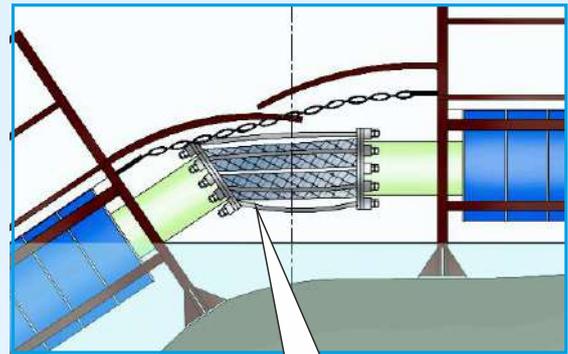
The float systems are designed & sized with minimum 1.25 x FoS (*Factor of Safety*)



No Issues of Toppling over during High Tide, Waves &/or Winds

Plastic/Polymer Pontoon

Can get Punctured / Leakage due to Sharp Stones / Debris.



Fully Metallic, Sunlight & Ozone Aging Resistant, Puncture Proof; **Flexible Discharge Piping** Capable of With-Standing upto **25 bar**

Robust Tank like Build

Aqua's Metallic Pontoon

Advanced Design

The flotation modules for Pontoons and Walkways are fabricated with **Top Entry Inspection Ports** facilitating easy & safe inspections against long term leakage (if any).

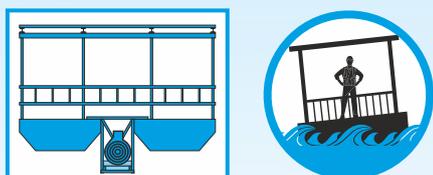
Sufficient **Clear Working Space** for easy O & M of pumpsets &/or resting of pumpsets on pontoon deck.

Safe & Operative in **All Seasons**

Modular Design (to Suit Single or Multiple Pumpsets)

Anchoring, Mooring & Towing Provisions

Walkway allows easy to access pontoon from Bank / Land.

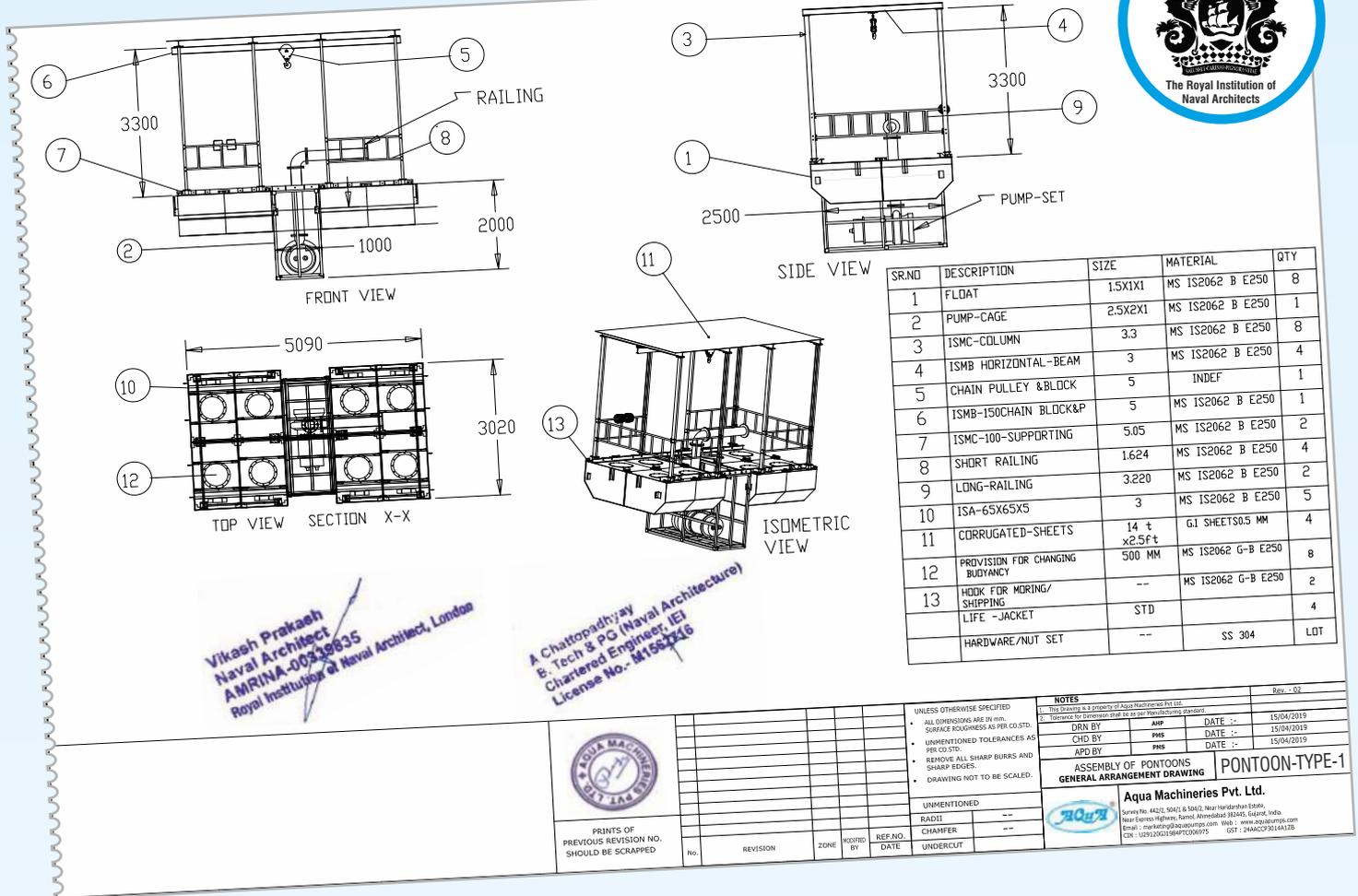


Designed with Costlier (to manufacture) **Swim Ends** & Minimum **Two Hulls** for Lower **CG** & to withstand high wind & waves.

- Well equipped with provisions for **Increasing/Decreasing the Buoyancy** in running live load conditions.
- Specially designed **Pivot Joints** to connect pontoon & walkways to rest on uneven dry bed surface as well as waves created due to Storm / Winds.
- Walkways / Gangways can be specially customized & designed for pipes and cable trays on request/demand by customer.



Compliant with Stringent
NAVAL & MARINE specifications



Vikash Prakash
Naval Architect
AMRINA-00338635
Royal Institution of Naval Architect, London

A Chattopadhyay
B. Tech & PG (Naval Architecture)
Chartered Engineer, IEI
License No.- M1582216



“Most of our designs are Heavy duty Marine Naval Certified for highest safety & assured peace of mind.”

U. M. Shah,
Project Manager, AMPL

Spacious & State of the Art Plant...

Synchronization of
Hydraulic Engg + Pump + Pontoon + Walkway + Electricals + Piping
system design under a **SINGLE ROOF** for
Turnkey Responsibility
& **Harmonious System Performance**



Well Synchronized Pump,
Pontoon & Walkway
Design for Optimal
Performance



Well Equipped Manufacturing...



Unique Realistic Test Bed...



No Assumption, No Simulation - Only Realistic, 100%; Full Scale Testing..!

Unlike most Pontoon & Walkway Manufacturers, Aqua has a **Unique Test Bed facility to Actually Float Pontoons & Walkways** enabling **100% Compliance** between **Designed Assumptions v/s Actual Performance** like **Buoyancy, Stability** (& also *Check Welding Integrity*)



NDT Test
as per **ASME**
(SEC V
Article 6)

Accessories



Life Jacket



Life Buoy



Pipe & Cable Floats



Ladder



Marine Chain

Used for
Anchoring Pontoons



Mechanical / Electrical Winches

Pulling / Holding
the Pontoon to Shore



Chain Pulley

Used to Lift &
Lower Pump & Pipes



Anchor

Prevent the Pontoons from Drifting
due to Wind or Water Currents

Some Submerged Pumpset based Floating Pumping Stations...

No.	Pump Details	Location
1	600 HP (2W+1S)	NTPC Thermal Power Plant, Kudgi at Almatti Dam
2	600 HP (2W+1S)	NTPC Thermal Power Plant, NTPC Solapur, Darlipalli, Khargone
3	475 HP (2W+0S)	Tata Sukinda mines, Odisha
4	335 HP (2W+1S)	Machchhu 1 Dam, Gujarat
5	350 HP (3W+1S)	NPGC Barge Mounted Pumping station at Nabinagar
6	300 HP (2W+1S)	Nand RWSS
7	300 HP (1W+1S)	Gadag water supply project
8	270 HP (1W+1S)	Gadegaon LIS at Waghur Dam
9	250 HP (1W+1S)	Kothiya WSS
10	250 HP (2W+1S)	Peechi Dam
11	235 HP (1W+0S)	Lalbagh, Bangalore
12	215 HP (2W+1S)	Ozat Dam
13	200 HP (1W+1S)	Gohai Dam
14	180 HP (4W+2S)	Sarnef WSS
15	180 HP (1W+1S)	Nargramonholi
16	180 HP (1W+1S)	Kappukadu
17	180 HP (1W+1S)	Gataprabha River water supply project
18	150 HP (1W+1S)	Nagathan, Bijapur
19	150 HP (1W+1S)	Bhadar Dam
20	150 HP (1W+1S)	Machchhu Dam
21	140 HP (4W+2S)	Ukai Dam
22	130 HP (2W+1S)	Jivapar WSS
23	130 HP (1W+1S)	Bawra WSS
24	120 HP (1W+1S)	Dholidhaja Dam
25	120 HP (3W+1S)	Aji Dam
26	120 HP (2W+1S)	Ajwa Dam, Gujarat
27	115 HP (2W+1S)	Bhadar Dam
28	110 HP (1W+1S)	Bhadar Dam
29	100 HP (1W+1S)	Kuboor MVS Scheme
30	90 HP (1W+1S)	Ukai Dam
31	90 HP (1W+1S)	Gohai Dam
32	80 HP (1W+0S)	MIDC Ranjangaon
33	75 HP (5W+2S)	MJP Aurangabad
34	75 HP (3W+1S)	PHED, Nagaur
35	75 HP (2W+1S)	Bramhagavan Dam
36	75 HP (2W+1S)	Mithi Dam
37	70 HP (1W+1S)	Vadod
38	70 HP (1W+0S)	Belgaum WSS



Machhu 1 Dam



Nabi Nagar



UKAI DAM



Some Clients....

