



(/component/banners/click/327.html)



(/component/banners/click/303.html)



(/component/banners/click/414.html)

NBM&CW
Infra Construction & Equipment Magazine
(/)



Aquatic Gallery - Science City, Ahmedabad



Very few places in our world are more educational than museums. Museums are storehouses of knowledge and help us understand our world better. As institutions at the heart of society, museums have the power to define a sustainable future. One such museum that celebrates and exhibits freshwater and marine ecosystems was inaugurated recently.

The Aquatic Gallery at Science City, Ahmedabad was inaugurated by Honorable Prime Minister Shri Narendra Modi via video conference on 16 July 2021 in the august presence of Honorable Minister of Home Affairs & Cooperation, Shri Amit Shah and Chief Minister of Gujarat, Shri Vijay Rupani and other dignitaries. The Aquarium serves as a platform to raise public awareness of the precious water world. It displays various species of fish for the purposes of education and entertainment. The facility, set up over a land parcel of 2.5 acres and with a built-up area of ~150,000 sqft, merges science education with entertainment and encourages a scientific temperament.

This project was awarded jointly to Shapoorji Pallonji E&C and Marinescape as consortium partners in late 2017. The Marinescape Group is a New Zealand based company which has been continuously active in the design construction, operations, management and ownership of aquariums. The construction started in early 2018.



(htt



(htt

Med

Pvt-

Ltd.

351



(htt

(htt

(htt

(htt

(htt

(htt

(htt

(htt

(htt

(htt

6Af

(htt

(htt

(htt

(htt

(htt

The Project Team

Employers: Gujarat Council of Science City, Department of Science and Technology

Architects, MEP & PM Consultants: INI Design Studio

Structural Consultants: DUCON Consultants

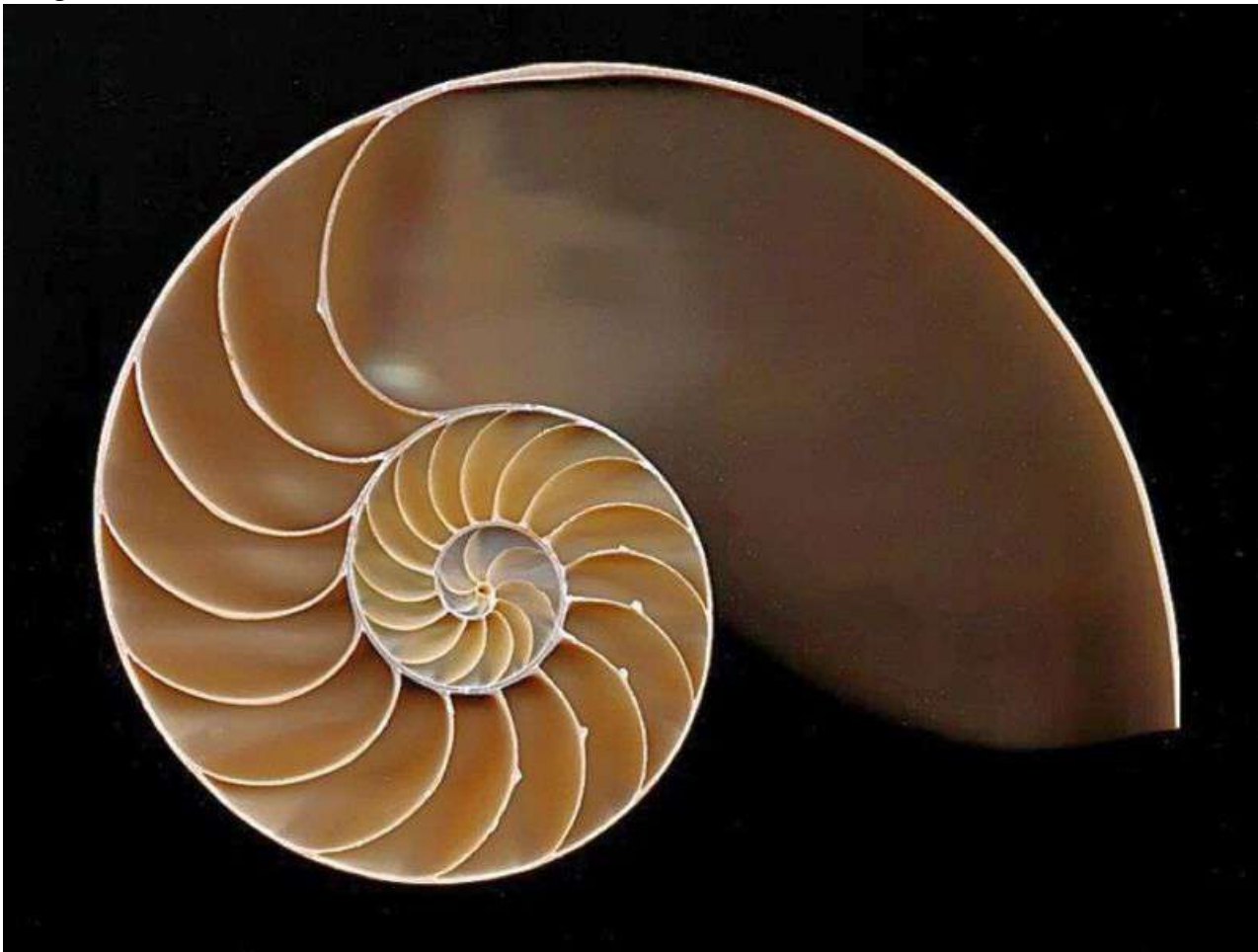
Prime Contractors: Shapoorji Pallonji E&C

Partner Contractor for Aquatic Works: Marinescape Limited

Shapoorji Pallonji's scope of works included the Civil, Structural & Architectural Finishing Works, Façade, Furniture, MEP works viz., Electrical, HVAC, Plumbing, Fire-fighting, ELV System, Elevators, Multimedia, Special Lights, etc.

Marinescape's scope of works included the execution of Aquarium Specialist works viz., Wet Theming, Acrylic viewing system Installation, Design & Installation of Life support Systems, Aquatic Species introduction and Operations & Management.

Design Features



The building, designed as a shell, is symbolic of the aquatic life. The form also allows connectivity and free movement. The building form is sculptural with its seven different volumes rising to different heights, depending upon the location and functions. The building and installation design has also factored in the seismic zone and related considerations and other vulnerabilities.

The external RC walls of the building are curved as well as inclined at an angle of 80.5 degree. The back of house spaces is designed and built to enable the servicing of water tanks and associated living environments of the various species. The structure is divided into four different floors.

The basement holds all the Utilities. The Lower Ground floor accommodates the Central Atrium, Shark Tank, Underwater Viewing Tunnel and Exhibit Tanks. The Ground Floor houses the 5D Theatre, Cafeteria & Touch Pools while the First Floor has the Offices & Classroom.

Main Highlights of the Aquatic Gallery

The aquarium has three water types - fresh water, brackish water and salt water that are sequentially demonstrated by creating 'water worlds', by location. These are Indian Rivers, South-East Asia, Africa, The Americas and Indian Ocean. The Aquatic Gallery consists of an underwater viewing walkway, a multi-level viewing gallery, an Interpretation Centre and a 5D Theatre.

The exhibits are equipped with advanced life support systems. The Aquatic Gallery is home to ~180 species of fish and has more than 11,000 fish from different aquatic and marine ecosystems around the world. The multiple ecosystems which are emulated in the water tanks, need precise maintenance of several water parameters such as pH level, salinity level or TDS level, chemical oxygen and bio-oxygen demand etc., depending on the requirement of species. The fish species coming from various eco-regions, were carefully acclimatised in different stages, before they finally come to the exhibit tanks.

The main attractions of the Aquatics Gallery include:-

- A clear 28 m long underwater acrylic tunnel stretching across the shark tank providing visitors with a more immersive experience and views of the aquatic species and coral reefs.
- A large oceanarium featuring a large flat single acrylic panel providing views into the ocean habitats.
- A Weird & Wonderful zone featuring two touch pools with starfish, spotted hermit crabs, tropical rock lobsters etc., amongst others.
- A Penguin Zone with Humboldt penguins.

A series of lights have been used throughout the gallery for a vibrant and natural experience at the same time. A separate dimming module has been provided for most of the lights to control the intensity of the lights. Informative displays including interactive displays on marine lifeforms have been provided in the gallery. Multiple touch screen consoles with a dynamic inlit Aquarium Layout guide the visitors through the gallery.



Construction Highlights

The Aquarium has a distinct architectural style. The building construction involved inclined RCC colored concrete exposed walls of F3 class. The building is divided into seven segments and each segment is topped with an inclined slab with all corners at different elevations. The geometric design of the RCC structure involved higher formwork material consumption and reduced labour productivity as compared to other buildings. Besides the geometry, the walls had many horizontal and vertical grooves thus posing challenges in formwork and concreting. The circular columns were cast using plastic formwork and the curved walls were cast using customised aluminium formwork. The finish and colour of the concrete surface were achieved using specially-designed self-compacting concrete that used a combination of white cement, grey cement, GGBS and admixtures.

The floorings, false ceilings for the rooms with curved walls also posed similar execution challenges. These challenges were overcome with the deployment of more skilled workmen and supervisors. Acoustic plaster has been used in the ceilings. Moisture-resistant finishing materials have been used near the exhibit areas.

The building elevation has curved fins with 3D slope. The Architect's brief for the fins was to match the form-finished RCC walls in look and feel along with durability requirements for the operation phase of the structure. This was achieved after a trial-and-error process.

Finally, the Architects approved Shera boards mounted over metal frames and finished with terra coat for the fins construction.

Construction Sequence for Exhibit Works

Wet Theming: The wet theming refers to the reproduction of the same eco-systems, the aquatic species are coming from. It also helps educate the visitors on the natural habitat of the species. The artist team studied the habitats of various aquatic species before designing and installing the wet theming of all the exhibit tanks.

The different habitat theming starts with muddy river banks and further continues with Rocky River beds and ends up with the coral reef theming in the marine exhibits. The theming team have worked on each and every minute detail and have produced more than 50 different varieties of corals and around 1800 nos. of corals.

Acrylic Viewing System: The Acrylic viewing panels provided in this modern aquarium allows uninhibited views of the aquatic life and theming within the exhibit tanks. These acrylic panels are easily prone to scratches and damages. The transportation, handling and installation for the delicate Acrylic panels were planned and executed with great care. The process included many steps right from unloading the panels from the transport vehicle, storage, preparation of the concrete nibs, installation of the acrylic panels into nibs, silicone sealant works, etc. All these sub-activities needed precision and perfection. A specialist team experienced in handling, rigging and installation of the Acrylic panels was deployed to safely install around 889 sqm and 110 tons of heavy but delicate panels.

The most challenging acrylic installation was that of the Main viewing panel of the huge shark tank which weighs 23 tons and is 15.6 long, 3.72m high and 330mm thick. This panel is the single largest acrylic panel ever installed in India, which was precisely & perfectly installed into its position.

The silicone sealant work for sealing the gaps between the acrylic panels and the concrete nibs to make the exhibits watertight is the most challenging job in any aquarium. The expert team from Marinescape, ably assisted by SP E&C, managed to deliver watertight installations including for the main panels and tunnel acrylic for the main shark tank which holds around 22 lakh litres of water volume.

Life Support Systems: The Life support system is the backbone of any Aquarium, which plays a major role in maintaining the water quality parameters of the exhibits. The health of the Aquatic species is dependent on water quality, which can be ensured through a proper Life supporting system. The technical team has designed, installed and commissioned these systems flawlessly.

Aquatic Species Introduction: Once the din and dust of construction is over and including any activity that uses chemicals (such as painting) is completed, the water tanks are then cleared for introduction of aquatic species. The life support systems need to be fully commissioned before the fish are introduced in the tanks. The health of the species is continuously monitored to ensure their survival. No construction worker is allowed near the exhibits without the permission of the curator.

Operations & Maintenance: Beyond the completion of the project, the Marinescape Curatorial & Husbandry team will continue to look after the operations & maintenance of the Aquatic Gallery for a period of five years. This involves proper maintenance of the life support systems & upkeep of the exhibits so that the aquatic species maintain good health.

Challenges Faced In construction

Being a world-class aquarium, the project involved a good amount of high-end architectural finishing works. Moreover, the exhibit areas involved many intricacies and coordination issues amongst execution teams from civil, architectural finishing, MEP and life support disciplines. This required careful attention to details and meticulous execution to avoid rework. SP E&C used Building Information Modelling to visualise the design details, to avoid clashes between various services, for quantity take-offs, to generate coordinated shop drawings, and to monitor construction progress. In addition, SP E&C deployed its best finishing, MEP and interiors experts to ensure the quality of workmanship. The job required close coordination with specialist subcontractors for specialised works. SP E&C managed about 40 specialized subcontractors on the project.

One of the most critical phases of the Aquatic Gallery project that involved the procurement and introduction of aquatic species into the exhibit tanks was executed amidst the pandemic situation. This phase of the project coincided with multiple restrictions on international and domestic air travel. These restrictions posed significant challenges for procurement of different varieties of exotic species from across the world and from different countries like Indonesia, Philippines, Singapore, turkey, South Africa, Brazil etc.

Marinescape's Husbandry team played a key role in quarantining and reviving the imported species which arrived in stressed conditions on long air routes due to the covid situation and travel bans imposed in many countries. The husbandry team has successfully introduced more than 11,600 fishes from ~180 species into the exhibit tanks.

Conclusion

The 'Aquatic Gallery' construction project is a great example of collaborative partnership between two major entities, Shapoorji Pallonji E&C and Marinescape, to accomplish a common goal. Both organisations were guided by their commitment and shared responsibility throughout the project journey and operated in a setting devoid of any hierarchy or authority.

The visitors to the Aquatic Gallery experience an enriching combination of lights, sounds, AV technology, projection, movies, interactive elements, graphics and signages at various points. Apart from displaying various species of fish such as grey reef sharks, bonnethead sharks, zebra sharks, alligator gar, Koi and black pacu fish among others, the Aquatic Gallery takes the visitors on a journey of information, interaction and education through a sensory experience.

With the commissioning of the Aquatic Gallery, tourists and science enthusiasts can now look forward to another must-visit destination in Ahmedabad. It is one of India's largest and most modern aquariums and provides an elegant and unique experience to visitors.

📅 September 2021

📧 (https://api.whatsapp.com//send?text=*Aquatic Gallery

🐦 Science f (http://Crtter.cm/sh

City, (http://www.itsa.com/ahmeda

Ahmedabad (http://www.itsa.com/ahmeda

report/infrastrucure/infrastruc

construcure/infrastrucure/infrastruc

real- real- estate/real-estate/

estate/estate/estate/estate/

gallerygallerysciencegallerygallery-

sciencecity- sciencecity-

city- city- ahmedabad.html&tex

ahmedabad.html&tex


[Click Here](#)
To Know More or to Contact the Manufacturer

◀ [Prev \(/article-report/infrastructure-construction/infra-real-estate/43950-need-to-look-beyond-boundaries.html\)](/article-report/infrastructure-construction/infra-real-estate/43950-need-to-look-beyond-boundaries.html)

[Next ▶ \(/article-report/infrastructure-construction/infra-real-estate/future-of-real-estate-investing.html\)](/article-report/infrastructure-construction/infra-real-estate/future-of-real-estate-investing.html)




(/component/banners/click/264.html)



National Monetisation Plan: Paving the Road for Sustainable Financing Towards Infrastructure Development

The Modi government's ambitious and aggressive ₹6 trillion National Monetisation Plan (NMP), high on intent with enabling framework, holds the promise of success, notwithstanding various challenges on...

(/article-report/infrastructure-construction/infra-real-estate/national-monetisation-plan-paving-the-roa...



Need to Look Beyond Boundaries

34-InfraDespite their relatively small markets, Bhutan and Maldives provide Indian construction companies a dynamic space for infra development with an appreciable degree of social and cultural familiarity...

(/article-report/infrastructure-construction/infra-real-estate/43950-need-to-look-beyond-...