



# PIANC

## RecCom WG Report n° 177 - 2017



## 10 YEARS OF THE MARINA EXCELLENCE DESIGN 'JACK NICHOL' AWARD (MEDA)

The World Association for Waterborne Transport Infrastructure



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## PIANC REPORT N° 177

RECREATIONAL NAVIGATION COMMISSION

### 10 YEARS OF THE MARINA EXCELLENCE DESIGN 'JACK NICHOL' AWARD (MEDA)

2017

PIANC has Technical Commissions concerned with inland waterways and ports (InCom), coastal and ocean waterways (including ports and harbours) (MarCom), environmental aspects (EnviCom) and sport and pleasure navigation (RecCom).

This report has been produced by an international Working Group convened by the Recreational Navigation Commission RecCom). Members of the Working Group represent several countries and are acknowledged experts in their profession.

The objective of this report is to provide information and recommendations on good practice. Conformity is not obligatory and engineering judgement should be used in its application, especially in special circumstances. This report should be seen as an expert guidance and state of the art on this particular subject. PIANC disclaims all responsibility in case this report should be presented as an official standard.

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## TABLE OF CONTENTS

1. Introduction .....	2
2. 2003, Cabrillo Marina - San Pedro, California, USA .....	3
3. 2004, Marina Punta Gabbiani - Ligano, Italy .....	4
4. 2005, Hammond Marina - Hammond, Indiana USA .....	6
5. 2006, Marina de Portimão - Portimao, Portugal .....	7
6. 2009, Charleston City Marina - Charleston, South Carolina, USA .....	8
7. 2010, Bahia Mar Yachting Center - Fort Lauderdale, Florida, USA .....	9
8. 2011, Mandurah Ocean Marina - Mandurah, Western Australia .....	11
9. 2012, Puerto Deportivo de Combarro - Pontevedra, Spain .....	12
10. 2013, Marina di Rodi Garganico - Rodi Garganico, Italy .....	13
11. 2014, Cesme Marina - Konukevi, Turkey .....	15

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**Marina  
Excellence  
Design  
Jack Nichol  
Award**

# 1. INTRODUCTION

Marinas have intrinsic value beyond their basic function to berth, launch, or repair boats. Marina are place makers; centres of civic activity where people are attracted to and engaged with the water's edge. They are also stimulus for economic activity by creating synergies between commercial enterprises, retail, restaurant and hospitality establishments, and residential living that support the local community and visitors alike. Marinas are also good stewards of the environment, with designs that harmonise with their physical surroundings and operations that employ sustainable practices and innovative technologies to preserve and enhance the air and water. The Recreational Navigation Commission (RecCom) of PIANC acknowledges the important role marinas provide to the vibrancy of the waterways and waterfront through the establishment of an award that showcases marinas exemplifying excellence in planning, design, and operations of modern recreational boating facilities; the Marina Excellence Design 'Jack Nichol' Award.

This award was established by RecCom in 2002 in memory of the late John M. 'Jack' Nichol, a U.S. Delegate and Honorary Member of PIANC and well-known waterfront and marina engineer. The ocean had called to Jack from an early age, after graduation from Oregon State and Delft University of Technology, Jack served the U.S. Army Corps of Engineers through the mid-1950's, working on a coastal and waterfront project along the west coast of the United States. Jack joined Moffatt & Nichol in the early 1960's as sustainable waterfront and marina design was in its infancy. With his colleagues at Moffatt & Nichol, Jack provided technical guidance and advice in the development of publications such as Special Report No.2 – 'Small-Craft Harbour: Design, Construction, and Operations' prepared for the U.S. Army Corps of Engineers as well as the design of major marina projects including the ever popular Huntington Harbour, Alamitos Bay, Long Beach Downtown and Marina Del Rey in Southern California. After retirement, he served on the Marine Advisory Commission for the City of Long Beach. Jack was often heard to advise the junior coastal engineers under his watch, "It's not what happens in life, it's how you react to it."



Since 2003, the Marina Excellence Design 'Jack Nichol' Award has been made annually to a marina facility that exemplifies excellence of design based on functionality, aesthetics, and environmental sustainability. These winning marinas met the qualifying criteria; which required the facility to be open to the public and be in operation for a minimum 2 years but not older than 15 years in age. This publication reviews the first 10 winners of the Award, highlighting features or elements of the marina that provide boaters a protected harbour with well-designed infrastructure, a full suite of available and convenient amenities, while preserving or enhancing the social and environmental setting of its location.



## 2. CABRILLO MARINA

San Pedro, California, USA - 2003



The Port of Los Angeles is one of the world's largest ports in the western hemisphere but it is also known for developing and supporting diverse recreational facilities including 15 marinas with over 3,700 wet slips. Cabrillo Marina was the anchor to the Port's first large-scale integrated marina development project, the West Channel/ Cabrillo Beach Recreational Complex. This project transformed the underutilised San Pedro District area in 1986, with the construction of 885 wet slip marina supporting retail, dining, and hospitality establishments on site and in downtown San Pedro. It also offers patrons and visitors alike convenient access to major roads and public beaches, natural greenways, and open park spaces to view the water.

The marina is ideally situated in a sheltered basin that is less than 30 kilometres from the cruising and fishing grounds of Catalina Island. Two land masses define three distinct sub-basins that support vessels from 8 to 23 metres. Each sub-basin utilises a floating concrete pontoon system laid out in an efficient arrangement that supports single slips defined by finger piers and wide fairways. A full range of utility services including electric, potable water, and Wi-Fi are provided at each slip while fuelling and sanitary sewer pump out services are centralised in the middle basin for convenience.

Marina support facilities including dedicated restrooms, laundry, provisioning, and administrative services are incorporated in this master planned marina with aesthetic features adhering to the Spanish colonial architecture of the region. A small village with retail, restaurants, and a hotel provide amenities to support local and transient boaters. The marina also boasts very convenient parking to the wet slips, with walking distances of less than 240 metres.



The marina concessionaire and the Port of Los Angeles support a series of environmental sustainability initiatives through operations, monitoring and education. The clean marina programme promotes recycling of waste and used oil as well as dedicated sanitary pump-out facilities to maintain the quality of the water. Training classes are routinely held to educate boaters to the merits of being good stewards of the environment. These efforts are a small part of a larger effort by the port that includes conducting biological surveys to monitor and evaluate impacts to the aquatic environment and funding saltwater marshlands to restore habitat displaced by port developments.

### 3. MARINA PUNTA GABBIANI

#### Ligano, Italy - 2004

Marina Punta Gabbiani is located in Aprilia Marittima, a nautical tourist centre situated on the Marano Lagoon between the Cities of Venice and Trieste in the northern Adriatic Sea. Marina Punta Gabbiani is a destination gateway facility to the cruising grounds, islands, and tourist areas of the Balkan peninsula (Croatia, Montenegro, and Slovenia) and Adriatic coast of Italy.

This 300-berth marina is characterised by its rectangular shape basin that provides an efficient fixed concrete dock system that supports wet berthing for 10- to 25-metre-long boats. The marina is sheltered from fierce winds, storm surge, and waves common to the open waters of the Adriatic by saltwater marshes, man-made earthen berms, and the lagoon itself. The lack of finger piers enhances the efficiency and flexibility of the dock layout, allowing the operator to support a wide range of power- and sailboats. Each berth is serviced with potable water, electricity, Satellite TV, Wi-Fi, and a sanitary sewer pump-out system.

The marina also boasts a substantial marine repair, maintenance, and storage facility with four travel lifts and heated sheds for all-weather painting, carpentry and sail repair. The storage yard for boats between 7 to 15 metres has a unique fan-shaped design for increased storage density while elevated catwalks between stored boats allows owners and maintenance staff convenient access to the boat interior during the offseason.





Buildings that provide well connected guest services including reception, showers, and restaurants are rendered in a nautical façade that is shared with the other developments within the Aprilia Marittima, providing cultural link to the maritime heritage inherent to the north Adriatic region. The layout of the roads, parking, open areas, and landscape buffers maintain the views of the lagoon while sheltering the more industrial sections of the facility.

The marina supports numerous environmental programmes to prevent degradation or impacts to the diverse ecosystem of the surrounding waters. A geothermal system provides a renewable heat source for the building and pools. The marina also has a dedicated recycling and waste disposal programme for used oil, bilge water, batteries, and shipyard waste. This dedicated recycling program coupled with annual water quality monitoring of basin waters has earned the marina the annual Blue Flag award.





## 4. HAMMOND MARINA

### Hammond, Indiana USA - 2005

Revitalisation of urban industrial waterfronts is a world-wide trend that has accelerated as cities and private developers realise the commercial, recreational, and entertainment potential of these under-utilised sites. The City of Hammond crafted and implemented a plan to transform the second largest steel mill slag site into a recreational gateway with a marina, public beach, and public access walkway for fishing and observations, all within a 30-minute drive from downtown Chicago. The outcome was the construction in 1991 of a 1,100-slip marina with an innovative tandem breakwater system.



The development of the marina basin revolved around the need to provide quiescent conditions in the marina from the energetic wave environment of Lake Michigan. As a means to minimise cost associated with high and extensively armoured single large breakwater structure, a tandem breakwater design was developed. This consisted of a submerged breakwater to attenuate the larger waves before impacting the main breakwater. This system, which was designed using the results of physical model testing,

lead to a reduction in the size and cost of the main breakwater. The new design also permitted a pedestrian walkway to be placed along the crest of the structure to improve public engagement of the water.

The marina typifies industry design guidance with the use of floating pontoons arranged along a central main walkway to improve efficiency for berthing of 9- to 18-metre boats, routing of utilities, and controlling pedestrian access. The wide central fairway created by this layout also supported the integration of boat launch facilities for the public and a marine centre that provides winter storage. A full suite of utilities is provided at each slip with fuel and sanitary pump-out provided at a centralised location near the marina entrance. The marina also has a de-icing system to protect infrastructure during the

winter months. A dense landscape buffer and the integration of existing municipal buildings with new retail and entertainment venues associated with the marina shields the site from neighbouring industrial uses.

The public beach constructed from material dredged during marina construction also provided critical habitat for nesting shorebirds, resulting in the area being designed as a protected bird sanctuary. This environmental restoration feature coupled with advanced drainage and boat wash-down recycling systems that keeps fouled water from entering Lake Michigan, resulted in the marina being designated the first clean marina in Indiana.

## 5. MARINA DE PORTIMÃO

### Portimao, Portugal - 2006

Marina de Portimão was conceived to add economic growth and opportunity to the town of Portimão and the Algarve region of southern Portugal; a region renowned as a tourist destination with beautiful beaches, the Forts of Santa Catarina and São João do Arade, and yachting. It has also become the de-facto destination in Portugal for superyachts up to 50 metres in length, as well as hosting a number of international yacht events and races.



The marina lies near the mouth of the Arade River, in a protected 25-hectare basin created from material dredged from the river mouth. The two landmasses on the south and central sides of the basin support marina services, restaurants, retail, and condominiums. A perimeter promenade facilitates pedestrian access within the marina as well connection to roads and pedestrian thoroughfares of the adjoining neighbourhoods.



A beach was constructed along the south side of the basin to dissipate incoming waves and reduce the size of the fronting rubble mound breakwater. The marina also employs floating wave attenuators along the river's edge to minimise wave agitation from wakes generated by passing boats. The floating attenuator and the floating pontoons inside the basin aid in water exchange and circulation while providing efficient and berthing for 620 vessels ranging from 6 metres to 50 metres. The marina is a full-service facility with each slip having electric, Wi-Fi, and potable water accommodations.



The marina also has a separate boatyard facility on the other side of the river; a distance that separates this marine industrial from the friendlier tourist areas but close enough to be convenient to boaters requiring year-round maintenance afforded by its travel lift capacity of 300 tonnes.

Each marina user must abide by the environmental code of conduct which prohibits the discharge of wastewater, pollutants, oils, or paints into the basin or surrounding estuary. Supporting this environmental awareness and the marina's Blue Flag designation is daily collection of waste, used oils, and other recyclable materials.

## 6. CHARLESTON CITY MARINA

### Charleston, South Carolina, USA - 2009

The Charleston City Marina is a facility renovated in 1994 along the north bank of the Ashley River in the heart of the City's historic district. It is the primary entry point for visiting transient boaters from abroad, with a US Custom Port of Entry at the marina. Damage from storms, years of deferred maintenance, and challenges with maintaining usable berths due to high siltation rates, had rendered



the facility obsolete and in a state of disrepair. The City embarked on a public private partnership to restore and upgrade the facility to become one of the eastern United States premier boating destinations.

The marina spans a distance of 850 metres along the river shoreline but is limited to a 175-metre width to avoid impeding navigation on the river. These physical constraints resulted in a long linear dock layout of floating



pontoons. When the marina was initially constructed, fixed concrete baffle walls were installed on the river side of the marina to minimise wave agitation in the basin due to passing ships. The baffles had the unfortunate effect of slowing tidal currents, which exacerbated the frequent siltation issues experienced by the marina. The design for the renovation selectively removed the wave baffles to increase the tidal currents, restoring navigable depths within the marina and minimise the need for frequent dredging.

The renovation project rearranged and in some instances, replacing the existing floating pontoon system with modern wood and concrete. These new pontoons supported a full menu of utility services including 480-volt shore power to support superyachts. A 465-metre-long floating fuel dock was incorporated into the marina to facilitate high speed fuelling of multiple vessels while also provide peripheral docking for superyachts. A floating marina service building with restroom and shower facilities was installed in a central location to provide boaters with convenient access.



Tidal marshes lie along the shoreline of the marina and have been protected by the use of fixed access bridges and riverward positioning of floating pontoons to avoid siltation impacts caused by propeller wash. The marina also adheres to environmental management and clean marina guidelines associated with sanitary sewer pump-out facilities, waste collection, and recycling efforts.



## 7. BAHIA MAR YACHTING CENTER

**Fort Lauderdale, Florida, USA - 2010**

Bahia Mar Yachting Center serves the booming South Florida yachting market and hosts the world-renowned Fort Lauderdale International Boat Show; an event each October that generates US\$ 500 million in revenue. Maintaining the dual function of this facility was the primary goal when the 1949-era 400+ slip marina was renovated in 2002. The original marina had fixed timber docks providing berths for boats up to 12 metres in length but the 2002 renovation reimaged the facility to one that catered

to the expanding superyacht market and the marina's position as host of the boat show. The 16-hectare site now accommodates 245 vessels from 14 to 36 metres in length with side-tie moorage for vessels up to 24 metres in length during normal operations. During the boat show, the marina has the ability to accommodate 1,000 vessels.



A floating concrete pontoon system with extra wide walkways and high (762 mm) freeboard were installed in a configuration that provided expansive fairways and flexible mooring and utility arrangements to support the boat show. Unlike a typical marina, where a percentage of the slips are using power at the same time under normal operations, all the vessels at the boat show are powered at once – running air conditioning, refrigerators, etc. 24-hours a day, requiring a substantial distribution network to provide necessary power. In-slip sanitary sewer pump-out, potable water, and Wi-Fi were provided along with a high-speed fuelling dock that can accommodate multiple superyachts. Central to the yachting centre is the resort with hotel, restaurants, shops, and concierge services that caters to boaters and visitors.

With its location straddling the Atlantic Ocean and the Intercoastal Waterway, the marina was designed to blend with the tropical environment. Special attention was given to the textures, colours, and lighting on the dock including the coordinated branding of dock equipment with the Bahia Mar logo. In addition, number of design features and operational programs have been implemented to promote water quality and reduce the marina's impact on the surrounding environment. The marina is a certified Clean Marina by the State of Florida.

Because of the economic impact of the boat show, construction of the marina had to be completed within a year between boat shows. Conversion of the marina into the boat show facility takes less than one week, minimising the down time the marina is without tenants.





## 8. MANDURAH OCEAN MARINA

### Mandurah, Western Australia - 2011

The 62-hectare Mandurah Ocean Marina is a major boating destination in Mandurah, a fast-growing city with a thriving tourism industry located about an hour's drive south of Perth. The City's 30-year vision to transform an underutilised strip of oceanfront property into an integrated mixed use development combining maritime, residential, commercial, and tourism, and recreational areas became a reality when it was completed in 2001 as part of a successful public-private partnership. The marina and sur-rounding development have become a catalyst for economic growth in the area attracting private investment and jobs.

Stewardship of the environment was paramount from the start, with management plans developed for the dredging and land reclamation of harbours and entrance channel. The Department of Fisheries and local conservation groups relocated affected aquatic species and created a new and protected breeding ground for shorebirds. Sediment and water quality plans were also developed and implemented prior to the installation of the floating aluminium pontoons that provide 313 berths in the North Harbour and 18 berths on the South Harbour for boats up to 20 metres. A clean marine environment policy involving pump-outs and waste and oil recycling was introduced to reduce the marina's impact on the surrounding environment.



In addition to the wet slips, the North Harbour also supports a four-lane public boat launch facility and a full-service maintenance and storage yard with travel lift. A full suite of marina support facilities is available including specially-designed wheelchair fishing access, restroom and laundry facilities, and food service. The perimeter of both basins has a promenade that links to a public beach and a colourful mix of shops and restaurants and modern facilities for both professional and recreational boaters.



## 9. PUERTO DEPORTIVO DE COMBARRO

Pontevedra, Spain - 2012



Lying in the heart of the Rías Bajas, with easy access to all the attractions of the Galician coast, the marina at Puerto Deportivo was constructed in 2008 to provide the regional area with berths for vessels ranging from 6 to 20 metres. The marina also caters to the transient boaters from Northern Europe and the Mediterranean with berthing accommodations for vessels up to 30 metres. The marina was a coordinated plan by public and private entities to complete the linkage between the historic port and the historic fishing village. The existing breakwaters defining the port were expanded to support marina buildings and service and repair facilities.

The facility was designed to meld with the surrounding heritage and character of the village by creating a central harbour district that highlights the Galician lifestyle. A principle feature of the marina is a service building with underground parking and a full suite of boater amenities (restrooms, showers, nautical shop and restaurants). The harbour is protected by the afore-mentioned fixed rubble breakwaters and a 160-metre long floating wave attenuator. The efficient arrangement of four 3-metre wide floating pontoons with finger piers provide berths for 334 boats with full utility provisions. A separate floating pontoon supports fuelling operations. The service and repair yard on the south side includes service buildings for engine, hull, and electric repairs, and a boat haul out and launch system including a 50-tonne travel lift and 6-tonne crane.



The design of Combarro Marina reflects not only the needs of the boaters it serves, but the surrounding environment. The marina has an easily and accessible pump-out facility next to the fuel station with the purpose of protecting the marine environment.



## 10. MARINA DI RODI GARGANICO

### Rodi Garganico, Italy - 2013

Located on the Adriatic Sea within the National Park of Gargano and adjacent to the seaside resort of Rodi Garganico, this marina is ideally situated close to the Tremeti Islands and the extensive cruising grounds along the Croatia and Montenegro coastlines. A marina had been planned for over a 100 years at this site; near the ruins of a Roman-era harbour. It became a reality in 2009 after 775 days of construction that included placement of a 700-metre curvilinear breakwater protecting the north and west approaches of the marina and a smaller 300-metre breakwater on the east side. These structures protect the marina from the strong northwest wind-driven waves that frequent this region.





The design also embraces the natural setting of the area, accentuated by the sweeping nature of the breakwater and wide public beach that visually connects the marina with the town. Public access and use of the facility was integrated into the design including public gathering areas for festivals, a terminal to support inter-island ferry operations and a public beach enhanced with material dredged from the marina during construction. Given the unspoiled charm and clear waters of the Puglia coastline, the marina had implemented a full environmental quality programme that included water and sediment testing, education, waste/recycle collection systems, and two recirculation pumps to improve water exchange and flushing.

The 310 slips that accommodate vessels between 8 and 45 metres were arranged to provide maximum flexibility, with wide fairways, deep water, and an adjustable mooring and access system. Each slip included a full suite of utilities as well as access to a centralised fuel, waste oil, and sanitary sewer and bilge pump-out stations. The waterside services were complimented by landside amenities that include a boat maintenance, refit, and haul out facility with high capacity travel lift and jib cranes, a ship chandlery, yacht club, and retail, restaurant, and hotel operations. A marina management structure was developed for all land and waterside operations to provide boaters with a simply and convenient point of service.

The marina closed in 2016 due to challenges in attracting boaters from major cities to homeport their boats at this remote facility. Siltation of the marina also continued to plague the marina at the time of its closing.





## 11. 2014, CESME MARINA

### Konukevi, Turkey

Cesme Marina, located near Izmir, Turkey is a 353-berth facility that is ideally located to explore the surrounding Greek Isles and waters of the Aegean Sea. This facility provides a year-round destination with landside and waterside features for both the marina user and the general public. The marina was designed to complement the character of Cesme's maritime heritage while providing a modern well-functioning facility. A high level of service coupled with the well laid out facility provides a sense of safety, comfort, and luxury.

The marina is divided into three distinct areas: 1) the Sea Area with well-protected and secured berths, 2) the Commercial Area supporting restaurants, retail and parking; and 3) the Shipyard Area dedicated to boat maintenance, chandlery, and boat haul-out. The wide floating concrete pontoons in the Sea Area can accommodate vessels from 6-metre boats to 60-metre superyachts using a flexible bow mooring system. These docks are supplemented with a high level of utility services including a dedicated fuel station to cater to the most demanding boaters. The high level of service also includes an extensive waste collection, recycling, and disposal operation to maintain the environment. The service facility within the Shipyard Area includes a travel lift and boat movers to support marine structural, mechanical, and electrical repairs as well as facilitate storage of up to 100 boats.



Amenities on the Commercial Area were developed to support the local population and incoming tourists of this seaside resort as well as yacht owners and their crews. Public spaces with outdoor seating and entertainment coupled with lush landscaping allows people to stroll, gather, and enjoy the waterfront experience, especially during the evening hours. Most businesses in Cesme would close during the off-season, leaving local population without convenient access to these amenities; a situation that changed with the construction of the marina.





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