

MARINA DI LOANO SHIPYARD FACILITY



Marcello Conti¹
Ing. Carlo¹

FOREWORD

The Marina di Loano Shipyard represents a new concept of marina shipyard facility. As a part of the Marina di Loano in Liguria, Italy, it has been designed to match with the new surrounding marina that represents itself one of the most modern concept of yacht harbours in the Mediterranean Sea, with more than 1.000 berths.

MARINA DI LOANO

Location

Marino di Loano (44°08'15"N 08°16'17"E) is the result of expansion works of the old fishing Harbour, which were completed in the early months of 2011.

It lies in the heart of West Liguria, Riviera di Ponente, close to the historical town centre and one hour away from Genoa and Nizza airports.

Project

Maximum safety of boat berths and moorings is guaranteed by the main and secondary breakwaters, hydraulic engineering structures designed according to the strictest safety parameters. The main breakwater is safe even in the event of a hundred-year wave, almost 6m high.

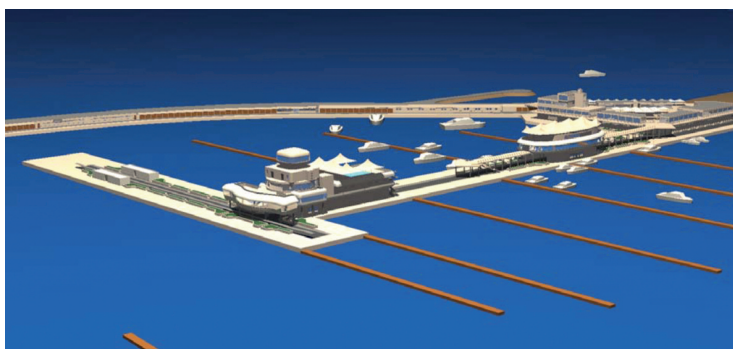
In spite of the wide port entrance, the maximum internal wave height is below 30cm in any weather condition, thanks to the main breakwater and the long inner docks. These were built with a view to minimising wave reflection and propagation within the wet docks into which the Marina is organized.

¹ Conti e Associati.

INFRAESTRUCTURAS, LOGÍSTICA Y SOSTENIBILIDAD



With water depths between 3.50 and 5m m.s.l., Marina di Loano can host boats from 8m to 40m, along its inner docks and floating docks. It provides 827 permanent berths for pleasure crafts and 100 transit berths, as well as a 100 berths rented at rates agreed with Loano Town Council; 3 berths for Coastguard boats; approx. 30 berths for professional fishing boats for a total of more than 1,000 berths.



The boats moored at the inner docks have access (through the stern) to a pair of bollards, each one with 10-ton traction resistance,

as well as stainless-steel mooring rings, each with up to 6-ton traction resistance. A pair of traditional bow mooring chains or lines are available, attached to concrete dead-men weighing up to 7.5 tons each and fixed onto the seabed. The facilities provided considerably exceed the needs of the current mooring plan and are equipped to host a greater fleet in the future.

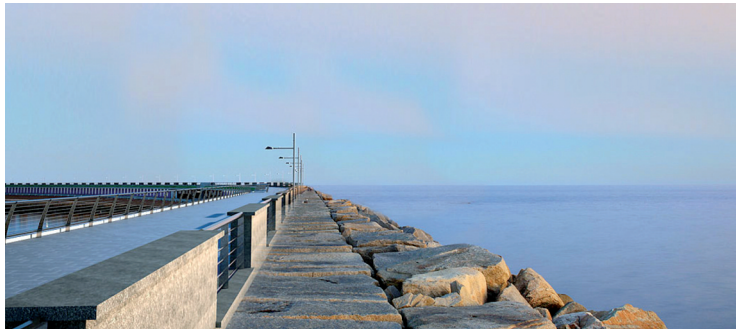
Breakwaters

This is the most imposing and notable marine work in Marina di Loano. 6m high and lying on 60m-wide foundations, the pier's main function is to make the marina a safe



INFRAESTRUCTURAS, LOGÍSTICA Y SOSTENIBILIDAD

place even in the most severe weather and sea conditions. The outer layer of its main ballast is made up of granite rocks weighing up to 12 tons each, while the upper layer is covered in Carrara marble blocks. On the top of the breakwater wall, over 5m above sea level, lies the 800m long Seafront Promenade, a prolongation of the town's promenade leading to the far end of the pier, where a characteristic sundial is found. Inside the wall. About 140 car parking spaces are available, along with bathroom blocks, both for public use and for that of the marina guests. On the inner side of the pier the docks host berths for boats longer than 16m.



The Secondary Breakwater, 300m long and rising 5m above sea level, secures marina basin leaving a 70m-wide mouth which grants easy access even in rough sea conditions. This is made possible also by the depth of the seabed (more than 5m) and by the outer basin which is delimited by a further jetty to the East and sheltered by the Main Breakwater.

MARINA DI LOANO SHIPYARD

Project

The Marina di Loano Shipyard satisfies all the typical service necessities of a modern marina consisting in maintain, repair and refitting of boats.

Technical assistance, maintenance, renovation and storage services are provided for both motor and sailing yachts between 6m and 50m. It boasts a 2,000 sqm indoor yard and a 8,000 sqm outdoor yard, which can accommodate a 500-ton travel lift.

Harbour's Dredging

Land reclamation for shipyard and landside facilities has been provided by the dredging of the basin necessary to reach the minimum depth of -3,5m along the landside quay (smaller boats) and -5,0m in other basin areas.



INFRAESTRUCTURAS, LOGÍSTICA Y SOSTENIBILIDAD

Construction

The boatyard facility has been built over an overconsolidated reclaimed land achieved using the dredged materials from the basin. The sand heap was up to 12m high above the ground and the material has been furtherly reused for beach filling in Loano public beaches.



The overconsolidation of the ground allowed the use of footings instead of piles with a considerable saving of money.

The laminated glued timber beams have been lifted by crane and assembled in place

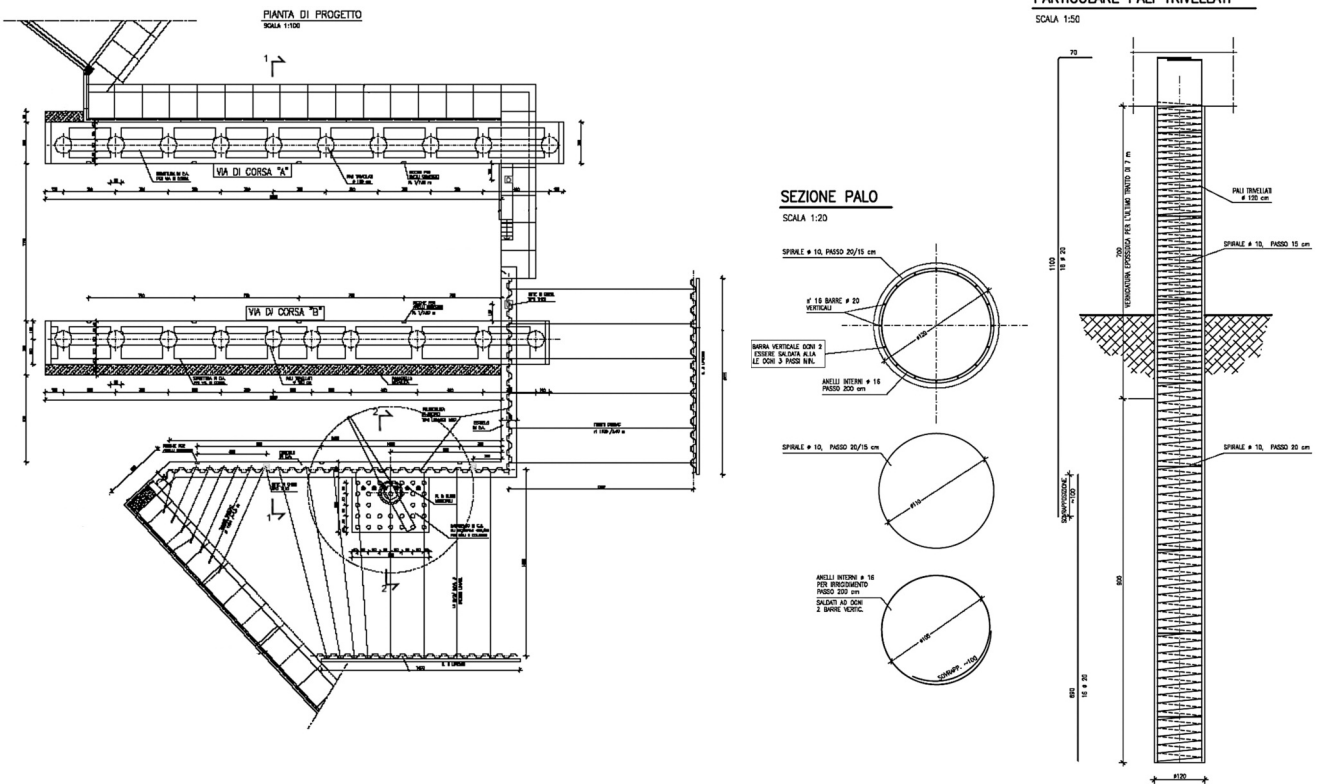
BOAT WELLS

Design

Two towing tanks are also available, measuring 30mx11m and 20mx6.50m.

The smaller tank is 5m deep and has a 40-ton crane.

The bigger well has been designed for a 500tons travel-lift. As this was not considered in the original design, a modification of the existing boat wells has been made by removing the original gravity blocks of the quay for a 1200mm steel and concrete piles structure to be placed to support the additional load.



SHIPYARD BUILDING

Design

The boatyard building features the typical wing-shaped profile, a green roof, solar panels, as well as technologies that minimise the environmental impact of boatyard activities, which do not cause any discomfort to marina visitors.

The structure of the building has been designed to be independent from the internal partitions to give the users the maximum of flexibility according to their effective needs.

Although, the uses that have been considered in the design phase are typical for marina's shipyards:

- carpentry;
- mechanical workshop;
- electrical workshop;
- offices;
- commercial spaces.

Roomy spaces for plants have been foreseen too.

INFRAESTRUCTURAS, LOGÍSTICA Y SOSTENIBILIDAD

The characteristic shape of the building has been designed together with the different levels of the street and the shipyard, to minimize the visual impact of a volume that is necessary of big dimensions, especially from the street view and from the hills surrounding Loano area.

Materials used are the typical of traditional ship building: wood and steel.

Steel and r.c. columns support big curved glued laminated timber beams, while curtain walls has been designed in sandwich insulated metal panels as well as the roof cover.

Particular attention has been given to the roof. Considering the importance of the impact of such a wide build surface, different technologies have been adopted both to improve the visual impact and to emphasize the attention to the environment.

Over the roof, by the Harbour side, where orientation and slope are more convenient, solar panel for hot sanitary water production for all the east marina area (boatyard, yacht club and beach services) and photovoltaic panels have been placed.

For the remaining portion of the cover a green roof has been adopted, considering the easiness and safety of access for maintenance.

Work on boats up to 70ft can be performed inside the facility thanks to the wide gates and the height of the upper beams giving access to the west side of the building and to mechanical and electrical workshops.

Technical rooms, restrooms and locker rooms for the employees are placed along the east side of the facility. A covered connection space gives protection to the back doors of the shops.



INFRAESTRUCTURAS, LOGÍSTICA Y SOSTENIBILIDAD



Offices for boatyard management are located in the north side of the building with direct access from the shipyard.

Commercial spaces for nautical wear and equipment are placed at the north side of the facility with access from the promenade under a wide porch. They are organized in two stores connected by stairs and elevator.

Fire fighting system is equipped with a 200m³ water tank.

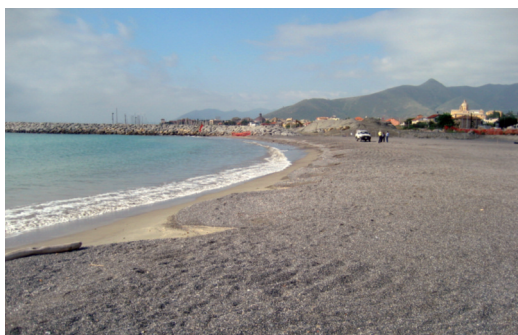
THE BEACH

At the eastern end of the complex, Marina di Loano offers its visitors a sandy beach. Over 200m long and 80m wide, the beach was completely reclaimed using the sand from dredging of the basin.

The beach is split into different areas by four jetties that branch out from the Shore Promenade and run perpendicular to the shore. Under the jetties are beach utility rooms, bathrooms and showers. Here nautical tourism lovers, their boats safely moored, will find a cosy corner where they can relax with family and friends. The multifunctional beach is divided into three main areas, sport, sun-keeping and entertainment.



INFRAESTRUCTURAS, LOGÍSTICA Y SOSTENIBILIDAD



Construction

To have the optimal grain size for the surface of the beach, a complex channel system has been prepared to permit the deposition and the separation of silt. A river sand cap has been placed over it and a final layer of fine sand is what you put your feet on.

Disable Pier

A disable pier has been built to allow anybody, even if on a wheelchair, to get into his boat. Low profiled, without architectural barriers and equipped with a crane designed to help people with reduced mobility to get on board is a particular feature of the sailing school that is an important complement to the whole services the Marina di Loano offers.

CONCLUSIONS

Marina di Loano Shipyard represents a new concept in design of service facilities for marinas. The particular design and the attention to the details have been thought for a total integration in a superior class marina where nothing must sing out of tune.