



activities & news

ITALY

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The new breakwater in Vado Ligure

BUZZI UNICEM'S LONG-STANDING COLLABORATION WITH IMPRESA CERRUTI SPA HAS LED TO A MAJOR RENOVATION PROJECT IN A STRATEGIC AREA IN NORTHERN ITALY



The purpose of the new breakwater undergoing construction in Vado Ligure (in the province of Savona) is to protect the port basin and improve the maritime accessibility for the shipment of goods and storage containers in northern Italy. The supply of concrete for the offshore filling of cellular caissons is being handled by Impresa Cerruti S.p.A. of Varazze (SV), which proposed a tailor-made solution using 42.5 N III/A cement supplied by Buzzi Unicem's plant in Trino Vercellese. The construction of the new breakwa-

ter is like the existing one, namely by sinking reinforced concrete cellular caissons onto a basement platform in the cliff to a depth of 35 to 49 meters. This will increase the width at the port entrance by about 150 meters, thereby improving safety and facilitating berthing maneuvers at the platform and the nearby ferry terminals. Specifically, 17 caissons will be installed in this new section of breakwater, 13 of which will be salvaged from the existing ones. The four caissons to be prefabricated from scratch have

a dimension of 22x31.1 meters and a height of 26.5 meters. They will be filled with granular material and sunk to a depth of more than -25.50 meters, thus preventing the platform from obstructing the Sacro Corem shipwreck. The remaining 13 caissons, on the other hand, come from the existing dam. To make their reuse compatible with current technical construction standards, it was necessary to plan for their filling with concrete in portions varying from 85% to 50%, depending on whether or not they are exposed to the direct action of wave motion. Approximately 90,000 cubic meters of concrete will be poured directly into the caissons already positioned in the sea, the reason for which the company Cerruti S.p.A., using specialized companies in the sector, has installed



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OPENING PHOTO

AERIAL PHOTO OF THE PONTOON WITH THE CAISSONS WAITING TO BE FILLED (WITH THE OLD BREAKWATER IN THE BACKGROUND)

- 1. THE GIULIANA PONTOON WITH THE CONCRETE BATCHING AND AGGREGATES STORAGE PLANT
- 2. DETAILED VIEW OF THE AGGREGATES STORAGE AND DOSING AREA

a ready-mix concrete production plant on a floating pontoon supplied by FIN-COSIT S.r.l. (one of the companies that make up the 2F per Vado consortium together with its partner FINCANTIERI INFRASTRUCTURE OPERE MARITTIME S.p.a.). The plant must produce 500 cubic meters of C35/45 concrete with an exposure class of XS3 and consistency class of S4 per day and has been specifically designed and built to take on board all the materials for its daily production needs. Comprised of two parts, one part of the plant is located on the Molo Scasse quayside and consists of three 110-ton capacity storage silos for the cement, an aggregates storage area, two 6,000-liter capacity storage tanks for the additives, a water-treatment plant for washing the equipment, a caterpillar conveyor belt, and a mechanical shovel on wheels.

The cement is transferred onboard by a pneumatic transport system, while the aggregates are transferred by the caterpillar conveyor belt fed by the mechanical shovel.

The other part of the plant is located on the Giuliana pontoon (22 by 60 meters), and consists of a 600-cubic meter capacity storage tank for the aggregates, two 110-ton capacity storage silos for the cement, two 50-cubic meter capacity storage tanks for the water, two storage tanks for the additives, a dosing and weighing unit for the aggregates, a dosing and weighing unit for the cement, additives and water, a 3-cubic meter horizontal axis mixer, a 10-cubic meter agitator tank, a hydraulic crawler excavator equipped with a clamshell bucket, a 32/36-meter truck-mounted concrete pump with boom, and a 350 kW generator. The plant and all production operations are controlled by an electrical panel and automation software specifically created for this purpose, and can also be managed remotely if necessary. It should also be noted that the aggregates arrive at the construction site already pre-dosed and premixed by an automated plant located in the production quarry in Martinetto, in the Municipality of Zuccarello (Savona), also owned by the company Cerruti S.p.A.

TYPE III cements are obtained by grinding clinker (between 35 and 64%), gypsum and granulated blast furnace slag. They are ideal for producing standard and special concretes and



for any product that requires greater resistance to chemical attacks and the development of heat of hydration under controlled conditions. They can be used in special mixtures under defined and controlled curing conditions for prefabricated and/or prestressed structures. They are characterized by a controlled development of initial resistances and comply with the harmonized European standard EN 197/1 and thus bear the European Regulation 305/2011 (CPR) marking.

The Vado Ligure project is just the latest of the many we have been involved in over decades of collaboration with Impresa Cerruti SpA, which was founded in 1964 and specialized initially in the excavation of large foundation shafts for viaducts and highway, railway and maritime works. Currently

managed by the founder's children, Marco and Anna, the firm is involved in extracting and producing aggregates and producing and selling bituminous and cementitious conglomerates.