

# CONCRETE LAYER ASSISTANCE & SURVEY

## CLAS ESTABLISHED A CLASSIFICATION OF THE ARMOUR LAYERS

With our experience both in expertise on existing breakwaters and full-time site monitoring, we have been the privileged witnesses of the destruction movements that the quality of installation authorizes or does not allow according to whether it has been more or less rigorous. We have established three grades of grades defined by classes A, B and C. This classification stems from the 20 years' experience, exclusive to CLAS inspectors and its use without the affixing of the CLAS TECHNOLOGY COMPLIANT™ trademark owner at an incorrectly assessed risk. As the inventor of this classification, CLAS recommends to companies and owners not to accept copies or counterfeits produced by third parties, of the classification principle that we issue in association with the trademark CLAS TECHNOLOGY COMPLIANT™:



### Class A

Works with lifetime in accordance with design objectives or more. It is the zero risk structures built in the framework of the certification that we apply either to the request of Concrete Layer Innovation or Delta Marine Consultants under an additional guaranty or at the request of the owner or of the contractor.

Complete follow-up of the construction of the underlayment and toe mount protection, by an inspector diver accredited by CLAS. Complete monitoring of the construction of the carapace.



As part of a more complete inspection procedure, CLASS A may be extended to the entire construction of the breakwater.

# CONCRETE LAYER ASSISTANCE & SURVEY

## Class B

An armour layer whose durability is not guaranteed due to uncertainty as to the quality of the construction.

Approval given on the basis of the surveys submitted by the contractor using placing tools POSIBLOC™ and ECHOSCOPE® and multibeam only without human eyes to analyze the reality underwater and of a follow-up without inspection inspectors accredited by CLAS.

Armour layer with ACCROPODE™ showing major disorders and premature obsolescence.



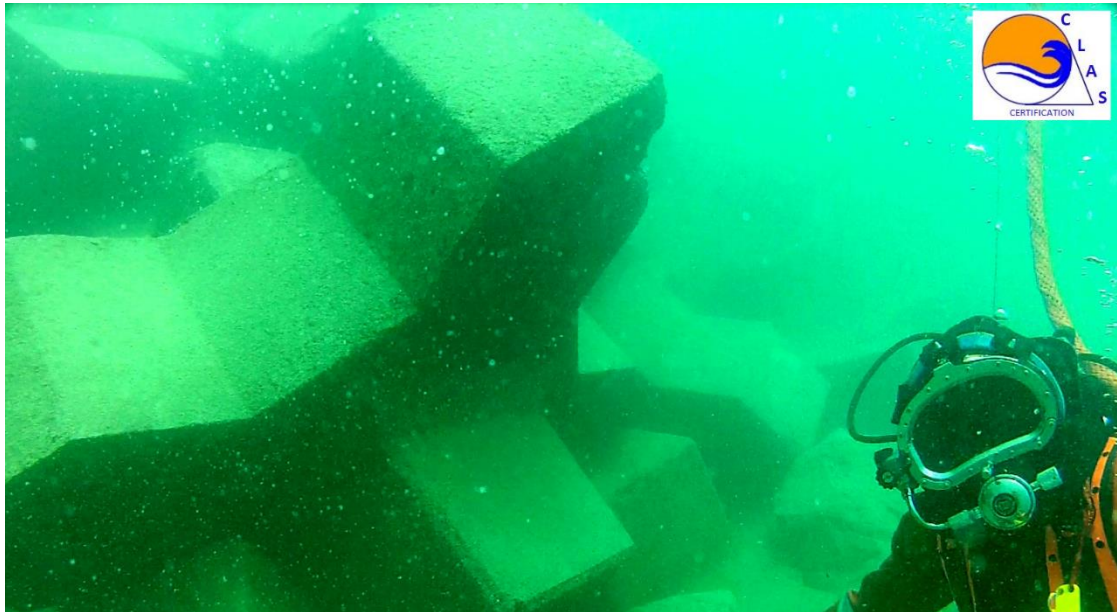
As part of a more complete inspection procedure, CLASS B can be extended to the entire construction of the breakwater. A CLASS A carapace can be built on a CLASS B breakwater. The client is then informed of the reasons for this classification of the structure, despite the good execution of the armour layer construction work.

# CONCRETE LAYER ASSISTANCE & SURVEY

## Class C

A structure whose durability is not guaranteed due to uncertainty as to the quality of the construction. Approval given on the basis of the surveys submitted by the contractor and of a follow-up without inspection inspectors accredited by CLAS.

Block totally out of profile not detected by the tools of installation and inspection on DAS ISLAND. We have supervised as a third part the repair of 5000 meters of X-block® carapace.



This work is known to be poorly constructed and will suffer damage.

Armour layer placed on very fine materials. Non-respect of design and non-compliance with TID. This 3600 meter project will be rebuilt following CLAS missions on this project.



We refuse to validate the construction of an armour layer on a breakwater CLASSE C.





# CONCRETE LAYER ASSISTANCE & SURVEY

**Warning:**

*This classification and the CLAS TECHNOLOGY COMPLIANT™ trademark are protected by national laws and international conventions governing intellectual property. Consequently, any use of this classification and the CLAS TECHNOLOGY COMPLIANT™ mark is strictly prohibited, except with the written permission of CLAS (CLAS, Prat de Baix d'Envalira, AD100, Canillo, ANDORRA). We invite you to report any use that seems suspicious to verify the authenticity. CLAS disclaims all liability for the unauthorized use of its classification and mark; such unauthorized use may be particularly perilous (error in the compliance of the work, in particular), in addition to the risk of counterfeiting and unfair competition to which unauthorized users may be exposed. © CLAS - 01 March 2017.*