“Seawall” or more familiar with “breakwater” is structures designed, build and have function as wave breaker, reduce the intensity of wave energy. While the wave energy reduce and thereby reduce coastal abrasion or provide safety to reclamation area. At the port area, function of the breakwater is to create smooth wave provide safe harborage and make ship easy and quick to berth at the quay deck.

The wave breaker or seawall also called bulkheads or more familiar with “breakwater” is structures designed, build and have function as wave breaker, reduce the intensity of wave energy. While the wave energy reduce with low intensity at beach line and thereby reduce coastal abrasion risk or provide safety to reclamation area. At the port area, function of the breakwater is to create smooth wave provide safe harborage and make ship easy and quick to berth at the quay deck.

There is two type of breakwater as follow; breakwaters with one end linked to the shore and offshore breakwaters. Breakwaters with one end linked to the shore build with purpose to provide safe harborage at port basin area. This type of breakwaters need wave characteristic study at some location along the breakwaters, such as quay deck design or groin. While offshore breakwaters build as beach line protection from abrasion risk. The structures build parallel with beach line at the specific range. Usually at beachside of the offshore breakwaters sedimentation will rise up. This sediment will prevent sediment flow along beach line.


Indonesia as maritime state, in fact does not have original technology create by Indonesian engineer and still adopted foreign technology that patent by foreign country.

Rubble Mound Technology with A-Jack Armor.

From all kind breakwaters type in the world. IPC commence breakwaters construction at New Priok Port project, breakwaters structure used for
Dani Rusli Utama act as President Director of PT. Pengembang Pelabuhan Indonesia state that New Priok Port project used the breakwaters “rubble mound” type. The breakwaters consist of rock bund and A-Jack concrete armor at the outer side. This method minimize the wave effect in the construction and the core layer of breakwater should protect by armor layer as soon as possible.

The breakwaters structure need at least 6 million bamboo that fabricate into bamboo matrass form. The bamboo matrass designed as the foundation, and barrier of lateral force to avoid collapse the rock bund. Because of the bamboo quantity, procurement system need to develop and accommodate the material requirement, considering the complexity to provide the bamboo quantity and quality.

Not only bamboo, the breakwaters construction at New Priok Port project need more than 2 million m³ rock. For the breakwaters construction, PT PP as project contractor should mobilize many heavy equipment and labor to produce the rock material from rock quarry at Bojonegara, Banten. Big barge used by sea transportation to carry away the rock material from rock quarry to project with range around 80 nautical miles. The rock material classification by 50 - 75 kg for core layer and 400 kg for cover layer.

At the outer side of breakwaters structures will install A-Jack as armor layer. The A-Jack is 2 meters high and 10 tons weight each piece. The A-Jack armor will install along 5,000 meters and more than 75,000 units of A-Jack.

In the fabrication process, transportation and installation, considering the weight of A-Jack, hook and sling modification used due with practical basis of A-Jack relocation. The method is use crane body movement (rotation) not the boom movement, this method will create equal range in the movement. First sling to lift up the A-Jack and the hook, second sling is to loose of the first sling and the hook from A-Jack.

At the moment of project visit and interview session, the breakwater construction of New Priok Port progress reach up to C and A section north side breakwaters of Container Yard 1B. All core layer of the A section breakwaters already over the sea water level along 2,500 meters. The breakwaters construction of C and A section on phase of installation for cover rock layer 400 kg and A-Jack armor layer. At the east side of Container Yard 1B, the B section of breakwater already start along 850 meters.