ABSTRACT

Breakwater is an infrastructure that is build as the wave breaker which absorbs half of the coming wave. Breakwater is used to control the abration which erodes the shoreline and also to calm the wave down at the harbor so that the ship can maneuver easily and fast. Breakwater must be designed just to prevent the pond of the harbor be silting up by the sand that carried by the current. If this happen, the harbor must be dredged up regularly.

The Structure of Waikelo breakwater collapsed because of the wave that coming in 5 meters high with velocity of the wind by 23 knots in January, 21st 2012. There was an earthquake, 6.3 SR that make half of the breakwater collapse, which caused the damage some of the Waikelo harbor facilities by the wave that hit them directly. As the problems mentioned above, it is important to evaluate the layout and its structure according to the real data, so that the function of the breakwater and the harbor of Waikelo be fulfilled for the citizen transportation.
This breakwater is fully re-designed using monolith type. This breakwater consist of two segments which stand 61.19 meters long from elevation -4 mLWS to -20 mLWS north east and then going along east ward by 88.50 meters long, elevation -20 mLWS. There is a segment of breakwater in east side that has been build perpendicular from the shoreline toward the sea.

The total cost required to build this breakwater of Waikelo is Rp. 86.225.768.000,00.

**Keyword**: Breakwater, Waikelo, Monolith, Wave Modeling, Structure, Construction Method, Total Cost.