A Schematic Design of Storm Surge Barrier with Navigable Gates along the Coastal Area of Brgy. Wawa 1, 2 and 3 Rosario, Cavite

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ABSTRACT

Every year an average of 26 storms occur and hit the Philippines. Hundreds of people get affected by these typhoon occurrences. Recently, typhoon Yolanda struck the Philippines. This typhoon was considered as one of the strongest tropical cyclones to make landfall in recorded history for it affected millions of families and thousands of casualties by the storms surge that it caused.

This led the researchers to conduct a study with a purpose to design a storm surge barrier that can withstand the force and height of the storm surge that typhoon Yolanda generated. This study also aims to prepare the Philippines, specifically Brgy. Wawa I, II and III Rosario Cavite, for such kind of calamity and to give an idea on the new structures necessary to be designed and constructed in the said country. In addition to this, the researchers aims to contribute to the idea of designing an effective barrier because at present there is still no standard procedure in designing a storm surge barrier.

This study consists of three main jobs; first was the data collection from NAMRIA, PAGASA and DOST. Second was designing of navigable storm surge barrier using STAAD and SketchUp. And lastly, simulation of the designed storm surge barrier using Depiction.

The designed Navigable Storm Surge Barriers in Brgy. Wawa I, II and III Rosario Cavite were computed against overturning, uplift and sliding using the principle of a dam. Based from the strength test using STAAD and flood inundation using Depiction software it was concluded that a 20-meter flap gate must have at least 10 cm thickness to resist the forces from typhoon and must have cylindrical supports of 10 cm in diameter. The designed four barriers were spaced at 20 meters to avoid closing the whole area. This was to allow the normal flow of water. Also, the barriers were placed 150 m away from the shoreline. This design generated a distance of 177.87 m flood distance from the shore.

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