ABSTRACT
In this paper, a large-sized tsunami shelter has been proposed and developed. The shelter is capable of accommodating at least three hundred people to evacuate from a run-up tsunami. The shelter plays an important role as an emergency medical center and a temporary accommodation during a tsunami attacking. To reveal a primary knowledge for design of tsunami shelter, some experiments were conducted in this work. This study has proposed a tsunami shelter formed by streamline for evacuating from a severe tsunami attacking. The concept of the tsunami shelter in streamline type comes from the Japanese Super Express “SHINKANSEN” considering aerodynamic force. As a result, in the experiments, we revealed that the streamline type of the tsunami shelter can make reduction of 40 to 50% for the averaged tsunami force and 60% for the maximum tsunami force. It can also reduce 75% for the maximum impact pressure and 50% for the averaged impact pressure acting on the surface of the tsunami shelter.

KEY WORDS: Tsunami; Shelter; Wave breaking; Impact pressure

INTRODUCTION
After the Tohoku earthquake tsunami in Japan (The 2011 Tohoku Earthquake Tsunami Joint Survey Group, 2011), many evacuating options from a huge tsunami have been proposed in recent years, e.g. tsunami tower, large building, moving onto hill, stronger breakwater, underground shelter and small lifeboat. To design these options at a devastated area, we have to consider characteristics of local community, industry and population, especially, barrier-free for children and senior citizens.

In this paper, we have proposed and developed one kind of a large-sized tsunami shelter, which is capable of accommodating at least two hundred people or more to evacuate from a run-up tsunami. The large-sized tsunami shelter would be located on a ground near coastal area. After a tsunami attacking, the tsunami shelter plays an important role as a emergency medical centre and a temporary accommodation. On the other hand, the shelter can be usually used as a community hall and a storage space for a processed marine product and disaster prevention goods. In this study, the developed tsunami shelter has a curved surface at the front and back face to reduce a tsunami force.