The shallow-water wave equation model is widely used in tsunami inundation simulation. Recently high-resolution topographic data with several meters interval is applied for tsunami inundation simulation. Buildings have a great influence on tsunami inundation, because those block tsunami run up. However those have a finite width, so tsunami intrudes behind those as a result. Applying high-resolution data, it is possible to reproduce real configuration of buildings and streets, and it is expected to obtain accurate inundation depth and velocity around structure. But the accuracy is not examined enough when high-resolution data is applied to simulation. In this study, hydraulic model experiments were conducted in a plain wave basin, the model scale is 1/100. Distributions of inundation depth and velocity were measured around structure, and results of hydraulic model test are compared with results of numerical simulation with 2cm grid. For the case of \( w=4 \text{cm} \) (\( w \) is width of aisle), the error of numerical calculation is 15% at structure side, 100% behind structure, 5% at entrance of aisle between structures, and 17% at 10cm behind exit of aisle between structures. As the result of this study, reproducing tsunami inundation by shallow-water wave equation model is difficult behind structure. In case that \( w \) is small, especially, the accuracy tends to decrease. Furthermore simulation result does not improve even if grid size is reduced to 1/4. It is necessary to add some artificial term to shallow-water wave equation to evaluate wave behavior precisely.