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Experimental flow characteristics over different area density roughness KWONHO PARK, HEECHANG LIM, Pusan National University — In this study, we aim to observe the flow and surface pressure characteristics over a variety of roughness pattern in a boundary layer wind tunnel. For each roughness element, the cuboid shape was chosen and size 505050mm3. The atmospheric boundary layer (hereafter, ABL) has been an important role of exchange and transfer in momentum flux at ground level. As reported, the Roughness Sub-layer (RS), the lower part of ABL, is usually 2 times thicker than the building height, and the Urban Canopy Layer (UCL) the same as the building height. Therefore, this study performed experimentally the generation of boundary layer in a wind tunnel and observed the flow characteristics of boundary layer and the surface pressure distribution around each roughness. Besides, to observe the effect of the roughness pattern, changes in area density of surface roughness were made by 11, 17, and 25%, and the arrangement was deployed in staggered and aligned. As a result, the RS height was estimated around 1.8H 2.2H, where H is roughness height. In addition, the surface pressure in front face become lower as area density increases, whereas the pressure on the back remains almost constant regardless of area density. In addition, the surface pressure at top face becomes higher as area density increases.

KwonHo Park
Pusan National University

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