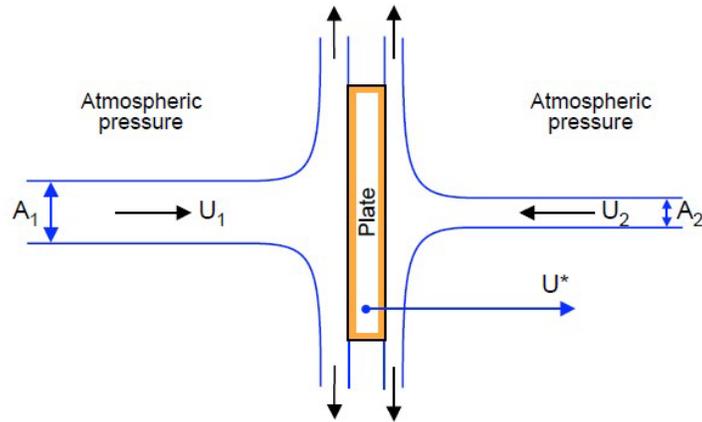


### Problem 220B

Two horizontal water jets impinge on opposite sides of a vertical flat plate:



The jets are uniform far from the plate and have unequal velocities,  $U_1$  and  $U_2$ , and cross-sectional areas,  $A_1$  and  $A_2$ , as shown. The deflected jets leave the plate with zero component of horizontal velocity relative to the plate. If the plate is free to move horizontally (while remaining vertical) at what steady velocity,  $U^*$ , will it travel? Assume that the pressure in the jets far from the plate is atmospheric. Neglect any effects of gravity.