Under normal impingement the coefficient in the third member of (34) is 0.97, so oblique impingement secures a 51% advantage in principle. The theoretical optimum requires that the jet be raked parallel to the rock surface, however, so that the flow swings a full 180° down through the cut. In practice the lip of rock above the impingement point would break away as $\theta_o \to 180°$, but the greatest possible rake should be used short of gross failure.

A remarkable consequence of (34) is that shear strength τ_o governs the feed-rate window within which efficient cutting can take place but has no effect on the rate at which slot area can be created. The limited permeability k of the rock imposes an absolute upper limit on the rate of area creation. Permeability controls the economics of hydraulic rock cutting. Since permeability varies over a range of five decades, there will be some rocks that are susceptible to hydraulic cutting, and there will be some rocks that are not.

But there may be an escape from the limitation of permeability. If the rock is completely saturated prior to cutting, then the air-water interface WD shown in Fig. 6 does not exist, and the arguments of Section 5 break down. The pressure gradient beneath the cutting surface would relax to a level of order $(p_s - p_a)/d_o$, and equation (21) could be replaced with

$$\tau = \tau_o + \frac{\mu_r g}{d_o}(p_s - p_a) \approx \tau_o\left(1 + \frac{\mu_r}{\mu_w}\frac{g}{d_o}\right) ,$$

where the second form follows approximately from (14) if g is much less than d_o. The cutting depth might then approximate the maximum (29) regardless of feed rate. Whether saturation offers practical relief from the limitations of permeability is a matter for future research.