3.9.2.4.1 PIERS PARALLEL TO FLOW

The friction angle ϕ_f between the pier nose and the ice is defined by the following equation.

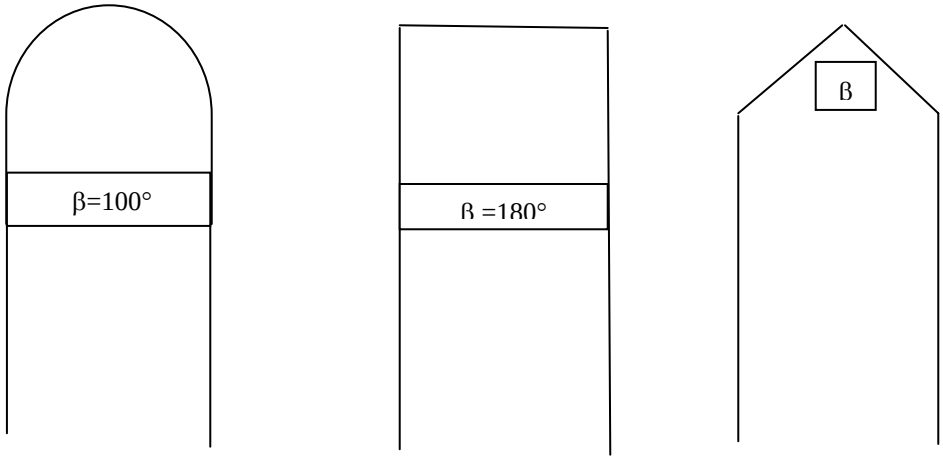
$$\phi_f = \tan^{-1} \mu$$

However, the coefficient of friction μ can not be established with great certainty. The Alberta Research Council uses $\mu = 0.18$ and the Alyeska Pipeline Co uses $\mu = 0.10$.

For most design cases $\phi_f = 0.0$ (which is conservative) should be used unless the loads become unrealistic in which case the following values should be $\mu = 0.10$ and $\phi_f = 5.7°$.

Changing the nose geometry β will have a bigger effect than changing ϕ_f.

β is defined as follows:



Note when $\beta = 180$ $F_t = 0$.