

Belt Load Cross Section Areas

TROUGHED BELT LOAD AREA

The belt theoretical load area tables are calculated using the standard edge distance, the geometry of the standard idler and a semicircular top surface cross section whose outer edge is tangent to the angle of surcharge. The equivalent center distance of the belt in contact with material is assumed to equal $.371BW + .25$ (in).

Referring to Figure 4.8 there are at least 2 cross section conditions that must be considered in the selection of a belt width and speed. During loading with conventional chutes there is often a turbulent transition to a profile confined by the skirtboards and finally the steady state unconfined condition on the belt governed by the surcharge angle.

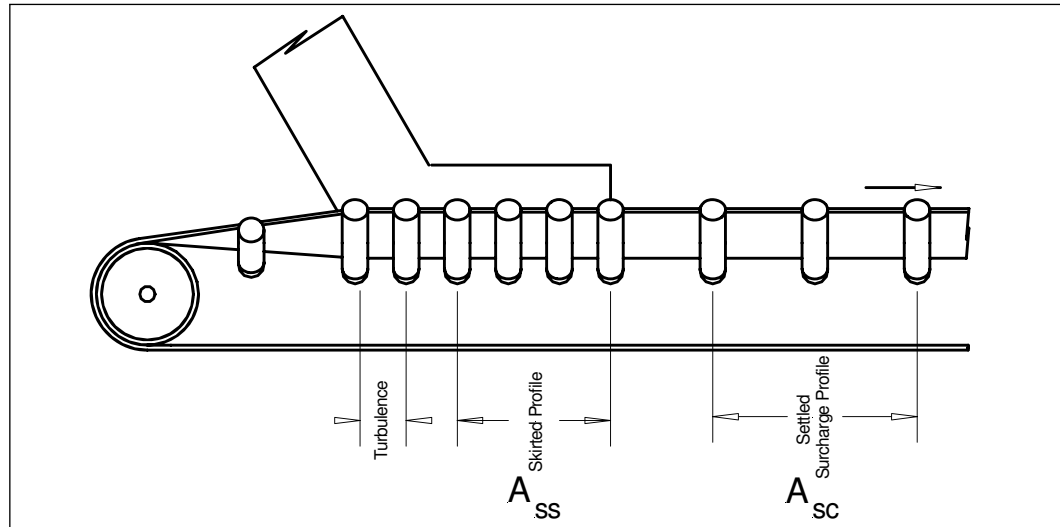


Figure 4.8
Cross sectional area profiles

Referring to Figure 4.9, the area of load cross section can be considered as two geometrical shapes. One is the trapezoidal area, the other is the circular segment area which is termed the surcharge area. The sum of these two areas equals A_{sc} , which is the total cross-sectional area for the standard profile based on the surcharge angle and standard edge distance.

Should read $b_{sd} \times BW$

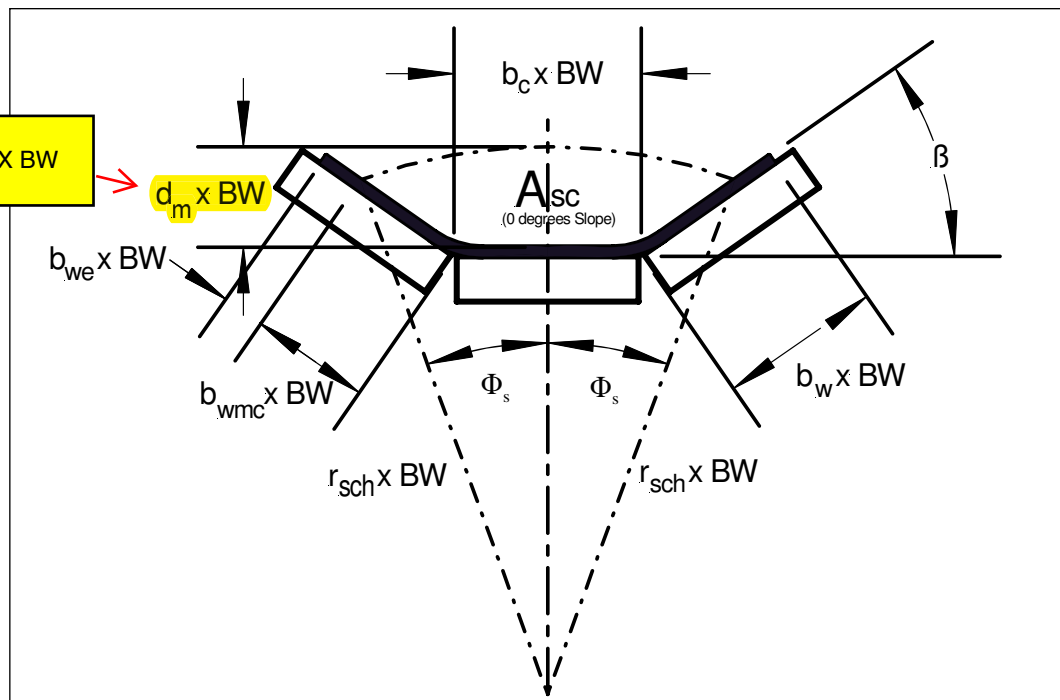


Figure 4.9
Area of standard surcharge load cross section, A_{sc}