Circular failure is generally occurs in slope of soil, mine dump, weak rock and highly jointed rock mass. The following information is required for the assessment of the stability of a slope against circular failure (Hunt, 1986):

- Location, orientation, and shape of a potential or existing failure,
- Distribution of the materials within and beneath the slope,
- Types of material and their representative shear strength parameters,
- Drainage conditions: drained or undrained,
- Distribution of piezometric levels along the potential failure surface and
- Slope geometry to its full height.
Most conventional stability analyses of slopes have been made by assuming that the curve of potential sliding is an arc of a circle. The procedures of stability analysis may be divided into two major categories.

1. Mass procedure: In this method, the mass of soil above the surface of sliding is taken as a unit. This procedure is useful when the soil that forms the slope is assumed to be homogeneous, although this is not the case in most natural slopes.

2. Method of slices: In this procedure, the soil above the surface of sliding is divided into a number of vertical parallel slices. The stability of each slice is calculated separately. This is a versatile technique in which the non-homogeneity of the soil and the pore pressure can be taken into consideration. It also accounts for the variation of the normal stress along the potential failure surface.
the design is based on the factor of safety (FOS) that is calculated using the angle of the slope $\theta$ and the angle of internal friction $\phi$. The factor of safety then becomes:

$$FOS = \frac{\tan\phi}{\tan\theta}$$
Considering the moment equilibrium about centre O for length of slip arc L, the restoring moment is $C_u L r$ and driving moment is $W x$. Therefore, the factor of safety:

$$FOS = \frac{C_u L r}{W x}$$
Circular Failure Analysis
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\[ \text{FOS} = \frac{\text{Shear Strength}}{\text{Shear Stress}} \]

\[ \text{FOS} = \frac{c + \sigma \tan \phi}{\tau_s} \]
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\[ FOS = \frac{c + \sigma \tan \phi}{\tau_s} \]

\[ FOS = \frac{c + \frac{w \cos \theta \tan \phi}{\Delta L}}{\frac{w \sin \theta}{\Delta L}} = \frac{c \Delta L + w \cos \theta \tan \phi}{w \sin \theta} \]

\[ FOS = \sum_{n=1}^{n=p} \left[ c \Delta L_n + W_n \cos \alpha_n \tan \phi \right] \frac{\sum_{n=1}^{n=p} W_n \sin \alpha_n}{\sum_{n=1}^{n=p} W_n \sin \alpha_n} \]