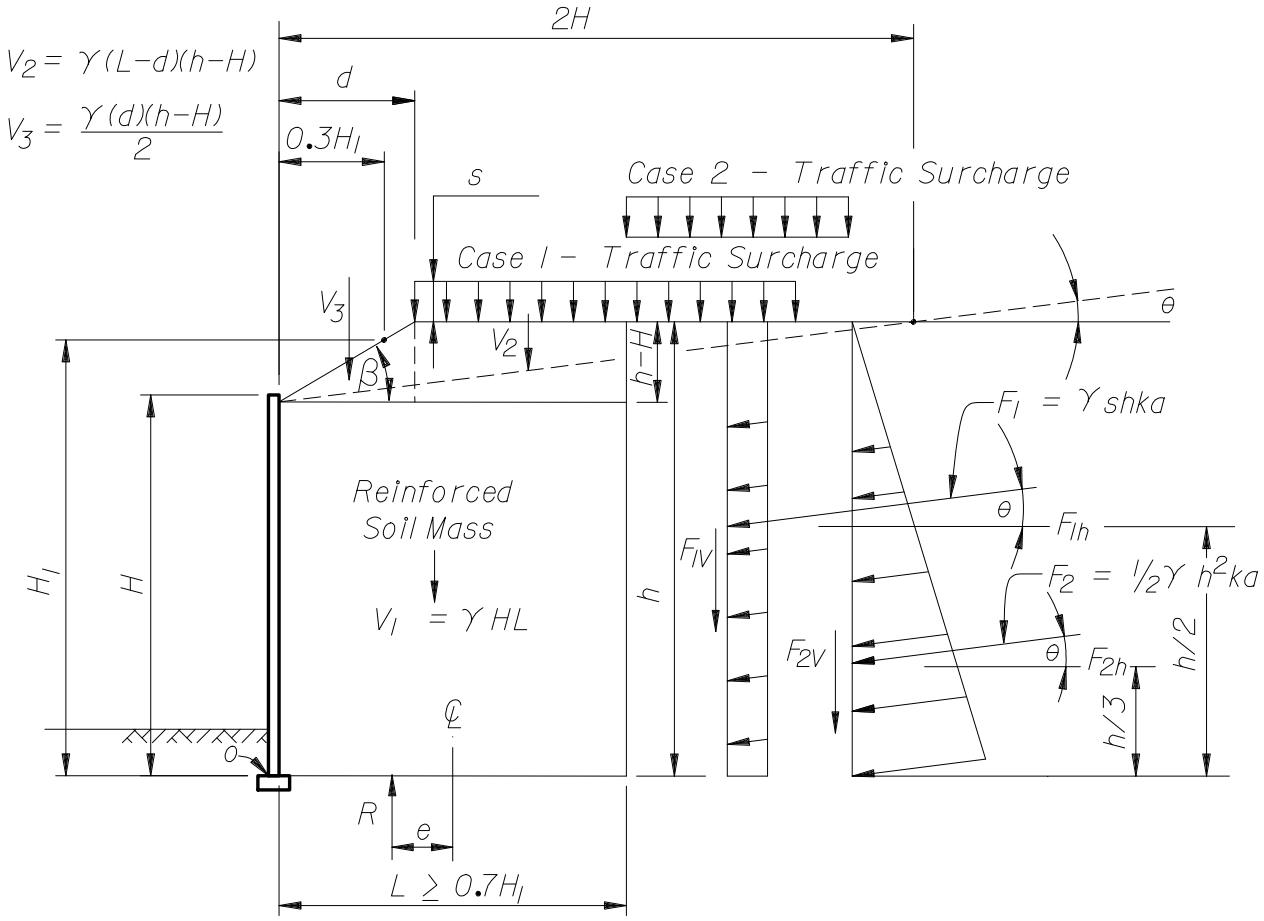
Figure 3-16 Broken Backfill with Traffic Surcharge



Case 1 used for bearing resistance, reinforcement tensile resistance and overall stability calculations.

Case 2 used for sliding, eccentricity, and reinforcement pullout resistance calculations.

$F_{1h} = (F_1)\cos(\theta)$
$F_{1V} = (F_1)\sin(\theta)$
$F_{2h} = (F_2)\cos(\theta)$
$F_{2V} = (F_2)\sin(\theta)$

$$H_1 = H + \frac{(\tan\beta)(0.3H)}{(1-0.3\tan\beta)} \quad \text{(Mechanical Height)}$$

$$K_a \text{ For Random Fill: } K_a = \cos(\theta)\left[\frac{\cos(\theta)-\sqrt{\cos^2(\theta)-\cos^2\phi}}{\cos(\theta)+\sqrt{\cos^2(\theta)-\cos^2\phi}}\right]$$

Loads shown are unfactored. Use appropriate load and resistance factors in analysis.

ϕ = friction angle of back fill or foundation, whichever is lowest.

$$e = \frac{L}{2} - \frac{Mr-Mo}{R} \leq \frac{L}{4} \qquad \sigma_V = \frac{R}{L-2e}$$

Where: e = Eccentricity
R = Resultant of Vertical forces
$= (V_1 + V_2 + V_3 + F_{1V} + F_{2V})$

BROKEN BACK BACK FILL CASE WITH TRAFFIC SURCHARGE