	Project				Job Ref.	
	Section				Sheet no./rev. 1	
	Calc. by RSF	Date 9/22/2012	Chk'd by	Date	App'd by	Date

LATERAL PRESSURE - NAVDAC - DM2

SOIL ANALYSIS BASED ON NAVDAC - DM 2

Active pressure;

Height of wall; H_a=5.5ft;

Wall batter; ω_a=0deg

Wall inclination from vertical measured clockwise; θ_a=360deg-ω_a=**360.000**; (from vertical line drawn downward at top of wall);

Angle of internal friction; ϕ_a=28deg;

Angle of backslope; β'_a=26deg;

Broken back distance; d_a=10ft;

Equivlent back slope; β_a=if(d_a<2*H_a,atan(d_a*tan(β'_a)/(2*H_a)),β'_a); β_a=**23.912**deg;

Wall friction factor for active pressure; ff_a=0;

Wall friction angle for active pressure;; δ_a=ff_a*ϕ_a=**0.000**deg;

$Ka=\cos(\phi_a-\theta_a)^2/(\cos(\theta_a)^2*\cos(\theta_a+\delta_a)*(1+((\sin(\phi_a+\delta_a)*\sin(\phi_a-\beta_a))/(\cos(\theta_a+\delta_a)*\cos(\theta_a-\beta_a)))^{0.5})^2)$=**0.549**;

Horizontal Component; $Kah=Ka*\cos(\delta_a-\omega_a)$=**0.549**;

Vertical Component; $Kav=Ka*\sin(\delta_a-\omega_a)$=**0.000**;

Passive Pressure;

Height of passive soil (or embedment); H_p=5ft;

Wall batter; ω_p=0deg; η_p=90deg-ω_p=**90.000**deg; (see Azizi)

Wall inclination from vertical measured clockwise; θ_p=360deg+ω_p=**360.000**; (from vertical line drawn downward at top of wall);

Angle of internal friction; ϕ_p=28deg;

Angle of toe slope (negative downward); β'_p=-27.5deg; (negative is downward);

Coeffcient of embedment for broken toeslope; k=1.0

Horizontal Distance untill slope is flat; X_p=6ft;

Equivlent toeslope; β_p=if(X_p<k*H_p,atan(X_p*tan(β'_p)/(k*H_p)),β'_p); β_p=**-27.500**deg

Wall friction factor for passive pressure; ff_p=0; (should be less than 1/3);

Wall friction angle for passive pressure; δ_p=ff_p*ϕ_p=**0.000**deg

$Kp=\cos(\phi_p+\theta_p)^2/(\cos(\theta_p)^2*\cos(\theta_p-\delta_p)*(1-((\sin(\phi_p+\delta_p)*\sin(\phi_p+\beta_p))/(\cos(\theta_p-\delta_p)*\cos(\theta_p-\beta_p)))^{0.5})^2)$=**0.897**;

Horizontal Component; $KPh=Kp*\cos(\delta_p-\omega_p)$=**0.897**;

Vertical Component; $KPv=Kp*\sin(\delta_p-\omega_p)$=**0.000**;

Verify with Engineering Design in Geotechnics by Fethi Azizi (pg280)

$Kp=\sin(\eta_p-\phi_p)^2/(\sin(\eta_p)^2*\sin(\eta_p+\delta_p)*(1-((\sin(\phi_p+\delta_p)*\sin(\phi_p+\beta_p))/(\sin(\eta_p+\delta_p)*\sin(\beta_p+\eta_p)))^{0.5})^2)$=**0.897**;