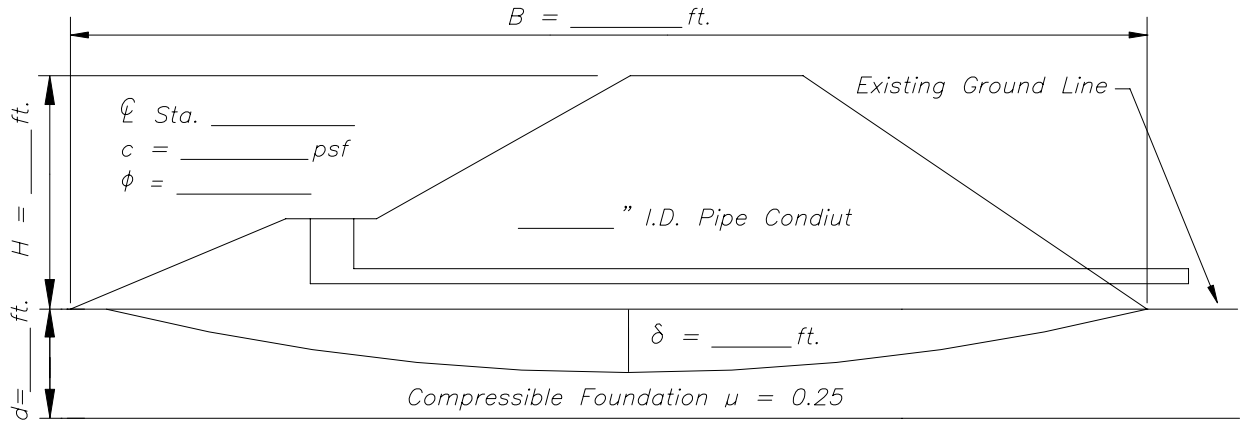
JOINT GAP COMPUTATION FOR R/C PIPE

Watershed_____ Computed by_____ Date_____
Structure No._____ Checked by_____ Date_____



Reference: Technical Release No. 18 Effective Joint Extensibility $J = g_s + g_r + s$

Step 1 Determine g_s; $g_s = \varepsilon_{hm} \times 12 \times L$

$\frac{B}{d} =$ _____ = _____; $\frac{B}{H} =$ _____ = _____; $\frac{\delta}{d} =$ _____ = _____

$\gamma_m = \gamma_d (1+\omega) = (\qquad)(1.\qquad) =$ _____ pcf Sample No._____

$\bar{p} = \frac{H}{2}\gamma_m + Y\gamma_f = (\qquad)(\qquad) + (\qquad)(\qquad) =$ _____ psf

$\sigma_3 = \frac{2}{3}\bar{p} = \frac{2}{3}(\qquad) =$ _____ psf

$p = H\gamma_m = (\qquad)(\qquad) =$ _____

$$\sigma_1 = \frac{2c}{\tan\left(45^\circ - \frac{\Phi}{2}\right)} + \frac{\sigma_3}{\tan^2\left(45^\circ - \frac{\Phi}{2}\right)} = \frac{2(\qquad)}{\tan(\ 0.00\ )} + \frac{(\qquad)}{\tan^2(\qquad)} =$$

$= (\qquad) + (\qquad) =$ 0.00 psf

$$s = \frac{\sigma_1 - \sigma_3}{2} = \frac{(\ 0.00\ ) - (\qquad)}{2} = \frac{(\qquad)}{2} =$$ _____ psf

Determine R_1 From E.S. – 146; $R_1 =$ _____

Determine R_2; $R_2 = \frac{2\,pd}{sB} + 0.10 = \frac{2(\qquad)(\qquad)}{(\qquad)(\qquad)} + 0.10 =$ _____

Determine ε_{hm}; $\varepsilon_{hm} = R_1 \times R_2 \times \frac{\delta}{D} = (\qquad)(\qquad)(\qquad) =$ _____ $\frac{ft.}{ft.}$

ε_{hm} X	12 in./ft. X	L = length of pipe sections (ft.) = g_s	
	12		
"	"		
"	"		
"	"		

Step 2 Determine g_r; $g_r = \dfrac{2.5 D_0 \delta}{B}$ $D_0 =$ _____ *in.*

$g_r = \dfrac{2.5(\qquad)(\qquad)}{(\qquad)} =$ _____ *in.*

Step 3 Determine S; $S = \dfrac{1}{2} \times \dfrac{2pd}{sB} + C_H + C_D$

$C_H = 0 \; for \; (H \le 100)$; $C_D = \dfrac{(30 - D)}{30} \; for \; (D < 30)$; $C_D = 0 \; for \; (D \ge 30)$

$S = \dfrac{1}{2}(\qquad) + (\qquad) + (\qquad) =$ _____ *in.*

$Min.\ S = 0.5 \; for (D \ge 30)$; $Min.\ S = 1.5 \; for (D < 30)$ $Use\ S =$ _____ *in.*

Step 4 Determine J; $J = g_s + g_r + S + 3/8"$

Lengths of pipe sections (ft.)	g_s +	g_r +	S +	3/8" =	J
				0.375	
		"	"	"	
		"	"	"	
		"	"	"	

Step 5 Determine α; $\alpha = \dfrac{5\delta}{B}$

$\alpha = \dfrac{5(\qquad)}{(\qquad)} =$ _____ *radians* = _____ ° _____ '

Step 6 Final Design Used in Plans

Length of Pipe Section	Minimum Joint Length	Minimum Joint Limiting Angle
Feet	Inches	Degrees