Pole ID	MAP-1, 35'	MAP-2, 45'	MAP-3, 55'	MAP-4, 10'
Boring ID	B-101	B-102	B-103	B-104
Concrete Reinforcing Input Parameters:				
Concrete Design Load Factor = LF_{CONC}	1.3	1.3	1.3	1.3
Concrete Compressive Strength (psi) = f'_C	3500	3500	3500	3500
Reinforcing Steel Yield (psi) = f_y	60000	60000	60000	60000
Diameter of Drilled Shaft (in) = D	36.00	36.00	36.00	36.00
Concrete Cover (in) = C	3	3	3	3
Diameter of Tie Bar (in) = d_{TIE}	**0.5**	**0.5**	**0.5**	**0.5**
Diameter of Longitudinal Bar (in) = d_{LONG}	**1**	**1**	**1**	**1**
Quantity of Longitudinal Bars = N	**8**	**8**	**8**	**8**
Check Steel Requirements for Eccentric Axial Load:				
Concrete Strength Reduction Factor = ϕ_B	0.7	0.7	0.7	0.7
Load Eccentricity = e	207.77	222.46	244.09	235.91
Area of Longitudinal Bars (in^2) = A_S	6.28	6.28	6.28	6.28
Gross Area of Concrete (in^2) = A_g	1017.88	1017.88	1017.88	1017.88
Dia. of Longitudinal Reinforcing Circle (in) = D_S	28.00	28.00	28.00	28.00
Bending Reinforcement Ratio = ρ_B	0.0062	0.0062	0.0062	0.0062
Concrete Design Strength (lbs) = ϕP_n	11543	10722	9706	10067
Concrete Required Strength (lbs) = P_U	3440	4397	5734	1680
Minimum Bending Reinforcement Ratio = $\rho_B(\min)$	0.0018	0.0025	0.0036	0.0010
	OK	**OK**	**OK**	**OK**

$$e = \frac{M_{MAX}}{P} \qquad A_S = N\frac{\pi d_{LONG}^{\ 2}}{4} \qquad A_g = \frac{\pi D^2}{4} \qquad D_S = D - 2C - 2d_{TIE} - d_{LONG} \qquad \rho_B = \frac{A_S}{A_g}$$

$$\phi P_n = \phi_B 0.85 f'_C D^2 \left[\sqrt{\left(\frac{0.85e}{D} - 0.38\right)^2 + \frac{\rho_B f_y D_S}{2.5D0.85 f'_C}} - \left(\frac{0.85e}{D} - 0.38\right) \right] \qquad P_U = LF_{CONC} P \qquad \phi P_n \geq P_U$$

$$\rho_B(\min) = \left[\left(\frac{P_U}{\phi_B 0.85 f'_C D^2} + \frac{0.85e}{D} - 0.38 \right)^2 - \left(\frac{0.85e}{D} - 0.38\right)^2 \right] \frac{2.5D0.85 f'_C}{f_y D_S}$$