

CORRELATIONS OF PENETRATION INDEX AND CALIFORNIA BEARING RATIO

Rehabilitation of Pali Highway
Waokanaka Street to Kamehameha Highway
Honolulu to Kaneohe, Oahu, Hawaii

CORRELATIONS OF PENETRATION INDEX AND CALIFORNIA BEARING RATIO				
Dynamic Cone Penetrometer Penetration (blows/25.4 mm)				1
Penetration Index (PI) (mm/blow)				25.4
Author	Correlation	Field or Laboratory Based Study	Material Tested	Calculated CBR Value
Harison(1987)	$\log(\text{CBR}) = 2.56 - 1.16 * \log(\text{PI})$	Laboratory	Cohesive	9
Coonse (1999)	$\log(\text{CBR}) = 2.53 - 1.14 * \log(\text{PI})$	Laboratory	Piedmont residual soil	8
Kleyn (1975)	$\log(\text{CBR}) = 2.62 - 1.27 * \log(\text{PI})$	Laboratory	Unknown	7
Livneh et al. (1994)	$\log(\text{CBR}) = 2.46 - 1.12 * \log(\text{PI})$	Field & Laboratory	Granular and cohesive	8
Harison (1987)	$\log(\text{CBR}) = 3.03 - 1.51 * \log(\text{PI})$	Laboratory	Granular	8
Ese et al. (1994)	$\log(\text{CBR}) = 2.44 - 1.07 * \log(\text{PI})$	Field & Laboratory	ABC	9
			AVERAGE	8.1

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Dynamic Cone Penetrometer Penetration (blows/25.4 mm)				2
Penetration Index (PI) (mm/blow)				12.7
Author	Correlation	Field or Laboratory Based Study	Material Tested	Calculated CBR Value
Harison(1987)	$\log(\text{CBR}) = 2.56 - 1.16 * \log(\text{PI})$	Laboratory	Cohesive	19
Coonse (1999)	$\log(\text{CBR}) = 2.53 - 1.14 * \log(\text{PI})$	Laboratory	Piedmont residual soil	19
Kleyn (1975)	$\log(\text{CBR}) = 2.62 - 1.27 * \log(\text{PI})$	Laboratory	Unknown	17
Livneh et al. (1994)	$\log(\text{CBR}) = 2.46 - 1.12 * \log(\text{PI})$	Field & Laboratory	Granular and cohesive	17
Harison (1987)	$\log(\text{CBR}) = 3.03 - 1.51 * \log(\text{PI})$	Laboratory	Granular	23
Ese et al. (1994)	$\log(\text{CBR}) = 2.44 - 1.07 * \log(\text{PI})$	Field & Laboratory	ABC	18
			AVERAGE	18.7

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Dynamic Cone Penetrometer Penetration (blows/25.4 mm)				3
Penetration Index (PI) (mm/blow)				8.5
Author	Correlation	Field or Laboratory Based Study	Material Tested	Calculated CBR Value
Harison(1987)	$\log (\text{CBR}) = 2.56 - 1.16 * \log (\text{PI})$	Laboratory	Cohesive	30
Coonse (1999)	$\log (\text{CBR}) = 2.53 - 1.14 * \log (\text{PI})$	Laboratory	Piedmont residual soil	30
Kleyn (1975)	$\log (\text{CBR}) = 2.62 - 1.27 * \log (\text{PI})$	Laboratory	Unknown	28
Livneh et al. (1994)	$\log (\text{CBR}) = 2.46 - 1.12 * \log (\text{PI})$	Field & Laboratory	Granular and cohesive	26
Harison (1987)	$\log (\text{CBR}) = 3.03 - 1.51 * \log (\text{PI})$	Laboratory	Granular	43
Ese et al. (1994)	$\log (\text{CBR}) = 2.44 - 1.07 * \log (\text{PI})$	Field & Laboratory	ABC	28
			AVERAGE	30.8