



OHIO DEPARTMENT OF TRANSPORTATION

AASHTO 93 Pavement Design

Default inputs based on July 2014 PDM

C-R-S: Ramp_35WB_to_435 - Using
ramp traffic

PID: 117955

Date calculated: 9/16/2024

Data entered by: L. Wright

ESAL Calculation

Input Parameters

Functional Classification = Rural Interstate
Design period = 20 years
Opening day ADT = 4,240
Design year ADT = 7,280
Directional distribution = 100 % (default 50%)
Trucks (24 hour B&C) = 31 %
B:C ratio = 7:1
Number of lanes = 2 (both directions)
Lane factor = 100 %

Flexible Pavement ESAL

B ESAL conversion factor = 0.98
C ESAL conversion factor = 0.29
Daily B-ESAL = 1,531
Daily C-ESAL = 65
Total ESAL 11 #NUM!
Total W_{18} ESAL = 11,700,000
Use 11,700,000

Flexible Pavement Design

Reliability, R = 90 %
Standard normal deviate, Z_R = -1.282
Overall standard deviation, S_0 = 0.49
Design serviceability loss, ΔPSI = 2.0
CBR = 7
Resilient Modulus, M_r = 11,424 psi
 $\log(W_{18})$ = 7.068185862
Trial $\log(W_{18})$ based on SN = 7.067408821
Difference = 0.000777041
Structural Number, SN = 4.29

AC Surface Courses 1.5 inches
AC Intermediate Courses 1.75 inches
AC Base Courses 6 inches
Aggregate Base 6 inches
Pavement Structural Number = 4.3975 OK

Rigid Pavement ESAL

B ESAL conversion factor = 1.53
C ESAL conversion factor = 0.37
Daily B-ESAL = 2,390
Daily C-ESAL = 83
Total ESAL 11 #NUM!
Total W_{18} ESAL = 18,100,000
Use 18,100,000

Rigid Pavement Design

Reliability, R = 90 %
Standard normal deviate, Z_R = -1.282
Overall standard deviation, S_0 = 0.39
Design serviceability loss, ΔPSI = 1.7
CBR = 7
Resilient Modulus, M_r = 11,424 psi
Subbase thickness, D_{SB} = 6 inch
Subbase modulus, E_{SB} = 36,000 psi
Composite Modulus, k_c = 588 pci
Loss of Support, LS = 1
Effective Modulus, k = 171 pci
Doweled, Edge Support $J = 2.7$

$\log(W_{18})$ = 7.257678575
Trial $\log(W_{18})$ based on D = 7.257689191
Difference = -1.0616E-05
Slab thickness, D = 10.13 inch
Rigid Pavement Thickness = 10.5 inch



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Parameters for Rigid Pavement Design

Ramp_35WB_to_435 - Using
C-R-S: ramp traffic

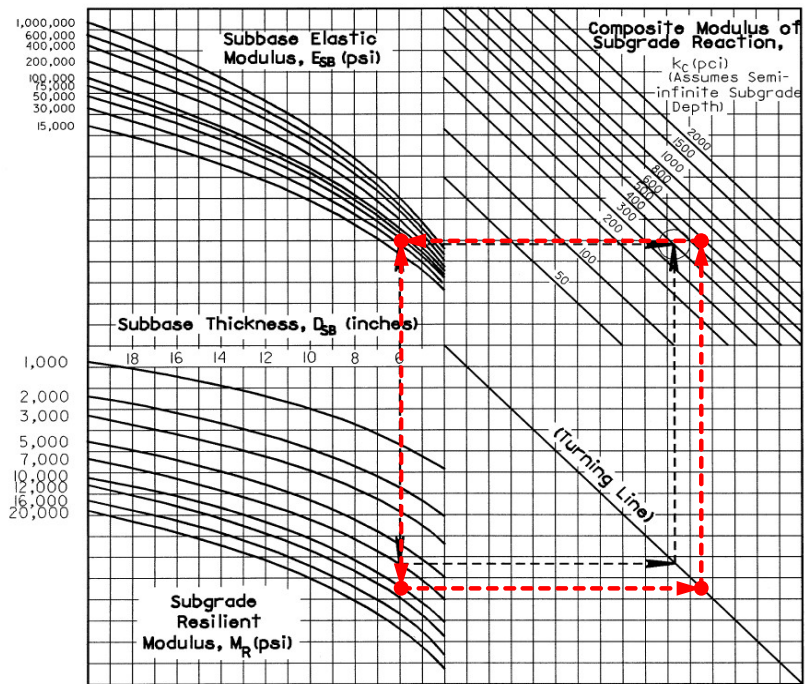
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Composite Modulus of Subgrade Reaction

$M_r = 11,424$ psi
 $D_{SB} = 6$ inch
 $E_{SB} = 36,000$ psi
 $k_c = 588$ pci



Effective Modulus of Subgrade Reaction

$k_c = 588$ pci
 $LS = 1$
 $k = 171$ pci

