



OHIO DEPARTMENT OF TRANSPORTATION

AASHTO 93 Pavement Design

Default inputs based on July 2014 PDM

C-R-S: **FAY-435-1.52**

117955

Date calculated: **9/13/2024**

Data entered by: **A. HOLLOWAY**

ESAL Calculation

Input Parameters

Functional Classification = **Rural Principal Arterial**
Design period = **20** years
Opening day ADT = **4,240**
Design year ADT = **7,280**
Directional distribution = **50** % (default 50%)
Trucks (24 hour B&C) = **31** %
B:C ratio = **5:1**
Number of lanes = **2** (both directions)
Lane factor = **100** %

Flexible Pavement ESAL

B ESAL conversion factor = **1.06**
C ESAL conversion factor = **0.33**
Daily B-ESAL = **789**
Daily C-ESAL = **49**
Total ESAL 11 #NUM!
Total W_{18} ESAL = **6,120,000**
Use **6,120,000**

Flexible Pavement Design

Reliability, R = **85** %
Standard normal deviate, Z_R = **-1.036**
Overall standard deviation, S_0 = **0.49**
Design serviceability loss, ΔPSI = **2.0**
CBR = **7**
Resilient Modulus, M_r = **8,400** psi
 $\log(W_{18})$ = **6.786751422**
Trial Log (W_{18}) based on SN = **6.785970347**
Difference = **0.000781075**
Structural Number, SN = **4.16**

AC Surface Courses **1.5** inches
AC Intermediate Courses **1.75** inches
AC Base Courses **7** inches
Aggregate Base **6** inches
Pavement Structural Number = **4.7575 OK**

Rigid Pavement ESAL

B ESAL conversion factor = **1.67**
C ESAL conversion factor = **0.44**
Daily B-ESAL = **1,242**
Daily C-ESAL = **65**
Total ESAL 11 #NUM!
Total W_{18} ESAL = **9,560,000**
Use **9,560,000**

Rigid Pavement Design

Reliability, R = **85** %
Standard normal deviate, Z_R = **-1.036**
Overall standard deviation, S_0 = **0.39**
Design serviceability loss, ΔPSI = **1.7**
CBR = **7**
Resilient Modulus, M_r = **8,400** psi
Subbase thickness, D_{SB} = **6** inch
Subbase modulus, E_{SB} = **30,000** psi
Composite Modulus, k_c = **442** pci
Loss of Support, LS = **1**
Effective Modulus, k = **135** pci
Doweled, No Edge Support $J = 3.2$

$\log(W_{18})$ = **6.980457892**
Trial Log (W_{18}) based on D = **6.980269078**
Difference = **0.000188814**
Slab thickness, D = **9.80** inch
Rigid Pavement Thickness = **10** inch



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Parameters for Rigid Pavement Design

C-R-S: FRA-3-24.27-24.32

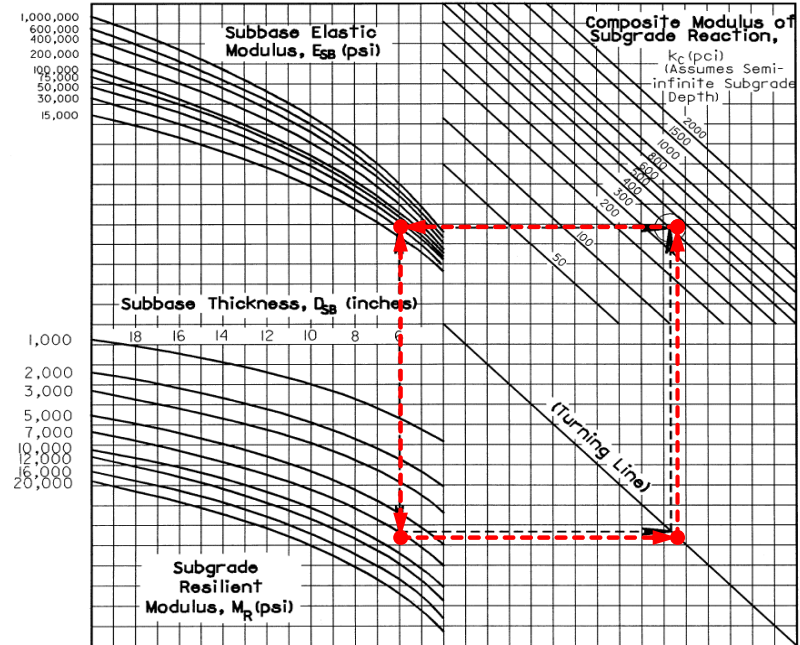
PID: 106260

Date calculated: 9/13/2024

Data entered by: A. HOLLOWAY

Composite Modulus of Subgrade Reaction

$M_r = 8,400$ psi
 $D_{SB} = 6$ inch
 $E_{SB} = 30,000$ psi
 $k_c = 442$ pci



Effective Modulus of Subgrade Reaction

$k_c = 442$ pci
 $LS = 1$
 $k = 135$ pci

