OHIO DEPARTMENT OF TRANSPORTATION

Pavement Design

Date calculated: 7/1/2026

C-R-S: FAY-35 Ramp D PID: 117955 Data entered by: D.Miller

ESAL Calculation

Input Parameters

Functional Classification =	Principal Arterial - Other (Rural)	
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 =	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 =	1,577
Daily C-ESAL =	98
Total W_{18} ESAL =	12,239,440
Use	12,300,000

Rigid Pavement ESAL

B ESAL conversion factor =	1.67
C ESAL conversion factor =	0.44
Daily B-ESAL =	2,485
Daily C-ESAL =	131
Total W_{18} ESAL =	19,109,179
Use	19,200,000

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}) =	7.089905111	
Trial Log (W_{18}) based on SN =	7.089899291	
Difference =	5.82065E-06	
Structural Number, SN =	4.60	
AC Surface Courses	1.5	inches
AC Intermediate Courses	1.75	inches
AC Base Courses	4	inches
Aggregate Base	6	inches
Pavement Structural Number =	3.6775	**NG**

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, Edge Support	J = 2.7	
Log (W_{18}) =	7.283301229	
Trial Log (W_{18}) based on D =	7.283117467	
Difference =	0.000183762	
Slab thickness, D =	9.9773	inch
Rigid Pavement Thickness =	10	inch

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Pavement Design

Parameters for Rigid Pavement Design

Date calculated: 7/1/2026

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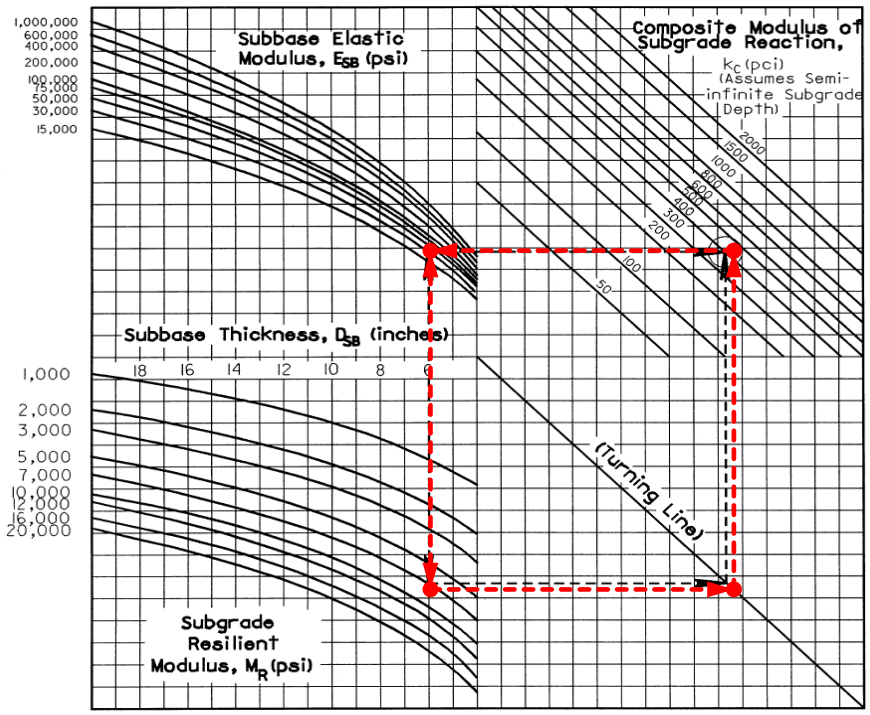
Composite Modulus of Subgrade Reaction

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