



9-A-2

New or Reconstructed Pavement Form

COMMONWEALTH OF MASSACHUSETTS
MassHighway

PAVEMENT DESIGN
NEW AND RECONSTRUCTED PAVEMENTS

City/Town	_____		
Route No.	_____	Highway System	_____
From Station	_____	To Station	_____
No. of Lanes	_____		
Date Pavement Designed	_____	Pavement Designer	_____

RECOMMENDED PAVEMENT STRUCTURE

Surface Course:

Intermediate Course

Base Course:

Sub-base:

Sub-grade:

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 1: PAVEMENT STRUCTURAL DESIGN DATA

City/Town		Route No.	
From Station		To Station	
No. of Lanes	Highway System	Date	
Current ADT			

Terminal Serviceability Index (T.S.I) = 2.5

(a) Day of Opening A.D.T. (Date <u>year</u>) ¹	
(b) Future A.D.T. (Date <u>(a) + 20 years</u>) ²	
(c) Mean A.D.T. = $\frac{[(a) + (b)]}{2}$	
(d) Mean A.D.T. in One Direction = $\frac{(c)}{2}$	
(e) A.D.T. Truck Percentage ("T" A.D.T.)	
(f) Mean Truck A.D.T. In One Direction (d) x (e)	
(g) ESAL Application per 1000 Trucks and Combinations Exhibit 9-2	
(h) Number of ESALs Per Day in One Direction	
$\frac{(f) \times (g)}{1000} (T_{18})$	

Comments:

1 Anticipated traffic when facility is opened to travel.

2 Under certain conditions this may change to a larger or shorter period.

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 2: DETERMINATION OF STRUCTURAL NUMBER (SN)

Design Lane ESAL Applications (T_{18})

For 2-Lane Undivided Highway

$$\text{Design Lane } T_{18} = 1.00 \times \text{Total } T_{18}^* = 1.00 \times \dots = \underline{\hspace{2cm}}$$

For 4 (Total Lanes) Lane Divided Highway

$$\text{Design Lane } T_{18} = 0.90 \times \text{Total } T_{18}^* = 0.90 \times \dots = \underline{\hspace{2cm}}$$

Design 6 or More (Total Lanes) Divided Highway

$$\text{Design Lane } T_{18} = 0.80 \times \text{Total } T_{18}^* = 0.80 \times \dots = \underline{\hspace{2cm}}$$

Design DBR + SSV Exhibits 9-4, 9-5 & 9-7, Sections 9.3 & 9.4

Subbase	<u> </u>	DBR =	<u> </u>	SSV =	<u> </u>
Subgrade	<u> </u>	DBR =	<u> </u>	SSV =	<u> </u>

Design Structural Number (SN)

Apply Design SSV and Design Lane T_{18} from above to Design Nomograph (Exhibit 9-8)

	From <u>Exhibit 9-8</u>	<u>+15%</u>
Above Subbase=		
Above Sugrade =		

*From Line (h) of Data Sheet 1.

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 3: PAVEMENT STRUCTURAL NUMBER (SN)

$$SN = D_{1\ 1}^a + D_{2\ 2}^a + D_{3\ 3}^a + D_{4\ 4}^a + D_{5\ 5}^a$$

Surface Course

Material: _____ $D_{1\ 1}^a =$ _____

Intermediate Course

Material: _____ $D_{2\ 2}^a =$ _____

Base Course

Material: _____ $D_{3\ 3}^a =$ _____

Total SN Above Sub-base = _____

Sub-base (Foundation)

Material: _____ $D_{4\ 4}^a =$ _____

_____ $D_{5\ 5}^a =$ _____

Total SN Above Sub-grade = _____

Where: D_1 = Surface Course Thickness, inches

D_2 = Intermediate Course Thickness, inches

D_3 = Base Course Thickness, inches

D_4 = Sub-base Course Thickness, inches

D_5 = Sub-base Course Thickness, inches

a_1 = Coefficient of Relative Strength, Surface Course

a_2 = Coefficient of Relative Strength, Intermediate Course

a_3 = Coefficient of Relative Strength, Base Course

a_4 = Coefficient of Relative Strength, Sub-base Course

a_5 = Coefficient of Relative Strength, Sub-base Course

Comments:
