



9-A-3

Overlay Design Form

COMMONWEALTH OF MASSACHUSETTS
MassHighway

PAVEMENT RESURFACING OVERLAY DESIGN

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

EXISTING PAVEMENT STRUCTURE

Depth	Existing HMA Pavement Course
_____	HMA surface course
_____	HMA intermediate course
_____	HMA base course or Penetrated Stone
_____	Sub-base
_____	Sub-grade

PROPOSED MILLING

_____	Proposed Milling Depth
_____	Existing HMA Depth After Milling Depth

RECOMMENDED PAVEMENT DESIGN OVERLAY THICKNESS

Depth	HMA Description

PAVEMENT RESURFACING OVERLAY DESIGN

DATA SHEET 1: PAVEMENT STRUCTURAL DESIGN DATA

Terminal Serviceability Index Nomograph = 2.5

- (a) Current A.D.T. (Date _____) _____
- (b) Future A.D.T. (Date _____) _____
- (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 _____
- (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
 $\frac{(f) \times (g)}{1000 (T_{18})}$ _____
- (i) ESALs on Design Lane: (h) x 1.00 for 2 lanes; (h) x 0.90
for 4 lanes; (h) x 0.80 for 6 or more lanes _____
- (j) Sub-grade Design Bearing Ratio and Soil Support Value _____
- (k)* Structural Number (SN) Required above this Subgrade _____
- (l)* Increase SN by 15% for Design SN _____

*These values are developed on Data Sheet #3.

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DATA SHEET 2: ACTUAL SN OF THE EXISTING PAVEMENT STRUCTURE

a) Soil Support Values of Existing Granular Base and/or Sub-base

Dense Graded or Penetrated Crushed Stone Sub-base	=
Gravel Base and/or Sub-base	=
Sub-grade	=

(b) Actual Structural Number (SN) of Each Layer of the Existing Pavement Structure

(1) Depth		(2) Coefficient Exhibit 9-10	(3) RF Exhibit 9-11	SN ((1)X(2)X(3))
	HMA			
	Dense Graded or Penetrated Crushed Stone Sub-base			
	Gravel Base/Sub-base			
			Total SN =	

(c) Actual Structural Number (SN) Above Each Layer of the Existing Pavement Structure

Above Top Of:	SN* HMA	SN* Pentrat. Stone	SN* Sand-Bd. Stone	SN* Gravel	Total SN*
Dense Graded-Penetrated Crushed Stone Sub-base					
Gravel Base and/or Sub-base					
Sub-grade					

*From Table (b) Above

**Accumulated SN Values from layers Above

***Gravel Base (for low volume design < 2000 adt)

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DATA SHEET 3: DETERMINATION OF HMA OVERLAY THICKNESS

(a) Required Structural Number (SN) Above Each Layer of the Existing Pavement Structure

SN +15%

Above Top of Dense Graded or Penetrated Crushed Stone Sub-base = _____

Above Top of Gravel Base and/or Sub-base = _____

Above Top of Sub-grade = _____

(b) SN Deficiency to be Corrected with the HMA Overlay Thickness

Above Top Of:	Required SN*	Actual SN**	SN Difference
Dense Grade or Penetrated Crushed Stone Sub-base			
Gravel Base and/or Sub-base			
Sub-grade			

*From (a) Data Sheet #3

**From (c) Data Sheet #2

(c) Thickness of Hot Mix Asphalt Overlay

Depth = $\frac{\text{Largest SN Difference}}{0.44}$ =