AHTD TRC TRANSPORTATION RESEARCH COMMITTEE

TRC9403

Reliability and Design Procedure Revisions of ROADHOG

Kevin D. Hall, Robert P. Elliott, Quintin B. Watkins

Final Report

1997

FINAL REPORT

TRC-9403
Reliability and Design Procedure Revisions of ROADHOG

by

Kevin D. Hall, Robert P. Elliott, and Quintin B. Watkins

conducted by

Department of Civil Engineering
University of Arkansas

in cooperation with

Arkansas State Highway and Transportation Department

U.S. Department of Transportation
Federal Highway Administration

and

Mack-Blackwell National Rural Transportation Study Center

University of Arkansas
Fayetteville, Arkansas 72701

June 1997

ACKNOWLEDGMENTS / DISCLAIMER

This report is based on the findings of Project TRC-9403, Reliability and Design Procedure Revisions of ROADHOG.

TRC-9403 is sponsored by, and this report is prepared in cooperation with, the Arkansas State Highway and Transportation Department and the U.S. Department of Transportation, Federal Highway Administration.

SI CONVERSION FACTORS

1 inch = 25.4 mm

1 foot = 0.305 m

1 lb/ft^3 = 16 kg/m^2

1 psi = 6.9 kN/m^2

1 ksi = 6.9 MN/m^2

1 lb = 4.45 N

EXECUTIVE SUMMARY

ROADHOG is a deflection-based flexible pavement overlay design procedure used by the Arkansas Highway and Transportation Department (AHTD). ROADHOG was developed using the AASHTO structural number concept for flexible pavement design and a "structural deficiency" approach in determining overlay thickness, as originally outlined in the 1986 AASHTO *Guide for the Design of Pavement Structures*. The 1993 Edition of the AASHTO *Guide* expanded the concepts of the 1986 *Guide* to provide discreet overlay design procedures. ROADHOG is re-evaluated in light of the revised AASHTO procedures.

To compare the two procedures, pavement surface deflections were generated using ILLI-PAVE (a finite-element pavement model) and ELSYM5 (a linear elastic pavement model), over a wide range of pavement thicknesses and layer moduli values for conventional flexible pavements (asphalt concrete+granular base+subgrade). The results of the comparison show that ROADHOG and AASHTO produce different overlay thicknesses due to differences in the methods used to determine the effective structural number of the existing pavement (SN_{eff}) and the subgrade resilient modulus (M_R). ROADHOG produced SN_{eff} values that were more consistent with SN_{eff} values predicted using a component analysis of the pavement. The two procedures produced similar overlay thicknesses for low M_R values. For relatively high M_R values, AASHTO produced overlay thicknesses greater than those predicted by ROADHOG. The analysis demonstrated the back-calculated subgrade resilient modulus has a greater effect on overlay thickness for AASHTO than for ROADHOG.

Based on the analyses presented, it is recommended that AHTD continue to use ROADHOG for routine design of flexible pavement overlays. Refinements to ROADHOG, including adjustments to predicted overlay thickness to account for extent and type of pre-overlay repair, existing pavement condition, and non-destructive testing (time of year), and a determination of overlay design reliability, should be accomplished to ensure that ROADHOG continues to evolve into a truly comprehensive overlay design system.

TABLE OF CONTENTS

PAGE

ACKNOWLEDGMENTS / DISCLAIMER

EXECUTIVE SUMMARY

LIST OF FIGURES

LIST OF TABLES

CHAPTER

1. INTRODUCTION

1.1 Statement of the Problem 1-1
1.2 Project Objectives 1-2
1.3 Background Information 1-2
1.3.1 Overlay Design Methodology 1-3
1.3.2 Structural Deficiency Concept 1-3

2. OVERLAY DESIGN METHODS

2.1 Overview 2-1
2.2 AASHTO Procedure 2-1
2.2.1 Determination of Subgrade Resilient Modulus 2-2
2.2.2 Effective Structural Capacity Analysis 2-3
2.3 ROADHOG Procedure 2-4
2.3.1 Determination of Subgrade Resilient Modulus 2-4
2.3.2 Effective Structural Capacity Analysis 2-5

3. COMPARISON BETWEEN AASHTO AND ROADHOG PROCEDURES

3.1 Methodology 3-1
3.2 Generation of Surface Deflection Database 3-2
3.3 Generation of Overlay Thickness Database 3-2

TABLE OF CONTENTS (continued)

CHAPTER		PAGE
4.	DATA ANALYSIS	
	4.1 Subgrade Resilient Modulus	4-1
	4.2 Effective Structural Number of Existing Pavement	4-6
	4.3 Overlay Thickness	4-10
5.	CONCLUSIONS AND RECOMMENDATIONS	5-1
6.	IMPLEMENTATION	6-1

REFERENCES

APPENDIX A: ELSYM5 and ILLI-PAVE Model Load-Response Data

APPENDIX B: ROADHOG and AASHTO Overlay Thickness Data

LIST OF TABLES

Table		PAGE
1	Parameters Varied to Establish Deflection Database	3-4
2	Summary of Material Properties for ILLI-PAVE Solutions	3-5

LIST OF FIGURES

Figure		PAGE
1	Influence of Traffic Loadings on Pavement Serviceability	1-4
2	Typical Representation of the Resilient Modulus-Repeated Deviator Stress Relationship for Fine-Grained Soils	2-6
3	Effect of Load on Pavement and Underlying Layers	2-7
4	Delta-D / Effective Structural Number Relationship used in ROADHOG	2-8
5	Soil Configuration for the Three-Layered Conventional Flexible Pavement System	3-3
6	Comparison of Backcalculated M_R with M_R used in Pavement Model	4-2
7	Comparison of AASHTO "Design" M_R with M_R used in ILLI-PAVE Model	4-4
8	Comparison of SN_f from Backcalculated M_R with SN_f from Input M_R	4-5
9	Comparison of ROADHOG and AASHTO SN_{eff} Component Analysis	4-7
10	Comparison of AASHTO SN_{eff} at Various M_R values with SN_{eff} from Component Analysis	4-9
11	Comparison of AASHTO and ROADHOG Recommended Overlay Thickness	4-11

CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem

The Arkansas Highway and Transportation Department (AHTD) designs new pavements using the AASHTO *Guide* for the *Design of Pavement Structures* ***(1)***. The 1986 AASHTO *Guide* addresses the subject of overlay design for pavement rehabilitation, but it does not contain a discreet overlay design procedure. The 1993 AASHTO *Guide*, however, does contain discreet methods for determining flexible overlay design thickness. AHTD currently uses ROADHOG ***(2)***, a flexible pavement overlay design procedure developed by the University of Arkansas under research (TRC-8705) sponsored by AHTD, for designing flexible pavement overlays. ROADHOG was developed in accordance with the basic overlay design guidelines contained in the 1986 AASHTO *Guide*. A re-evaluation and possible upgrade of the ROADHOG procedures is necessary since the publication of the 1993 AASHTO *Guide* to ensure ROADHOG remains consistent with AASHTO design principles. TRC-9403, "Reliability and Design Procedure Revisions of ROADHOG" was initiated to perform this re-evaluation.

In addition to a comparison of the procedures used in ROADHOG with procedures described in the 1993 AASHTO *Guide*, TRC-9403 also proposed to address issues raised in "additional research needs" from TRC-8705 ***(3)***. These "areas of further study" included:

- *time of year adjustment*. The identification and possible inclusion in ROADHOG of a factor to account for the variation in subgrade resilient modulus during the year.
- *overlay performance review*. A program of periodic monitoring of the field performance of overlays designed using ROADHOG; this performance

monitoring would provide data for "calibration" of the ROADHOG procedure.

- *improved pavement model*. Field loads on pavements are dynamic; models used in ROADHOG and other procedures are static-load models. Dynamic models are needed to move ROADHOG closer to correctly modeling field conditions.
- *design reliability*. The point-by-point design approach used by ROADHOG may invalidate some assumptions of the AASHTO reliability concept for design. A rational method of selecting design reliability is needed for ROADHOG.
- *effect of pavement condition.* The condition of the existing pavement prior to overlay and the type and amount of pre-overlay repair are critical to the performance of an overlay. Methods are needed to account for these factors during design.

1.2 Project Objectives

TRC-8705 raised some very profound issues to be addressed for ROADHOG to become a truly comprehensive overlay design procedure. Indeed, many of the issues listed in the previous section could serve as "stand alone" research projects. In order to accomplish significant progress in the evolution of ROADHOG, the scope of work to be performed under TRC-9403 was reduced from the myriad needs that had been identified. Two primary objectives were identified for the project: (1) to re-evaluate the procedures used in ROADHOG in light of the procedures included in the 1993 AASHTO *Guide*; (2) correct any "bugs" identified by AHTD personnel in the ROADHOG computer program, and enhance the computer program to include features desired by AHTD users.

1.3 Background Information

The underlying principle for determining the flexible pavement overlay thickness is the serviceability-performance relationship, developed during the 1958-60 AASHO Road Test ***(1)***. Incorporated in this relationship is the "structural deficiency" concept, which states that a pavement can be considered "structurally deficient" when it cannot carry the volume of traffic projected over the design period. ROADHOG and AASHTO both use the "structural

deficiency" approach to overlay design.

1.3.1 *Overlay Design Methodology*

The serviceability-performance relationship serves as the foundation for the AASHTO overlay design procedure. Incorporated in the serviceability-performance relationship is an interaction between pavement serviceability, traffic loadings, and structural capacity as shown in Figure 1 ***(1)***. Looking at Figure 1, it can be seen that after construction, a pavement has an initial structural capacity SC_o and an initial serviceability P_o. Traffic loadings gradually deteriorate the original pavement to a selected terminal serviceability of Pt_1 after 'x' load repetitions of traffic. The existing pavement has an effective structural capacity SC_{eff} associated with the terminal serviceability Pt_1.

In order to improve the structural capacity and the serviceability of the pavement system, an overlay of structural capacity SC_{ol} , is applied to the existing pavement. The structural capacity of the new pavement system is improved to SC_f , with serviceability Pt_2, which is capable of carrying the future projected traffic. In order to determine the required overlay structural capacity SC_{ol} the difference between the SC_f of a new design for the projected future traffic and the effective SC_{eff} of the existing pavement is needed.

1.3.2 *Structural Deficiency Concept*

The 1993 AASHTO *Guide* and ROADHOG use a structural number (SN) to quantify the structural capacity of the pavement layers (surface, base, subbase). SN is calculated using a layer coefficient for the layer and the thickness of the layer, as shown in Equation 1.

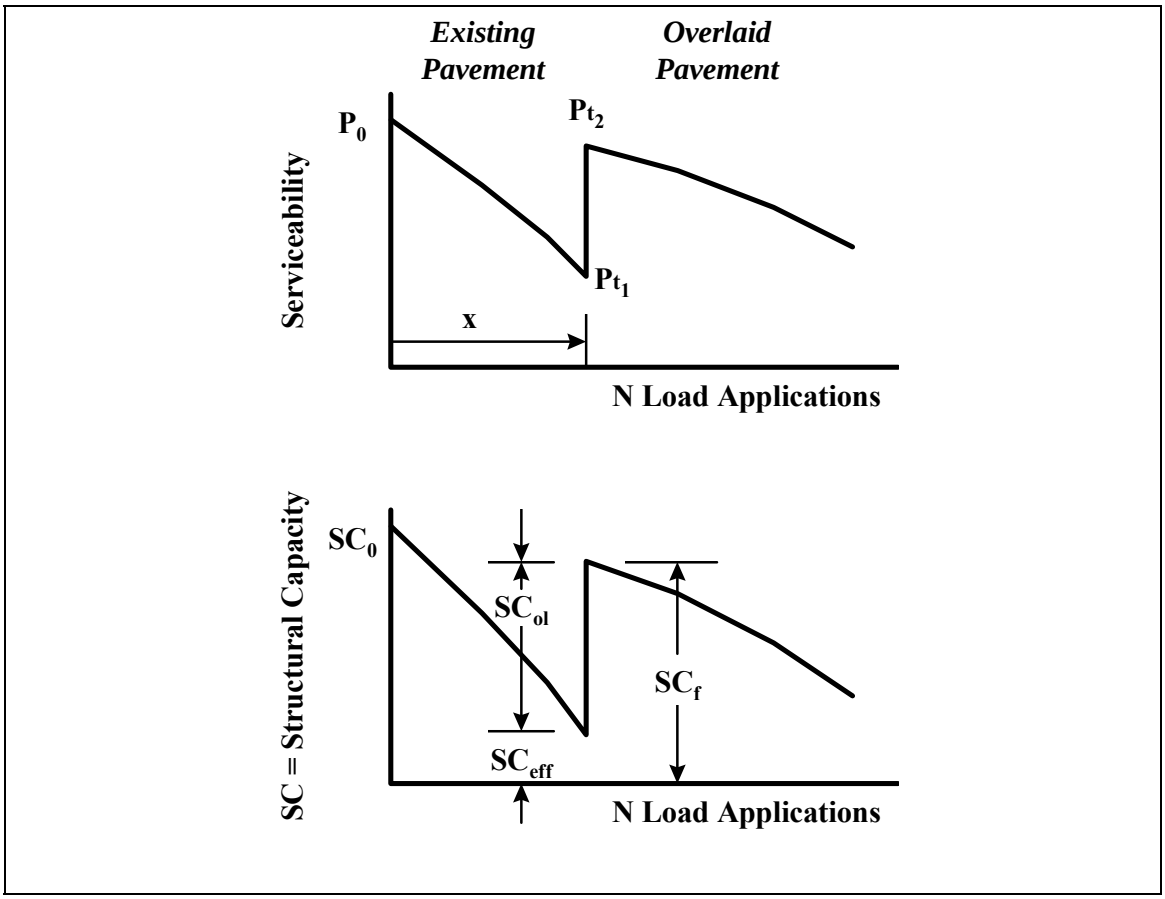


Figure 1: Influence of Traffic Loadings on Pavement Serviceability

$$SN = a_1D_1 + a_2D_2 + \ldots\ldots + a_nD_n \qquad \textbf{(1)}$$

where: SN= structural number of the pavement
a_n = layer coefficient of layer n
D_n = thickness of layer n

ROADHOG and the AASHTO procedure use the "structural deficiency" concept to overlay design. The "structural deficiency" approach requires that the effective structural capacity of the existing pavement (SN_{eff}) be determined and the structural capacity required to carry future traffic (SN_f) also be determined. The overlay required is the difference

between the structural capacity needed and that which currently exists, as expressed in Equation 2.

$$SN_{ol} = SN_f - SN_{eff} \quad \textbf{(2)}$$

where: SN_{ol} = required structural number of the overlay
SN_f = structural number required to carry future projected traffic
SN_{eff} = effective structural number of existing pavement

The required asphalt concrete (AC) overlay thickness is obtained by dividing the structural number of the overlay (Equation 1) by an AC layer coefficient (a_{ac}) value as shown in Equation 3.

$$D_{ol} = SN_{ol} \ / \ a_{ac} \quad \textbf{(3)}$$

where: D_{ol} = thickness of overlay
SN_{ol} = structural deficiency
a_{ac} = asphalt layer coefficient

The difference between the design procedures fully utilizing the "structural deficiency" approach can be related to the methods used to estimate the effective structural number of the existing pavement (SN_{eff}) and the methods used to determine the structural number required to carry future traffic (SN_f).

CHAPTER 2

OVERLAY DESIGN METHODS

2.1 Overview

In order to determine the "structural deficiency" of the pavement, methods for determining SN_f and SN_{eff} are included in AASHTO and ROADHOG. Both the ROADHOG and AASHTO procedures use the AASHTO "new" pavement design equation to determine SN_f, differing only in the method used to back-calculate the resilient modulus, M_R, of the roadbed soil. M_R is the only variable input in the AASHTO "new" pavement design equation which differs for the two procedures. The procedures determine SN_{eff} using distinct methods. A comparison of the two procedures will focus on the respective methods of estimating SN_{eff} and M_R. An overview of the methods for each procedure follows.

2.2 AASHTO Procedure

The 1986 AASHTO *Guide* included a framework around which an overlay design procedure could be developed, but did not contain a discrete procedure itself. The 1993 *Guide*, however, did contain discrete procedures for determining overlay thickness. The 1993 AASHTO *Guide* incorporates methods which use FWD data to determine the subgrade resilient modulus and the effective structural capacity of the existing pavement. AASHTO has other methods of determining SN_{eff} and M_R which rely on laboratory based testing and are not addressed in this study. A description of the AASHTO methodologies used for estimating M_R and SN_{eff} follows, with M_R discussed first since it is used in the determination of SN_{eff}.

2.2.1 *Determination of Subgrade Resilient Modulus*

The method recommended by AASHTO for back-calculating the subgrade resilient modulus is based on a method proposed by Ullidtz ***(4)***, which is based on Boussinesq's deflection equation ***(5)***. The concept rests on two basic assumptions: (1) at some distance from the center of loading, the measured surface deflection is almost entirely due to deformation in the subgrade; (2) as radial distance from a load increases, the approximation of a distributed load by a point load improves. These two assumptions allow a deflection to be estimated by the Boussinesq equation for a one-layer system. Rearranging the Boussinesq equation to solve for the elastic modulus and assuming a Poisson's ratio of 0.5 for the subgrade soil, the equation used in the 1993 AASHTO Guide for estimating M_R is obtained:

$$M_R = \frac{0.24 * P}{d_r * r} \qquad \textbf{(4)}$$

where: M_R = resilient modulus of the subgrade soil, psi
P = applied load, pounds
d_r = deflection at radial distance r from the load, in.
r = radial distance from the load, in.

Equation 4 is recommended only for deflections measured at a radial distance greater than 0.7 times the effective radius of the stress bulb at the subgrade/pavement interface (a_e); this is to insure that the deflection is due only to subgrade deformation ***(1)***. The back-calculated subgrade modulus is multiplied by a "correction" factor to obtain the design subgrade modulus used in the AASHTO "new" pavement design procedure to determine SN_f. A correction factor not greater than 0.33 is recommended to make the subgrade resilient

modulus consistent with the AASHO Road Test soil used in the development of the flexible pavement design equation, which had a laboratory-measured value of 3,000 psi at a deviator stress of 6 psi ***(6)***.

2.2.2 *Effective Structural Capacity Analysis*

The AASHTO approach to determining the effective structural number of an existing pavement is based on the idea that the structural capacity of a pavement is a function of its overall stiffness ***(1)***. The 1986 AASHTO *Guide* (Appendix NN) uses this premise in developing an "equal stiffness" approach to determining SN_{eff} ***(7)***. The 1993 AASHTO *Guide* uses a "simplified" version of this general approach. In the 1993 *Guide*, SN_{eff} is related to the total pavement thickness (D) and the "effective" modulus of the total pavement structure (E_P) as shown in Equation 5:

$$SN_{eff} = 0.0045 * D * \sqrt[3]{E_P} \qquad \textbf{(5)}$$

where: SN_{eff} = effective structural number of the pavement
D = total pavement thickness (surface, base, subbase), in.
E_p = effective modulus of the pavement, psi

The pavement's effective modulus (E_P) may be determined using Equation 6. Equation 6 is based on Boussinesq's one-layer deflection ***(5)***, with subsequent development by Odemark's method for determination of deflection in a two-layer system ***(8)*** and the "equivalent thickness" concept described by Barber ***(9)***.

$$d_0 = 1.5pa\left[\frac{1}{M_R\sqrt{1+\left(\frac{D}{a}\sqrt[3]{\frac{E_p}{M_R}}\right)^2}} + \frac{1-\frac{1}{\sqrt{1+\left(\frac{D}{a}\right)^2}}}{E_p}\right] \quad \textbf{(6)}$$

where: d_0 = deflection measured at the center of the load plate, in.
p = NDT, load plate pressure, psi
a = NDT, load plate radius, in.
M_R = resilient modulus of subgrade soil, psi
D = total pavement thickness, in.
E_P = effective pavement modulus, psi

The stiffness of the pavement (E_P) is a function of the stiffness of the subgrade (M_R), the loading characteristics (plate radius and pressure), the thickness of the pavement (D), and the maximum surface deflection (d_0). The maximum surface deflection is adjusted according to a reference temperature of 20°C [68°F] ***(1)***. Using the temperature-corrected deflection the effective pavement modulus can be found by iteration.

2.3 ROADHOG Procedure

ROADHOG uses FWD deflection data to determine the flexible pavement overlay design thickness. In ROADHOG the determination of the effective structural number of the existing pavement is independent of the subgrade resilient modulus. The backcalculated subgrade resilient modulus is used only to determine the structural number of the pavement required to carry future traffic.

2.3.1 *Determination of the Subgrade Resilient Modulus*

An estimate of the roadbed soil (subgrade) resilient modulus must be provided in order to calculate the structural number required to carry future traffic (using AASHTO new

pavement design procedures). ROADHOG determines M_R using the pavement surface deflection measured at 36 in. from the center of the loading. M_R is calculated using a regression equation developed by Elliott and Thompson ***(10)***. The algorithm was developed from data generated by the ILLI-PAVE finite element model ***(11)***. The regression equation used for conventional flexible pavements with more than 3-inches AC surface is shown as Equation 7:

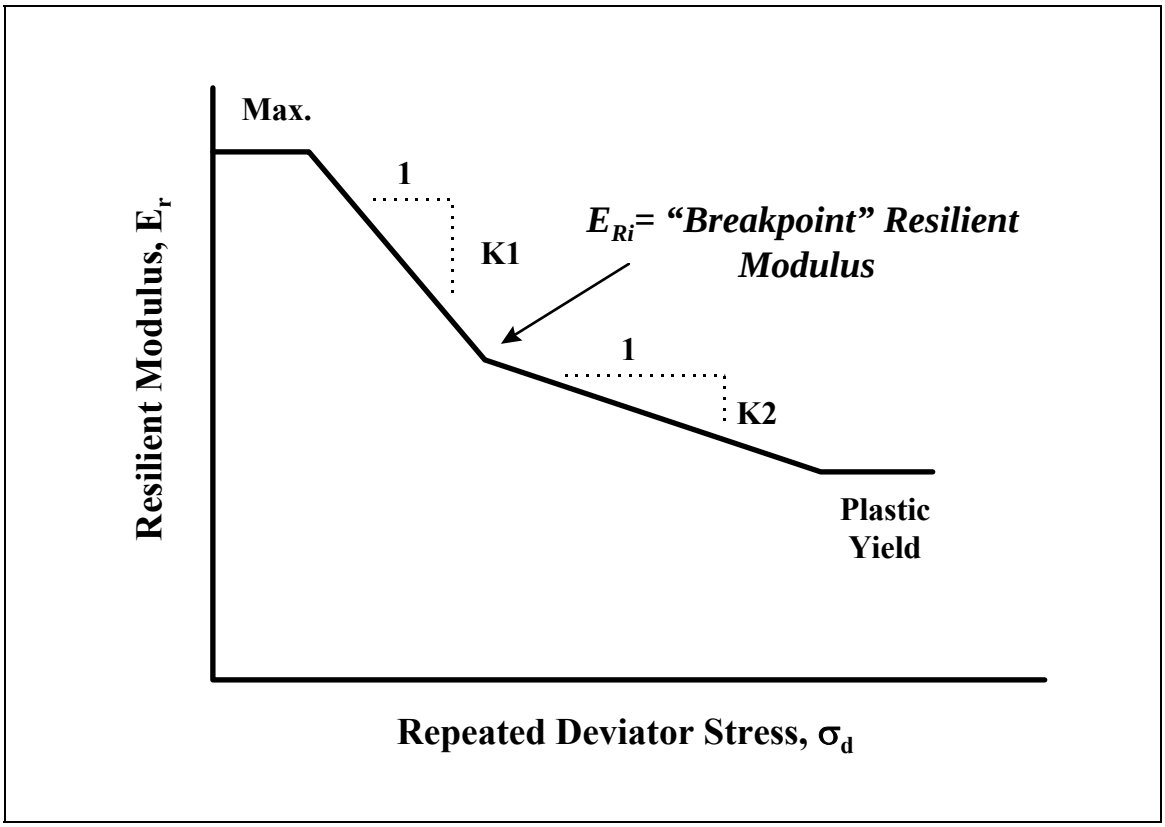
$$E_{Ri} = 25.0 - 5.25 * D_{36} + 0.29 * D_{36}^{2} \quad \textbf{(7)}$$

where: E_{ri} = breakpoint resilient modulus of the subgrade soil, ksi
D_{36} = pavement surface deflection at 36" from the load, mils

The breakpoint resilient modulus for fine-grained soils is defined as the point at which the slope of the resilient modulus-repeated deviator stress curve breaks (Figure 2). The 1986 *Guide* used a subgrade resilient modulus value of 3000 psi for the AASHO Road Test soil in order to incorporate the effects of the subgrade into the AASHTO design equation. This subgrade resilient modulus value was found to agree with the breakpoint resilient modulus values obtained by Thompson and Robnett ***(12).*** Thus the value of M_R determined by the ROADHOG method is consistent with the value used in the AASHTO *Guide* design equation to represent the AASHO Road Test subgrade soil. M_R determined by ROADHOG does not require the modification needed by the AASHTO backcalculation method needs.

2.3.2 *Effective Structural Capacity Analysis*

Kong ***(13)*** developed the methodology used in ROADHOG for estimating the effective structural number of a flexible pavement. In ROADHOG the determination of



SN_{eff}

Figure 2: Typical Representation of the Resilient Modulus-Repeated Deviator Stress Relationship for Fine-Grained Soils

is assumed to be a function of pavement stiffness, just as in the AASHTO method. Kong developed a SN_{eff} algorithm with the concept that at a sufficient distance from the loading plate the surface deflection is entirely due to the deformation of the subgrade.

The methodology uses two pavement surface deflections shown in Figure 3: (1) the deflection at the center of the load, where it is assumed that the surface deflection is due to the deformation of the pavement layers and the subgrade; (2) a deflection at distance (T) from the load (in the case of ROADHOG, a distance equal to the pavement thickness), where it is assumed that the surface deflection is due entirely to subgrade deformation. Kong

suggested that the difference between these two deflections, termed "delta-D", could be used as a measure of pavement stiffness. In this manner SN_{eff} is determined by a method that is independent of the subgrade resilient modulus (M_R) and the depth to bedrock.

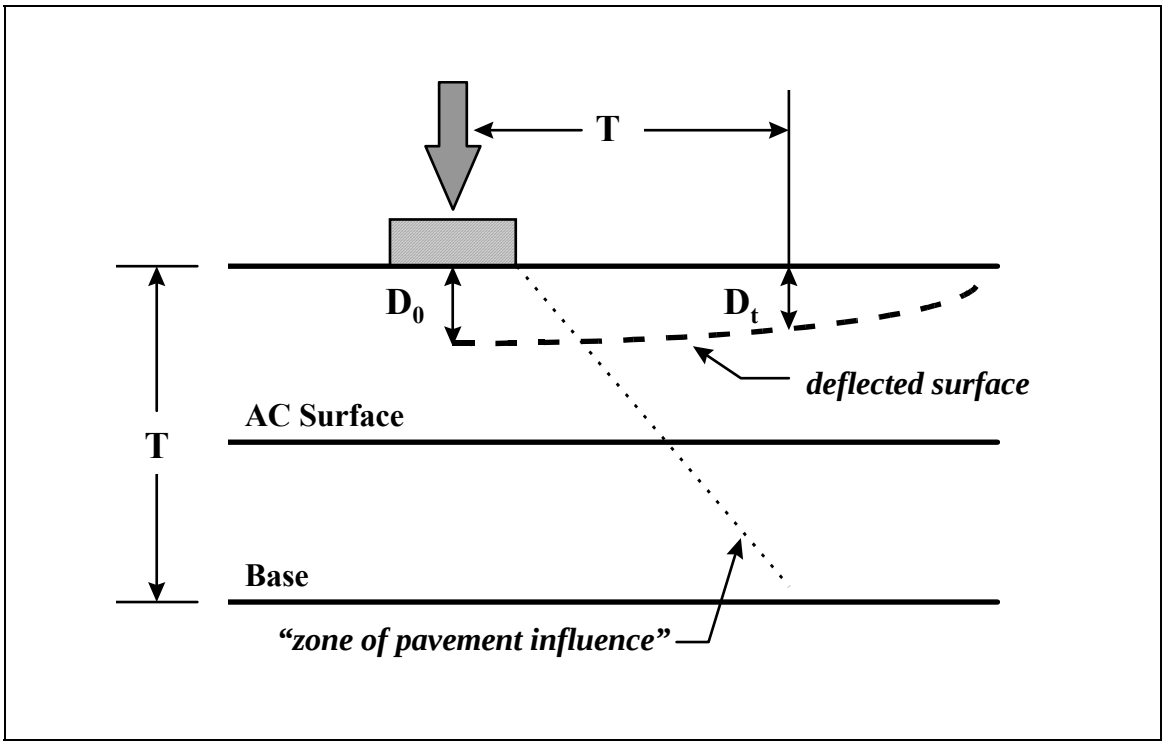


Figure 3. Effect of Load on Pavement and Underlying Layers

In the development of the SN_{eff} algorithm, Kong related the SN_{eff} of a number of conventional flexible pavement configurations to the deflection difference delta-D. He generated deflection basins using the ELSYM5 elastic layer model ***(14)***. Kong verified the delta-D/SN_{eff} relationship using the ILLI-PAVE finite element method. SN_{eff} was estimated using "component analysis", in which each paving layer was assigned a "typical" layer coefficient based on its input elastic modulus, and the structural number calculated according

to Equation 1. Figure 4 shows the relationship between SN_{eff} and delta-D for various pavement thicknesses ***(13)***. The subgrade resilient modulus is not explicitly considered in the relationship shown in Figure 4. The relationship is primarily a function of total pavement thickness. A temperature correction factor is needed to adjust delta-D because the AC modulus is temperature sensitive. Temperature adjustment curves were established with the reference temperature being 70°F. Delta-D is divided by this adjustment factor before determining SN_{eff}.

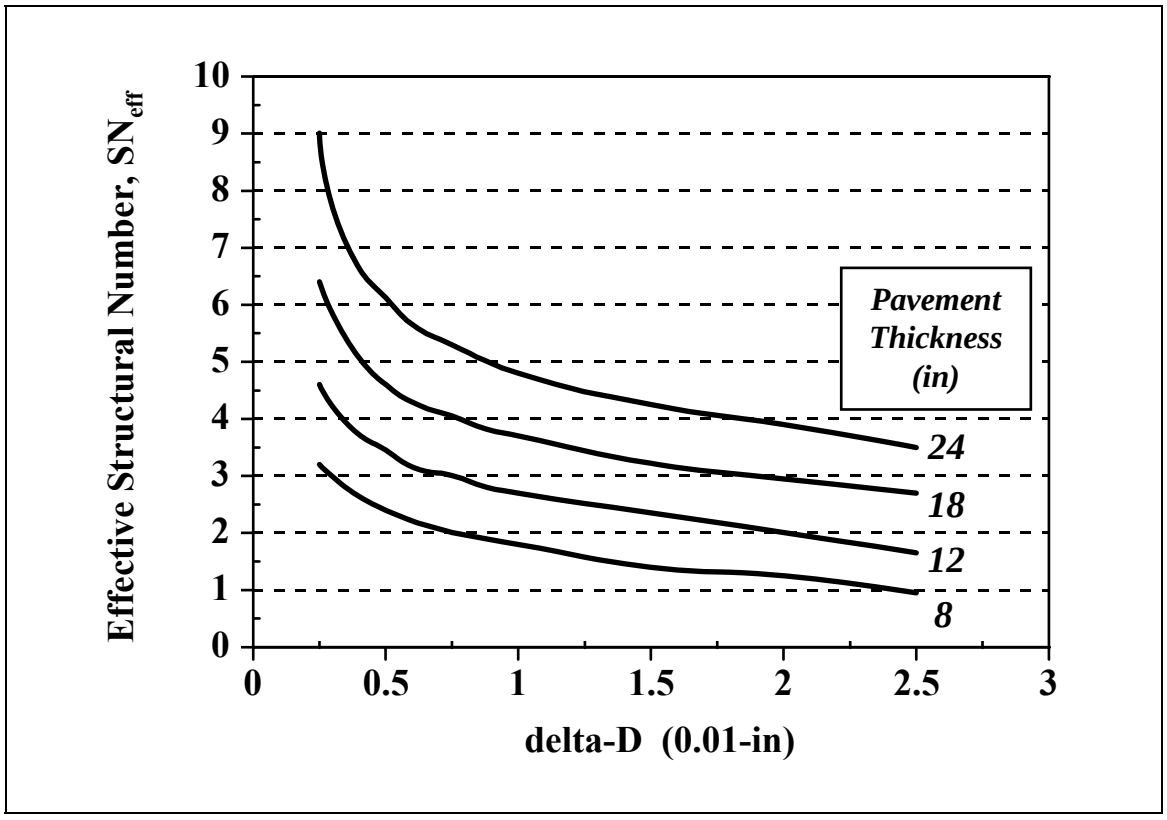


Figure 4: Delta-D / Effective Structural Number Relationship used in ROADHOG

CHAPTER 3

COMPARISON BETWEEN AASHTO AND ROADHOG

3.1 Methodology

In order to modify ROADHOG a comparison must be performed which relates existing ROADHOG procedures to the recommended AASHTO procedures for flexible pavement overlays. ROADHOG and the AASHTO *Guide* have many common approaches in the development of each procedure. Both procedures use the "structural deficiency" approach for determining the overlay thickness. Also, the effective structural number of the existing pavement (SN_{eff}) and the subgrade resilient modulus (M_R), which are used in the "structural deficiency" approach, are determined from non-destructive testing (NDT) deflection data taken by a falling weight deflectometer (FWD). The AASHTO *Guide* has other methods of determining SN_{eff} and M_R which aren't dependent on NDT data. The comparison between the procedures will only focus on the methods using FWD data for determining overlay thicknesses.

In order to compare the procedures, a database of deflection basins must be generated for conventional flexible pavements (asphalt+base+subgrade) with the asphalt and base course thicknesses and moduli values varying, along with varying subgrade moduli. The deflection database is generated using ILLI-PAVE, a finite element structural model, and ELSYM5, an elastic layer model.

In order to compare overlay design procedures four tasks are performed. (1) A pavement surface deflection database is generated; (2) The surface deflection database

information is input into the AASHTO and ROADHOG procedures in order to obtain SN_f, SN_{eff}, M_R, and the overlay thickness; (3) The effect of M_R and SN_{eff} on the resulting overall overlay thickness are analyzed; (4) The results of the comparison are determined.

3.2 Generation of Surface Deflection Database

Comparisons of the AASHTO and ROADHOG deflection-based overlay design procedures are performed using "conventional flexible pavement" configurations (Figure 5). The material properties and thicknesses varied to establish the deflection database are shown in Table 1. Pavement surface deflection basins are generated using ILLI-PAVE and ELSYM5. Finite element based procedures have the advantage of the ability to model both non-linear and linear elastic pavement materials. ILLI-PAVE models the AC layer as a "linear elastic" material, while it considers the granular base and subgrade soil to be "stress dependent" materials which behave in a "non-linear" fashion. The granular base and subgrade soil parameters are selected from work performed by Elliott and Thompson and are shown in Table 2 ***(10)***. In the ELSYM5 model, all the materials (AC, base, subgrade) are considered to be "linear elastic". The surface deflection database may be found in Appendix A.

3.3 Generation of Overlay Thickness Database

Using the surface deflection basins, M_R and SN_{eff} are determined using the AASHTO and ROADHOG procedures. SN_f is determined using the AASHTO "new" pavement design procedure for both procedures. The values input into the equation include a standard deviation (0.42), delta PSI (2.5), and future traffic (10^7 ESALs), which are constant for all analyses. The design reliability used to determine SN_f is varied, including values of 50, 75,

90, 95, and 99 percent. The value of M_R input into the equation is varied according to the procedure used. Once SN_f and SN_{eff} are calculated, Equation 3 is used with an asphalt layer coefficient of 0.44 to obtain the overlay thickness for design reliability of 50, 75, 90, 95, and 99 percent. The overlay thickness database is located in Appendix B.

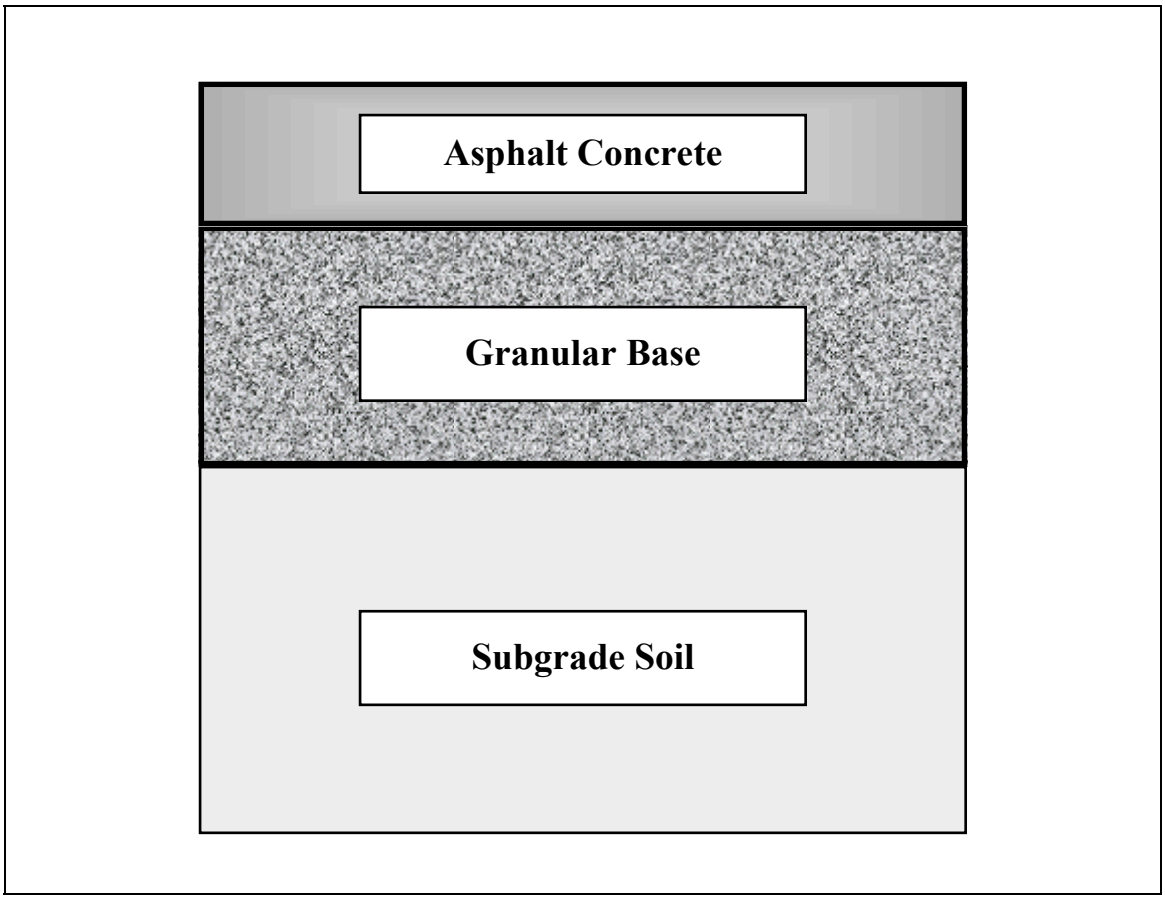


Figure 5: Soil Configuration for the Three-Layered Conventional Flexible Pavement System

Material	Layer Coefficient	Thickness (in)	Resilient Modulus (ksi)	AC Temperature (deg C)
Asphalt Concrete	0.44	2	1400	5
		4	500	20
		6	100	40
		8		
Crushed Stone (base #1)	0.14	8	40	
		10		
		12		
Gravel (base #2)	0.12	8	30	
		10		
		12		
Subgrade Soil			12	
			7.5	
			3	
			1	

Table 1: Parameters Varied to Establish Deflection Database

CHAPTER 4

DATA ANALYSIS

Factors considered in the comparison between the ROADHOG and AASHTO overlay design procedures include the subgrade resilient modulus, the effective structural number of the existing pavement, and the resulting overlay thickness.

4.1 Subgrade Resilient Modulus

A representative pavement section (4-in. AC layer, 8-in. granular base) is presented to illustrate the comparison of M_R backcalculation procedures; the results shown are "typical" of the results obtained from other conventional flexible pavement configurations (see Appendix B for data on additional pavements). Backcalculated M_R values are estimated from the deflection basins generated by both the ILLI-PAVE and ELSYM5 models. In the calculation of M_R for the ROADHOG procedure Equation 8 is used, while Equation 4 is used for the AASHTO procedure. The subgrade resilient modulus backcalculated using the AASHTO procedure and the ROADHOG procedure are plotted versus the "known" input M_R values, shown in Figure 6.

Trends in the data shown in Figure 6 are not surprising. Each backcalculation method provides relatively accurate estimates of M_R for deflection basins generated by the model upon which the method is based. The AASHTO procedure accurately estimates M_R for ELSYM5 (elastic layer) based deflections; Equation 4 is developed using elastic layer theory. The ROADHOG procedure accurately estimates M_R for ILLI-PAVE based deflections; Equation 8

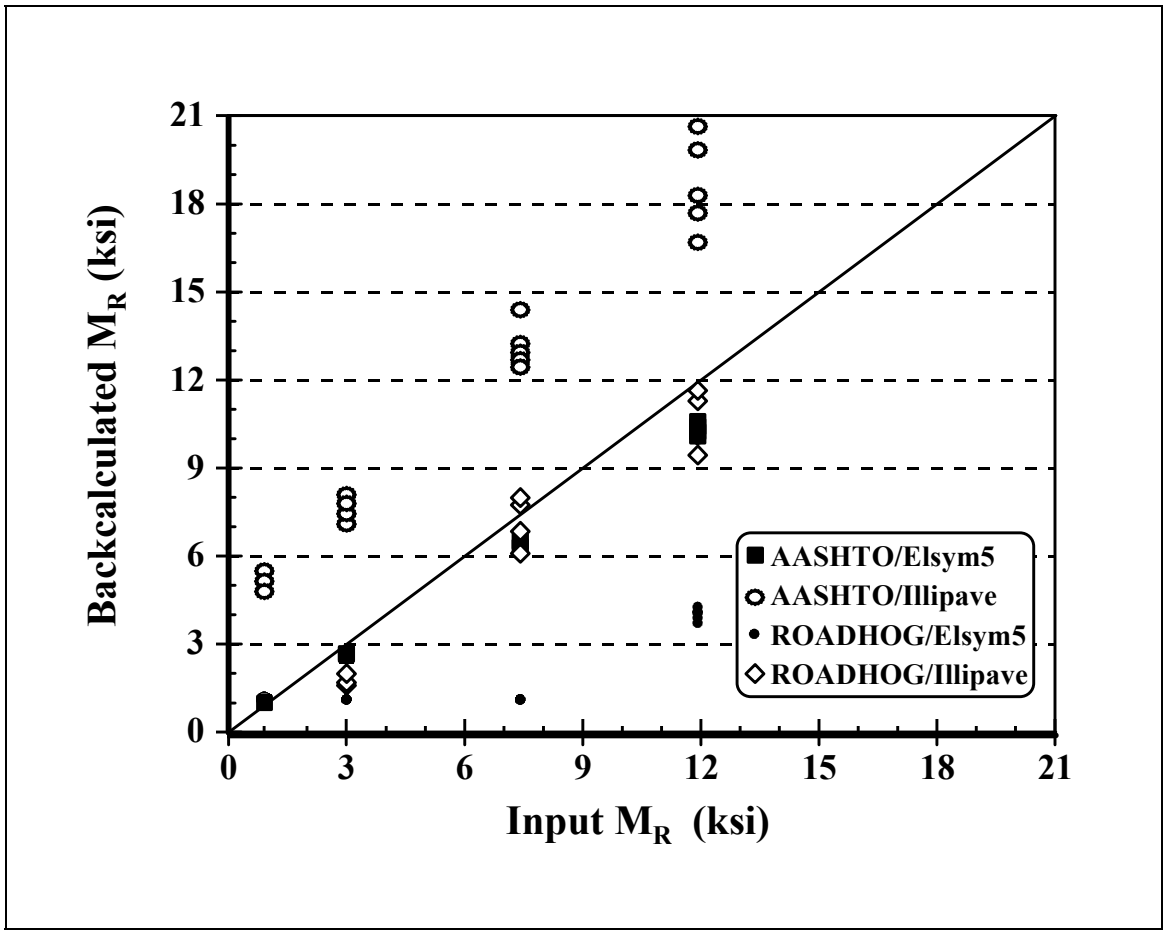


Figure 6: **Comparison of Backcalculated M_R with M_R used in Pavement Model**

is a regression equation developed from ILLI-PAVE generated deflection data. The AASHTO backcalculated M_R values using the ILLI-PAVE deflections are consistently higher than the ROADHOG values. The ROADHOG backcalculated M_R values using the ELSYM5 deflections are relatively lower than the "known" input M_R values. It is shown that neither procedure estimates M_R accurately using deflections generated by the "non-basis" model.

The points shown in Figure 6 raise the question of the accuracy with which each of the pavement models represents "real-life" pavements. Many researchers have recommended

the use of stress-dependent models to represent unbound granular materials and subgrade soils ***(15)***. ILLI-PAVE as used in this study, models the non-linear, stress dependent behavior of paving materials and subgrade soils. ELSYM5 however, models the materials using only linear elastic assumptions. In this study it is assumed that ILLI-PAVE provides a more realistic picture of actual pavement behavior; only the data generated from ILLI-PAVE is used for the comparisons that follow.

Using the ILLI-PAVE generated deflection basins, the AASHTO backcalculation method overestimates the subgrade resilient modulus, compared to the method used in ROADHOG. Since M_R is used in the AASHTO effective structural number estimation procedure, an error in M_R may result in an error in SN_{eff}, directly affecting the resulting overlay thickness. In ROADHOG, M_R is not explicitly considered in the calculation of SN_{eff}. Additional discussion of this point is provided in the comparison of SN_{eff} values.

In the determination of SN_f, the total structural number required to carry future traffic, the subgrade resilient modulus is used. In both the AASHTO and ROADHOG procedures, SN_f is determined using AASHTO "new-pavement" design concepts. For new pavement design, a "design" value of M_R is needed. This design value should be obtained in a manner consistent with the assumptions underlying the development of the AASHTO flexible pavement design equation ***(1)***. The method of backcalculating M_R used in the ROADHOG method was developed to be consistent with the original AASHO Road Test soil ***(2)***. However, M_R values obtained using AASHTO procedure Equation 4 must be adjusted to make the values consistent with the laboratory measured value used for the AASHO Road Test soil ***(1,16)***. For conventional AC surfaced pavements, the 1993 AASHTO Guide

recommends the M_R values obtained using Equation 4 be multiplied by a correction factor of 0.33 for use in design ***(1)***.

Figure 7 shows corrected "design" M_R values (using a correction factor of 0.33) for the AASHTO procedure and M_R values for the ROADHOG procedure plotted versus the input M_R values for the ILLI-PAVE generated deflection basins. At lower-stiffness levels, the design AASHTO M_R values reasonably reflect input values; however, the AASHTO method (using C=0.33) underestimates M_R at higher input stiffness values.

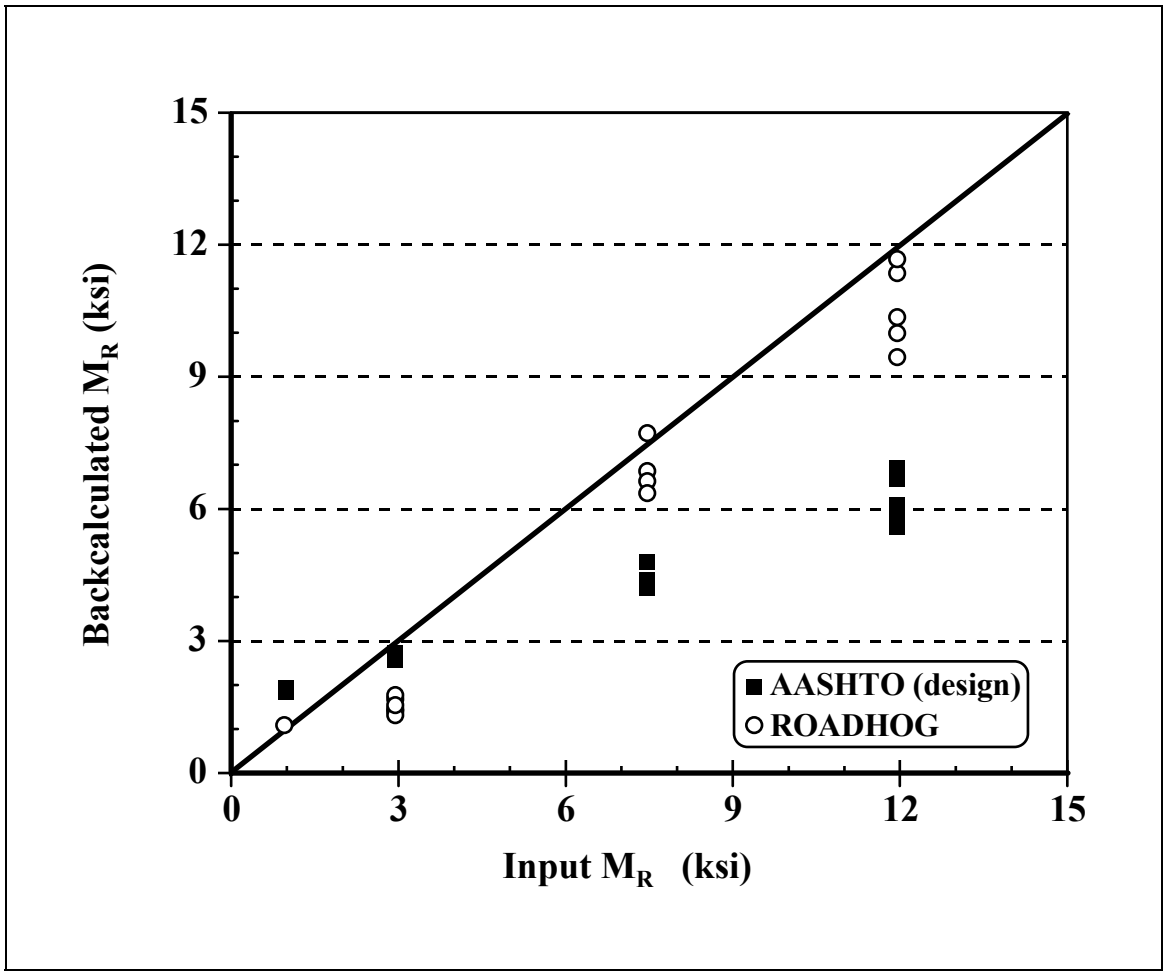


Figure 7: Comparison of AASHTO "Design" M_R with M_R used in ILLI-PAVE Model

The AASHTO flexible pavement design equation is sensitive to M_R, particularly for low M_R values ***(17)***. Underestimating the design subgrade resilient modulus has the general effect of increasing SN_f, while overestimating M_R generally decreases SN_f. This is illustrated in Figure 8, which shows SN_f values determined in the AASHTO and ROADHOG procedures plotted against SN_f values calculated using the "input" M_R values for ILLI-PAVE. The design reliability used in the AASHTO flexible pavement design equation is 95%; the trend shown is representative of the other design reliability values.

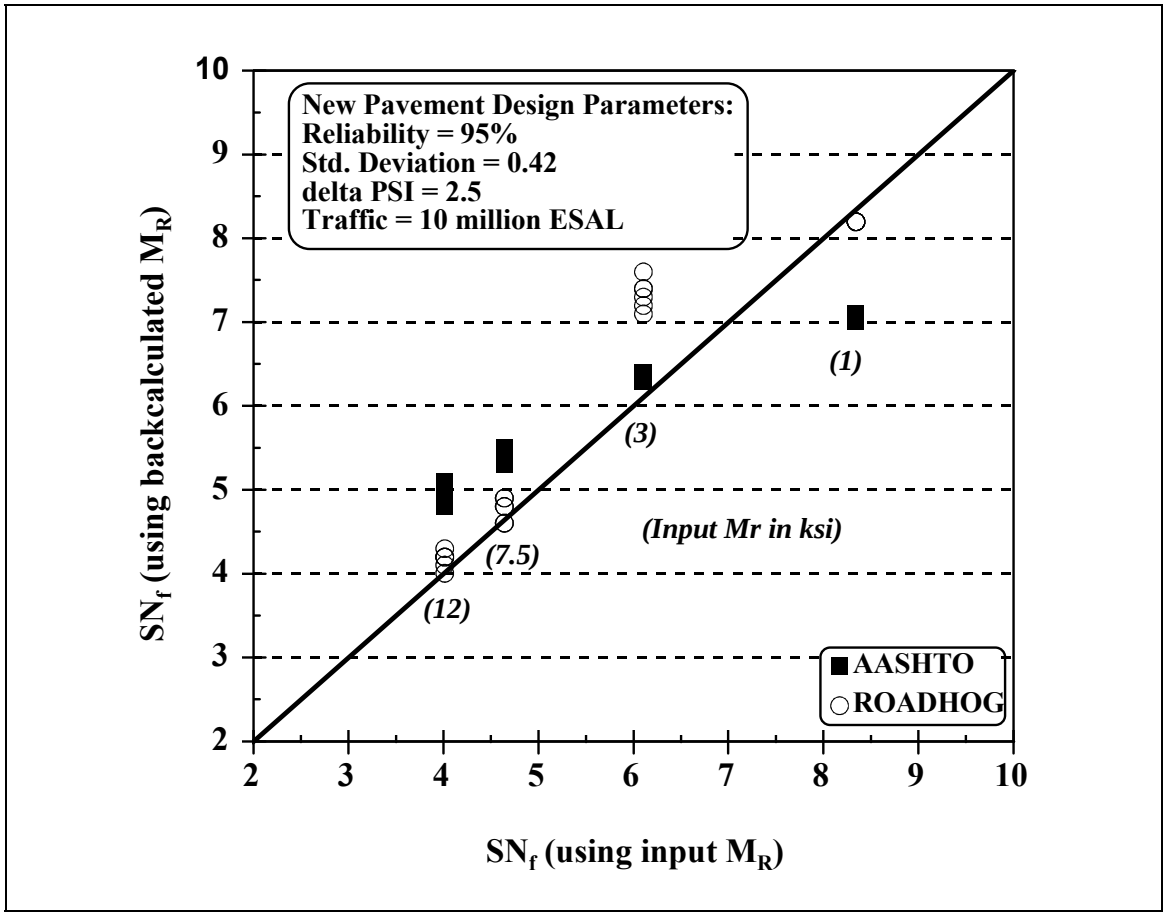


Figure 8: Comparison of SN_f from Backcalculated M_R with SN_f from Input M_R

4.2 Effective Structural Number of Existing Pavement

The comparison of SN_{eff} algorithms is performed using a variety of conventional flexible pavement configurations. In order to compare SN_{eff} values obtained from the AASHTO and ROADHOG procedures, some "standard" must be established to serve as a basis for comparison. For this research, the standard of comparison is the SN_{eff} value determined using component analysis (Equation 1). For each generated deflection basin, all paving layer thicknesses and modulus values are "known". Layer coefficients are assigned to each material based on the material's modulus value and the relationships given in the 1993 AASHTO *Guide*; layer coefficients used in this research are shown in Table 1. Two items regarding layer coefficients should be noted. The first is that a single layer coefficient is used for the asphalt concrete surface. The second is that layer coefficients used to determine the SN of the pavement section are selected with no consideration of material degradation -- in other words, no "reduced" layer coefficients are used. The variation in AC modulus shown in Table 1 is related to temperature. Both the AASHTO and ROADHOG procedures adjust deflection data to a single reference temperature (approximately 20°C [68°F]). The AC layer coefficient used (0.44) is typical for asphalt concrete at the reference temperature.

Figure 9 shows deflection-based SN_{eff} values (AASHTO and ROADHOG) plotted versus component analysis based values for an input subgrade modulus equal to 7500 psi. Because of the large number of data points, individual values are not plotted. Instead, SN_{eff} data are plotted as trends determined by linear regression. The degree of "fit" as determined by the regression coefficient r^2 is shown for each regression line. ROADHOG has an r^2 of 0.89 with a standard error of 0.33 while AASHTO has an r^2 of 0.90 with a standard error of 0.27. For pavement configurations with lower SN_{eff} values both the AASHTO and

ROADHOG methods adequately reflect component based SN_{eff} values. At higher levels of SN_{eff} the AASHTO method underestimates the pavement's effective structural number relative to component based values. Underestimating SN_{eff} has the general effect of increasing overlay thickness.

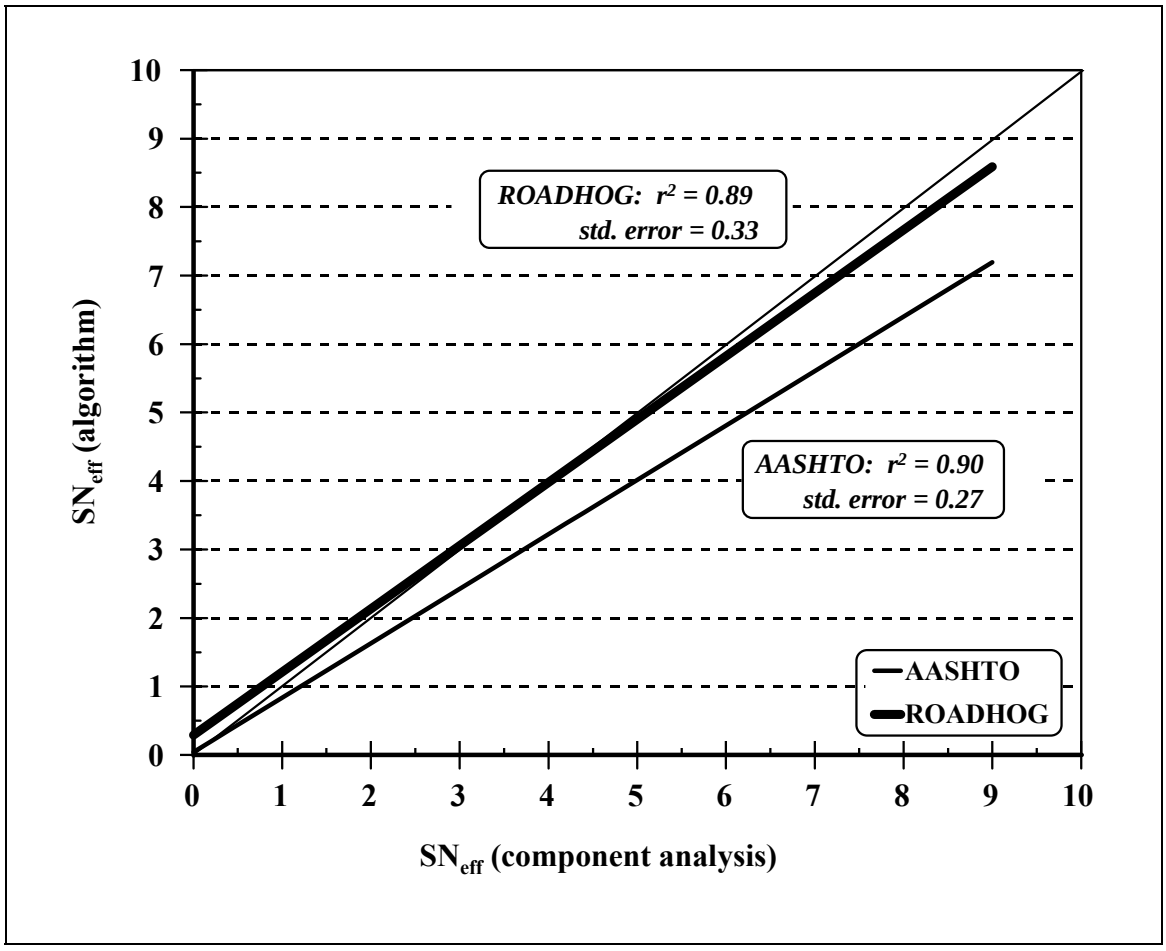


Figure 9: Comparison of ROADHOG and AASHTO SN_{eff} Component Analysis

One item to consider in the comparison shown in Figure 9 involves the role of the

subgrade resilient modulus on SN_{eff} values, particularly for AASHTO-based values. The ROADHOG SN_{eff} algorithm is relatively independent of M_R. In the AASHTO procedure, SN_{eff} and M_R are inter-dependent (see Equation 6). An error in the AASHTO-based SN_{eff} value may be compounded by an error in determining M_R. To adequately compare SN_{eff} procedures it is necessary to distinguish the effect of M_R on the SN_{eff} estimate.

Figure 10 shows AASHTO-based SN_{eff} trends for four "input" levels of subgrade modulus. The SN_{eff} trends clearly reflect the effect of M_R, particularly for higher component-analysis based values of SN_{eff}. For any given component-analysis based SN_{eff} value (which denotes a single conventional flexible pavement configuration in this research) the AASHTO procedure estimates a range of SN_{eff} values, depending on the subgrade modulus used. It is apparent that the AASHTO SN_{eff} determination procedure provides an estimate that reflects the structural capacity of the total pavement system (paving layers + subgrade soil), not of the pavement alone. This violates the basic definition of the AASHTO structural number in which SN is a function of the layer thickness and material properties (see Equation 1)***(7)***. For overlay design purposes, SN_{eff} should reflect only the structural capacity of the pavement layers. The effects of the subgrade will be reflected in the total SN required for the overlaid pavement.

Another complication in the AASHTO system and its use of M_R in determining SN_{eff} is the fact that (for ILLI-PAVE based deflections) the AASHTO procedure overestimates the subgrade modulus (Figure 6). This may help provide an explanation for the fact that AASHTO underestimates SN_{eff}. For a given value of d_0 (refer to Equation 6), extremely high

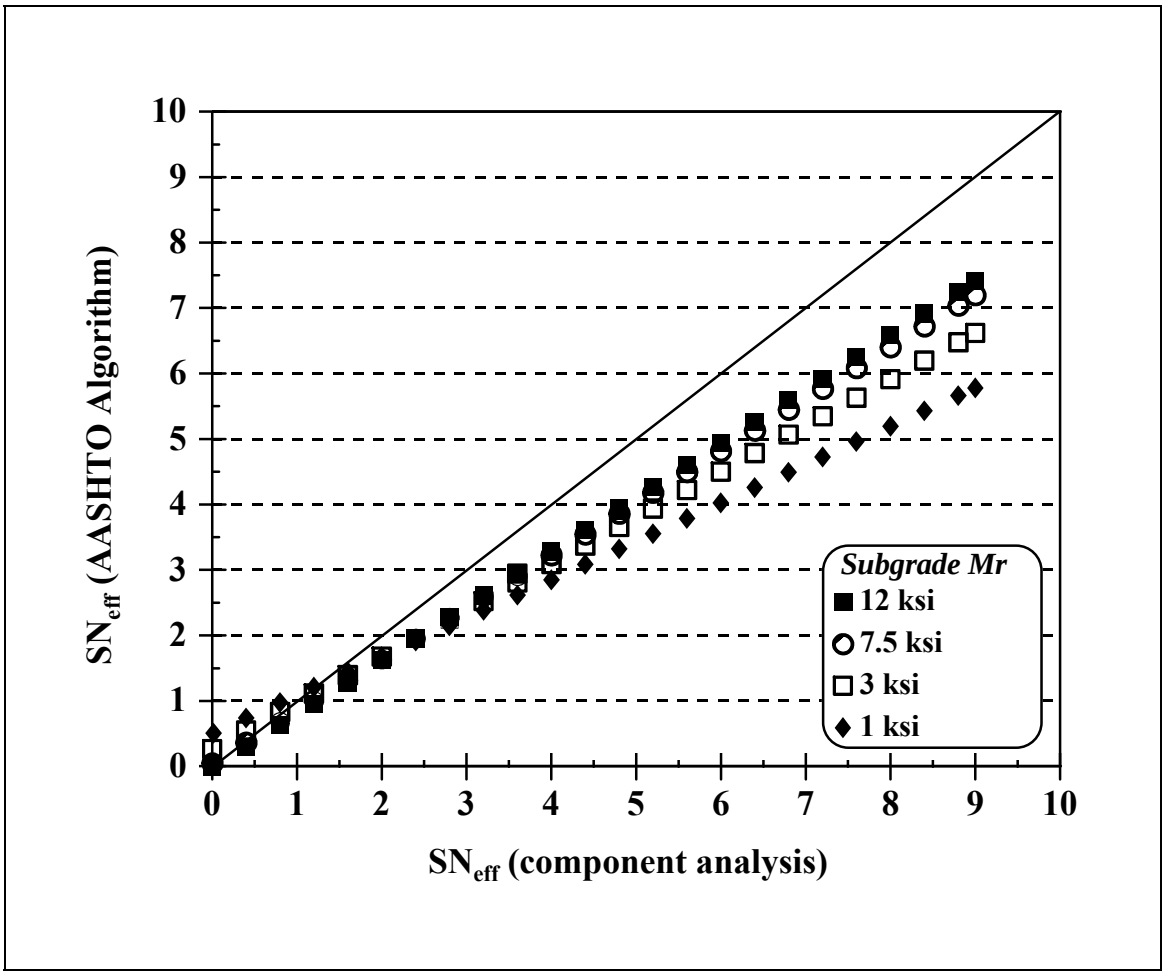


Figure 10: Comparison of AASHTO SN_{eff} at Various M_R values with SN_{eff} from Component Analysis

values of M_R (as seen in Figure 6) result in relatively low SN_{eff} values. A possible explanation for the relatively low AASHTO SN_{eff} values is that the M_R values used in Equation 6 are much higher than the "actual" M_R values used to model the subgrade. Using a higher M_R value, Equation 6 considers the deflection under the load to be due to a weak pavement (low pavement modulus, E_P). SN_{eff} is reduced when a lower E_P value is input into Equation 5. In other words the AASHTO procedure may give too much "credit" to the subgrade soil and therefore "discounts" the structural capacity of the pavement structure,

resulting in lower SN_{eff} values.

4.3 Overlay Thickness

The ultimate comparison between the two overlay design procedures is the recommended overlay thickness for a given pavement configuration and its associated deflection basin. Figure 11 shows a comparison of overlay thickness as determined by the AASHTO and ROADHOG methods for various conventional flexible pavement configurations. The AASHTO procedure generally recommends "thicker" overlays than does the ROADHOG procedure for pavements over stiffer subgrade soils; for pavements over soils with lower M_R values, the two procedures recommend similar overlay thicknesses. Overlay thickness is a direct function of SN_{ol}. The factors affecting SN_{ol} (and therefore overlay thickness) are SN_f and SN_{eff} (Equation 2).

It was established earlier that corrected "design" M_R values used in the AASHTO method generally underestimate the subgrade resilient modulus compared to the backcalculated modulus values used in ROADHOG. With all other "new-pavement" design factors constant, the SN_f values determined by AASHTO are higher than those determined by ROADHOG (Figure 7). Higher SN_f values will result in thicker overlays. It was also established that the AASHTO procedure generally underestimates SN_{eff} relative to the ROADHOG procedure, particularly for those pavement configurations having higher component-analysis based SN_{eff} values (Figure 8). Lower SN_{eff} values result in thicker overlays. The observed differences in recommended overlay thicknesses between AASHTO and ROADHOG can be traced, then, to both the SN_f and SN_{eff} estimates.

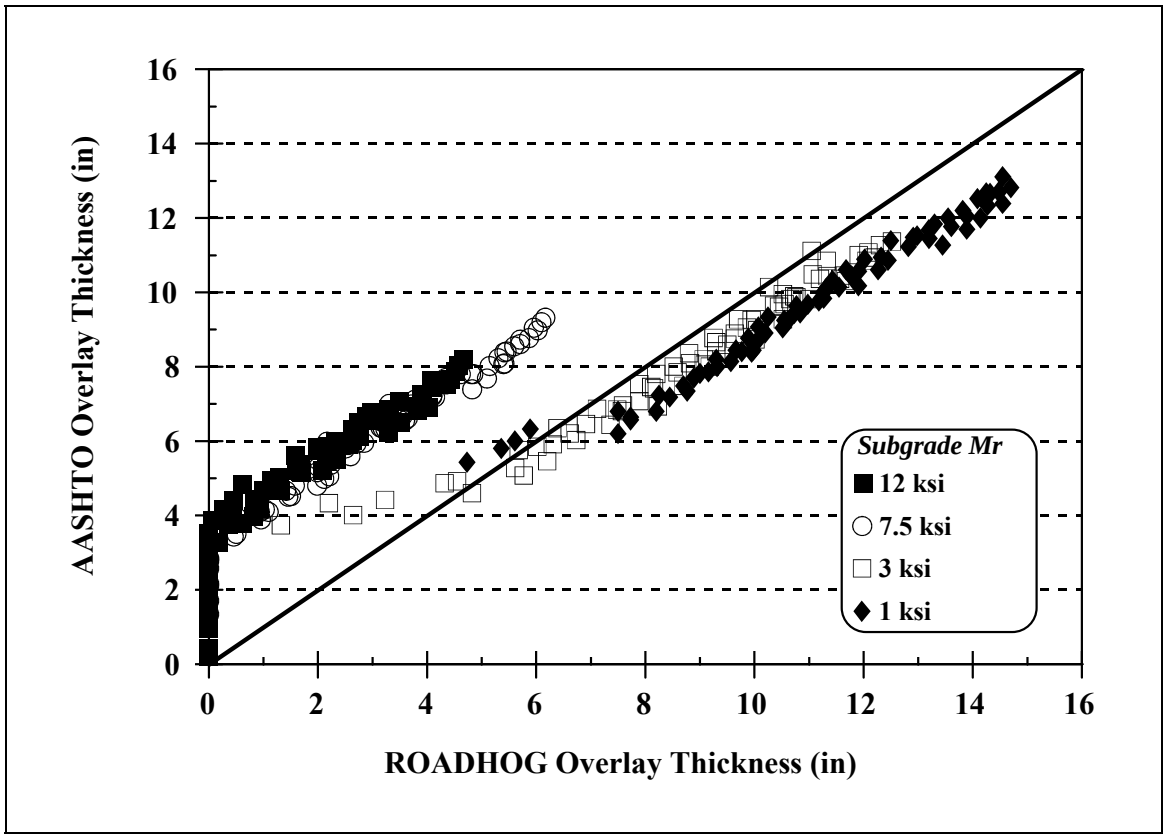


Figure 11: Comparison of AASHTO and ROADHOG Recommended Overlay Thickness

Since differences in the recommended overlay thickness exist, the question to be answered becomes "which of the two overlay design procedures produces a more 'correct' or 'realistic' overlay thickness?". An "independent" basis of comparison is offered for each of components leading to differences in overlay thickness: (1) the subgrade modulus value input into the pavement models, used for comparing M_R values backcalculated by each method; (2) the "component-analysis" based structural number for each pavement configuration, used for comparing SN_{eff} values estimated by each method. In each case, the algorithms contained in the ROADHOG procedure produce values that compare more favorably to the standards used.

It becomes apparent through the analyses presented that the subgrade resilient modulus plays a crucial role in determining the overlay thickness. It is important to use an appropriate modulus value in the AASHTO flexible pavement design equation. Using the lowest calculated subgrade resilient modulus produces the most conservative overlay thickness. Using an overestimated subgrade modulus in design will result in an underestimated AC overlay thickness. If stress-dependent, non-linear material models such as those used in ILLI-PAVE produce more realistic pavement responses (e.g. surface deflections) than do linear elastic models, the apparent difficulty shown by the AASHTO procedure in estimating the subgrade modulus (particularly for "stiffer" subgrade soils) gives rise to concern regarding recommended overlay thicknesses.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

There are differences between the ROADHOG and AASHTO overlay thickness design procedures. The differences between the procedures can be traced to the methods for determining the effective structural number of the existing pavement and the structural number required to carry future traffic. It is apparent that the backcalculated subgrade resilient modulus plays an important role in determining the overlay thickness. Based on the analyses detailed earlier the following conclusions are offered:

1. For conventional flexible pavements overlying relatively stiff subgrades, the AASHTO overlay design procedure generally recommends thicker AC overlays than does the ROADHOG procedure. For pavements over subgrade soils with lower resilient modulus values, the two procedures recommend similar overlay thicknesses.
2. For pavement sections having higher component-analysis based effective structural numbers, the AASHTO procedure underestimates SN_{eff} compared to the ROADHOG procedure.
3. For higher values of subgrade resilient modulus, the AASHTO procedure generally overestimates SN_f compared to the ROADHOG procedure.
4. The inter-dependence of SN_{eff} and M_R in the AASHTO procedure makes the subgrade modulus the primary factor in determining the required overlay thickness.
5. In general, the AASHTO procedure overestimates the M_R value used for determining SN_{eff}, causing an underestimation of the SN_{eff} value. In the ROADHOG procedure

M_R and SN_{eff} are independent; no error in SN_{eff} is associated with an error in M_R.

The conclusions are based on four assumptions:

1. ILLI-PAVE model represents "real-world" conditions insofar as possible.
2. "Input" subgrade modulus is a valid standard of comparison for backcalculated values.
3. Component analysis based SN_{eff} is a valid standard of comparison for estimated SN_{eff} values.
4. In ILLI-PAVE all the subgrade soils were modeled using the same level of stress dependency.

RECOMMENDATIONS

In general, it is recommended that the ROADHOG procedure continue to be used by AHTD for determining flexible pavement overlay thicknesses. The analyses detailed in this report demonstrate that the ROADHOG procedure produces overlay thicknesses that appear to be more realistic that those produced using procedures found in the 1993 AASHTO *Guide*, and yet remains compatible with fundamental AASHTO design concepts.

Although this study provides valuable results in terms of validating the efficacy of ROADHOG relative to AASHTO procedures, significant issues concerning overlay design originally identified in TRC-8705 have yet to be addressed. Among these are adjustments to overlay thickness due to deflection testing "time of year" and the condition of / repairs to the existing roadway; the question of overlay design reliability; and the use of an improved (e.g. dynamic load) pavement model to better model a pavement system's response to traffic loads.

Some of these concerns can be addressed by the creation and execution of a structured, formal overlay performance monitoring program. By tracking the performance of overlays designed by ROADHOG and constructed over pavements in a variety of locations and with a variety of "existing conditions", vital data can be gathered to address issues such as the effect of existing conditions and pre-overlay repair; the effect of subgrade soil and testing time of year; and design reliability.

CHAPTER 6

IMPLEMENTATION

ROADHOG is currently being used by AHTD to design flexible pavement overlays. This project confirms that ROADHOG provides overlay design thicknesses that appear to be reasonable and consistent with AASHTO design principles. An updated version of the ROADHOG computer program has been delivered to AHTD for immediate implementation into routine design practice. The updated version addresses many user comments concerning the original computer program and fixed a number of user-identified "bugs" in the software.

The Roadway Design section of AHTD has identified a number of desired features and enhancements to the software that have not yet been incorporated. Many of these enhancements concern the use of ROADHOG in a "windows" environment (the updated version of ROADHOG remains a DOS-based program). It is recommended that an open dialog remain between the Roadway Design staff and the project team to address these concerns, and that periodic updates to the software be made. In that light, it is anticipated that research into rigid pavement overlay design (sponsored by AHTD and the Mack-Blackwell Transportation Center) will be completed in the Fall of 1997, which will result in Windows-based overlay design tools for rigid pavements. The existing ROADHOG flexible pavement overlay design procedures could be incorporated into the same Windows-based format for a comprehensive overlay design software system.

REFERENCES

1. *AASHTO Guide for Design of Pavement Structures*. American Association of State Highway and Transportation Officials, Washington, D.C., 1986, 1993.

2. Hall, K.D. and Elliott, R.P., ROADHOG- A Flexible Pavement Overlay Design Procedure. *In Transportation Research Record 1374*, TRB, National Research Council, Washington, D.C., 1992, pp.9-16.

3. Elliott, R.P., Hall, K.D., Morrison, N.T., and Hong, K.S., "The Development of ROADHOG, A Flexible Pavement Overlay Design Procedure", Final Report, TRC-8705, Report No. UAF-AHTRC-90-001, University of Arkansas, 1990.

4. Ullidtz, P., "Overlay and Stage-by-Stage Design", *Proceedings*, Fourth International Conference on Structural Design of Asphalt Pavements, Ann Arbor, Michigan, 1977.

5. Boussinesq, J., *Application des Potentials 4'a 'l Equilibre et du Mouvement des Solides Elastiques*. Gauthier-Villars, Paris, 1885.

6. Elliott, R.P., Selection of Subgrade Modulus for AASHTO Flexible Pavement Design. Presented at the 71st Annual Meeting of the Transportation Research Board, Washington, D.C., 1992.

7. *AASHTO Guide for Design of Pavement Structures*. Vol. 2, Appendix NN. American Association of State Highway and Transportation Officials, Washington, D.C., 1986.

8. Odemark, N., *Investigations as to the Elastic Properties of Soils and Design of Pavements According to the Theory of Elasticity*. Meddelande 77, Statens Vaginstitut, Stockholm, Sweden, 1949 (English translation by A.M. Ioannides, 1990).

9. Barber, E.S., Author's Closure, comments on C.A. Hagentogler, Jr.'s discussion of *Soil Displacement Under a Circular Loaded Area* by L.A. Palmer and E.S. Barber, Proc., Highway Research Board, Vol. 20, 1940.

10. Elliott, R.P. and Thompson, M.R., *Mechanistic Design Concepts for Conventional Flexible Pavements*. Transportation Engineering Series No. 42, University of Illinois, Urbana, 1985.

11. *ILLIPAVE: A Pavement Analysis Program Provided by the Transportation Facilities Group*. Department of Civil Engineering, University of Illinois at Urbana-Champaign.

12. Thompson, M.R. and Robnett, Q., *Final Report- Data Summary, Resilient Properties of Subgrade Soils*. Transportation Engineering Series No. 14, University of Illinois,

Urbana, 1976.

13. Kong, S.H., *Determination of Effective Structural Number in Flexible Pavement Overlay Design*. Master's Thesis, University of Arkansas, Fayetteville, 1989.

14. Kopperman, S., et al, *ELSYM5*; Interactive Microcomputer Version, User's Manual: IBM-PC and Compatible Version. Report FHWA-TS-87-206. Federal Highway Administration, U.S. Department of Transportation, 1986.

15. *Calibrated Mechanistic Structural Analysis Procedures for Pavements*: Phase 2. Volume II- Appendices. NCHRP Project 1-26, December 1992.

6. Darter, M. I., Elliott, R. P. and Hall, K. T., *Revision of AASHTO Pavement Overlay Design Procedures*, Documentation of Design Procedures. NCHRP Project 20-7/Task 39, June 1991.

7. Hall, K.D., *Pedologic Based Subgrade Characterization for Low Volume Pavement Design*, PhD Thesis, University of Illinois at Urbana-Champaign, Urbana, Illinois, 1993.

APPENDIX A

ELSYM5 AND ILLI-PAVE MODEL LOAD-RESPONSE DATA

SYMBOL	VARIABLE	UNIT
AC E	Resilient Modulus of the AC	ksi
AC t	Thickness of Asphalt Concrete	inches
Base E	Resilient Modulus of the Granular Base	psi
Base t	Thickness of Granular Base	inches
Subgr E	Subgrade Soil "Breakpoint" Resilient Modulus	psi
D 0	Deflection at Point of Loading	inches
D 6	Deflection at 6 Inches from Point of Loading	inches
D 12	Deflection at 12 Inches from Point of Loading	inches
D 24	Deflection at 24 Inches from Point of Loading	inches
D 36	Deflection at 36 Inches from Point of Loading	inches
D 48	Deflection at 48 Inches from Point of Loading	inches
D 60	Deflection at 60 Inches from Point of Loading	inches
AC Strain	Horizontal Strain at Bottom of AC	in/in
Subgr Stress	Maximum Normal Stress at Top of Subgrade	psi
Subgr Strain	Vertical Strain at Top of Subgrade	in/in

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	12,000	0.0262	0.0218	0.0153	0.00866	0.00570	0.00415	0.00325	0.000232	12.90	0.001000
500	2	40,000	8	12,000	0.0290	0.0232	0.0154	0.00865	0.00568	0.00414	0.00324	0.000281	15.00	0.001170
100	2	40,000	8	12,000	0.0321	0.0247	0.0157	0.00873	0.00565	0.00411	0.00322	0.000218	17.60	0.001350
1400	4	40,000	8	12,000	0.0176	0.0161	0.0132	0.00868	0.00595	0.00433	0.00335	0.000158	6.72	0.000505
500	4	40,000	8	12,000	0.0213	0.0185	0.0141	0.00868	0.00583	0.00424	0.00330	0.000254	8.94	0.000695
100	4	40,000	8	12,000	0.0271	0.0217	0.0147	0.00868	0.00576	0.00419	0.00327	0.000389	12.40	0.000976
1400	6	40,000	8	12,000	0.0131	0.0123	0.0108	0.00808	0.00599	0.00452	0.00352	0.000104	3.99	0.000295
500	6	40,000	8	12,000	0.0165	0.0150	0.0123	0.00845	0.00595	0.00439	0.00340	0.000185	5.78	0.000448
100	6	40,000	8	12,000	0.0234	0.0192	0.0137	0.00854	0.00583	0.00427	0.00332	0.000353	9.12	0.000726
1400	8	40,000	8	12,000	0.0103	0.0098	0.0090	0.00725	0.00575	0.00455	0.00365	7.21E-05	2.59	0.000190
500	8	40,000	8	12,000	0.0135	0.0124	0.0107	0.00795	0.00592	0.00450	0.00352	0.000135	4.00	0.000310
100	8	40,000	8	12,000	0.0208	0.0172	0.0126	0.00833	0.00586	0.00434	0.00338	0.000286	6.94	0.000559
1400	2	30,000	8	12,000	0.0286	0.0236	0.0161	0.00865	0.00562	0.00410	0.00322	0.000273	14.00	0.001070
500	2	30,000	8	12,000	0.0323	0.0254	0.0161	0.00859	0.00559	0.00409	0.00322	0.000357	16.50	0.001280
100	2	30,000	8	12,000	0.0363	0.0271	0.0161	0.00863	0.00558	0.00408	0.00321	0.000343	19.50	0.001510
1400	4	30,000	8	12,000	0.0185	0.0168	0.0137	0.00885	0.00594	0.00429	0.00331	0.000171	6.98	0.000516
500	4	30,000	8	12,000	0.0228	0.0198	0.0149	0.00879	0.00578	0.00419	0.00326	0.000289	9.49	0.000729
100	4	30,000	8	12,000	0.0298	0.0236	0.0154	0.00865	0.00568	0.00414	0.00324	0.000498	13.50	0.001060
1400	6	30,000	8	12,000	0.0135	0.0127	0.0111	0.00824	0.00605	0.00453	0.00351	0.000110	4.08	0.000296
500	6	30,000	8	12,000	0.0174	0.0157	0.0129	0.00864	0.00597	0.00436	0.00337	0.000203	6.01	0.000459
100	6	30,000	8	12,000	0.0252	0.0206	0.0144	0.00862	0.00577	0.00421	0.00329	0.000428	9.73	0.000776
1400	8	30,000	8	12,000	0.0106	0.0100	0.0092	0.00738	0.00581	0.00458	0.00365	0.000075	2.63	0.000189
500	8	30,000	8	12,000	0.0140	0.0129	0.0111	0.00814	0.00598	0.00450	0.00350	0.000145	4.12	0.000314
100	8	30,000	8	12,000	0.0221	0.0183	0.0133	0.00848	0.00584	0.00430	0.00334	0.000338	7.32	0.000590

ELSYM5: Conventional Flexible Pavement Deflection Data: 8" Base 12 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	12,000	0.0246	0.0204	0.0144	0.00847	0.00574	0.00422	0.00330	0.000221	10.30	0.000813
500	2	40,000	10	12,000	0.0272	0.0216	0.0144	0.00851	0.00574	0.00421	0.00329	0.000269	11.60	0.000927
100	2	40,000	10	12,000	0.0300	0.0230	0.0147	0.00867	0.00575	0.00418	0.00327	0.000221	13.40	0.001050
1400	4	40,000	10	12,000	0.0169	0.0153	0.0126	0.00841	0.00589	0.00435	0.00339	0.000152	5.72	0.000440
500	4	40,000	10	12,000	0.0202	0.0175	0.0134	0.00843	0.00582	0.00430	0.00335	0.000244	7.37	0.000582
100	4	40,000	10	12,000	0.0256	0.0204	0.0139	0.00850	0.00580	0.00426	0.00332	0.000381	9.81	0.000778
1400	6	40,000	10	12,000	0.0127	0.0119	0.0105	0.00786	0.00589	0.00450	0.00353	0.000101	3.52	0.000265
500	6	40,000	10	12,000	0.0159	0.0143	0.0118	0.00819	0.00588	0.00440	0.00344	0.000179	4.93	0.000387
100	6	40,000	10	12,000	0.0223	0.0182	0.0129	0.00831	0.00582	0.00432	0.00337	0.000345	7.40	0.000593
1400	8	40,000	10	12,000	0.0101	0.0096	0.0088	0.00710	0.00565	0.00451	0.00363	7.04E-05	2.34	0.000174
500	8	40,000	10	12,000	0.0131	0.0120	0.0103	0.00773	0.00582	0.00447	0.00353	0.000131	3.50	0.000274
100	8	40,000	10	12,000	0.0200	0.0164	0.0120	0.00807	0.00580	0.00437	0.00343	0.000279	5.76	0.000466
1400	2	30,000	10	12,000	0.0273	0.0225	0.0153	0.00853	0.00567	0.00416	0.00326	0.000264	11.20	0.000882
500	2	30,000	10	12,000	0.0307	0.0240	0.0153	0.00851	0.00566	0.00415	0.00326	0.000345	12.90	0.001030
100	2	30,000	10	12,000	0.0344	0.0256	0.0153	0.00862	0.00567	0.00414	0.00325	0.000340	14.90	0.001180
1400	4	30,000	10	12,000	0.0179	0.0163	0.0133	0.00865	0.00591	0.00431	0.00335	0.000167	6.01	0.000455
500	4	30,000	10	12,000	0.0219	0.0190	0.0143	0.00860	0.00578	0.00423	0.00331	0.000281	7.91	0.000618
100	4	30,000	10	12,000	0.0285	0.0225	0.0147	0.00853	0.00573	0.00420	0.00329	0.000489	10.70	0.000856
1400	6	30,000	10	12,000	0.0132	0.0124	0.0109	0.00808	0.00598	0.00451	0.00352	0.000108	3.63	0.000269
500	6	30,000	10	12,000	0.0169	0.0152	0.0125	0.00844	0.00592	0.00437	0.00340	0.000198	5.19	0.000401
100	6	30,000	10	12,000	0.0243	0.0198	0.0138	0.00844	0.00578	0.00426	0.00333	0.000420	7.98	0.000641
1400	8	30,000	10	12,000	0.0104	0.0099	0.0090	0.00727	0.00575	0.00455	0.00364	0.000074	2.38	0.000174
500	8	30,000	10	12,000	0.0137	0.0126	0.0108	0.00797	0.00591	0.00448	0.00351	0.000142	3.63	0.000280
100	8	30,000	10	12,000	0.0214	0.0176	0.0128	0.00828	0.00580	0.00432	0.00338	0.000331	6.13	0.000496

ELSYM5: Conventional Flexible Pavement Deflection Data: 10" Base 12 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	12,000	0.0233	0.0193	0.0136	0.00824	0.00573	0.00426	0.00335	0.000215	8.28	0.000666
500	2	40,000	12	12,000	0.0257	0.0204	0.0136	0.00831	0.00575	0.00427	0.00334	0.000262	9.23	0.000744
100	2	40,000	12	12,000	0.0285	0.0217	0.0139	0.00853	0.00580	0.00426	0.00332	0.000226	10.5	0.000826
1400	4	40,000	12	12,000	0.0162	0.0147	0.0121	0.00815	0.00580	0.00436	0.00342	0.000148	4.90	0.000383
500	4	40,000	12	12,000	0.0193	0.0167	0.0128	0.00817	0.00577	0.00432	0.00339	0.000238	6.14	0.000491
100	4	40,000	12	12,000	0.0244	0.0194	0.0131	0.00829	0.00580	0.00431	0.00337	0.000378	7.90	0.000631
1400	6	40,000	12	12,000	0.0123	0.0115	0.0101	0.00765	0.00578	0.00446	0.00354	9.89E-05	3.12	0.000238
500	6	40,000	12	12,000	0.0153	0.0138	0.0114	0.00793	0.00578	0.00439	0.00346	0.000175	4.25	0.000336
100	6	40,000	12	12,000	0.0214	0.0174	0.0123	0.00806	0.00577	0.00435	0.00342	0.000340	6.11	0.000492
1400	8	40,000	12	12,000	0.0099	0.0094	0.0086	0.00694	0.00555	0.00446	0.00362	6.91E-05	2.12	0.000159
500	8	40,000	12	12,000	0.0127	0.0116	0.0100	0.00751	0.00571	0.00444	0.00354	0.000128	3.08	0.000243
100	8	40,000	12	12,000	0.0193	0.0158	0.0115	0.00782	0.00572	0.00437	0.00346	0.000274	4.85	0.000393
1400	2	30,000	12	12,000	0.0262	0.0215	0.0147	0.00836	0.00568	0.00420	0.00330	0.000257	9.15	0.000730
500	2	30,000	12	12,000	0.0294	0.0230	0.0146	0.00838	0.00569	0.00420	0.00330	0.000338	10.30	0.000831
100	2	30,000	12	12,000	0.0331	0.0244	0.0146	0.00853	0.00572	0.00420	0.00329	0.000342	11.70	0.000932
1400	4	30,000	12	12,000	0.0174	0.0158	0.0129	0.00844	0.00585	0.00432	0.00338	0.000164	5.21	0.000401
500	4	30,000	12	12,000	0.0211	0.0183	0.0138	0.00839	0.00575	0.00426	0.00334	0.000275	6.66	0.000527
100	4	30,000	12	12,000	0.0275	0.0216	0.0141	0.00837	0.00574	0.00425	0.00333	0.000484	8.71	0.000699
1400	6	30,000	12	12,000	0.0129	0.0121	0.0106	0.00792	0.00589	0.00449	0.00352	0.000106	3.24	0.000244
500	6	30,000	12	12,000	0.0164	0.0148	0.0121	0.00824	0.00585	0.00437	0.00342	0.000194	4.51	0.000353
100	6	30,000	12	12,000	0.0235	0.0191	0.0133	0.00825	0.00575	0.00429	0.00337	0.000414	6.64	0.000536
1400	8	30,000	12	12,000	0.0102	0.0097	0.0089	0.00715	0.00567	0.00451	0.00363	7.28E-05	2.17	0.000160
500	8	30,000	12	12,000	0.0134	0.0123	0.0105	0.00780	0.00582	0.00446	0.00352	0.000140	3.22	0.000250
100	8	30,000	12	12,000	0.0208	0.0171	0.0124	0.00808	0.00575	0.00433	0.00341	0.000326	5.20	0.000422

ELSYM5: Conventional Flexible Pavement Deflection Data: 12" Base 12 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	7,500	0.0324	0.0295	0.0222	0.0138	0.00934	0.00681	0.00529	0.000243	10.10	0.001250
500	2	40,000	8	7,500	0.0375	0.0313	0.0226	0.0138	0.00931	0.00678	0.00527	0.000286	11.70	0.001460
100	2	40,000	8	7,500	0.0417	0.0338	0.0235	0.0141	0.00928	0.00670	0.00521	0.000188	14.00	0.001700
1400	4	40,000	8	7,500	0.0235	0.0218	0.0187	0.0133	0.00955	0.00712	0.00552	0.000168	5.23	0.000627
500	4	40,000	8	7,500	0.0279	0.0250	0.0202	0.0135	0.00947	0.00699	0.00542	0.000266	6.98	0.000864
100	4	40,000	8	7,500	0.0349	0.0292	0.0216	0.0138	0.00942	0.00687	0.00533	0.000386	9.81	0.001220
1400	6	40,000	8	7,500	0.0175	0.0166	0.0152	0.0120	0.00931	0.00728	0.00578	0.000111	3.06	0.000360
500	6	40,000	8	7,500	0.0218	0.0202	0.0174	0.0128	0.00947	0.00718	0.00561	0.000196	4.47	0.000552
100	6	40,000	8	7,500	0.0300	0.0256	0.0197	0.0133	0.00945	0.00702	0.00545	0.000359	7.16	0.000901
1400	8	40,000	8	7,500	0.0139	0.0134	0.0125	0.0105	0.00870	0.00713	0.00587	7.62E-05	1.97	0.000228
500	8	40,000	8	7,500	0.0179	0.0167	0.0150	0.0118	0.00920	0.00723	0.00577	0.000143	3.07	0.000378
100	8	40,000	8	7,500	0.0265	0.0227	0.0179	0.0128	0.00939	0.00711	0.00556	0.000294	5.42	0.000691
1400	2	30,000	8	7,500	0.0372	0.0319	0.0235	0.0139	0.00923	0.00671	0.00523	0.000288	11.10	0.001370
500	2	30,000	8	7,500	0.0415	0.0342	0.0238	0.0138	0.00918	0.00668	0.00522	0.000368	13.10	0.001640
100	2	30,000	8	7,500	0.0465	0.0367	0.0243	0.0140	0.00915	0.00663	0.00518	0.000318	15.70	0.001940
1400	4	30,000	8	7,500	0.0246	0.0228	0.0194	0.0136	0.00959	0.00707	0.00546	0.000183	5.51	0.000654
500	4	30,000	8	7,500	0.0298	0.0267	0.0213	0.0138	0.00944	0.00690	0.00535	0.000304	7.51	0.000927
100	4	30,000	8	7,500	0.0382	0.0316	0.0226	0.0138	0.00931	0.00678	0.00527	0.000502	10.80	0.001360
1400	6	30,000	8	7,500	0.0180	0.0171	0.0156	0.0122	0.00942	0.00730	0.00577	0.000117	3.16	0.000368
500	6	30,000	8	7,500	0.0229	0.0212	0.0182	0.0131	0.00954	0.00715	0.00556	0.000215	4.71	0.000577
100	6	30,000	8	7,500	0.0322	0.0274	0.0207	0.0135	0.00941	0.00693	0.00538	0.000439	7.44	0.000984
1400	8	30,000	8	7,500	0.0142	0.0136	0.0128	0.0107	0.00880	0.00718	0.00588	7.94E-05	2.01	0.000230
500	8	30,000	8	7,500	0.0185	0.0173	0.0155	0.0121	0.00932	0.00725	0.00575	0.000154	3.19	0.000390
100	8	30,000	8	7,500	0.0280	0.0241	0.0189	0.0131	0.00941	0.00705	0.00550	0.000349	5.78	0.000743

ELSYM5: Conventional Flexible Pavement Deflection Data: 8" Base 7.5 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	7,500	0.0314	0.0271	0.0205	0.0132	0.00931	0.00693	0.00541	0.000228	7.96	0.001010
500	2	40,000	10	7,500	0.0344	0.0286	0.0208	0.0134	0.00934	0.00692	0.00539	0.000269	9.05	0.001150
100	2	40,000	10	7,500	0.0381	0.0308	0.0217	0.0138	0.00941	0.00686	0.00532	0.000193	10.60	0.001310
1400	4	40,000	10	7,500	0.0221	0.0205	0.0176	0.0127	0.00936	0.00711	0.00559	0.000160	4.43	0.000544
500	4	40,000	10	7,500	0.0260	0.0233	0.0189	0.0129	0.00935	0.00704	0.00552	0.000252	5.72	0.000720
100	4	40,000	10	7,500	0.0323	0.0270	0.0200	0.0133	0.00942	0.00699	0.00544	0.000375	7.70	0.000966
1400	6	40,000	10	7,500	0.0168	0.0160	0.0146	0.0116	0.00909	0.00719	0.00577	0.000107	2.70	0.000324
500	6	40,000	10	7,500	0.0207	0.0191	0.0165	0.0123	0.00925	0.00714	0.00566	0.000187	3.81	0.000476
100	6	40,000	10	7,500	0.0281	0.0239	0.0184	0.0128	0.00934	0.00707	0.00554	0.000346	5.79	0.000734
1400	8	40,000	10	7,500	0.0136	0.0131	0.0121	0.0103	0.00851	0.00702	0.00582	0.000074	1.78	0.000209
500	8	40,000	10	7,500	0.0172	0.0161	0.0144	0.0114	0.00897	0.00714	0.00576	0.000137	2.68	0.000333
100	8	40,000	10	7,500	0.0250	0.0214	0.0169	0.0122	0.00921	0.00710	0.00563	0.000283	4.48	0.000574
1400	2	30,000	10	7,500	0.0347	0.0297	0.0219	0.0135	0.00925	0.00682	0.00533	0.000273	8.87	0.001120
500	2	30,000	10	7,500	0.0385	0.0316	0.0221	0.0135	0.00925	0.00681	0.00532	0.000349	10.20	0.001300
100	2	30,000	10	7,500	0.0431	0.0339	0.0227	0.0138	0.00929	0.00677	0.00527	0.000315	12.00	0.001500
1400	4	30,000	10	7,500	0.0235	0.0217	0.0186	0.0131	0.00944	0.00708	0.00552	0.000176	4.73	0.000576
500	4	30,000	10	7,500	0.0282	0.0251	0.0201	0.0133	0.00935	0.00696	0.00544	0.000291	6.24	0.000783
100	4	30,000	10	7,500	0.0358	0.0295	0.0212	0.0135	0.00934	0.00690	0.00537	0.000487	8.56	0.001090
1400	6	30,000	10	7,500	0.0175	0.0166	0.0151	0.0119	0.00924	0.00723	0.00576	0.000114	2.82	0.000335
500	6	30,000	10	7,500	0.0219	0.0202	0.0174	0.0127	0.00936	0.00713	0.00560	0.000207	4.06	0.000505
100	6	30,000	10	7,500	0.0305	0.0259	0.0196	0.0131	0.00934	0.00699	0.00547	0.000425	6.33	0.000810
1400	8	30,000	10	7,500	0.0139	0.0134	0.0125	0.0105	0.00865	0.00710	0.00584	7.76E-05	1.83	0.000213
500	8	30,000	10	7,500	0.0179	0.0168	0.0150	0.0117	0.00913	0.00718	0.00574	0.000149	2.81	0.000348
100	8	30,000	10	7,500	0.0268	0.0229	0.0179	0.0126	0.00927	0.00706	0.00556	0.000338	4.84	0.000624

ELSYM5: Conventional Flexible Pavement Deflection Data: 10" Base 7.5 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	7,500	0.0292	0.0251	0.0190	0.0127	0.00919	0.00697	0.00550	0.000218	6.38	0.000820
500	2	40,000	12	7,500	0.0320	0.0265	0.0193	0.0129	0.00927	0.00699	0.00549	0.000261	7.14	0.000916
100	2	40,000	12	7,500	0.0354	0.0284	0.0201	0.0134	0.00943	0.00698	0.00543	0.000201	8.25	0.001030
1400	4	40,000	12	7,500	0.0210	0.0194	0.0167	0.0122	0.00913	0.00706	0.00562	0.000154	3.78	0.000472
500	4	40,000	12	7,500	0.0245	0.0218	0.0177	0.0124	0.00916	0.00704	0.00558	0.000243	4.74	0.000604
100	4	40,000	12	7,500	0.0304	0.0252	0.0186	0.0128	0.00932	0.00705	0.00553	0.000370	6.18	0.000781
1400	6	40,000	12	7,500	0.0162	0.0154	0.0140	0.0111	0.00885	0.00708	0.00574	0.000103	2.39	0.000291
500	6	40,000	12	7,500	0.0197	0.0182	0.0157	0.0117	0.00901	0.00707	0.00567	0.000180	3.27	0.000412
100	6	40,000	12	7,500	0.0266	0.0225	0.0173	0.0123	0.00918	0.00707	0.00561	0.000339	4.76	0.000607
1400	8	40,000	12	7,500	0.0133	0.0127	0.0118	0.0100	0.00831	0.00690	0.00576	7.21E-05	1.62	0.000192
500	8	40,000	12	7,500	0.0166	0.0155	0.0137	0.0109	0.00873	0.00702	0.00573	0.000133	2.36	0.000295
100	8	40,000	12	7,500	0.0239	0.0203	0.0160	0.0117	0.00899	0.00706	0.00566	0.000276	3.76	0.000482
1400	2	30,000	12	7,500	0.0327	0.0278	0.0206	0.0130	0.00918	0.00689	0.00541	0.000263	7.19	0.000923
500	2	30,000	12	7,500	0.0363	0.0296	0.0207	0.0131	0.00922	0.00689	0.00541	0.000339	8.13	0.001050
100	2	30,000	12	7,500	0.0406	0.0317	0.0213	0.0135	0.00934	0.00689	0.00536	0.000318	9.36	0.001180
1400	4	30,000	12	7,500	0.0225	0.0208	0.0177	0.0126	0.00926	0.00705	0.00556	0.000170	4.09	0.000506
500	4	30,000	12	7,500	0.0268	0.0238	0.0191	0.0128	0.00922	0.00698	0.00550	0.000282	5.23	0.000666
100	4	30,000	12	7,500	0.0339	0.0279	0.0200	0.0130	0.00929	0.00697	0.00546	0.000479	6.92	0.000885
1400	6	30,000	12	7,500	0.0170	0.0161	0.0146	0.0115	0.00904	0.00715	0.00574	0.000111	2.52	0.000304
500	6	30,000	12	7,500	0.0211	0.0194	0.0167	0.0122	0.00917	0.00708	0.00562	0.000201	3.52	0.000443
100	6	30,000	12	7,500	0.0291	0.0246	0.0185	0.0126	0.00921	0.00701	0.00553	0.000416	5.25	0.000676
1400	8	30,000	12	7,500	0.0137	0.0131	0.0122	0.0103	0.00849	0.00700	0.00579	7.61E-05	1.68	0.000197
500	8	30,000	12	7,500	0.0174	0.0163	0.0145	0.0114	0.00893	0.00709	0.00572	0.000146	2.50	0.000311
100	8	30,000	12	7,500	0.0257	0.0220	0.0171	0.0121	0.00909	0.00703	0.00560	0.000330	4.09	0.000530

ELSYM5: Conventional Flexible Pavement Deflection Data: 12" Base 7.5 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	3,000	0.0585	0.0532	0.0448	0.0321	0.0237	0.0179	0.0140	0.000264	5.86	0.001760
500	2	40,000	8	3,000	0.0635	0.0566	0.0463	0.0327	0.0238	0.0179	0.0139	0.000295	6.82	0.002050
100	2	40,000	8	3,000	0.0713	0.0624	0.0499	0.0343	0.0241	0.0177	0.0136	0.000121	8.41	0.002430
1400	4	40,000	8	3,000	0.0416	0.0397	0.0364	0.0290	0.0229	0.0181	0.0145	0.000188	3.03	0.000876
500	4	40,000	8	3,000	0.0484	0.0452	0.0399	0.0304	0.0233	0.0181	0.0143	0.000290	4.05	0.001210
100	4	40,000	8	3,000	0.0590	0.0528	0.0441	0.0322	0.0238	0.0180	0.0141	0.000381	5.79	0.001720
1400	6	40,000	8	3,000	0.0318	0.0309	0.0290	0.0249	0.0210	0.0175	0.0146	0.000123	1.75	0.000487
500	6	40,000	8	3,000	0.0385	0.0366	0.0337	0.0275	0.0222	0.0179	0.0146	0.000215	2.57	0.000759
100	6	40,000	8	3,000	0.0503	0.0457	0.0393	0.0301	0.0232	0.0181	0.0144	0.000372	4.17	0.001260
1400	8	40,000	8	3,000	0.0263	0.0257	0.0236	0.0213	0.0187	0.0163	0.0141	8.4E-05	1.14	0.000304
500	8	40,000	8	3,000	0.0321	0.0308	0.0286	0.0246	0.0207	0.0173	0.0145	0.000158	1.75	0.000508
100	8	40,000	8	3,000	0.0441	0.0402	0.0352	0.0281	0.0224	0.0179	0.0145	0.000311	3.12	0.000950
1400	2	30,000	8	3,000	0.0636	0.0576	0.0476	0.0330	0.0237	0.0177	0.0138	0.000317	6.62	0.002000
500	2	30,000	8	3,000	0.0698	0.0616	0.0491	0.0334	0.0237	0.0176	0.0137	0.000389	7.81	0.002390
100	2	30,000	8	3,000	0.0784	0.0674	0.0521	0.0346	0.0239	0.0174	0.0134	0.000260	9.59	0.002850
1400	4	30,000	8	3,000	0.0436	0.0416	0.0380	0.0298	0.0232	0.0182	0.0144	0.000206	3.26	0.000942
500	4	30,000	8	3,000	0.0517	0.0482	0.0421	0.0313	0.0235	0.0180	0.0142	0.000335	4.46	0.001340
100	4	30,000	8	3,000	0.0641	0.0569	0.0464	0.0328	0.0238	0.0178	0.0139	0.000510	6.49	0.001970
1400	6	30,000	8	3,000	0.0327	0.0317	0.0299	0.0255	0.0213	0.0177	0.0147	0.000131	1.83	0.000509
500	6	30,000	8	3,000	0.0403	0.0383	0.0352	0.0284	0.0226	0.0180	0.0146	0.000239	2.76	0.000819
100	6	30,000	8	3,000	0.0539	0.0488	0.0414	0.0310	0.0234	0.0180	0.0142	0.000462	4.60	0.001420
1400	8	30,000	8	3,000	0.0267	0.0261	0.0241	0.0217	0.0190	0.0164	0.0142	8.77E-05	1.17	0.000312
500	8	30,000	8	3,000	0.0331	0.0318	0.0296	0.0252	0.0211	0.0175	0.0146	0.000171	1.84	0.000537
100	8	30,000	8	3,000	0.0467	0.0425	0.0370	0.0290	0.0227	0.0180	0.0144	0.000375	3.40	0.001050

ELSYM5: Conventional Flexible Pavement Deflection Data: 8" Base 3 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	3,000	0.0520	0.0473	0.0401	0.0298	0.0229	0.0179	0.0143	0.000239	4.52	0.001390
500	2	40,000	10	3,000	0.0561	0.0499	0.0413	0.0305	0.0232	0.0179	0.0142	0.000269	5.15	0.001580
100	2	40,000	10	3,000	0.0629	0.0550	0.0447	0.0324	0.0239	0.0180	0.0140	0.000132	6.26	0.001840
1400	4	40,000	10	3,000	0.0385	0.0368	0.0336	0.0272	0.0219	0.0177	0.0145	0.000174	2.54	0.000750
500	4	40,000	10	3,000	0.0440	0.0411	0.0363	0.0283	0.0224	0.0178	0.0144	0.000266	3.26	0.000922
100	4	40,000	10	3,000	0.0531	0.0474	0.0398	0.0302	0.0232	0.0181	0.0143	0.000361	4.48	0.001340
1400	6	40,000	10	3,000	0.0305	0.0295	0.0275	0.0238	0.0202	0.0170	0.0144	0.000116	1.55	0.000439
500	6	40,000	10	3,000	0.0360	0.0343	0.0313	0.0259	0.0213	0.0175	0.0145	0.000201	2.17	0.000650
100	6	40,000	10	3,000	0.0461	0.0417	0.0359	0.0282	0.0224	0.0179	0.0145	0.000349	3.33	0.001010
1400	8	40,000	10	3,000	0.0256	0.0250	0.0227	0.0206	0.0181	0.0159	0.0138	8.07E-05	1.05	0.000283
500	8	40,000	10	3,000	0.0307	0.0295	0.0270	0.0233	0.0199	0.0168	0.0143	0.000149	1.53	0.000449
100	8	40,000	10	3,000	0.0411	0.0373	0.0324	0.0263	0.0215	0.0176	0.0145	0.000291	2.57	0.000782
1400	2	30,000	10	3,000	0.0572	0.0517	0.0430	0.0309	0.0231	0.0178	0.0141	0.000290	5.19	0.001610
500	2	30,000	10	3,000	0.0624	0.0549	0.0442	0.0315	0.0233	0.0178	0.0140	0.000356	5.97	0.001860
100	2	30,000	10	3,000	0.0699	0.0599	0.0470	0.0330	0.0238	0.0178	0.0138	0.000257	7.20	0.002170
1400	4	30,000	10	3,000	0.0408	0.0389	0.0355	0.0282	0.0224	0.0179	0.0144	0.000193	2.77	0.000822
500	4	30,000	10	3,000	0.0475	0.0442	0.0388	0.0295	0.0228	0.0179	0.0143	0.000312	3.65	0.001120
100	4	30,000	10	3,000	0.0582	0.0515	0.0423	0.0310	0.0233	0.0179	0.0141	0.000482	5.08	0.001560
1400	6	30,000	10	3,000	0.0315	0.0305	0.0285	0.0245	0.0206	0.0173	0.0145	0.000125	1.64	0.000466
500	6	30,000	10	3,000	0.0380	0.0361	0.0330	0.0269	0.0218	0.0177	0.0145	0.000225	2.36	0.000712
100	6	30,000	10	3,000	0.0498	0.0448	0.0381	0.0292	0.0227	0.0179	0.0143	0.000435	3.72	0.001150
1400	8	30,000	10	3,000	0.0261	0.0255	0.0233	0.0210	0.0185	0.0161	0.0140	8.5E-05	1.09	0.000293
500	8	30,000	10	3,000	0.0318	0.0306	0.0282	0.0242	0.0204	0.0171	0.0144	0.000163	1.63	0.000482
100	8	30,000	10	3,000	0.0438	0.0397	0.0344	0.0273	0.0219	0.0177	0.0144	0.000353	2.82	0.000880

ELSYM5: Conventional Flexible Pavement Deflection Data: 10" Base 3 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	3,000	0.0472	0.0428	0.0362	0.0277	0.0219	0.0176	0.0143	0.000224	3.57	0.001110
500	2	40,000	12	3,000	0.0509	0.0450	0.0373	0.0285	0.0223	0.0178	0.0143	0.000256	4.01	0.001250
100	2	40,000	12	3,000	0.0568	0.0494	0.0404	0.0305	0.0233	0.0181	0.0143	0.000148	4.81	0.001430
1400	4	40,000	12	3,000	0.0361	0.0344	0.0311	0.0254	0.0209	0.0172	0.0143	0.000164	2.15	0.000644
500	4	40,000	12	3,000	0.0407	0.0379	0.0333	0.0264	0.0214	0.0174	0.0144	0.000252	2.68	0.000822
100	4	40,000	12	3,000	0.0487	0.0433	0.0364	0.0283	0.0224	0.0179	0.0144	0.000354	3.55	0.001070
1400	6	40,000	12	3,000	0.0292	0.0283	0.0259	0.0226	0.0193	0.0165	0.0141	0.000111	1.38	0.000395
500	6	40,000	12	3,000	0.0340	0.0323	0.0292	0.0243	0.0203	0.0170	0.0143	0.000190	1.86	0.000559
100	6	40,000	12	3,000	0.0429	0.0386	0.0330	0.0265	0.0215	0.0175	0.0144	0.000337	2.72	0.000828
1400	8	40,000	12	3,000	0.0249	0.0243	0.0217	0.0198	0.0175	0.0154	0.0135	7.79E-05	0.967	0.000263
500	8	40,000	12	3,000	0.0294	0.0282	0.0255	0.0222	0.0190	0.0163	0.0140	0.000142	1.36	0.000399
100	8	40,000	12	3,000	0.0387	0.0351	0.0301	0.0248	0.0206	0.0171	0.0143	0.000280	2.15	0.000654
1400	2	30,000	12	3,000	0.0523	0.0472	0.0393	0.0290	0.0223	0.0176	0.0142	0.000273	4.14	0.001310
500	2	30,000	12	3,000	0.0569	0.0499	0.0402	0.0296	0.0226	0.0177	0.0142	0.000339	4.68	0.001480
100	2	30,000	12	3,000	0.0637	0.0543	0.0428	0.0313	0.0234	0.0179	0.0141	0.000265	5.56	0.001700
1400	4	30,000	12	3,000	0.0385	0.0366	0.0332	0.0267	0.0215	0.0175	0.0143	0.000183	2.37	0.000716
500	4	30,000	12	3,000	0.0442	0.0411	0.0359	0.0277	0.0219	0.0176	0.0143	0.000296	3.03	0.000941
100	4	30,000	12	3,000	0.0537	0.0473	0.0388	0.0293	0.0227	0.0178	0.0143	0.000468	4.06	0.001260
1400	6	30,000	12	3,000	0.0304	0.0295	0.0272	0.0235	0.0199	0.0168	0.0142	0.000120	1.47	0.000424
500	6	30,000	12	3,000	0.0361	0.0343	0.0311	0.0255	0.0209	0.0172	0.0143	0.000214	2.04	0.000621
100	6	30,000	12	3,000	0.0465	0.0418	0.0353	0.0275	0.0219	0.0176	0.0144	0.000420	3.06	0.000954
1400	8	30,000	12	3,000	0.0255	0.0249	0.0225	0.0204	0.0180	0.0157	0.0137	8.26E-05	1.01	0.000275
500	8	30,000	12	3,000	0.0307	0.0295	0.0268	0.0231	0.0196	0.0167	0.0141	0.000156	1.46	0.000432
100	8	30,000	12	3,000	0.0414	0.0375	0.0321	0.0259	0.0211	0.0173	0.0143	0.000339	2.38	0.000742

ELSYM5: Conventional Flexible Pavement Deflection Data: 12" Base 3 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	1,000	0.1140	0.1080	0.0991	0.0810	0.0659	0.0537	0.0439	0.000284	2.820	0.002360
500	2	40,000	8	1,000	0.1220	0.1150	0.1040	0.0837	0.0673	0.0542	0.0440	0.000301	3.270	0.002750
100	2	40,000	8	1,000	0.1390	0.1290	0.1150	0.0907	0.0706	0.0551	0.0437	3.65E-05	4.180	0.003340
1400	4	40,000	8	1,000	0.0867	0.0845	0.0786	0.0690	0.0594	0.0507	0.0432	0.000208	1.500	0.001180
500	4	40,000	8	1,000	0.0974	0.0938	0.0870	0.0741	0.0623	0.0522	0.0437	0.000314	1.970	0.001620
100	4	40,000	8	1,000	0.1150	0.1080	0.0989	0.0815	0.0665	0.0540	0.0441	0.000374	2.820	0.002310
1400	6	40,000	8	1,000	0.0704	0.0693	0.0615	0.0572	0.0513	0.0457	0.0404	0.000137	0.916	0.000664
500	6	40,000	8	1,000	0.0811	0.0790	0.0723	0.0647	0.0565	0.0490	0.0423	0.000236	1.280	0.001010
100	6	40,000	8	1,000	0.0994	0.0943	0.0863	0.0738	0.0622	0.0522	0.0437	0.000386	2.030	0.001670
1400	8	40,000	8	1,000	0.0595	0.0588	0.0499	0.0476	0.0440	0.0403	0.0367	9.52E-05	0.642	0.000433
500	8	40,000	8	1,000	0.0702	0.0688	0.0606	0.0563	0.0506	0.0452	0.0401	0.000174	0.911	0.000688
100	8	40,000	8	1,000	0.0885	0.0843	0.0761	0.0670	0.0580	0.0499	0.0427	0.000330	1.530	0.001250
1400	2	30,000	8	1,000	0.1240	0.1170	0.1060	0.0847	0.0676	0.0541	0.0437	0.000347	3.260	0.002770
500	2	30,000	8	1,000	0.1340	0.1250	0.1110	0.0872	0.0687	0.0544	0.0436	0.000407	3.820	0.003290
100	2	30,000	8	1,000	0.1510	0.1390	0.1210	0.0932	0.0712	0.0549	0.0432	0.000182	4.820	0.004000
1400	4	30,000	8	1,000	0.0904	0.0881	0.0825	0.0717	0.0610	0.0516	0.0435	0.000231	1.630	0.001290
500	4	30,000	8	1,000	0.1030	0.0995	0.0924	0.0775	0.0642	0.0530	0.0439	0.000369	2.200	0.001840
100	4	30,000	8	1,000	0.1240	0.1160	0.1050	0.0845	0.0677	0.0543	0.0439	0.000517	3.210	0.002720
1400	6	30,000	8	1,000	0.0720	0.0709	0.0635	0.0587	0.0525	0.0465	0.0410	0.000146	0.956	0.000700
500	6	30,000	8	1,000	0.0843	0.0821	0.0758	0.0672	0.0582	0.0500	0.0428	0.000256	1.380	0.001110
100	6	30,000	8	1,000	0.1060	0.0999	0.0914	0.0768	0.0638	0.0529	0.0439	0.000489	2.260	0.001930
1400	8	30,000	8	1,000	0.0605	0.0598	0.0509	0.0486	0.0448	0.0409	0.0372	9.95E-05	0.659	0.000447
500	8	30,000	8	1,000	0.0721	0.0707	0.0629	0.0580	0.0519	0.0461	0.0406	0.000190	0.958	0.000734
100	8	30,000	8	1,000	0.0928	0.0884	0.0804	0.0698	0.0597	0.0508	0.0431	0.000404	1.680	0.001420

ELSYM5: Conventional Flexible Pavement Deflection Data: 8" Base 1 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	1,000	0.1010	0.0954	0.0860	0.0725	0.0610	0.0513	0.0432	0.000248	2.130	0.001820
500	2	40,000	10	1,000	0.1070	0.1000	0.0899	0.0751	0.0626	0.0521	0.0436	0.000265	2.420	0.002070
100	2	40,000	10	1,000	0.1200	0.1120	0.1010	0.0825	0.0669	0.0542	0.0441	5.91E-05	3.040	0.002470
1400	4	40,000	10	1,000	0.0805	0.0785	0.0710	0.0633	0.0554	0.0481	0.0417	0.000187	1.260	0.001000
500	4	40,000	10	1,000	0.0885	0.0853	0.0772	0.0672	0.0579	0.0496	0.0425	0.000280	1.580	0.001310
100	4	40,000	10	1,000	0.1030	0.0965	0.0873	0.0741	0.0623	0.0522	0.0437	0.000346	0.419	0.001780
1400	6	40,000	10	1,000	0.0672	0.0661	0.0577	0.0539	0.0487	0.0437	0.0391	0.000128	0.824	0.000607
500	6	40,000	10	1,000	0.0760	0.0741	0.0659	0.0598	0.0529	0.0466	0.0408	0.000215	1.090	0.000870
100	6	40,000	10	1,000	0.0909	0.0862	0.0772	0.0675	0.0582	0.0499	0.0427	0.000352	1.620	0.001330
1400	8	40,000	10	1,000	0.0573	0.0567	0.0480	0.0456	0.0424	0.0390	0.0357	9.08E-05	0.598	0.000411
500	8	40,000	10	1,000	0.0668	0.0655	0.0566	0.0528	0.0479	0.0431	0.0386	0.000162	0.814	0.000618
100	8	40,000	10	1,000	0.0824	0.0784	0.0689	0.0617	0.0543	0.0475	0.0414	0.000301	1.270	0.001030
1400	2	30,000	10	1,000	0.1090	0.1030	0.0931	0.0765	0.0632	0.0522	0.0434	0.000306	2.490	0.002170
500	2	30,000	10	1,000	0.1170	0.1090	0.0968	0.0788	0.0645	0.0529	0.0436	0.000360	2.850	0.002500
100	2	30,000	10	1,000	0.1310	0.1200	0.1070	0.0853	0.0680	0.0544	0.0439	0.000184	3.530	0.002980
1400	4	30,000	10	1,000	0.0845	0.0823	0.0755	0.0665	0.0575	0.0494	0.0424	0.000211	1.380	0.001120
500	4	30,000	10	1,000	0.0945	0.0908	0.0829	0.0708	0.0600	0.0508	0.0430	0.000332	1.780	0.001520
100	4	30,000	10	1,000	0.1110	0.1030	0.0930	0.0772	0.0639	0.0528	0.0437	0.000474	2.470	0.002110
1400	6	30,000	10	1,000	0.0692	0.0681	0.0601	0.0558	0.0502	0.0448	0.0398	0.000138	0.870	0.000649
500	6	30,000	10	1,000	0.0794	0.0774	0.0699	0.0626	0.0549	0.0478	0.0416	0.000244	1.190	0.000969
100	6	30,000	10	1,000	0.0967	0.0914	0.0823	0.0706	0.0600	0.0508	0.0431	0.000447	1.820	0.001550
1400	8	30,000	10	1,000	0.0587	0.0580	0.0493	0.0469	0.0434	0.0398	0.0363	9.58E-05	0.619	0.000429
500	8	30,000	10	1,000	0.0691	0.0677	0.0592	0.0550	0.0495	0.0443	0.0394	0.000178	0.864	0.000668
100	8	30,000	10	1,000	0.0867	0.0825	0.0733	0.0646	0.0562	0.0486	0.0420	0.000370	1.400	0.001180

ELSYM5: Conventional Flexible Pavement Deflection Data: 10" Base 1 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	1,000	0.0910	0.0863	0.0757	0.0654	0.0563	0.0485	0.0418	0.000228	1.680	0.001440
500	2	40,000	12	1,000	0.0964	0.0902	0.0792	0.0680	0.0581	0.0497	0.0425	0.000249	1.880	0.001610
100	2	40,000	12	1,000	0.1070	0.0995	0.0891	0.0753	0.0630	0.0525	0.0438	8.82E-05	2.310	0.001890
1400	4	40,000	12	1,000	0.0751	0.0733	0.0645	0.0582	0.0515	0.0455	0.0401	0.000173	1.080	0.000863
500	4	40,000	12	1,000	0.0818	0.0788	0.0693	0.0613	0.0537	0.0469	0.0410	0.000259	1.300	0.001080
100	4	40,000	12	1,000	0.0939	0.0882	0.0781	0.0678	0.0583	0.0500	0.0427	0.000336	1.710	0.001410
1400	6	40,000	12	1,000	0.0638	0.0629	0.0540	0.0506	0.0461	0.0417	0.0376	0.000120	0.744	0.000554
500	6	40,000	12	1,000	0.0714	0.0696	0.0604	0.0553	0.0495	0.0441	0.0392	0.000201	0.950	0.000755
100	6	40,000	12	1,000	0.0845	0.0800	0.0698	0.0620	0.0544	0.0475	0.0414	0.000335	1.330	0.001090
1400	8	40,000	12	1,000	0.0548	0.0542	0.0460	0.0436	0.0406	0.0375	0.0345	8.69E-05	0.555	0.000338
500	8	40,000	12	1,000	0.0634	0.0621	0.0530	0.0495	0.0452	0.0410	0.0371	0.000152	0.731	0.000556
100	8	40,000	12	1,000	0.0774	0.0736	0.0630	0.0571	0.0509	0.0452	0.0399	0.000284	1.080	0.000870
1400	2	30,000	12	1,000	0.0991	0.0936	0.0826	0.0695	0.0588	0.0499	0.0424	0.000282	1.970	0.001730
500	2	30,000	12	1,000	0.1050	0.0980	0.0858	0.0717	0.0603	0.0508	0.0428	0.000337	2.210	0.001960
100	2	30,000	12	1,000	0.1170	0.1070	0.0948	0.0784	0.0645	0.0530	0.0438	0.000202	2.690	0.002290
1400	4	30,000	12	1,000	0.0794	0.0773	0.0692	0.0616	0.0539	0.0470	0.0410	0.000196	1.190	0.000976
500	4	30,000	12	1,000	0.0875	0.0841	0.0749	0.0650	0.0561	0.0484	0.0417	0.000308	1.480	0.001260
100	4	30,000	12	1,000	0.1010	0.0944	0.0835	0.0710	0.0601	0.0508	0.0430	0.000455	1.970	0.001680
1400	6	30,000	12	1,000	0.0664	0.0653	0.0568	0.0529	0.0479	0.0430	0.0385	0.000131	0.793	0.000599
500	6	30,000	12	1,000	0.0751	0.0732	0.0646	0.0584	0.0517	0.0456	0.0402	0.000228	1.040	0.000850
100	6	30,000	12	1,000	0.0900	0.0850	0.0747	0.0652	0.0564	0.0487	0.0419	0.000423	1.500	0.001280
1400	8	30,000	12	1,000	0.0567	0.0560	0.0476	0.0451	0.0419	0.0386	0.0353	9.24E-05	0.579	0.000409
500	8	30,000	12	1,000	0.0661	0.0648	0.0558	0.0520	0.0471	0.0424	0.0381	0.000169	0.783	0.000608
100	8	30,000	12	1,000	0.0817	0.0776	0.0673	0.0601	0.0529	0.0464	0.0407	0.000349	1.190	0.001000

ELSYM5: Conventional Flexible Pavement Deflection Data: 12" Base 1 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	12,000	0.0218	0.0176	0.0111	0.00521	0.00323	0.00207	0.00146	0.000248	12.10	0.000783
500	2	40,000	8	12,000	0.0264	0.0209	0.0122	0.00509	0.00303	0.00193	0.00141	0.000271	14.80	0.001026
100	2	40,000	8	12,000	0.0310	0.0238	0.0125	0.00490	0.00286	0.00185	0.00142	0.000223	17.60	0.001291
1400	4	40,000	8	12,000	0.0129	0.0113	0.0086	0.00510	0.00340	0.00231	0.00170	0.000160	7.01	0.000340
500	4	40,000	8	12,000	0.0179	0.0152	0.0105	0.00537	0.00328	0.00207	0.00147	0.000263	9.61	0.000566
100	4	40,000	8	12,000	0.0259	0.0203	0.0119	0.00511	0.00296	0.00189	0.00144	0.000425	13.40	0.000917
1400	6	40,000	8	12,000	0.0089	0.0082	0.0068	0.00464	0.00336	0.00249	0.00197	0.000101	4.83	0.000179
500	6	40,000	8	12,000	0.0131	0.0115	0.0088	0.00526	0.00340	0.00224	0.00161	0.000191	6.91	0.000331
100	6	40,000	8	12,000	0.0218	0.0173	0.0110	0.00529	0.00311	0.00195	0.00144	0.000412	10.50	0.000660
1400	8	40,000	8	12,000	0.0068	0.0063	0.0055	0.00416	0.00325	0.00260	0.00221	0.000066	3.79	0.000109
500	8	40,000	8	12,000	0.0102	0.0091	0.0074	0.00490	0.00339	0.00238	0.00181	0.000132	5.34	0.000210
100	8	40,000	8	12,000	0.0186	0.0149	0.0099	0.00530	0.00323	0.00205	0.00150	0.000329	8.48	0.000478
1400	2	30,000	8	12,000	0.0234	0.0189	0.0119	0.00547	0.00333	0.00207	0.00140	0.000265	13.00	0.000820
500	2	30,000	8	12,000	0.0285	0.0228	0.0132	0.00525	0.00305	0.00189	0.00135	0.000290	16.10	0.001099
100	2	30,000	8	12,000	0.0334	0.0263	0.0137	0.00486	0.00279	0.00181	0.00139	0.000252	19.20	0.001386
1400	4	30,000	8	12,000	0.0136	0.0120	0.0091	0.00540	0.00356	0.00238	0.00171	0.000169	7.22	0.000332
500	4	30,000	8	12,000	0.0193	0.0164	0.0114	0.00569	0.00340	0.00207	0.00140	0.000283	10.20	0.000584
100	4	30,000	8	12,000	0.0282	0.0223	0.0131	0.00526	0.00294	0.00183	0.00139	0.000467	14.70	0.000987
1400	6	30,000	8	12,000	0.0094	0.0086	0.0071	0.00490	0.00353	0.00259	0.00204	0.000106	4.83	0.000166
500	6	30,000	8	12,000	0.0139	0.0123	0.0095	0.00561	0.00357	0.00228	0.00158	0.000204	7.15	0.000326
100	6	30,000	8	12,000	0.0236	0.0190	0.0121	0.00559	0.00315	0.00190	0.00137	0.000457	11.40	0.000698
1400	8	30,000	8	12,000	0.0071	0.0066	0.0058	0.00437	0.00341	0.00272	0.00231	0.000069	3.74	0.000099
500	8	30,000	8	12,000	0.0107	0.0097	0.0078	0.00520	0.00356	0.00246	0.00183	0.000140	5.42	0.000200
100	8	30,000	8	12,000	0.0200	0.0162	0.0109	0.00568	0.00334	0.00202	0.00141	0.000364	8.99	0.000497

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 8" Base 12 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	12,000	0.0215	0.0173	0.0110	0.00522	0.00325	0.00209	0.00148	0.000242	10.80	0.000667
500	2	40,000	10	12,000	0.0257	0.0204	0.0120	0.00511	0.00306	0.00196	0.00143	0.000263	12.90	0.000855
100	2	40,000	10	12,000	0.0298	0.0230	0.0123	0.00494	0.00289	0.00187	0.00144	0.000230	14.90	0.001046
1400	4	40,000	10	12,000	0.0129	0.0113	0.0086	0.00513	0.00342	0.00233	0.00171	0.000159	6.52	0.000299
500	4	40,000	10	12,000	0.0178	0.0151	0.0105	0.00539	0.00331	0.00209	0.00148	0.000260	8.74	0.000492
100	4	40,000	10	12,000	0.0254	0.0199	0.0118	0.00515	0.00301	0.00192	0.00144	0.000422	11.80	0.000764
1400	6	40,000	10	12,000	0.0090	0.0082	0.0068	0.00467	0.00339	0.00251	0.00199	0.000101	4.63	0.000160
500	6	40,000	10	12,000	0.0131	0.0115	0.0088	0.00528	0.00343	0.00226	0.00163	0.000191	6.47	0.000291
100	6	40,000	10	12,000	0.0215	0.0172	0.0109	0.00531	0.00314	0.00198	0.00146	0.000410	9.50	0.000560
1400	8	40,000	10	12,000	0.0069	0.0064	0.0055	0.00418	0.00327	0.00262	0.00223	0.000067	3.75	0.000100
500	8	40,000	10	12,000	0.0102	0.0091	0.0074	0.00492	0.00341	0.00240	0.00183	0.000132	5.13	0.000188
100	8	40,000	10	12,000	0.0185	0.0148	0.0099	0.00532	0.00325	0.00208	0.00151	0.000329	7.86	0.000408
1400	2	30,000	10	12,000	0.0234	0.0190	0.0120	0.00557	0.00338	0.00209	0.00141	0.000261	11.60	0.000708
500	2	30,000	10	12,000	0.0282	0.0226	0.0133	0.00535	0.00310	0.00192	0.00136	0.000284	14.20	0.000933
100	2	30,000	10	12,000	0.0326	0.0258	0.0138	0.00495	0.00282	0.00182	0.00140	0.000259	16.60	0.001153
1400	4	30,000	10	12,000	0.0138	0.0122	0.0093	0.00551	0.00363	0.00241	0.00173	0.000170	6.71	0.000293
500	4	30,000	10	12,000	0.0194	0.0165	0.0115	0.00582	0.00346	0.00209	0.00139	0.000282	9.33	0.000512
100	4	30,000	10	12,000	0.0280	0.0223	0.0133	0.00539	0.00299	0.00184	0.00138	0.000466	13.00	0.000836
1400	6	30,000	10	12,000	0.0095	0.0087	0.0073	0.00498	0.00360	0.00264	0.00208	0.000106	4.62	0.000148
500	6	30,000	10	12,000	0.0141	0.0125	0.0096	0.00572	0.00364	0.00231	0.00159	0.000205	6.70	0.000288
100	6	30,000	10	12,000	0.0237	0.0191	0.0123	0.00572	0.00322	0.00192	0.00136	0.000457	10.30	0.000601
1400	8	30,000	10	12,000	0.0072	0.0067	0.0059	0.00444	0.00347	0.00277	0.00235	0.000069	3.69	0.000090
500	8	30,000	10	12,000	0.0109	0.0098	0.0080	0.00530	0.00363	0.00250	0.00185	0.000141	5.20	0.000180
100	8	30,000	10	12,000	0.0202	0.0164	0.0111	0.00580	0.00340	0.00204	0.00141	0.000367	8.38	0.000431

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 10" Base 12 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	12,000	0.0212	0.0172	0.0109	0.00524	0.00328	0.00211	0.00150	0.000238	9.59	0.000567
500	2	40,000	12	12,000	0.0252	0.0200	0.0119	0.00515	0.00309	0.00198	0.00144	0.000259	11.30	0.000715
100	2	40,000	12	12,000	0.0290	0.0224	0.0121	0.00500	0.00294	0.00190	0.00145	0.000244	12.80	0.000852
1400	4	40,000	12	12,000	0.0129	0.0113	0.0086	0.00515	0.00345	0.00235	0.00173	0.000159	6.10	0.000264
500	4	40,000	12	12,000	0.0177	0.0150	0.0105	0.00542	0.00333	0.00211	0.00150	0.000257	8.01	0.000422
100	4	40,000	12	12,000	0.0250	0.0196	0.0117	0.00518	0.00304	0.00194	0.00146	0.000420	10.40	0.000639
1400	6	40,000	12	12,000	0.0090	0.0082	0.0068	0.00469	0.00341	0.00253	0.00201	0.000101	4.48	0.000145
500	6	40,000	12	12,000	0.0131	0.0115	0.0088	0.00531	0.00345	0.00228	0.00164	0.000190	6.09	0.000257
100	6	40,000	12	12,000	0.0213	0.0170	0.0109	0.00533	0.00316	0.00200	0.00148	0.000406	8.59	0.000477
1400	8	40,000	12	12,000	0.0069	0.0064	0.0056	0.00421	0.00330	0.00264	0.00225	0.000066	3.72	0.000092
500	8	40,000	12	12,000	0.0102	0.0091	0.0074	0.00495	0.00344	0.00242	0.00185	0.000132	4.93	0.000169
100	8	40,000	12	12,000	0.0184	0.0148	0.0099	0.00533	0.00327	0.00209	0.00153	0.000326	7.27	0.000350
1400	2	30,000	12	12,000	0.0234	0.0191	0.0122	0.00568	0.00345	0.00212	0.00142	0.000258	10.40	0.000611
500	2	30,000	12	12,000	0.0281	0.0226	0.0134	0.00547	0.00316	0.00193	0.00135	0.000280	12.60	0.000793
100	2	30,000	12	12,000	0.0322	0.0256	0.0139	0.00507	0.00287	0.00183	0.00140	0.000273	14.50	0.000960
1400	4	30,000	12	12,000	0.0140	0.0124	0.0095	0.00562	0.00370	0.00245	0.00174	0.000170	6.29	0.000261
500	4	30,000	12	12,000	0.0196	0.0167	0.0117	0.00595	0.00353	0.00212	0.00139	0.000282	8.59	0.000447
100	4	30,000	12	12,000	0.0280	0.0223	0.0134	0.00552	0.00305	0.00185	0.00137	0.000466	11.70	0.000712
1400	6	30,000	12	12,000	0.0096	0.0088	0.0074	0.00507	0.00366	0.00268	0.00211	0.000107	4.47	0.000135
500	6	30,000	12	12,000	0.0143	0.0127	0.0098	0.00584	0.00370	0.00234	0.00159	0.000205	6.32	0.000257
100	6	30,000	12	12,000	0.0238	0.0193	0.0125	0.00585	0.00328	0.00193	0.00135	0.000455	9.42	0.000521
1400	8	30,000	12	12,000	0.0073	0.0068	0.0059	0.00451	0.00353	0.00282	0.00239	0.000069	3.66	0.000083
500	8	30,000	12	12,000	0.0110	0.0099	0.0081	0.00540	0.00370	0.00254	0.00187	0.000141	5.00	0.000162
100	8	30,000	12	12,000	0.0204	0.0166	0.0112	0.00593	0.00347	0.00207	0.00141	0.000366	7.79	0.000373

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 12" Base 12 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	7,500	0.0255	0.0210	0.0139	0.00701	0.00449	0.00296	0.00213	0.000262	10.20	0.000954
500	2	40,000	8	7,500	0.0313	0.0254	0.0157	0.00706	0.00429	0.00275	0.00199	0.000283	12.40	0.001267
100	2	40,000	8	7,500	0.0371	0.0294	0.0167	0.00691	0.00404	0.00260	0.00197	0.000206	14.70	0.001616
1400	4	40,000	8	7,500	0.0150	0.0134	0.0105	0.00660	0.00460	0.00328	0.00252	0.000167	6.13	0.000398
500	4	40,000	8	7,500	0.0210	0.0181	0.0131	0.00718	0.00456	0.00297	0.00214	0.000275	8.26	0.000684
100	4	40,000	8	7,500	0.0304	0.0245	0.0153	0.00710	0.00421	0.00269	0.00202	0.000432	11.40	0.001137
1400	6	40,000	8	7,500	0.0105	0.0097	0.0082	0.00592	0.00449	0.00349	0.00290	0.000105	4.30	0.000207
500	6	40,000	8	7,500	0.0153	0.0137	0.0108	0.00684	0.00463	0.00319	0.00239	0.000199	6.09	0.000391
100	6	40,000	8	7,500	0.0252	0.0206	0.0139	0.00719	0.00438	0.00281	0.00207	0.000423	9.08	0.000813
1400	8	40,000	8	7,500	0.0081	0.0076	0.0067	0.00531	0.00433	0.00362	0.00319	0.000068	3.42	0.000126
500	8	40,000	8	7,500	0.0119	0.0108	0.0090	0.00628	0.00456	0.00337	0.00268	0.000137	4.78	0.000245
100	8	40,000	8	7,500	0.0214	0.0176	0.0123	0.00706	0.00448	0.00295	0.00218	0.000338	7.45	0.000574
1400	2	30,000	8	7,500	0.0274	0.0226	0.0148	0.00732	0.00461	0.00297	0.00207	0.000282	10.90	0.001007
500	2	30,000	8	7,500	0.0340	0.0278	0.0170	0.00728	0.00431	0.00270	0.00192	0.000308	13.50	0.001367
100	2	30,000	8	7,500	0.0405	0.0326	0.0183	0.00688	0.00395	0.00254	0.00194	0.000237	16.10	0.001765
1400	4	30,000	8	7,500	0.0158	0.0141	0.0111	0.00691	0.00477	0.00336	0.00255	0.000176	6.31	0.000392
500	4	30,000	8	7,500	0.0225	0.0195	0.0141	0.00755	0.00469	0.00297	0.00207	0.000297	8.75	0.000712
100	4	30,000	8	7,500	0.0333	0.0270	0.0168	0.00732	0.00419	0.00262	0.00195	0.000482	12.40	0.001237
1400	6	30,000	8	7,500	0.0109	0.0101	0.0086	0.00618	0.00467	0.00361	0.00298	0.000109	4.31	0.000194
500	6	30,000	8	7,500	0.0162	0.0145	0.0115	0.00721	0.00481	0.00324	0.00236	0.000212	6.32	0.000388
100	6	30,000	8	7,500	0.0274	0.0226	0.0152	0.00757	0.00444	0.00274	0.00197	0.000473	9.77	0.000868
1400	8	30,000	8	7,500	0.0084	0.0079	0.0070	0.00552	0.00449	0.00375	0.00330	0.000070	3.39	0.000115
500	8	30,000	8	7,500	0.0125	0.0113	0.0094	0.00659	0.00473	0.00345	0.00270	0.000145	4.86	0.000235
100	8	30,000	8	7,500	0.0230	0.0190	0.0134	0.00750	0.00462	0.00292	0.00208	0.000376	7.90	0.000600

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 8" Base 7.5 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	7,500	0.0248	0.0205	0.0136	0.00697	0.00450	0.00299	0.00218	0.000252	9.19	0.000820
500	2	40,000	10	7,500	0.0299	0.0243	0.0152	0.00704	0.00432	0.00280	0.00204	0.000271	10.90	0.001063
100	2	40,000	10	7,500	0.0349	0.0278	0.0161	0.00693	0.00411	0.00265	0.00201	0.000213	12.70	0.001311
1400	4	40,000	10	7,500	0.0149	0.0133	0.0104	0.00659	0.00461	0.00330	0.00255	0.000165	5.78	0.000353
500	4	40,000	10	7,500	0.0206	0.0178	0.0129	0.00714	0.00457	0.00301	0.00218	0.000269	7.65	0.000592
100	4	40,000	10	7,500	0.0293	0.0236	0.0149	0.00709	0.00426	0.00275	0.00206	0.000425	10.10	0.000951
1400	6	40,000	10	7,500	0.0104	0.0097	0.0082	0.00592	0.00450	0.00351	0.00293	0.000104	4.18	0.000188
500	6	40,000	10	7,500	0.0152	0.0136	0.0107	0.00682	0.00464	0.00322	0.00242	0.000197	5.78	0.000346
100	6	40,000	10	7,500	0.0246	0.0201	0.0136	0.00714	0.00440	0.00285	0.00211	0.000417	8.30	0.000690
1400	8	40,000	10	7,500	0.0081	0.0076	0.0067	0.00532	0.00434	0.00364	0.00321	0.000068	3.42	0.000116
500	8	40,000	10	7,500	0.0118	0.0107	0.0089	0.00627	0.00456	0.00339	0.00271	0.000137	4.64	0.000221
100	8	40,000	10	7,500	0.0210	0.0173	0.0121	0.00702	0.00449	0.00298	0.00222	0.000336	6.99	0.000492
1400	2	30,000	10	7,500	0.0270	0.0223	0.0148	0.00738	0.00466	0.00301	0.00210	0.000275	9.93	0.000878
500	2	30,000	10	7,500	0.0330	0.0271	0.0168	0.00735	0.00437	0.00274	0.00194	0.000296	12.00	0.001171
100	2	30,000	10	7,500	0.0386	0.0314	0.0180	0.00699	0.00401	0.00257	0.00197	0.000244	14.10	0.001466
1400	4	30,000	10	7,500	0.0159	0.0142	0.0111	0.00699	0.00483	0.00340	0.00257	0.000176	5.95	0.000348
500	4	30,000	10	7,500	0.0224	0.0194	0.0141	0.00763	0.00475	0.00301	0.00208	0.000294	8.17	0.000623
100	4	30,000	10	7,500	0.0325	0.0265	0.0167	0.00741	0.00425	0.00265	0.00196	0.000475	11.20	0.001056
1400	6	30,000	10	7,500	0.0110	0.0102	0.0087	0.00624	0.00472	0.00366	0.00302	0.000109	4.18	0.000175
500	6	30,000	10	7,500	0.0163	0.0146	0.0116	0.00729	0.00486	0.00327	0.00238	0.000212	6.00	0.000345
100	6	30,000	10	7,500	0.0272	0.0224	0.0151	0.00764	0.00450	0.00277	0.00198	0.000469	9.00	0.000754
1400	8	30,000	10	7,500	0.0084	0.0079	0.0070	0.00557	0.00454	0.00379	0.00334	0.000071	3.39	0.000106
500	8	30,000	10	7,500	0.0126	0.0114	0.0095	0.00666	0.00479	0.00349	0.00273	0.000145	4.72	0.000213
100	8	30,000	10	7,500	0.0229	0.0190	0.0135	0.00758	0.00467	0.00295	0.00209	0.000376	7.46	0.000521

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 10" Base 7.5 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	7,500	0.0242	0.0200	0.0134	0.00694	0.00452	0.00302	0.00221	0.000245	8.31	0.000691
500	2	40,000	12	7,500	0.0289	0.0235	0.0148	0.00702	0.00435	0.00284	0.00208	0.000264	9.69	0.000883
100	2	40,000	12	7,500	0.0334	0.0265	0.0155	0.00694	0.00416	0.00271	0.00205	0.000230	11.00	0.001062
1400	4	40,000	12	7,500	0.0148	0.0132	0.0104	0.00658	0.00461	0.00332	0.00258	0.000164	5.47	0.000313
500	4	40,000	12	7,500	0.0203	0.0175	0.0128	0.00710	0.00457	0.00303	0.00221	0.000265	7.10	0.000506
100	4	40,000	12	7,500	0.0284	0.0229	0.0145	0.00705	0.00428	0.00279	0.00210	0.000421	9.07	0.000792
1400	6	40,000	12	7,500	0.0104	0.0096	0.0082	0.00593	0.00451	0.00353	0.00295	0.000104	4.09	0.000170
500	6	40,000	12	7,500	0.0151	0.0135	0.0107	0.00680	0.00464	0.00323	0.00245	0.000196	5.50	0.000307
100	6	40,000	12	7,500	0.0242	0.0197	0.0133	0.00709	0.00441	0.00289	0.00216	0.000411	7.64	0.000578
1400	8	40,000	12	7,500	0.0081	0.0076	0.0067	0.00533	0.00435	0.00365	0.00323	0.000068	3.44	0.000107
500	8	40,000	12	7,500	0.0118	0.0107	0.0089	0.00626	0.00457	0.00341	0.00273	0.000136	4.51	0.000199
100	8	40,000	12	7,500	0.0208	0.0171	0.0120	0.00696	0.00449	0.00301	0.00226	0.000332	6.54	0.000422
1400	2	30,000	12	7,500	0.0268	0.0268	0.0148	0.00745	0.00472	0.00304	0.00212	0.000269	9.04	0.000757
500	2	30,000	12	7,500	0.0323	0.0266	0.0167	0.00744	0.00444	0.00277	0.00195	0.000269	10.80	0.000993
100	2	30,000	12	7,500	0.0374	0.0305	0.0178	0.00710	0.00408	0.00260	0.00197	0.000260	12.40	0.001212
1400	4	30,000	12	7,500	0.0160	0.0143	0.0112	0.00706	0.00488	0.00344	0.00260	0.000176	5.64	0.000311
500	4	30,000	12	7,500	0.0224	0.0194	0.0142	0.00771	0.00481	0.00303	0.00209	0.000291	7.62	0.000541
100	4	30,000	12	7,500	0.0320	0.0261	0.0166	0.00750	0.00431	0.00267	0.00197	0.000476	8.81	0.000717
1400	6	30,000	12	7,500	0.0111	0.0102	0.0087	0.00630	0.00477	0.00369	0.00305	0.000109	4.08	0.000159
500	6	30,000	12	7,500	0.0164	0.0147	0.0117	0.00737	0.00492	0.00331	0.00240	0.000212	5.72	0.000309
100	6	30,000	12	7,500	0.0270	0.0223	0.0151	0.00772	0.00456	0.00280	0.00200	0.000465	8.34	0.000642
1400	8	30,000	12	7,500	0.0085	0.0080	0.0071	0.00563	0.00459	0.00383	0.00338	0.000071	3.41	0.000098
500	8	30,000	12	7,500	0.0126	0.0115	0.0096	0.00672	0.00483	0.00353	0.00276	0.000145	4.59	0.000193
100	8	30,000	12	7,500	0.0229	0.0191	0.0135	0.00765	0.00472	0.00298	0.00211	0.000374	7.01	0.000453

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 12" Base 7.5 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	3,000	0.0330	0.0281	0.0199	0.01127	0.00765	0.00536	0.00406	0.000284	7.27	0.001344
500	2	40,000	8	3,000	0.0416	0.0351	0.0237	0.01192	0.00755	0.00497	0.00363	0.000305	8.48	0.001827
100	2	40,000	8	3,000	0.0507	0.0420	0.0266	0.01212	0.00720	0.00463	0.00347	0.000172	9.90	0.002384
1400	4	40,000	8	3,000	0.0195	0.0178	0.0146	0.01008	0.00755	0.00584	0.00483	0.000178	4.91	0.000492
500	4	40,000	8	3,000	0.0274	0.0243	0.0187	0.01142	0.00774	0.00538	0.00408	0.000294	6.46	0.000889
100	4	40,000	8	3,000	0.0401	0.0336	0.0231	0.01204	0.00746	0.00488	0.00365	0.000446	8.14	0.001654
1400	6	40,000	8	3,000	0.0139	0.0131	0.0115	0.00897	0.00730	0.00611	0.00539	0.000110	3.56	0.000253
500	6	40,000	8	3,000	0.0200	0.0183	0.0152	0.01048	0.00765	0.00571	0.00458	0.000212	4.97	0.000491
100	6	40,000	8	3,000	0.0326	0.0277	0.0202	0.01176	0.00761	0.00511	0.00384	0.000444	6.95	0.001128
1400	8	40,000	8	3,000	0.0111	0.0106	0.0097	0.00814	0.00705	0.00625	0.00576	0.000071	2.94	0.000155
500	8	40,000	8	3,000	0.0156	0.0145	0.0126	0.00950	0.00742	0.00594	0.00506	0.000145	3.99	0.000302
100	8	40,000	8	3,000	0.0272	0.0233	0.0176	0.01120	0.00763	0.00535	0.00412	0.000356	6.05	0.000740
1400	2	30,000	8	3,000	0.0355	0.0301	0.0212	0.01164	0.00780	0.00537	0.00400	0.000312	7.75	0.001447
500	2	30,000	8	3,000	0.0457	0.0386	0.0257	0.01232	0.00760	0.00489	0.00349	0.000341	9.21	0.002013
100	2	30,000	8	3,000	0.0566	0.0475	0.0296	0.01214	0.00703	0.00448	0.00338	0.000210	10.80	0.002676
1400	4	30,000	8	3,000	0.0203	0.0185	0.0152	0.01041	0.00774	0.00593	0.00486	0.000188	5.06	0.000489
500	4	30,000	8	3,000	0.0293	0.0260	0.0199	0.01188	0.00790	0.00538	0.00398	0.000321	6.82	0.000939
100	4	30,000	8	3,000	0.0423	0.0374	0.0254	0.01242	0.00743	0.00475	0.00350	0.000510	8.79	0.001839
1400	6	30,000	8	3,000	0.0143	0.0135	0.0119	0.00924	0.00748	0.00624	0.00549	0.000114	3.58	0.000241
500	6	30,000	8	3,000	0.0210	0.0192	0.0160	0.01093	0.00786	0.00576	0.00455	0.000227	5.15	0.000494
100	6	30,000	8	3,000	0.0355	0.0303	0.0220	0.01230	0.00770	0.00502	0.00367	0.000504	7.41	0.001246
1400	8	30,000	8	3,000	0.0113	0.0108	0.0099	0.00834	0.00721	0.00638	0.00587	0.000073	2.93	0.000145
500	8	30,000	8	3,000	0.0163	0.0151	0.0131	0.00984	0.00762	0.00604	0.00509	0.000153	4.07	0.000294
100	8	30,000	8	3,000	0.0292	0.0251	0.0190	0.01184	0.00783	0.00530	0.00396	0.000399	6.39	0.000787

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 8" Base 3 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	3,000	0.0316	0.0269	0.0193	0.01107	0.00762	0.00541	0.00417	0.000269	6.92	0.001118
500	2	40,000	10	3,000	0.0388	0.0328	0.0224	0.01170	0.00756	0.00507	0.00976	0.000284	7.86	0.001544
100	2	40,000	10	3,000	0.0461	0.0382	0.0247	0.01191	0.00729	0.00477	0.00360	0.000182	8.93	0.001938
1400	4	40,000	10	3,000	0.0192	0.0175	0.0144	0.00996	0.00753	0.00585	0.00487	0.000175	4.72	0.000442
500	4	40,000	10	3,000	0.0266	0.0236	0.0182	0.01120	0.00770	0.00543	0.00417	0.000285	6.15	0.000765
100	4	40,000	10	3,000	0.0376	0.0316	0.0219	0.01178	0.00748	0.00499	0.00377	0.000431	7.53	0.001393
1400	6	40,000	10	3,000	0.0138	0.0130	0.0114	0.00893	0.00728	0.00612	0.00541	0.000109	3.53	0.000233
500	6	40,000	10	3,000	0.0197	0.0180	0.0149	0.01038	0.00761	0.00573	0.00464	0.000209	4.80	0.000440
100	6	40,000	10	3,000	0.0313	0.0266	0.0194	0.01148	0.00756	0.00519	0.00397	0.000432	6.65	0.000921
1400	8	40,000	10	3,000	0.0110	0.0105	0.0096	0.00813	0.00705	0.00626	0.00577	0.000070	3.00	0.000144
500	8	40,000	10	3,000	0.0155	0.0143	0.0124	0.00943	0.00740	0.00596	0.00510	0.000144	3.94	0.000275
100	8	40,000	10	3,000	0.0265	0.0226	0.0171	0.01094	0.00755	0.00540	0.00423	0.000350	5.77	0.000634
1400	2	30,000	10	3,000	0.0344	0.0293	0.0208	0.01160	0.00783	0.00543	0.00407	0.000298	7.43	0.001236
500	2	30,000	10	3,000	0.0433	0.0367	0.0248	0.01224	0.00765	0.00497	0.00358	0.000318	8.60	0.001738
100	2	30,000	10	3,000	0.0521	0.0440	0.0281	0.01216	0.00714	0.00459	0.00347	0.000216	9.91	0.002224
1400	4	30,000	10	3,000	0.0203	0.0185	0.0152	0.01043	0.00777	0.00597	0.00490	0.000186	4.87	0.000442
500	4	30,000	10	3,000	0.0288	0.0256	0.0197	0.01184	0.00792	0.00543	0.00404	0.000314	6.55	0.000821
100	4	30,000	10	3,000	0.0422	0.0357	0.0245	0.00686	0.00752	0.00483	0.00357	0.000491	8.26	0.001581
1400	6	30,000	10	3,000	0.0143	0.0135	0.0119	0.00925	0.00750	0.00627	0.00552	0.000114	3.54	0.000222
500	6	30,000	10	3,000	0.0209	0.0192	0.0159	0.01093	0.00787	0.00580	0.00460	0.000225	4.99	0.000446
100	6	30,000	10	3,000	0.0345	0.0295	0.0215	0.01222	0.00774	0.00508	0.00374	0.000492	7.15	0.001040
1400	8	30,000	10	3,000	0.0114	0.0108	0.0099	0.00837	0.00724	0.00642	0.00591	0.000073	2.99	0.000135
500	8	30,000	10	3,000	0.0162	0.0151	0.0131	0.00984	0.00764	0.00607	0.00513	0.000152	4.02	0.000269
100	8	30,000	10	3,000	0.0288	0.0248	0.0188	0.01174	0.00782	0.00535	0.00402	0.000395	6.15	0.000685

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 10" Base 3 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	3,000	0.0305	0.0260	0.0187	0.01089	0.00759	0.00546	0.00425	0.000258	6.55	0.000901
500	2	40,000	12	3,000	0.0367	0.0310	0.0214	0.01144	0.00753	0.00515	0.00388	0.000272	7.30	0.001253
100	2	40,000	12	3,000	0.0427	0.0354	0.0232	0.01172	0.00734	0.00489	0.00372	0.000204	8.09	0.001559
1400	4	40,000	12	3,000	0.0189	0.0173	0.0142	0.00989	0.00751	0.00588	0.00492	0.000172	4.54	0.000392
500	4	40,000	12	3,000	0.0258	0.0229	0.0178	0.01105	0.00765	0.00547	0.00426	0.000277	5.81	0.000652
100	4	40,000	12	3,000	0.0357	0.0300	0.0209	0.01151	0.00745	0.00508	0.00389	0.000423	7.10	0.001090
1400	6	40,000	12	3,000	0.0137	0.0129	0.0114	0.00888	0.00727	0.00612	0.00544	0.000108	3.51	0.000213
500	6	40,000	12	3,000	0.0194	0.0177	0.0147	0.01025	0.00757	0.00575	0.00470	0.000205	4.63	0.000390
100	6	40,000	12	3,000	0.0302	0.0256	0.0187	0.01122	0.00752	0.00526	0.00408	0.000421	6.27	0.000757
1400	8	40,000	12	3,000	0.0110	0.0105	0.0096	0.00810	0.00704	0.00626	0.00578	0.000070	3.06	0.000134
500	8	40,000	12	3,000	0.0153	0.0142	0.0123	0.00935	0.00737	0.00597	0.00513	0.000142	3.90	0.000249
100	8	40,000	12	3,000	0.0259	0.0221	0.0167	0.01077	0.00753	0.00545	0.00432	0.000342	5.50	0.000544
1400	2	30,000	12	3,000	0.0336	0.0287	0.0205	0.01156	0.00785	0.00547	0.00413	0.000287	7.08	0.001016
500	2	30,000	12	3,000	0.0414	0.0353	0.0241	0.01216	0.00769	0.00504	0.00365	0.000303	8.01	0.001474
100	2	30,000	12	3,000	0.0488	0.0413	0.0268	0.01216	0.00724	0.00469	0.00353	0.000236	9.02	0.001830
1400	4	30,000	12	3,000	0.0202	0.0184	0.0152	0.01044	0.00780	0.00601	0.00495	0.000185	4.70	0.000396
500	4	30,000	12	3,000	0.0284	0.0253	0.0195	0.01180	0.00795	0.00547	0.00409	0.000308	6.24	0.000711
100	4	30,000	12	3,000	0.0405	0.0343	0.0238	0.01232	0.00757	0.00490	0.00364	0.000482	7.79	0.001310
1400	6	30,000	12	3,000	0.0143	0.0135	0.0119	0.00927	0.00753	0.00630	0.00556	0.000114	3.53	0.000204
500	6	30,000	12	3,000	0.0208	0.0191	0.0159	0.01089	0.00789	0.00584	0.00464	0.000223	4.83	0.000401
100	6	30,000	12	3,000	0.0338	0.0289	0.0211	0.01214	0.00777	0.00514	0.00381	0.000483	6.82	0.000866
1400	8	30,000	12	3,000	0.0114	0.0109	0.0100	0.00839	0.00727	0.00645	0.00594	0.000073	3.05	0.000125
500	8	30,000	12	3,000	0.0162	0.0151	0.0130	0.00985	0.00766	0.00610	0.00516	0.000152	3.97	0.000246
100	8	30,000	12	3,000	0.0285	0.0245	0.0186	0.01166	0.00783	0.00539	0.00409	0.000389	5.89	0.000597

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 12" Base 3 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	8	1,000	0.0392	0.0340	0.0251	0.01520	0.01079	0.00791	0.00625	0.000299	5.37	0.001796
500	2	40,000	8	1,000	0.0507	0.0437	0.0309	0.01670	0.01092	0.00738	0.00549	0.000319	5.67	0.002540
100	2	40,000	8	1,000	0.0637	0.0543	0.0367	0.01752	0.01059	0.00684	0.00508	0.000141	6.49	0.003127
1400	4	40,000	8	1,000	0.0234	0.0216	0.0183	0.01336	0.01049	0.00850	0.00733	0.000184	4.26	0.000549
500	4	40,000	8	1,000	0.0328	0.0296	0.0236	0.01536	0.01089	0.00793	0.00626	0.000307	5.53	0.001026
100	4	40,000	8	1,000	0.0484	0.0416	0.0301	0.01682	0.01081	0.00725	0.00546	0.000455	5.72	0.002358
1400	6	40,000	8	1,000	0.0171	0.0162	0.0146	0.01190	0.01009	0.00881	0.00803	0.000113	3.15	0.000284
500	6	40,000	8	1,000	0.0241	0.0224	0.0191	0.01388	0.01062	0.00834	0.00699	0.000221	4.37	0.000556
100	6	40,000	8	1,000	0.0388	0.0338	0.0258	0.01598	0.01082	0.00758	0.00584	0.000459	5.77	0.001378
1400	8	40,000	8	1,000	0.0140	0.0135	0.0125	0.01096	0.00981	0.00896	0.00844	0.000072	2.70	0.000175
500	8	40,000	8	1,000	0.0191	0.0179	0.0159	0.01262	0.01030	0.00862	0.00761	0.000150	3.55	0.000339
100	8	40,000	8	1,000	0.0323	0.0283	0.0223	0.01508	0.01076	0.00789	0.00630	0.000368	5.30	0.000854
1400	2	30,000	8	1,000	0.0421	0.0364	0.0266	0.01572	0.01099	0.00792	0.00616	0.000331	5.37	0.002115
500	2	30,000	8	1,000	0.0564	0.0487	0.0340	0.01738	0.01105	0.00727	0.00526	0.000363	6.26	0.002840
100	2	30,000	8	1,000	0.0733	0.0633	0.0423	0.01800	0.01042	0.00659	0.00491	0.000180	7.11	0.003568
1400	4	30,000	8	1,000	0.0243	0.0224	0.0189	0.01370	0.01069	0.00860	0.00737	0.000195	4.39	0.000550
500	4	30,000	8	1,000	0.0350	0.0315	0.0250	0.01592	0.01109	0.00793	0.00613	0.000337	5.82	0.001097
100	4	30,000	8	1,000	0.0542	0.0468	0.0334	0.01758	0.01087	0.00706	0.00521	0.000528	6.03	0.002619
1400	6	30,000	8	1,000	0.0175	0.0166	0.0150	0.01220	0.01030	0.00894	0.00812	0.000117	3.17	0.000274
500	6	30,000	8	1,000	0.0253	0.0234	0.0199	0.01436	0.01085	0.00840	0.00695	0.000236	4.52	0.000563
100	6	30,000	8	1,000	0.0423	0.0369	0.0280	0.01682	0.01103	0.00745	0.00558	0.000526	5.89	0.001631
1400	8	30,000	8	1,000	0.0142	0.0137	0.0128	0.01116	0.00998	0.00910	0.00856	0.000074	2.69	0.000166
500	8	30,000	8	1,000	0.0197	0.0185	0.0164	0.01296	0.01050	0.00871	0.00764	0.000158	3.61	0.000334
100	8	30,000	8	1,000	0.0346	0.0304	0.0240	0.01588	0.01102	0.00783	0.00607	0.000415	5.58	0.000922

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 8" Base 1 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	10	1,000	0.0372	0.0323	0.0241	0.01488	0.01072	0.00797	0.00640	0.000280	5.79	0.001315
500	2	40,000	10	1,000	0.0464	0.0401	0.0288	0.01610	0.01080	0.00751	0.00572	0.000293	5.70	0.002278
100	2	40,000	10	1,000	0.0563	0.0480	0.0331	0.01696	0.01064	0.00707	0.00534	0.000155	6.18	0.002756
1400	4	40,000	10	1,000	0.0230	0.0213	0.0180	0.01322	0.01045	0.00852	0.00738	0.000180	4.14	0.000496
500	4	40,000	10	1,000	0.0316	0.0286	0.0229	0.01498	0.01078	0.00799	0.00640	0.000295	5.35	0.000882
100	4	40,000	10	1,000	0.0447	0.0384	0.0281	0.01622	0.01071	0.00740	0.00569	0.000435	5.43	0.002072
1400	6	40,000	10	1,000	0.0169	0.0161	0.0145	0.01186	0.01009	0.00882	0.00805	0.000112	3.17	0.000264
500	6	40,000	10	1,000	0.0236	0.0219	0.0187	0.01374	0.01057	0.00837	0.00707	0.000216	4.26	0.000500
100	6	40,000	10	1,000	0.0369	0.0321	0.0246	0.01556	0.01073	0.00769	0.00605	0.000442	5.76	0.001087
1400	8	40,000	10	1,000	0.0139	0.0134	0.0125	0.01096	0.00980	0.00896	0.00845	0.000072	2.78	0.000164
500	8	40,000	10	1,000	0.0188	0.0177	0.0157	0.01248	0.01025	0.00863	0.00766	0.000148	3.54	0.000312
100	8	40,000	10	1,000	0.0312	0.0273	0.0215	0.01470	0.01064	0.00796	0.00646	0.000359	5.12	0.000730
1400	2	30,000	10	1,000	0.0405	0.0352	0.0259	0.01548	0.01093	0.00798	0.00626	0.000313	6.10	0.001504
500	2	30,000	10	1,000	0.0524	0.0454	0.0321	0.01702	0.01102	0.00738	0.00543	0.000333	5.95	0.002480
100	2	30,000	10	1,000	0.0656	0.0569	0.0389	0.01772	0.01053	0.00677	0.00507	0.000190	6.88	0.003159
1400	4	30,000	10	1,000	0.0241	0.0223	0.0188	0.01370	0.01071	0.00864	0.00742	0.000193	4.28	0.000500
500	4	30,000	10	1,000	0.0342	0.0309	0.0246	0.01578	0.01107	0.00798	0.00622	0.000327	5.68	0.000958
100	4	30,000	10	1,000	0.0506	0.0437	0.0316	0.01718	0.01086	0.00718	0.00536	0.000503	6.09	0.002382
1400	6	30,000	10	1,000	0.0175	0.0166	0.0150	0.01220	0.01032	0.00897	0.00815	0.000117	3.19	0.000255
500	6	30,000	10	1,000	0.0250	0.0232	0.0198	0.01432	0.01086	0.00844	0.00702	0.000233	4.43	0.000513
100	6	30,000	10	1,000	0.0409	0.0356	0.0272	0.01654	0.01100	0.00755	0.00572	0.000509	6.12	0.001265
1400	8	30,000	10	1,000	0.0142	0.0137	0.0128	0.01116	0.00998	0.00912	0.00859	0.000074	2.78	0.000156
500	8	30,000	10	1,000	0.0196	0.0184	0.0163	0.01290	0.01047	0.00874	0.00769	0.000157	3.61	0.000309
100	8	30,000	10	1,000	0.0339	0.0298	0.0235	0.01564	0.01096	0.00789	0.00619	0.000408	5.44	0.000802

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 10" Base 1 ksi Subgrade

AC E (ksi)	AC t (in)	Base E (psi)	Base t (in)	Subgr E (psi)	D 0 (in)	D 6 (in)	D 12 (in)	D 24 (in)	D 36 (in)	D 48 (in)	D 60 (in)	AC Strain (in/in) tension	Subgr Stress (psi) comp.	Subgr Strain (in/in) comp.
1400	2	40,000	12	1,000	0.0357	0.0310	0.0233	0.01460	0.01064	0.00803	0.00652	0.000266	5.64	0.001038
500	2	40,000	12	1,000	0.0431	0.0373	0.0270	0.01564	0.01071	0.00762	0.00592	0.000276	5.82	0.001629
100	2	40,000	12	1,000	0.0508	0.0432	0.0301	0.01638	0.01061	0.00726	0.00558	0.000184	5.93	0.002312
1400	4	40,000	12	1,000	0.0226	0.0209	0.0177	0.01302	0.01036	0.00854	0.00744	0.000177	4.03	0.000440
500	4	40,000	12	1,000	0.0306	0.0276	0.0221	0.01470	0.01070	0.00804	0.00653	0.000285	5.11	0.000749
100	4	40,000	12	1,000	0.0419	0.0360	0.0264	0.01572	0.01063	0.00753	0.00591	0.000425	6.06	0.001309
1400	6	40,000	12	1,000	0.0168	0.0159	0.0144	0.01236	0.01044	0.00881	0.00806	0.000111	3.19	0.000243
500	6	40,000	12	1,000	0.0232	0.0214	0.0183	0.01350	0.01048	0.00839	0.00716	0.000211	4.15	0.000443
100	6	40,000	12	1,000	0.0354	0.0307	0.0235	0.01510	0.01063	0.00777	0.00623	0.000429	5.53	0.000881
1400	8	40,000	12	1,000	0.0138	0.0133	0.0124	0.01086	0.00976	0.00896	0.00845	0.000071	2.87	0.000153
500	8	40,000	12	1,000	0.0186	0.0174	0.0155	0.01238	0.01020	0.00863	0.00769	0.000145	3.54	0.000285
100	8	40,000	12	1,000	0.0302	0.0264	0.0208	0.01432	0.01052	0.00801	0.00661	0.000349	4.92	0.000625
1400	2	30,000	12	1,000	0.0393	0.0342	0.0254	0.01540	0.01095	0.00803	0.00636	0.000299	6.06	0.001196
500	2	30,000	12	1,000	0.0493	0.0428	0.0306	0.01666	0.01098	0.00747	0.00558	0.000314	5.94	0.002248
100	2	30,000	12	1,000	0.0595	0.0516	0.0357	0.01734	0.01060	0.00695	0.00524	0.000216	6.41	0.002689
1400	4	30,000	12	1,000	0.0239	0.0221	0.0187	0.01360	0.01068	0.00867	0.00747	0.000191	4.17	0.000450
500	4	30,000	12	1,000	0.0336	0.0303	0.0242	0.01560	0.01105	0.00804	0.00631	0.000319	5.48	0.000828
100	4	30,000	12	1,000	0.0478	0.0413	0.0301	0.01682	0.01083	0.00730	0.00552	0.000490	6.28	0.001726
1400	6	30,000	12	1,000	0.0174	0.0166	0.0149	0.01220	0.01033	0.00900	0.00819	0.000116	3.21	0.000236
500	6	30,000	12	1,000	0.0248	0.0230	0.0196	0.01422	0.01083	0.00847	0.00707	0.000231	4.33	0.000461
100	6	30,000	12	1,000	0.0397	0.0346	0.0264	0.01626	0.01094	0.00762	0.00585	0.000496	5.97	0.001032
1400	8	30,000	12	1,000	0.0142	0.0137	0.0128	0.01116	0.01000	0.00914	0.00861	0.000074	2.87	0.000146
500	8	30,000	12	1,000	0.0195	0.0183	0.0163	0.01286	0.01047	0.00876	0.00772	0.000156	3.61	0.000285
100	8	30,000	12	1,000	0.0333	0.0292	0.0231	0.01546	0.01093	0.00795	0.00629	0.000400	5.27	0.000698

ILLI-PAVE: Conventional Flexible Pavement Deflection Data: 12" Base 1 ksi Subgrade

APPENDIX B

ROADHOG AND AASHTO OVERLAY THICKNESS DATA

SYMBOL	VARIABLE	UNIT
STATION	Properties of the Pavement Layer Profile (use the Pavement Structure Code on the following page to decipher the STATION code)	
SNeff	Effective Structural Number of the Existing Pavement	
SNf	Structural Number Required to Carry Future Traffic at Varying Reliability Levels (50,75,90,95,99)	
Mr	Backcalculated Subgrade Resilient Modulus	psi
OVERLAY THICKNESS	Overlay Thickness Required At Varying Reliability Levels (50,75,90,95,99)	inches

PAVEMENT STRUCTURE CODE

The purpose of the Pavement Structure Code is to identify the properties of the pavement layer profiles. The P.S.C. is in the form XXXXXXX.00. Each X in the code has a meaning relating to the pavement profile. The following is a description of how to decipher the code.

$$X_1X_2X_3X_4X_5X_6X_7.00$$

X_1 represents the Model Method used to form the deflection data.

(1) ELSYM5
(2) ILLI-PAVE

X_2 represents the Pavement Type.

(1) Conventional Flexible Pavement (CFP)

X_3 represents the Resilient Modulus of the AC.

(1) 100,000 psi
(2) 500,000 psi
(3) 1,400,000 psi

X_4 represents the AC thickness.

(1) 2 in.
(2) 4 in.
(3) 6 in.
(4) 8 in.

X_5 represents the Resilient Modulus of the Base.

(1) 30,000 psi
(2) 40,000 psi

X_6 represents the Base thickness.

(1) 8 in.
(2) 10 in.
(3) 12 in.

X_7 represents the Resilient Modulus of the Subgrade.

(1) 1,000 psi
(2) 3,000 psi
(3) 7,500 psi
(4) 12,000 psi

cont. PAVEMENT STRUCTURE CODE

EXAMPLE

		VALUE
Model Method:	ELSYM5	1
Pavement Type:	CFP	1
AC Modulus:	500,000 psi	2
AC Thickness:	8 in.	4
Base Modulus:	40,000 psi	2
Base Thickness:	10 in.	2
Subgrade Modulus:	12,000 psi	4

PAVEMENT STRUCTURE CODE: 1 1 2 4 2 2 4 . 0 0

2" AC 8" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1131214.00	2.19	4.5	4.9	5.3	5.5	6.0	4202	5.25	6.16	7.07	7.52	8.66
1121214.00	2.17	4.5	4.9	5.3	5.5	6.0	4202	5.30	6.20	7.11	7.57	8.70
1111214.00	2.19	4.5	4.9	5.3	5.5	6.0	4202	5.25	6.16	7.07	7.52	8.66
1131114.00	2.09	4.4	4.8	5.2	5.5	5.9	4394	5.25	6.16	7.07	7.75	8.66
1121114.00	2.03	4.4	4.8	5.2	5.5	5.9	4394	5.39	6.30	7.20	7.89	8.80
1111114.00	2.03	4.4	4.8	5.2	5.5	5.9	4394	5.39	6.30	7.20	7.89	8.80
1131213.00	2.28	6.8	7.3	7.9	8.2	8.9	1060	10.27	11.41	12.77	13.45	15.05
1121213.00	2.10	6.8	7.3	7.9	8.2	8.9	1060	10.68	11.82	13.18	13.86	15.45
1111213.00	2.11	6.8	7.3	7.9	8.2	8.9	1060	10.66	11.80	13.16	13.84	15.43
1131113.00	2.02	6.8	7.3	7.9	8.2	8.9	1060	10.86	12.00	13.36	14.05	15.64
1121113.00	1.97	6.8	7.3	7.9	8.2	8.9	1060	10.98	12.11	13.48	14.16	15.75
1111113.00	1.96	6.8	7.3	7.9	8.2	8.9	1060	11.00	12.14	13.50	14.18	15.77
1131212.00	2.02	6.8	7.3	7.9	8.2	8.9	1060	10.86	12.00	13.36	14.05	15.64
1121212.00	1.99	6.8	7.3	7.9	8.2	8.9	1060	10.93	12.07	13.43	14.11	15.70
1111212.00	1.99	6.8	7.3	7.9	8.2	8.9	1060	10.93	12.07	13.43	14.11	15.70
1131112.00	1.90	6.8	7.3	7.9	8.2	8.9	1060	11.14	12.27	13.64	14.32	15.91
1121112.00	1.85	6.8	7.3	7.9	8.2	8.9	1060	11.25	12.39	13.75	14.43	16.02
1111112.00	1.83	6.8	7.3	7.9	8.2	8.9	1060	11.30	12.43	13.80	14.48	16.07
1131211.00	1.95	6.8	7.3	7.9	8.2	8.9	1060	11.02	12.16	13.52	14.20	15.80
1121211.00	1.96	6.8	7.3	7.9	8.2	8.9	1060	11.00	12.14	13.50	14.18	15.77
1111211.00	1.90	6.8	7.3	7.9	8.2	8.9	1060	11.14	12.27	13.64	14.32	15.91
1131111.00	1.80	6.8	7.3	7.9	8.2	8.9	1060	11.36	12.50	13.86	14.55	16.14
1121111.00	1.77	6.8	7.3	7.9	8.2	8.9	1060	11.43	12.57	13.93	14.61	16.20
1111111.00	1.73	6.8	7.3	7.9	8.2	8.9	1060	11.52	12.66	14.02	14.70	16.30
2131214.00	2.21	3.3	3.7	4.0	4.2	4.5	10672	2.48	3.39	4.07	4.52	5.20
2121214.00	2.15	3.3	3.6	3.9	4.1	4.5	11340	2.61	3.30	3.98	4.43	5.34
2111214.00	2.12	3.2	3.5	3.9	4.0	4.4	11683	2.45	3.14	4.05	4.27	5.18
2131114.00	2.15	3.4	3.7	4.0	4.2	4.6	10346	2.84	3.52	4.20	4.66	5.57
2121114.00	2.09	3.3	3.6	3.9	4.1	4.5	11003	2.75	3.43	4.11	4.57	5.48
2111114.00	2.08	3.2	3.5	3.8	4.0	4.4	12031	2.55	3.23	3.91	4.36	5.27
2131213.00	2.15	3.8	4.2	4.6	4.8	5.2	6871	3.75	4.66	5.57	6.02	6.93
2121213.00	2.08	3.8	4.1	4.4	4.7	5.1	7394	3.91	4.59	5.27	5.95	6.86
2111213.00	2.04	3.6	4.0	4.3	4.5	4.9	8221	3.55	4.45	5.14	5.59	6.50
2131113.00	2.09	3.9	4.3	4.6	4.8	5.3	6617	4.11	5.02	5.70	6.16	7.30
2121113.00	2.02	3.8	4.1	4.4	4.7	5.1	7394	4.05	4.73	5.41	6.09	7.00
2111113.00	1.99	3.6	4.0	4.3	4.5	4.9	8221	3.66	4.57	5.25	5.70	6.61
2131212.00	2.06	6.0	6.5	7.0	7.3	7.9	1626	8.95	10.09	11.23	11.91	13.27
2121212.00	1.98	6.0	6.5	7.0	7.3	7.9	1626	9.14	10.27	11.41	12.09	13.45
2111212.00	1.92	5.6	6.1	6.6	6.9	7.4	2000	8.36	9.50	10.64	11.32	12.45
2131112.00	1.99	6.1	6.7	7.2	7.5	8.1	1472	9.34	10.70	11.84	12.52	13.89
2121112.00	1.89	6.0	6.5	7.0	7.3	7.9	1626	9.34	10.48	11.61	12.30	13.66
2111112.00	1.84	5.5	5.9	6.4	6.7	7.2	2221	8.32	9.23	10.36	11.05	12.18
2131211.00	2.00	6.8	7.3	7.9	8.2	8.9	1060	10.91	12.05	13.41	14.09	15.68
2121211.00	1.90	6.8	7.3	7.9	8.2	8.9	1060	11.14	12.27	13.64	14.32	15.91
2111211.00	1.83	6.8	7.3	7.9	8.2	8.9	1060	11.30	12.43	13.80	14.48	16.07
2131111.00	1.93	6.8	7.3	7.9	8.2	8.9	1060	11.07	12.20	13.57	14.25	15.84
2121111.00	1.80	6.8	7.3	7.9	8.2	8.9	1060	11.36	12.50	13.86	14.55	16.14
2111111.00	1.73	6.8	7.3	7.9	8.2	8.9	1060	11.52	12.66	14.02	14.70	16.30

ROADHOG: 2" AC 8" BASE Overlay Thickness Data

2" AC 10" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1131224.00	2.52	4.5	4.9	5.3	5.5	6.0	4202	4.50	5.41	6.32	6.77	7.91
1121224.00	2.46	4.5	4.9	5.3	5.5	6.0	4202	4.64	5.55	6.45	6.91	8.05
1111224.00	2.46	4.6	5.0	5.4	5.6	6.1	4016	4.86	5.77	6.68	7.14	8.27
1131124.00	2.34	4.5	4.9	5.3	5.5	6.0	4202	4.91	5.82	6.73	7.18	8.32
1121124.00	2.25	4.5	4.9	5.3	5.5	6.0	4202	5.11	6.02	6.93	7.39	8.52
1111124.00	2.21	4.5	4.9	5.3	5.5	6.0	4202	5.20	6.11	7.02	7.48	8.61
1131223.00	2.45	6.8	7.3	7.9	8.2	8.9	1060	9.89	11.02	12.39	13.07	14.66
1121223.00	2.39	6.8	7.3	7.9	8.2	8.9	1060	10.02	11.16	12.52	13.20	14.80
1111223.00	2.38	6.8	7.3	7.9	8.2	8.9	1060	10.05	11.18	12.55	13.23	14.82
1131123.00	2.27	6.8	7.3	7.9	8.2	8.9	1060	10.30	11.43	12.80	13.48	15.07
1121123.00	2.18	6.8	7.3	7.9	8.2	8.9	1060	10.50	11.64	13.00	13.68	15.27
1111123.00	2.13	6.8	7.3	7.9	8.2	8.9	1060	10.61	11.75	13.11	13.80	15.39
1131222.00	2.35	6.8	7.3	7.9	8.2	8.9	1060	10.11	11.25	12.61	13.30	14.89
1121222.00	2.30	6.8	7.3	7.9	8.2	8.9	1060	10.23	11.36	12.73	13.41	15.00
1111222.00	2.26	6.8	7.3	7.9	8.2	8.9	1060	10.32	11.45	12.82	13.50	15.09
1131122.00	2.15	6.8	7.3	7.9	8.2	8.9	1060	10.57	11.70	13.07	13.75	15.34
1121122.00	2.05	6.8	7.3	7.9	8.2	8.9	1060	10.80	11.93	13.30	13.98	15.57
1111122.00	1.99	6.8	7.3	7.9	8.2	8.9	1060	10.93	12.07	13.43	14.11	15.70
1131221.00	2.08	6.8	7.3	7.9	8.2	8.9	1060	10.73	11.86	13.23	13.91	15.50
1121221.00	2.13	6.8	7.3	7.9	8.2	8.9	1060	10.61	11.75	13.11	13.80	15.39
1111221.00	2.22	6.8	7.3	7.9	8.2	8.9	1060	10.41	11.55	12.91	13.59	15.18
1131121.00	2.01	6.8	7.3	7.9	8.2	8.9	1060	10.89	12.02	13.39	14.07	15.66
1121121.00	1.93	6.8	7.3	7.9	8.2	8.9	1060	11.07	12.20	13.57	14.25	15.84
1111121.00	1.93	6.8	7.3	7.9	8.2	8.9	1060	11.07	12.20	13.57	14.25	15.84
2131224.00	2.49	3.3	3.7	4.0	4.2	4.5	10672	1.84	2.75	3.43	3.89	4.57
2121224.00	2.38	3.3	3.6	3.9	4.1	4.5	11003	2.09	2.77	3.45	3.91	4.82
2111224.00	2.31	3.2	3.5	3.9	4.0	4.4	11683	2.02	2.70	3.61	3.84	4.75
2131124.00	2.40	3.4	3.7	4.0	4.2	4.6	10025	2.27	2.95	3.64	4.09	5.00
2121124.00	2.29	3.3	3.6	3.9	4.1	4.5	11003	2.30	2.98	3.66	4.11	5.02
2111124.00	2.23	3.2	3.5	3.8	4.0	4.4	12031	2.20	2.89	3.57	4.02	4.93
2131223.00	2.42	3.8	4.2	4.6	4.8	5.2	6871	3.14	4.05	4.95	5.41	6.32
2121223.00	2.30	3.8	4.1	4.4	4.7	5.1	7394	3.41	4.09	4.77	5.45	6.36
2111223.00	2.23	3.7	4.0	4.4	4.6	5.0	7939	3.34	4.02	4.93	5.39	6.30
2131123.00	2.32	3.9	4.3	4.7	4.9	5.3	6370	3.59	4.50	5.41	5.86	6.77
2121123.00	2.19	3.8	4.2	4.5	4.7	5.1	7129	3.66	4.57	5.25	5.70	6.61
2111123.00	2.12	3.6	4.0	4.3	4.5	4.9	8221	3.36	4.27	4.95	5.41	6.32
2131222.00	2.31	6.0	6.5	7.0	7.3	7.9	1626	8.39	9.52	10.66	11.34	12.70
2121222.00	2.18	6.0	6.5	7.0	7.3	7.9	1626	8.68	9.82	10.95	11.64	13.00
2111222.00	2.07	5.7	6.2	6.7	7.0	7.5	1898	8.25	9.39	10.52	11.20	12.34
2131122.00	2.20	6.1	6.7	7.2	7.5	8.1	1472	8.86	10.23	11.36	12.05	13.41
2121122.00	2.03	6.1	6.6	7.1	7.4	8.0	1546	9.25	10.39	11.52	12.20	13.57
2111122.00	1.93	5.5	6.0	6.5	6.8	7.3	2108	8.11	9.25	10.39	11.07	12.20
2131221.00	2.24	6.8	7.3	7.9	8.2	8.9	1060	10.36	11.50	12.86	13.55	15.14
2121221.00	2.09	6.8	7.3	7.9	8.2	8.9	1060	10.70	11.84	13.20	13.89	15.48
2111221.00	1.98	6.8	7.3	7.9	8.2	8.9	1060	10.95	12.09	13.45	14.14	15.73
2131121.00	2.12	6.8	7.3	7.9	8.2	8.9	1060	10.64	11.77	13.14	13.82	15.41
2121121.00	1.92	6.8	7.3	7.9	8.2	8.9	1060	11.09	12.23	13.59	14.27	15.86
2111121.00	1.80	6.8	7.3	7.9	8.2	8.9	1060	11.36	12.50	13.86	14.55	16.14

ROADHOG: 2" AC 10" BASE Overlay Thickness Data

2" AC 12" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1131234.00	2.82	4.5	4.9	5.3	5.5	6.0	4202	3.82	4.73	5.64	6.09	7.23
1121234.00	2.75	4.6	5.0	5.4	5.6	6.1	4016	4.20	5.11	6.02	6.48	7.61
1111234.00	2.72	4.6	5.0	5.4	5.6	6.1	4016	4.27	5.18	6.09	6.55	7.68
1131134.00	2.63	4.5	4.9	5.3	5.5	6.0	4202	4.25	5.16	6.07	6.52	7.66
1121134.00	2.53	4.5	4.9	5.3	5.5	6.0	4202	4.48	5.39	6.30	6.75	7.89
1111134.00	2.47	4.5	4.9	5.3	5.5	6.0	4202	4.61	5.52	6.43	6.89	8.02
1131233.00	2.75	6.8	7.3	7.9	8.2	8.9	1060	9.20	10.34	11.70	12.39	13.98
1121233.00	2.69	6.8	7.3	7.9	8.2	8.9	1060	9.34	10.48	11.84	12.52	14.11
1111233.00	2.66	6.8	7.3	7.9	8.2	8.9	1060	9.41	10.55	11.91	12.59	14.18
1131133.00	2.56	6.8	7.3	7.9	8.2	8.9	1060	9.64	10.77	12.14	12.82	14.41
1121133.00	2.46	6.8	7.3	7.9	8.2	8.9	1060	9.86	11.00	12.36	13.05	14.64
1111133.00	2.40	6.8	7.3	7.9	8.2	8.9	1060	10.00	11.14	12.50	13.18	14.77
1131232.00	2.64	6.8	7.3	7.9	8.2	8.9	1060	9.45	10.59	11.95	12.64	14.23
1121232.00	2.59	6.8	7.3	7.9	8.2	8.9	1060	9.57	10.70	12.07	12.75	14.34
1111232.00	2.55	6.8	7.3	7.9	8.2	8.9	1060	9.66	10.80	12.16	12.84	14.43
1131132.00	2.45	6.8	7.3	7.9	8.2	8.9	1060	9.89	11.02	12.39	13.07	14.66
1121132.00	2.36	6.8	7.3	7.9	8.2	8.9	1060	10.09	11.23	12.59	13.27	14.86
1111132.00	2.29	6.8	7.3	7.9	8.2	8.9	1060	10.25	11.39	12.75	13.43	15.02
1131231.00	2.29	6.8	7.3	7.9	8.2	8.9	1060	10.25	11.39	12.75	13.43	15.02
1121231.00	2.32	6.8	7.3	7.9	8.2	8.9	1060	10.18	11.32	12.68	13.36	14.95
1111231.00	2.43	6.8	7.3	7.9	8.2	8.9	1060	9.93	11.07	12.43	13.11	14.70
1131131.00	2.18	6.8	7.3	7.9	8.2	8.9	1060	10.50	11.64	13.00	13.68	15.27
1121131.00	2.18	6.8	7.3	7.9	8.2	8.9	1060	10.50	11.64	13.00	13.68	15.27
1111131.00	2.18	6.8	7.3	7.9	8.2	8.9	1060	10.50	11.64	13.00	13.68	15.27
2131234.00	2.75	3.4	3.7	4.0	4.2	4.6	10346	1.48	2.16	2.84	3.30	4.20
2121234.00	2.64	3.3	3.6	3.9	4.1	4.5	11003	1.50	2.18	2.86	3.32	4.23
2111234.00	2.55	3.2	3.5	3.9	4.0	4.4	11683	1.48	2.16	3.07	3.30	4.20
2131134.00	2.66	3.4	3.7	4.0	4.2	4.6	10025	1.68	2.36	3.05	3.50	4.41
2121134.00	2.52	3.3	3.7	4.0	4.2	4.5	10672	1.77	2.68	3.36	3.82	4.50
2111134.00	2.45	3.2	3.5	3.9	4.0	4.4	11683	1.70	2.39	3.30	3.52	4.43
2131233.00	2.69	3.8	4.2	4.6	4.8	5.2	6871	2.52	3.43	4.34	4.80	5.70
2121233.00	2.57	3.8	4.1	4.4	4.7	5.1	7394	2.80	3.48	4.16	4.84	5.75
2111233.00	2.48	3.7	4.1	4.4	4.6	5.0	7664	2.77	3.68	4.36	4.82	5.73
2131133.00	2.57	3.9	4.3	4.7	4.9	5.3	6370	3.02	3.93	4.84	5.30	6.20
2121133.00	2.44	3.8	4.2	4.5	4.7	5.1	7129	3.09	4.00	4.68	5.14	6.05
2111133.00	2.36	3.7	4.0	4.4	4.6	5.0	7939	3.05	3.73	4.64	5.09	6.00
2131232.00	2.58	6.0	6.5	7.0	7.3	7.9	1626	7.77	8.91	10.05	10.73	12.09
2121232.00	2.46	5.9	6.4	6.9	7.2	7.8	1711	7.82	8.95	10.09	10.77	12.14
2111232.00	2.36	5.7	6.2	6.7	7.0	7.5	1898	7.59	8.73	9.86	10.55	11.68
2131132.00	2.46	6.2	6.8	7.3	7.6	8.2	1404	8.50	9.86	11.00	11.68	13.05
2121132.00	2.31	6.1	6.6	7.1	7.4	8.0	1546	8.61	9.75	10.89	11.57	12.93
2111132.00	2.21	5.6	6.1	6.6	6.9	7.4	2000	7.70	8.84	9.98	10.66	11.80
2131231.00	2.52	6.8	7.3	7.9	8.2	8.9	1060	9.73	10.86	12.23	12.91	14.50
2121231.00	2.39	6.8	7.3	7.9	8.2	8.9	1060	10.02	11.16	12.52	13.20	14.80
2111231.00	2.28	6.8	7.3	7.9	8.2	8.9	1060	10.27	11.41	12.77	13.45	15.05
2131131.00	2.39	6.8	7.3	7.9	8.2	8.9	1060	10.02	11.16	12.52	13.20	14.80
2121131.00	2.21	6.8	7.3	7.9	8.2	8.9	1060	10.43	11.57	12.93	13.61	15.20
2111131.00	2.09	6.8	7.3	7.9	8.2	8.9	1060	10.70	11.84	13.20	13.89	15.48

ROADHOG: 2" AC 12" BASE Overlay Thickness Data

4" AC 8" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1132214.00	3.16	4.7	5.1	5.5	5.8	6.3	3661	3.50	4.41	5.32	6.00	7.14
1122214.00	3.02	4.6	5.0	5.4	5.6	6.1	4016	3.59	4.50	5.41	5.86	7.00
1112214.00	2.89	4.6	5.0	5.4	5.6	6.1	4016	3.89	4.80	5.70	6.16	7.30
1132114.00	3.08	4.6	5.0	5.4	5.7	6.2	3836	3.45	4.36	5.27	5.95	7.09
1122114.00	2.93	4.6	5.0	5.4	5.6	6.1	4016	3.80	4.70	5.61	6.07	7.20
1112114.00	2.74	4.5	4.9	5.3	5.5	6.0	4202	4.00	4.91	5.82	6.27	7.41
1132213.00	3.08	6.8	7.3	7.9	8.2	8.9	1060	8.45	9.59	10.95	11.64	13.23
1122213.00	2.95	6.8	7.3	7.9	8.2	8.9	1060	8.75	9.89	11.25	11.93	13.52
1112213.00	2.82	6.8	7.3	7.9	8.2	8.9	1060	9.05	10.18	11.55	12.23	13.82
1132113.00	3.00	6.8	7.3	7.9	8.2	8.9	1060	8.64	9.77	11.14	11.82	13.41
1122113.00	2.86	6.8	7.3	7.9	8.2	8.9	1060	8.95	10.09	11.45	12.14	13.73
1112113.00	2.66	6.8	7.3	7.9	8.2	8.9	1060	9.41	10.55	11.91	12.59	14.18
1132212.00	3.00	6.8	7.3	7.9	8.2	8.9	1060	8.64	9.77	11.14	11.82	13.41
1122212.00	2.86	6.8	7.3	7.9	8.2	8.9	1060	8.95	10.09	11.45	12.14	13.73
1112212.00	2.71	6.8	7.3	7.9	8.2	8.9	1060	9.30	10.43	11.80	12.48	14.07
1132112.00	2.93	6.8	7.3	7.9	8.2	8.9	1060	8.80	9.93	11.30	11.98	13.57
1122112.00	2.74	6.8	7.3	7.9	8.2	8.9	1060	9.23	10.36	11.73	12.41	14.00
1112112.00	2.53	6.8	7.3	7.9	8.2	8.9	1060	9.70	10.84	12.20	12.89	14.48
1132211.00	2.56	6.8	7.3	7.9	8.2	8.9	1060	9.64	10.77	12.14	12.82	14.41
1122211.00	2.66	6.8	7.3	7.9	8.2	8.9	1060	9.41	10.55	11.91	12.59	14.18
1112211.00	2.63	6.8	7.3	7.9	8.2	8.9	1060	9.48	10.61	11.98	12.66	14.25
1132111.00	2.59	6.8	7.3	7.9	8.2	8.9	1060	9.57	10.70	12.07	12.75	14.34
1122111.00	2.64	6.8	7.3	7.9	8.2	8.9	1060	9.45	10.59	11.95	12.64	14.23
1112111.00	2.45	6.8	7.3	7.9	8.2	8.9	1060	9.89	11.02	12.39	13.07	14.66
2132214.00	3.18	3.4	3.7	4.0	4.2	4.6	10025	0.50	1.18	1.86	2.32	3.23
2122214.00	2.99	3.4	3.7	4.0	4.2	4.6	10346	0.93	1.61	2.30	2.75	3.66
2112214.00	2.77	3.3	3.6	3.9	4.1	4.5	11340	1.20	1.89	2.57	3.02	3.93
2132114.00	3.14	3.5	3.8	4.1	4.3	4.7	9401	0.82	1.50	2.18	2.64	3.55
2122114.00	2.93	3.4	3.7	4.0	4.2	4.6	10025	1.07	1.75	2.43	2.89	3.80
2112114.00	2.69	3.2	3.5	3.9	4.0	4.4	11683	1.16	1.84	2.75	2.98	3.89
2132213.00	3.14	3.9	4.3	4.6	4.8	5.3	6617	1.73	2.64	3.32	3.77	4.91
2122213.00	2.93	3.9	4.3	4.6	4.8	5.3	6617	2.20	3.11	3.80	4.25	5.39
2112213.00	2.69	3.7	4.1	4.4	4.6	5.0	7664	2.30	3.20	3.89	4.34	5.25
2132113.00	3.10	4.0	4.4	4.7	4.9	5.4	6128	2.05	2.95	3.64	4.09	5.23
2122113.00	2.87	3.9	4.3	4.7	4.9	5.3	6370	2.34	3.25	4.16	4.61	5.52
2112113.00	2.60	3.7	4.1	4.4	4.6	5.0	7664	2.50	3.41	4.09	4.55	5.45
2132212.00	3.06	6.0	6.5	7.0	7.3	7.9	1626	6.68	7.82	8.95	9.64	11.00
2122212.00	2.84	6.1	6.6	7.1	7.4	8.0	1546	7.41	8.55	9.68	10.36	11.73
2112212.00	2.57	5.9	6.4	6.9	7.2	7.8	1711	7.57	8.70	9.84	10.52	11.89
2132112.00	3.02	6.1	6.6	7.1	7.4	8.0	1546	7.00	8.14	9.27	9.95	11.32
2122112.00	2.76	6.2	6.8	7.3	7.6	8.2	1404	7.82	9.18	10.32	11.00	12.36
2112112.00	2.58	5.8	6.3	6.8	7.1	7.7	1802	7.32	8.45	9.59	10.27	11.64
2132211.00	3.02	6.8	7.3	7.9	8.2	8.9	1060	8.59	9.73	11.09	11.77	13.36
2122211.00	2.78	6.8	7.3	7.9	8.2	8.9	1060	9.14	10.27	11.64	12.32	13.91
2112211.00	2.49	6.8	7.3	7.9	8.2	8.9	1060	9.80	10.93	12.30	12.98	14.57
2132111.00	2.96	6.8	7.3	7.9	8.2	8.9	1060	8.73	9.86	11.23	11.91	13.50
2122111.00	2.70	6.8	7.3	7.9	8.2	8.9	1060	9.32	10.45	11.82	12.50	14.09
2112111.00	2.35	6.8	7.3	7.9	8.2	8.9	1060	10.11	11.25	12.61	13.30	14.89

ROADHOG: 4" AC 8" BASE Overlay Thickness Data

4" AC 10" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1132224.00	3.44	4.6	5.0	5.4	5.7	6.2	3836	2.64	3.55	4.45	5.14	6.27
1122224.00	3.30	4.6	5.0	5.4	5.6	6.1	4016	2.95	3.86	4.77	5.23	6.36
1112224.00	3.13	4.6	5.0	5.4	5.6	6.1	4016	3.34	4.25	5.16	5.61	6.75
1132124.00	3.36	4.6	5.0	5.4	5.7	6.2	3836	2.82	3.73	4.64	5.32	6.45
1122124.00	3.18	4.6	5.0	5.4	5.6	6.1	4016	3.23	4.14	5.05	5.50	6.64
1112124.00	2.96	4.5	4.9	5.3	5.5	6.0	4202	3.50	4.41	5.32	5.77	6.91
1132223.00	3.37	6.8	7.3	7.9	8.2	8.9	1060	7.80	8.93	10.30	10.98	12.57
1122223.00	3.24	6.8	7.3	7.9	8.2	8.9	1060	8.09	9.23	10.59	11.27	12.86
1112223.00	3.07	6.8	7.3	7.9	8.2	8.9	1060	8.48	9.61	10.98	11.66	13.25
1132123.00	3.28	6.8	7.3	7.9	8.2	8.9	1060	8.00	9.14	10.50	11.18	12.77
1122123.00	3.10	6.8	7.3	7.9	8.2	8.9	1060	8.41	9.55	10.91	11.59	13.18
1112123.00	2.89	6.8	7.3	7.9	8.2	8.9	1060	8.89	10.02	11.39	12.07	13.66
1132222.00	3.25	6.8	7.3	7.9	8.2	8.9	1060	8.07	9.20	10.57	11.25	12.84
1122222.00	3.12	6.8	7.3	7.9	8.2	8.9	1060	8.36	9.50	10.86	11.55	13.14
1112222.00	2.96	6.8	7.3	7.9	8.2	8.9	1060	8.73	9.86	11.23	11.91	13.50
1132122.00	3.16	6.8	7.3	7.9	8.2	8.9	1060	8.27	9.41	10.77	11.45	13.05
1122122.00	2.99	6.8	7.3	7.9	8.2	8.9	1060	8.66	9.80	11.16	11.84	13.43
1112122.00	2.77	6.8	7.3	7.9	8.2	8.9	1060	9.16	10.30	11.66	12.34	13.93
1132221.00	2.62	6.8	7.3	7.9	8.2	8.9	1060	9.50	10.64	12.00	12.68	14.27
1122221.00	2.74	6.8	7.3	7.9	8.2	8.9	1060	9.23	10.36	11.73	12.41	14.00
1112221.00	2.76	6.8	7.3	7.9	8.2	8.9	1060	9.18	10.32	11.68	12.36	13.95
1132121.00	2.65	6.8	7.3	7.9	8.2	8.9	1060	9.43	10.57	11.93	12.61	14.20
1122121.00	2.68	6.8	7.3	7.9	8.2	8.9	1060	9.36	10.50	11.86	12.55	14.14
1112121.00	2.60	6.8	7.3	7.9	8.2	8.9	1060	9.55	10.68	12.05	12.73	14.32
2132224.00	3.46	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.55	1.23	1.68	2.59
2122224.00	3.23	3.4	3.7	4.0	4.2	4.6	10346	0.39	1.07	1.75	2.20	3.11
2112224.00	2.97	3.3	3.6	3.9	4.1	4.5	11340	0.75	1.43	2.11	2.57	3.48
2132124.00	3.41	3.5	3.8	4.1	4.3	4.7	9401	0.20	0.89	1.57	2.02	2.93
2122124.00	3.14	3.4	3.8	4.1	4.3	4.7	9710	0.59	1.50	2.18	2.64	3.55
2112124.00	2.88	3.3	3.6	3.9	4.1	4.5	11340	0.95	1.64	2.32	2.77	3.68
2132223.00	3.41	3.9	4.3	4.6	4.8	5.3	6617	1.11	2.02	2.70	3.16	4.30
2122223.00	3.17	3.9	4.3	4.6	4.8	5.3	6617	1.66	2.57	3.25	3.70	4.84
2112223.00	2.90	3.8	4.1	4.4	4.7	5.1	7394	2.05	2.73	3.41	4.09	5.00
2132123.00	3.34	4.0	4.4	4.7	4.9	5.4	6128	1.50	2.41	3.09	3.55	4.68
2122123.00	3.08	4.0	4.4	4.7	4.9	5.4	6128	2.09	3.00	3.68	4.14	5.27
2112123.00	2.79	3.8	4.1	4.4	4.7	5.1	7394	2.30	2.98	3.66	4.34	5.25
2132222.00	3.33	5.9	6.4	6.9	7.2	7.8	1711	5.84	6.98	8.11	8.80	10.16
2122222.00	3.06	6.1	6.6	7.1	7.4	8.0	1546	6.91	8.05	9.18	9.86	11.23
2112222.00	2.79	5.9	6.4	6.9	7.2	7.8	1711	7.07	8.20	9.34	10.02	11.39
2132122.00	3.26	6.1	6.7	7.2	7.5	8.1	1472	6.45	7.82	8.95	9.64	11.00
2122122.00	2.97	6.2	6.8	7.3	7.6	8.2	1404	7.34	8.70	9.84	10.52	11.89
2112122.00	2.60	5.9	6.4	6.9	7.2	7.8	1711	7.50	8.64	9.77	10.45	11.82
2132221.00	3.28	6.8	7.3	7.9	8.2	8.9	1060	8.00	9.14	10.50	11.18	12.77
2122221.00	3.01	6.8	7.3	7.9	8.2	8.9	1060	8.61	9.75	11.11	11.80	13.39
2112221.00	2.72	6.8	7.3	7.9	8.2	8.9	1060	9.27	10.41	11.77	12.45	14.05
2132121.00	3.22	6.8	7.3	7.9	8.2	8.9	1060	8.14	9.27	10.64	11.32	12.91
2122121.00	2.91	6.8	7.3	7.9	8.2	8.9	1060	8.84	9.98	11.34	12.02	13.61
2112121.00	2.56	6.8	7.3	7.9	8.2	8.9	1060	9.64	10.77	12.14	12.82	14.41

ROADHOG: 4" AC 10" BASE Overlay Thickness Data

4" AC 12" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1132234.00	3.73	4.6	5.0	5.4	5.6	6.1	4016	1.98	2.89	3.80	4.25	5.39
1122234.00	3.57	4.6	5.0	5.4	5.6	6.1	4016	2.34	3.25	4.16	4.61	5.75
1112234.00	3.38	4.6	5.0	5.4	5.6	6.1	4016	2.77	3.68	4.59	5.05	6.18
1132134.00	3.61	4.6	5.0	5.4	5.7	6.2	3836	2.25	3.16	4.07	4.75	5.89
1122134.00	3.44	4.6	5.0	5.4	5.6	6.1	4016	2.64	3.55	4.45	4.91	6.05
1112134.00	3.19	4.5	4.9	5.3	5.5	6.0	4202	2.98	3.89	4.80	5.25	6.39
1132233.00	3.65	6.8	7.3	7.9	8.2	8.9	1060	7.16	8.30	9.66	10.34	11.93
1122233.00	3.50	6.8	7.3	7.9	8.2	8.9	1060	7.50	8.64	10.00	10.68	12.27
1112233.00	3.31	6.8	7.3	7.9	8.2	8.9	1060	7.93	9.07	10.43	11.11	12.70
1132133.00	3.53	6.8	7.3	7.9	8.2	8.9	1060	7.43	8.57	9.93	10.61	12.20
1122133.00	3.36	6.8	7.3	7.9	8.2	8.9	1060	7.82	8.95	10.32	11.00	12.59
1112133.00	3.13	6.8	7.3	7.9	8.2	8.9	1060	8.34	9.48	10.84	11.52	13.11
1132232.00	3.46	6.8	7.3	7.9	8.2	8.9	1060	7.59	8.73	10.09	10.77	12.36
1122232.00	3.37	6.8	7.3	7.9	8.2	8.9	1060	7.80	8.93	10.30	10.98	12.57
1112232.00	3.22	6.8	7.3	7.9	8.2	8.9	1060	8.14	9.27	10.64	11.32	12.91
1132132.00	3.38	6.8	7.3	7.9	8.2	8.9	1060	7.77	8.91	10.27	10.95	12.55
1122132.00	3.23	6.8	7.3	7.9	8.2	8.9	1060	8.11	9.25	10.61	11.30	12.89
1112132.00	3.02	6.8	7.3	7.9	8.2	8.9	1060	8.59	9.73	11.09	11.77	13.36
1132231.00	2.81	6.8	7.3	7.9	8.2	8.9	1060	9.07	10.20	11.57	12.25	13.84
1122231.00	2.89	6.8	7.3	7.9	8.2	8.9	1060	8.89	10.02	11.39	12.07	13.66
1112231.00	2.95	6.8	7.3	7.9	8.2	8.9	1060	8.75	9.89	11.25	11.93	13.52
1132131.00	2.80	6.8	7.3	7.9	8.2	8.9	1060	9.09	10.23	11.59	12.27	13.86
1122131.00	2.84	6.8	7.3	7.9	8.2	8.9	1060	9.00	10.14	11.50	12.18	13.77
1112131.00	2.82	6.8	7.3	7.9	8.2	8.9	1060	9.05	10.18	11.55	12.23	13.82
2132234.00	3.72	3.4	3.8	4.1	4.3	4.7	9710	0.00	0.18	0.86	1.32	2.23
2122234.00	3.46	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.55	1.23	1.68	2.59
2112234.00	3.18	3.3	3.6	3.9	4.1	4.5	11340	0.27	0.95	1.64	2.09	3.00
2132134.00	3.65	3.5	3.8	4.2	4.4	4.8	9098	0.00	0.34	1.25	1.70	2.61
2122134.00	3.35	3.4	3.8	4.1	4.3	4.7	9710	0.11	1.02	1.70	2.16	3.07
2112134.00	3.07	3.3	3.6	3.9	4.1	4.5	11340	0.52	1.20	1.89	2.34	3.25
2132233.00	3.68	3.9	4.3	4.6	4.8	5.3	6617	0.50	1.41	2.09	2.55	3.68
2122233.00	3.40	3.9	4.3	4.6	4.8	5.3	6617	1.14	2.05	2.73	3.18	4.32
2112233.00	3.12	3.8	4.1	4.4	4.7	5.1	7394	1.55	2.23	2.91	3.59	4.50
2132133.00	3.58	4.0	4.4	4.8	5.0	5.4	5891	0.95	1.86	2.77	3.23	4.14
2122133.00	3.30	4.0	4.4	4.7	4.9	5.4	6128	1.59	2.50	3.18	3.64	4.77
2112133.00	2.99	3.8	4.1	4.4	4.7	5.1	7394	1.84	2.52	3.20	3.89	4.80
2132232.00	3.59	5.9	6.4	6.9	7.2	7.8	1711	5.25	6.39	7.52	8.20	9.57
2122232.00	3.31	6.1	6.6	7.1	7.4	8.0	1546	6.34	7.48	8.61	9.30	10.66
2112232.00	3.02	5.9	6.4	6.9	7.2	7.8	1711	6.55	7.68	8.82	9.50	10.86
2132132.00	3.51	6.1	6.7	7.2	7.5	8.1	1472	5.89	7.25	8.39	9.07	10.43
2122132.00	3.19	6.2	6.8	7.3	7.6	8.2	1404	6.84	8.20	9.34	10.02	11.39
2112132.00	2.88	6.0	6.5	7.0	7.3	7.9	1626	7.09	8.23	9.36	10.05	11.41
2132231.00	3.53	6.8	7.3	7.9	8.2	8.9	1060	7.43	8.57	9.93	10.61	12.20
2122231.00	3.24	6.8	7.3	7.9	8.2	8.9	1060	8.09	9.23	10.59	11.27	12.86
2112231.00	2.96	6.8	7.3	7.9	8.2	8.9	1060	8.73	9.86	11.23	11.91	13.50
2132131.00	3.46	6.8	7.3	7.9	8.2	8.9	1060	7.59	8.73	10.09	10.77	12.36
2122131.00	3.12	6.8	7.3	7.9	8.2	8.9	1060	8.36	9.50	10.86	11.55	13.14
2112131.00	2.80	6.8	7.3	7.9	8.2	8.9	1060	9.09	10.23	11.59	12.27	13.86

ROADHOG: 4" AC 12" BASE Overlay Thickness Data

6" AC 8" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1133214.00	3.90	4.7	5.1	5.5	5.8	6.3	3661	1.82	2.73	3.64	4.32	5.45
1123214.00	3.78	4.7	5.1	5.5	5.8	6.3	3661	2.09	3.00	3.91	4.59	5.73
1113214.00	3.51	4.6	5.0	5.4	5.6	6.1	4016	2.48	3.39	4.30	4.75	5.89
1133114.00	3.85	4.8	5.2	5.6	5.8	6.3	3492	2.16	3.07	3.98	4.43	5.57
1123114.00	3.69	4.7	5.1	5.5	5.8	6.3	3661	2.30	3.20	4.11	4.80	5.93
1113114.00	3.40	4.6	5.0	5.4	5.6	6.1	4016	2.73	3.64	4.55	5.00	6.14
1133213.00	3.87	6.8	7.3	7.9	8.2	8.9	1060	6.66	7.80	9.16	9.84	11.43
1123213.00	3.70	6.8	7.3	7.9	8.2	8.9	1060	7.05	8.18	9.55	10.23	11.82
1113213.00	3.43	6.8	7.3	7.9	8.2	8.9	1060	7.66	8.80	10.16	10.84	12.43
1133113.00	3.81	6.8	7.3	7.9	8.2	8.9	1060	6.80	7.93	9.30	9.98	11.57
1123113.00	3.62	6.8	7.3	7.9	8.2	8.9	1060	7.23	8.36	9.73	10.41	12.00
1113113.00	3.32	6.8	7.3	7.9	8.2	8.9	1060	7.91	9.05	10.41	11.09	12.68
1133212.00	3.63	6.8	7.3	7.9	8.2	8.9	1060	7.20	8.34	9.70	10.39	11.98
1123212.00	3.57	6.8	7.3	7.9	8.2	8.9	1060	7.34	8.48	9.84	10.52	12.11
1113212.00	3.33	6.8	7.3	7.9	8.2	8.9	1060	7.89	9.02	10.39	11.07	12.66
1133112.00	3.62	6.8	7.3	7.9	8.2	8.9	1060	7.23	8.36	9.73	10.41	12.00
1123112.00	3.50	6.8	7.3	7.9	8.2	8.9	1060	7.50	8.64	10.00	10.68	12.27
1113112.00	3.20	6.8	7.3	7.9	8.2	8.9	1060	8.18	9.32	10.68	11.36	12.95
1133211.00	2.55	6.8	7.3	7.9	8.2	8.9	1060	9.66	10.80	12.16	12.84	14.43
1123211.00	2.99	6.8	7.3	7.9	8.2	8.9	1060	8.66	9.80	11.16	11.84	13.43
1113211.00	3.13	6.8	7.3	7.9	8.2	8.9	1060	8.34	9.48	10.84	11.52	13.11
1133111.00	2.59	6.8	7.3	7.9	8.2	8.9	1060	9.57	10.70	12.07	12.75	14.34
1123111.00	3.01	6.8	7.3	7.9	8.2	8.9	1060	8.61	9.75	11.11	11.80	13.39
1113111.00	3.01	6.8	7.3	7.9	8.2	8.9	1060	8.61	9.75	11.11	11.80	13.39
2133214.00	4.04	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.36	1.27
2123214.00	3.76	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.55	1.00	1.91
2113214.00	3.40	3.3	3.6	3.9	4.1	4.5	11003	0.00	0.45	1.14	1.59	2.50
2133114.00	3.94	3.4	3.8	4.1	4.3	4.7	9710	0.00	0.00	0.36	0.82	1.73
2123114.00	3.73	3.5	3.8	4.1	4.3	4.7	9401	0.00	0.16	0.84	1.30	2.20
2113114.00	3.32	3.3	3.7	4.0	4.2	4.5	10672	0.00	0.86	1.55	2.00	2.68
2133213.00	3.93	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.61	1.52	1.98	2.89
2123213.00	3.70	3.9	4.3	4.6	4.8	5.3	6617	0.45	1.36	2.05	2.50	3.64
2113213.00	3.34	3.8	4.2	4.5	4.7	5.1	7129	1.05	1.95	2.64	3.09	4.00
2133113.00	3.93	3.9	4.3	4.7	4.9	5.3	6370	0.00	0.84	1.75	2.20	3.11
2123113.00	3.65	4.0	4.4	4.7	4.9	5.4	6128	0.80	1.70	2.39	2.84	3.98
2113113.00	3.25	3.8	4.2	4.5	4.7	5.1	7129	1.25	2.16	2.84	3.30	4.20
2133212.00	3.87	5.7	6.2	6.7	7.0	7.5	1898	4.16	5.30	6.43	7.11	8.25
2123212.00	3.62	6.1	6.6	7.1	7.4	8.0	1546	5.64	6.77	7.91	8.59	9.95
2113212.00	3.23	6.0	6.5	7.0	7.3	7.9	1626	6.30	7.43	8.57	9.25	10.61
2133112.00	3.86	5.9	6.4	6.9	7.2	7.8	1711	4.64	5.77	6.91	7.59	8.95
2123112.00	3.56	6.2	6.8	7.3	7.6	8.2	1404	6.00	7.36	8.50	9.18	10.55
2113112.00	3.13	6.1	6.6	7.1	7.4	8.0	1546	6.75	7.89	9.02	9.70	11.07
2133211.00	3.82	6.8	7.3	7.9	8.2	8.9	1060	6.77	7.91	9.27	9.95	11.55
2123211.00	3.56	6.8	7.3	7.9	8.2	8.9	1060	7.36	8.50	9.86	10.55	12.14
2113211.00	3.17	6.8	7.3	7.9	8.2	8.9	1060	8.25	9.39	10.75	11.43	13.02
2133111.00	3.81	6.8	7.3	7.9	8.2	8.9	1060	6.80	7.93	9.30	9.98	11.57
2123111.00	3.48	6.8	7.3	7.9	8.2	8.9	1060	7.55	8.68	10.05	10.73	12.32
2113111.00	3.06	6.8	7.3	7.9	8.2	8.9	1060	8.50	9.64	11.00	11.68	13.27

ROADHOG: 6" AC 8" BASE Overlay Thickness Data

6" AC 10" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1133224.00	4.27	4.6	5.0	5.4	5.7	6.2	3836	0.75	1.66	2.57	3.25	4.39
1123224.00	4.05	4.6	5.0	5.4	5.7	6.2	3836	1.25	2.16	3.07	3.75	4.89
1113224.00	3.73	4.6	5.0	5.4	5.6	6.1	4016	1.98	2.89	3.80	4.25	5.39
1133124.00	4.19	4.7	5.1	5.5	5.8	6.3	3661	1.16	2.07	2.98	3.66	4.80
1123124.00	3.94	4.6	5.0	5.4	5.7	6.2	3836	1.50	2.41	3.32	4.00	5.14
1113124.00	3.60	4.6	5.0	5.4	5.6	6.1	4016	2.27	3.18	4.09	4.55	5.68
1133223.00	4.20	6.8	7.3	7.9	8.2	8.9	1060	5.91	7.05	8.41	9.09	10.68
1123223.00	3.98	6.8	7.3	7.9	8.2	8.9	1060	6.41	7.55	8.91	9.59	11.18
1113223.00	3.67	6.8	7.3	7.9	8.2	8.9	1060	7.11	8.25	9.61	10.30	11.89
1133123.00	4.09	6.8	7.3	7.9	8.2	8.9	1060	6.16	7.30	8.66	9.34	10.93
1123123.00	3.88	6.8	7.3	7.9	8.2	8.9	1060	6.64	7.77	9.14	9.82	11.41
1113123.00	3.54	6.8	7.3	7.9	8.2	8.9	1060	7.41	8.55	9.91	10.59	12.18
1133222.00	3.84	6.8	7.3	7.9	8.2	8.9	1060	6.73	7.86	9.23	9.91	11.50
1123222.00	3.80	6.8	7.3	7.9	8.2	8.9	1060	6.82	7.95	9.32	10.00	11.59
1113222.00	3.56	6.8	7.3	7.9	8.2	8.9	1060	7.36	8.50	9.86	10.55	12.14
1133122.00	3.81	6.8	7.3	7.9	8.2	8.9	1060	6.80	7.93	9.30	9.98	11.57
1123122.00	3.71	6.8	7.3	7.9	8.2	8.9	1060	7.02	8.16	9.52	10.20	11.80
1113122.00	3.41	6.8	7.3	7.9	8.2	8.9	1060	7.70	8.84	10.20	10.89	12.48
1133221.00	2.82	6.8	7.3	7.9	8.2	8.9	1060	9.05	10.18	11.55	12.23	13.82
1123221.00	3.11	6.8	7.3	7.9	8.2	8.9	1060	8.39	9.52	10.89	11.57	13.16
1113221.00	3.26	6.8	7.3	7.9	8.2	8.9	1060	8.05	9.18	10.55	11.23	12.82
1133121.00	2.84	6.8	7.3	7.9	8.2	8.9	1060	9.00	10.14	11.50	12.18	13.77
1123121.00	3.13	6.8	7.3	7.9	8.2	8.9	1060	8.34	9.48	10.84	11.52	13.11
1113121.00	3.17	6.8	7.3	7.9	8.2	8.9	1060	8.25	9.39	10.75	11.43	13.02
2133224.00	4.36	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.00	0.55
2123224.00	4.01	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.43	1.34
2113224.00	3.59	3.3	3.6	3.9	4.1	4.5	11003	0.00	0.02	0.70	1.16	2.07
2133124.00	4.32	3.5	3.8	4.1	4.3	4.7	9401	0.00	0.00	0.00	0.00	0.86
2123124.00	3.93	3.5	3.8	4.1	4.3	4.7	9401	0.00	0.00	0.39	0.84	1.75
2113124.00	3.49	3.3	3.7	4.0	4.2	4.5	10672	0.00	0.48	1.16	1.61	2.30
2133223.00	4.32	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.00	0.64	1.09	2.00
2123223.00	3.93	3.9	4.3	4.6	4.8	5.3	6617	0.00	0.84	1.52	1.98	3.11
2113223.00	3.53	3.8	4.2	4.5	4.7	5.1	7129	0.61	1.52	2.20	2.66	3.57
2133123.00	4.24	3.9	4.3	4.7	4.9	5.3	6370	0.00	0.14	1.05	1.50	2.41
2123123.00	3.86	4.0	4.4	4.8	5.0	5.4	5891	0.32	1.23	2.14	2.59	3.50
2113123.00	3.42	3.8	4.2	4.6	4.8	5.2	6871	0.86	1.77	2.68	3.14	4.05
2133222.00	4.19	5.7	6.2	6.7	7.0	7.5	1898	3.43	4.57	5.70	6.39	7.52
2123222.00	3.83	6.0	6.5	7.0	7.3	7.9	1626	4.93	6.07	7.20	7.89	9.25
2113222.00	3.42	6.0	6.5	7.0	7.3	7.9	1626	5.86	7.00	8.14	8.82	10.18
2133122.00	4.16	5.9	6.4	6.9	7.2	7.8	1711	3.95	5.09	6.23	6.91	8.27
2123122.00	3.77	6.2	6.8	7.3	7.6	8.2	1404	5.52	6.89	8.02	8.70	10.07
2113122.00	3.31	6.1	6.6	7.1	7.4	8.0	1546	6.34	7.48	8.61	9.30	10.66
2133221.00	4.17	6.8	7.3	7.9	8.2	8.9	1060	5.98	7.11	8.48	9.16	10.75
2123221.00	3.78	6.8	7.3	7.9	8.2	8.9	1060	6.86	8.00	9.36	10.05	11.64
2113221.00	3.37	6.8	7.3	7.9	8.2	8.9	1060	7.80	8.93	10.30	10.98	12.57
2133121.00	4.10	6.8	7.3	7.9	8.2	8.9	1060	6.14	7.27	8.64	9.32	10.91
2123121.00	3.71	6.8	7.3	7.9	8.2	8.9	1060	7.02	8.16	9.52	10.20	11.80
2113121.00	3.24	6.8	7.3	7.9	8.2	8.9	1060	8.09	9.23	10.59	11.27	12.86

ROADHOG: 6" AC 10" BASE Overlay Thickness Data

6" AC 12" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1133234.00	4.57	4.6	5.0	5.4	5.6	6.1	4016	0.07	0.98	1.89	2.34	3.48
1123234.00	4.32	4.6	5.0	5.4	5.6	6.1	4016	0.64	1.55	2.45	2.91	4.05
1113234.00	3.97	4.6	5.0	5.4	5.6	6.1	4016	1.43	2.34	3.25	3.70	4.84
1133134.00	4.45	4.6	5.0	5.4	5.7	6.2	3836	0.34	1.25	2.16	2.84	3.98
1123134.00	4.18	4.6	5.0	5.4	5.7	6.2	3836	0.95	1.86	2.77	3.45	4.59
1113134.00	3.83	4.6	5.0	5.4	5.6	6.1	4016	1.75	2.66	3.57	4.02	5.16
1133233.00	4.45	6.8	7.4	7.9	8.3	9.0	1028	5.34	6.70	7.84	8.75	10.34
1123233.00	4.23	6.8	7.4	7.9	8.3	9.0	1022	5.84	7.20	8.34	9.25	10.84
1113233.00	3.91	6.8	7.3	7.9	8.2	8.9	1060	6.57	7.70	9.07	9.75	11.34
1133133.00	4.34	6.8	7.4	7.9	8.3	9.0	1022	5.59	6.95	8.09	9.00	10.59
1123133.00	4.10	6.8	7.3	7.9	8.2	8.9	1060	6.14	7.27	8.64	9.32	10.91
1113133.00	3.76	6.8	7.3	7.9	8.2	8.9	1060	6.91	8.05	9.41	10.09	11.68
1133232.00	4.05	6.8	7.3	7.9	8.2	8.9	1060	6.25	7.39	8.75	9.43	11.02
1123232.00	4.00	6.8	7.3	7.9	8.2	8.9	1060	6.36	7.50	8.86	9.55	11.14
1113232.00	3.79	6.8	7.3	7.9	8.2	8.9	1060	6.84	7.98	9.34	10.02	11.61
1133132.00	4.02	6.8	7.3	7.9	8.2	8.9	1060	6.32	7.45	8.82	9.50	11.09
1123132.00	3.92	6.8	7.3	7.9	8.2	8.9	1060	6.55	7.68	9.05	9.73	11.32
1113132.00	3.64	6.8	7.3	7.9	8.2	8.9	1060	7.18	8.32	9.68	10.36	11.95
1133231.00	3.13	6.8	7.3	7.9	8.2	8.9	1060	8.34	9.48	10.84	11.52	13.11
1123231.00	3.32	6.8	7.3	7.9	8.2	8.9	1060	7.91	9.05	10.41	11.09	12.68
1113231.00	3.42	6.8	7.3	7.9	8.2	8.9	1060	7.68	8.82	10.18	10.86	12.45
1133131.00	3.13	6.8	7.3	7.9	8.2	8.9	1060	8.34	9.48	10.84	11.52	13.11
1123131.00	3.32	6.8	7.3	7.9	8.2	8.9	1060	7.91	9.05	10.41	11.09	12.68
1113131.00	3.34	6.8	7.3	7.9	8.2	8.9	1060	7.86	9.00	10.36	11.05	12.64
2133234.00	4.66	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.00	0.00
2123234.00	4.22	3.4	3.8	4.1	4.3	4.7	9710	0.00	0.00	0.00	0.18	1.09
2113234.00	3.79	3.3	3.7	4.0	4.2	4.5	10672	0.00	0.00	0.48	0.93	1.61
2133134.00	4.60	3.5	3.8	4.2	4.4	4.8	9098	0.00	0.00	0.00	0.00	0.45
2123134.00	4.13	3.5	3.8	4.2	4.4	4.8	9098	0.00	0.00	0.16	0.61	1.52
2113134.00	3.67	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.07	0.75	1.20	2.11
2133233.00	4.60	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.00	0.00	0.45	1.36
2123233.00	4.16	3.9	4.3	4.6	4.8	5.3	6617	0.00	0.32	1.00	1.45	2.59
2113233.00	3.72	3.8	4.2	4.5	4.7	5.1	7129	0.18	1.09	1.77	2.23	3.14
2133133.00	4.48	4.0	4.4	4.7	4.9	5.4	6128	0.00	0.00	0.50	0.95	2.09
2123133.00	4.07	4.0	4.4	4.8	5.0	5.4	5891	0.00	0.75	1.66	2.11	3.02
2113133.00	3.61	3.9	4.3	4.6	4.8	5.3	6617	0.66	1.57	2.25	2.70	3.84
2133232.00	4.50	5.7	6.2	6.7	7.0	7.5	1898	2.73	3.86	5.00	5.68	6.82
2123232.00	4.06	6.0	6.5	7.0	7.3	7.9	1626	4.41	5.55	6.68	7.36	8.73
2113232.00	3.63	5.9	6.4	6.9	7.2	7.8	1711	5.16	6.30	7.43	8.11	9.48
2133132.00	4.43	5.9	6.4	6.9	7.2	7.8	1711	3.34	4.48	5.61	6.30	7.66
2123132.00	3.98	6.2	6.8	7.3	7.6	8.2	1404	5.05	6.41	7.55	8.23	9.59
2113132.00	3.50	6.2	6.7	7.2	7.5	8.1	1472	6.14	7.27	8.41	9.09	10.45
2133231.00	4.57	6.8	7.3	7.9	8.2	8.9	1060	5.07	6.20	7.57	8.25	9.84
2123231.00	3.99	6.8	7.3	7.9	8.2	8.9	1060	6.39	7.52	8.89	9.57	11.16
2113231.00	3.57	6.8	7.3	7.9	8.2	8.9	1060	7.34	8.48	9.84	10.52	12.11
2133131.00	4.37	6.8	7.3	7.9	8.2	8.9	1060	5.52	6.66	8.02	8.70	10.30
2123131.00	3.90	6.8	7.3	7.9	8.2	8.9	1060	6.59	7.73	9.09	9.77	11.36
2113131.00	3.43	6.8	7.3	7.9	8.2	8.9	1060	7.66	8.80	10.16	10.84	12.43

ROADHOG: 6" AC 12" BASE Overlay Thickness Data

8" AC 8" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1134214.00	5.02	4.6	5.0	5.4	5.6	6.1	4016	0.00	0.00	0.86	1.32	2.45
1124214.00	4.63	4.6	5.0	5.4	5.7	6.2	3836	0.00	0.84	1.75	2.43	3.57
1114214.00	4.08	4.6	5.0	5.4	5.7	6.2	3836	1.18	2.09	3.00	3.68	4.82
1134114.00	4.80	4.6	5.0	5.4	5.6	6.1	4016	0.00	0.45	1.36	1.82	2.95
1124114.00	4.51	4.7	5.1	5.5	5.8	6.3	3661	0.43	1.34	2.25	2.93	4.07
1114114.00	3.98	4.6	5.0	5.4	5.6	6.1	4016	1.41	2.32	3.23	3.68	4.82
1134213.00	4.71	6.8	7.3	7.9	8.2	8.9	1059	4.75	5.89	7.25	7.93	9.52
1124213.00	4.48	6.8	7.3	7.9	8.2	8.9	1060	5.27	6.41	7.77	8.45	10.05
1114213.00	3.99	6.8	7.3	7.9	8.2	8.9	1060	6.39	7.52	8.89	9.57	11.16
1134113.00	4.67	6.8	7.4	7.9	8.2	8.9	1041	4.84	6.20	7.34	8.02	9.61
1124113.00	4.40	6.8	7.3	7.9	8.2	8.9	1060	5.45	6.59	7.95	8.64	10.23
1114113.00	3.91	6.8	7.3	7.9	8.2	8.9	1060	6.57	7.70	9.07	9.75	11.34
1134212.00	3.87	6.8	7.3	7.9	8.2	8.9	1060	6.66	7.80	9.16	9.84	11.43
1124212.00	4.16	6.8	7.3	7.9	8.2	8.9	1060	6.00	7.14	8.50	9.18	10.77
1114212.00	3.88	6.8	7.3	7.9	8.2	8.9	1060	6.64	7.77	9.14	9.82	11.41
1134112.00	3.90	6.8	7.3	7.9	8.2	8.9	1060	6.59	7.73	9.09	9.77	11.36
1124112.00	4.12	6.8	7.3	7.9	8.2	8.9	1060	6.09	7.23	8.59	9.27	10.86
1114112.00	3.77	6.8	7.3	7.9	8.2	8.9	1060	6.89	8.02	9.39	10.07	11.66
1134211.00	2.67	6.8	7.3	7.9	8.2	8.9	1060	9.39	10.52	11.89	12.57	14.16
1124211.00	3.20	6.8	7.3	7.9	8.2	8.9	1060	8.18	9.32	10.68	11.36	12.95
1114211.00	3.52	6.8	7.3	7.9	8.2	8.9	1060	7.45	8.59	9.95	10.64	12.23
1134111.00	2.67	6.8	7.3	7.9	8.2	8.9	1060	9.39	10.52	11.89	12.57	14.16
1124111.00	3.22	6.8	7.3	7.9	8.2	8.9	1060	8.14	9.27	10.64	11.32	12.91
1114111.00	3.49	6.8	7.3	7.9	8.2	8.9	1060	7.52	8.66	10.02	10.70	12.30
2134214.00	5.28	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.00	0.00	0.00	0.00
2124214.00	4.67	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.00	0.00
2114214.00	4.00	3.3	3.7	4.0	4.2	4.5	10672	0.00	0.00	0.00	0.45	1.14
2134114.00	5.22	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.00	0.00
2124114.00	4.59	3.5	3.8	4.1	4.3	4.7	9401	0.00	0.00	0.00	0.00	0.25
2114114.00	3.93	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.00	0.16	0.61	1.52
2134213.00	5.02	3.8	4.1	4.4	4.7	5.1	7394	0.00	0.00	0.00	0.00	0.18
2124213.00	4.57	3.9	4.3	4.6	4.8	5.3	6617	0.00	0.00	0.07	0.52	1.66
2114213.00	3.93	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.61	1.52	1.98	2.89
2134113.00	4.96	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.00	0.00	0.00	0.55
2124113.00	4.45	3.9	4.3	4.7	4.9	5.3	6370	0.00	0.00	0.57	1.02	1.93
2114113.00	3.85	3.9	4.3	4.6	4.8	5.3	6617	0.11	1.02	1.70	2.16	3.30
2134212.00	4.90	5.5	6.0	6.5	6.8	7.3	2108	1.36	2.50	3.64	4.32	5.45
2124212.00	4.45	5.8	6.3	6.8	7.1	7.7	1802	3.07	4.20	5.34	6.02	7.39
2114212.00	3.83	6.0	6.5	7.0	7.3	7.9	1626	4.93	6.07	7.20	7.89	9.25
2134112.00	4.90	5.6	6.1	6.6	6.9	7.4	2000	1.59	2.73	3.86	4.55	5.68
2124112.00	4.34	6.0	6.5	7.0	7.3	7.9	1626	3.77	4.91	6.05	6.73	8.09
2114112.00	3.75	6.1	6.7	7.2	7.5	8.1	1472	5.34	6.70	7.84	8.52	9.89
2134211.00	4.80	6.8	7.3	7.9	8.2	8.9	1060	4.55	5.68	7.05	7.73	9.32
2124211.00	4.34	6.8	7.3	7.9	8.2	8.9	1060	5.59	6.73	8.09	8.77	10.36
2114211.00	3.77	6.8	7.3	7.9	8.2	8.9	1060	6.89	8.02	9.39	10.07	11.66
2134111.00	4.90	6.8	7.3	7.9	8.2	8.9	1060	4.32	5.45	6.82	7.50	9.09
2124111.00	4.29	6.8	7.3	7.9	8.2	8.9	1060	5.70	6.84	8.20	8.89	10.48
2114111.00	3.69	6.8	7.3	7.9	8.2	8.9	1060	7.07	8.20	9.57	10.25	11.84

ROADHOG: 8" AC 8" BASE Overlay Thickness Data

8" AC 10" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1134224.00	5.73	4.5	4.9	5.3	5.5	6.0	4202	0.00	0.00	0.00	0.00	0.61
1124224.00	4.90	4.6	5.0	5.4	5.6	6.1	4016	0.00	0.23	1.14	1.59	2.73
1114224.00	4.29	4.6	5.0	5.4	5.6	6.1	4016	0.70	1.61	2.52	2.98	4.11
1134124.00	5.48	4.6	5.0	5.4	5.6	6.1	4016	0.00	0.00	0.00	0.27	1.41
1124124.00	4.78	4.6	5.0	5.4	5.7	6.2	3836	0.00	0.50	1.41	2.09	3.23
1114124.00	4.18	4.6	5.0	5.4	5.6	6.1	4016	0.95	1.86	2.77	3.23	4.36
1134223.00	5.12	6.7	7.2	7.8	8.1	8.8	1111	3.59	4.73	6.09	6.77	8.36
1124223.00	4.78	6.8	7.4	7.9	8.3	9.0	1022	4.59	5.95	7.09	8.00	9.59
1114223.00	4.23	6.8	7.3	7.9	8.2	8.9	1060	5.84	6.98	8.34	9.02	10.61
1134123.00	5.12	6.8	7.3	7.9	8.2	8.9	1059	3.82	4.95	6.32	7.00	8.59
1124123.00	4.65	6.8	7.3	7.9	8.2	8.9	1060	4.89	6.02	7.39	8.07	9.66
1114123.00	4.10	6.8	7.3	7.9	8.2	8.9	1060	6.14	7.27	8.64	9.32	10.91
1134222.00	4.15	6.8	7.3	7.9	8.2	8.9	1060	6.02	7.16	8.52	9.20	10.80
1124222.00	4.33	6.8	7.3	7.9	8.2	8.9	1060	5.61	6.75	8.11	8.80	10.39
1114222.00	4.08	6.8	7.3	7.9	8.2	8.9	1060	6.18	7.32	8.68	9.36	10.95
1134122.00	4.15	6.8	7.3	7.9	8.2	8.9	1060	6.02	7.16	8.52	9.20	10.80
1124122.00	4.31	6.8	7.3	7.9	8.2	8.9	1060	5.66	6.80	8.16	8.84	10.43
1114122.00	3.97	6.8	7.3	7.9	8.2	8.9	1060	6.43	7.57	8.93	9.61	11.20
1134221.00	3.07	6.8	7.3	7.9	8.2	8.9	1060	8.48	9.61	10.98	11.66	13.25
1124221.00	3.43	6.8	7.3	7.9	8.2	8.9	1060	7.66	8.80	10.16	10.84	12.43
1114221.00	3.66	6.8	7.3	7.9	8.2	8.9	1060	7.14	8.27	9.64	10.32	11.91
1134121.00	3.06	6.8	7.3	7.9	8.2	8.9	1060	8.50	9.64	11.00	11.68	13.27
1124121.00	3.44	6.8	7.3	7.9	8.2	8.9	1060	7.64	8.77	10.14	10.82	12.41
1114121.00	3.62	6.8	7.3	7.9	8.2	8.9	1060	7.23	8.36	9.73	10.41	12.00
2134224.00	5.90	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.00	0.00	0.00	0.00
2124224.00	4.94	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.00	0.00
2114224.00	4.17	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.00	0.00	0.07	0.98
2134124.00	5.90	3.4	3.8	4.1	4.3	4.7	9710	0.00	0.00	0.00	0.00	0.00
2124124.00	4.81	3.5	3.8	4.1	4.3	4.7	9401	0.00	0.00	0.00	0.00	0.00
2114124.00	4.08	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.27	1.18
2134223.00	5.82	3.8	4.1	4.4	4.7	5.1	7394	0.00	0.00	0.00	0.00	0.00
2124223.00	4.84	3.9	4.3	4.6	4.8	5.3	6617	0.00	0.00	0.00	0.00	1.05
2114223.00	4.11	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.20	1.11	1.57	2.48
2134123.00	5.82	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.00	0.00	0.00	0.00
2124123.00	4.68	4.0	4.4	4.7	4.9	5.4	6128	0.00	0.00	0.05	0.50	1.64
2114123.00	4.02	3.9	4.3	4.7	4.9	5.3	6370	0.00	0.64	1.55	2.00	2.91
2134222.00	5.73	5.4	5.9	6.4	6.7	7.2	2221	0.00	0.39	1.52	2.20	3.34
2124222.00	4.63	5.8	6.3	6.8	7.1	7.7	1802	2.66	3.80	4.93	5.61	6.98
2114222.00	4.01	6.0	6.5	7.0	7.3	7.9	1626	4.52	5.66	6.80	7.48	8.84
2134122.00	5.48	5.6	6.1	6.6	6.9	7.4	2000	0.27	1.41	2.55	3.23	4.36
2124122.00	4.57	6.0	6.5	7.0	7.3	7.9	1626	3.25	4.39	5.52	6.20	7.57
2114122.00	3.91	6.1	6.7	7.2	7.5	8.1	1472	4.98	6.34	7.48	8.16	9.52
2134221.00	5.73	6.8	7.3	7.9	8.2	8.9	1060	2.43	3.57	4.93	5.61	7.20
2124221.00	4.59	6.8	7.3	7.9	8.2	8.9	1060	5.02	6.16	7.52	8.20	9.80
2114221.00	3.95	6.8	7.3	7.9	8.2	8.9	1060	6.48	7.61	8.98	9.66	11.25
2134121.00	5.61	6.8	7.3	7.9	8.2	8.9	1060	2.70	3.84	5.20	5.89	7.48
2124121.00	4.48	6.8	7.3	7.9	8.2	8.9	1060	5.27	6.41	7.77	8.45	10.05
2114121.00	3.85	6.8	7.3	7.9	8.2	8.9	1060	6.70	7.84	9.20	9.89	11.48

ROADHOG: 8" AC 10" BASE Overlay Thickness Data

8" AC 12" BASE ROADHOG STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1134234.00	5.97	4.4	4.8	5.2	5.5	5.9	4394	0.00	0.00	0.00	0.00	0.00
1124234.00	5.23	4.5	4.9	5.3	5.5	6.0	4202	0.00	0.00	0.16	0.61	1.75
1114234.00	4.61	4.5	4.9	5.3	5.5	6.0	4202	0.00	0.66	1.57	2.02	3.16
1134134.00	5.97	4.5	4.9	5.3	5.5	6.0	4202	0.00	0.00	0.00	0.00	0.07
1124134.00	5.07	4.6	5.0	5.4	5.6	6.1	4016	0.00	0.00	0.75	1.20	2.34
1114134.00	4.49	4.6	5.0	5.4	5.6	6.1	4016	0.25	1.16	2.07	2.52	3.66
1134233.00	5.40	6.5	7.1	7.6	7.9	8.6	1187	2.50	3.86	5.00	5.68	7.27
1124233.00	5.04	6.8	7.3	7.9	8.2	8.9	1059	4.00	5.14	6.50	7.18	8.77
1114233.00	4.55	6.8	7.4	7.9	8.3	9.0	1022	5.11	6.48	7.61	8.52	10.11
1134133.00	5.32	6.7	7.2	7.8	8.1	8.8	1111	3.14	4.27	5.64	6.32	7.91
1124133.00	4.96	6.8	7.4	7.9	8.3	9.0	1028	4.18	5.55	6.68	7.59	9.18
1114133.00	4.42	6.8	7.3	7.9	8.2	8.9	1060	5.41	6.55	7.91	8.59	10.18
1134232.00	4.49	6.8	7.3	7.9	8.2	8.9	1060	5.25	6.39	7.75	8.43	10.02
1124232.00	4.64	6.8	7.3	7.9	8.2	8.9	1060	4.91	6.05	7.41	8.09	9.68
1114232.00	4.39	6.8	7.3	7.9	8.2	8.9	1060	5.48	6.61	7.98	8.66	10.25
1134132.00	4.51	6.8	7.3	7.9	8.2	8.9	1060	5.20	6.34	7.70	8.39	9.98
1124132.00	4.58	6.8	7.3	7.9	8.2	8.9	1060	5.05	6.18	7.55	8.23	9.82
1114132.00	4.27	6.8	7.3	7.9	8.2	8.9	1060	5.75	6.89	8.25	8.93	10.52
1134231.00	3.47	6.8	7.3	7.9	8.2	8.9	1060	7.57	8.70	10.07	10.75	12.34
1124231.00	3.74	6.8	7.3	7.9	8.2	8.9	1060	6.95	8.09	9.45	10.14	11.73
1114231.00	3.90	6.8	7.3	7.9	8.2	8.9	1060	6.59	7.73	9.09	9.77	11.36
1134131.00	3.43	6.8	7.3	7.9	8.2	8.9	1060	7.66	8.80	10.16	10.84	12.43
1124131.00	3.73	6.8	7.3	7.9	8.2	8.9	1060	6.98	8.11	9.48	10.16	11.75
1114131.00	3.84	6.8	7.3	7.9	8.2	8.9	1060	6.73	7.86	9.23	9.91	11.50
2134234.00	6.65	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.00	0.00	0.00	0.00
2124234.00	5.18	3.4	3.7	4.0	4.2	4.6	10025	0.00	0.00	0.00	0.00	0.00
2114234.00	4.46	3.4	3.7	4.0	4.2	4.6	10346	0.00	0.00	0.00	0.00	0.32
2134134.00	6.40	3.4	3.8	4.1	4.3	4.7	9710	0.00	0.00	0.00	0.00	0.00
2124134.00	5.07	3.5	3.8	4.2	4.4	4.8	9098	0.00	0.00	0.00	0.00	0.00
2114134.00	4.33	3.4	3.8	4.1	4.3	4.7	9710	0.00	0.00	0.00	0.00	0.84
2134233.00	6.40	3.8	4.2	4.5	4.7	5.1	7129	0.00	0.00	0.00	0.00	0.00
2124233.00	5.10	3.9	4.3	4.6	4.8	5.3	6617	0.00	0.00	0.00	0.00	0.45
2114233.00	4.39	3.8	4.2	4.6	4.8	5.2	6871	0.00	0.00	0.48	0.93	1.84
2134133.00	6.12	3.9	4.3	4.6	4.8	5.3	6617	0.00	0.00	0.00	0.00	0.00
2124133.00	4.98	4.0	4.4	4.7	4.9	5.4	6128	0.00	0.00	0.00	0.00	0.95
2114133.00	4.28	3.9	4.3	4.7	4.9	5.3	6370	0.00	0.05	0.95	1.41	2.32
2134232.00	6.12	5.4	5.9	6.4	6.7	7.2	2221	0.00	0.00	0.64	1.32	2.45
2124232.00	4.98	5.8	6.3	6.8	7.1	7.7	1802	1.86	3.00	4.14	4.82	6.18
2114232.00	4.29	5.9	6.4	6.9	7.2	7.8	1711	3.66	4.80	5.93	6.61	7.98
2134132.00	5.84	5.7	6.2	6.7	7.0	7.5	1898	0.00	0.82	1.95	2.64	3.77
2124132.00	4.86	6.1	6.6	7.1	7.4	8.0	1546	2.82	3.95	5.09	5.77	7.14
2114132.00	4.17	6.1	6.7	7.2	7.5	8.1	1472	4.39	5.75	6.89	7.57	8.93
2134231.00	6.12	6.8	7.3	7.9	8.2	8.9	1060	1.55	2.68	4.05	4.73	6.32
2124231.00	4.90	6.8	7.3	7.9	8.2	8.9	1060	4.32	5.45	6.82	7.50	9.09
2114231.00	4.24	6.8	7.3	7.9	8.2	8.9	1060	5.82	6.95	8.32	9.00	10.59
2134131.00	5.84	6.8	7.3	7.9	8.2	8.9	1060	2.18	3.32	4.68	5.36	6.95
2124131.00	4.80	6.8	7.3	7.9	8.2	8.9	1060	4.55	5.68	7.05	7.73	9.32
2114131.00	4.11	6.8	7.3	7.9	8.2	8.9	1060	6.11	7.25	8.61	9.30	10.89

ROADHOG: 8" AC 12" BASE Overlay Thickness Data

2" AC 8" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1131214.00	1.55	4.7	5.2	5.6	5.8	6.3	10526	7.16	8.30	9.20	9.66	10.80
1121214.00	1.66	4.7	5.2	5.6	5.8	6.3	10526	6.91	8.05	8.95	9.41	10.55
1111214.00	1.81	4.7	5.2	5.6	5.8	6.3	10526	6.57	7.70	8.61	9.07	10.20
1131114.00	1.45	4.7	5.1	5.5	5.8	6.3	10714	7.39	8.30	9.20	9.89	11.02
1121114.00	1.52	4.7	5.1	5.5	5.8	6.3	10714	7.23	8.14	9.05	9.73	10.86
1111114.00	1.65	4.7	5.1	5.5	5.8	6.3	10714	6.93	7.84	8.75	9.43	10.57
1131213.00	1.62	5.5	6.0	6.4	6.7	7.3	6452	8.82	9.95	10.86	11.55	12.91
1121213.00	1.68	5.5	6.0	6.4	6.7	7.3	6452	8.68	9.82	10.73	11.41	12.77
1111213.00	1.85	5.5	6.0	6.4	6.7	7.3	6452	8.30	9.43	10.34	11.02	12.39
1131113.00	1.45	5.5	6.0	6.4	6.7	7.3	6522	9.20	10.34	11.25	11.93	13.30
1121113.00	1.55	5.5	6.0	6.4	6.7	7.3	6522	8.98	10.11	11.02	11.70	13.07
1111113.00	1.69	5.5	6.0	6.4	6.7	7.3	6522	8.66	9.80	10.70	11.39	12.75
1131212.00	1.57	7.2	7.8	8.4	8.7	9.5	2532	12.80	14.16	15.52	16.20	18.02
1121212.00	1.74	7.2	7.8	8.4	8.8	9.5	2521	12.41	13.77	15.14	16.05	17.64
1111212.00	1.93	7.2	7.8	8.4	8.8	9.5	2490	11.98	13.34	14.70	15.61	17.20
1131112.00	1.47	7.2	7.8	8.4	8.7	9.5	2532	13.02	14.39	15.75	16.43	18.25
1121112.00	1.60	7.2	7.8	8.4	8.7	9.5	2532	12.73	14.09	15.45	16.14	17.95
1111112.00	1.77	7.2	7.8	8.4	8.8	9.5	2510	12.34	13.70	15.07	15.98	17.57
1131211.00	1.54	9.6	10.4	11.1	11.6	12.5	910	18.32	20.14	21.73	22.86	24.91
1121211.00	1.75	9.6	10.4	11.2	11.6	12.5	892	17.84	19.66	21.48	22.39	24.43
1111211.00	1.97	9.8	10.6	11.3	11.8	12.7	850	17.80	19.61	21.20	22.34	24.39
1131111.00	1.44	9.7	10.4	11.2	11.6	12.6	888	18.77	20.36	22.18	23.09	25.36
1121111.00	1.63	9.7	10.5	11.2	11.7	12.6	873	18.34	20.16	21.75	22.89	24.93
1111111.00	1.83	9.8	10.6	11.3	11.8	12.7	843	18.11	19.93	21.52	22.66	24.70
2131214.00	1.44	4.0	4.3	4.7	4.9	5.3	18750	5.82	6.50	7.41	7.86	8.77
2121214.00	1.43	3.9	4.2	4.6	4.8	5.2	20000	5.61	6.30	7.20	7.66	8.57
2111214.00	1.47	3.8	4.2	4.5	4.8	5.2	20690	5.30	6.20	6.89	7.57	8.48
2131114.00	1.40	4.0	4.4	4.7	5.0	5.4	18182	5.91	6.82	7.50	8.18	9.09
2121114.00	1.37	3.9	4.3	4.6	4.9	5.3	19355	5.75	6.66	7.34	8.02	8.93
2111114.00	1.39	3.8	4.2	4.5	4.7	5.1	21429	5.48	6.39	7.07	7.52	8.43
2131213.00	1.45	4.4	4.8	5.2	5.4	5.9	13333	6.70	7.61	8.52	8.98	10.11
2121213.00	1.42	4.4	4.7	5.1	5.4	5.8	13953	6.77	7.45	8.36	9.05	9.95
2111213.00	1.44	4.3	4.6	5.0	5.2	5.7	15000	6.50	7.18	8.09	8.55	9.68
2131113.00	1.40	4.4	4.8	5.2	5.5	6.0	13043	6.82	7.73	8.64	9.32	10.45
2121113.00	1.35	4.4	4.7	5.1	5.4	5.8	13953	6.93	7.61	8.52	9.20	10.11
2111113.00	1.36	4.3	4.6	5.0	5.2	5.7	15000	6.68	7.36	8.27	8.73	9.86
2131212.00	1.46	5.2	5.6	6.1	6.3	6.9	7895	8.50	9.41	10.55	11.00	12.36
2121212.00	1.43	5.2	5.6	6.1	6.3	6.9	7895	8.57	9.48	10.61	11.07	12.43
2111212.00	1.43	5.1	5.5	6.0	6.2	6.8	8333	8.34	9.25	10.39	10.84	12.20
2131112.00	1.40	5.2	5.7	6.1	6.4	6.9	7692	8.64	9.77	10.68	11.36	12.50
2121112.00	1.34	5.2	5.6	6.1	6.3	6.9	7895	8.77	9.68	10.82	11.27	12.64
2111112.00	1.31	5.1	5.5	5.9	6.2	6.7	8571	8.61	9.52	10.43	11.11	12.25
2131211.00	1.49	5.8	6.2	6.7	7.0	7.6	5556	9.80	10.70	11.84	12.52	13.89
2121211.00	1.43	5.8	6.3	6.7	7.0	7.6	5505	9.93	11.07	11.98	12.66	14.02
2111211.00	1.41	5.7	6.2	6.7	7.0	7.6	5660	9.75	10.89	12.02	12.70	14.07
2131111.00	1.42	5.8	6.3	6.8	7.0	7.6	5455	9.95	11.09	12.23	12.68	14.05
2121111.00	1.33	5.8	6.3	6.8	7.1	7.7	5405	10.16	11.30	12.43	13.11	14.48
2111111.00	1.26	5.7	6.2	6.6	6.9	7.5	5769	10.09	11.23	12.14	12.82	14.18

AASHTO: 2" AC 8" BASE Overlay Thickness Data

2" AC 10" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1131224.00	1.84	4.7	5.2	5.6	5.8	6.3	10526	6.50	7.64	8.55	9.00	10.14
1121224.00	1.95	4.7	5.2	5.6	5.8	6.3	10526	6.25	7.39	8.30	8.75	9.89
1111224.00	2.14	4.8	5.2	5.6	5.9	6.4	10345	6.05	6.95	7.86	8.55	9.68
1131124.00	1.72	4.7	5.2	5.6	5.8	6.3	10526	6.77	7.91	8.82	9.27	10.41
1121124.00	1.80	4.7	5.2	5.6	5.8	6.3	10526	6.59	7.73	8.64	9.09	10.23
1111124.00	1.94	4.7	5.2	5.6	5.8	6.3	10526	6.27	7.41	8.32	8.77	9.91
1131223.00	1.84	5.5	6.0	6.4	6.7	7.3	6452	8.32	9.45	10.36	11.05	12.41
1121223.00	1.97	5.5	6.0	6.4	6.7	7.3	6452	8.02	9.16	10.07	10.75	12.11
1111223.00	2.17	5.5	6.0	6.5	6.7	7.3	6383	7.57	8.70	9.84	10.30	11.66
1131123.00	1.72	5.5	6.0	6.4	6.7	7.3	6452	8.59	9.73	10.64	11.32	12.68
1121123.00	1.83	5.5	6.0	6.4	6.7	7.3	6452	8.34	9.48	10.39	11.07	12.43
1111123.00	1.98	5.5	6.0	6.4	6.7	7.3	6452	8.00	9.14	10.05	10.73	12.09
1131222.00	1.83	7.1	7.7	8.3	8.7	9.4	2620	11.98	13.34	14.70	15.61	17.20
1121222.00	2.03	7.2	7.8	8.3	8.7	9.4	2586	11.75	13.11	14.25	15.16	16.75
1111222.00	2.25	7.2	7.8	8.4	8.8	9.5	2510	11.25	12.61	13.98	14.89	16.48
1131122.00	1.70	7.2	7.8	8.3	8.7	9.4	2597	12.50	13.86	15.00	15.91	17.50
1121122.00	1.86	7.2	7.8	8.3	8.7	9.4	2575	12.14	13.50	14.64	15.55	17.14
1111122.00	2.06	7.2	7.8	8.4	8.8	9.5	2521	11.68	13.05	14.41	15.32	16.91
1131221.00	1.71	9.4	10.1	10.9	11.3	12.2	984	17.48	19.07	20.89	21.80	23.84
1121221.00	1.96	9.5	10.2	10.9	11.4	12.3	958	17.14	18.73	20.32	21.45	23.50
1111221.00	2.25	9.6	10.4	11.1	11.6	12.5	897	16.70	18.52	20.11	21.25	23.30
1131121.00	1.64	9.5	10.2	11.0	11.4	12.3	949	17.86	19.45	21.27	22.18	24.23
1121121.00	1.84	9.5	10.3	11.0	11.5	12.4	930	17.41	19.23	20.82	21.95	24.00
1111121.00	2.10	9.7	10.4	11.2	11.7	12.6	882	17.27	18.86	20.68	21.82	23.86
2131224.00	1.71	4.0	4.3	4.7	4.9	5.3	18750	5.20	5.89	6.80	7.25	8.16
2121224.00	1.72	3.9	4.3	4.6	4.9	5.3	19355	4.95	5.86	6.55	7.23	8.14
2111224.00	1.76	3.8	4.2	4.5	4.8	5.2	20690	4.64	5.55	6.23	6.91	7.82
2131124.00	1.65	4.0	4.4	4.8	5.0	5.4	17647	5.34	6.25	7.16	7.61	8.52
2121124.00	1.63	3.9	4.3	4.6	4.9	5.3	19355	5.16	6.07	6.75	7.43	8.34
2111124.00	1.67	3.8	4.2	4.5	4.7	5.1	21429	4.84	5.75	6.43	6.89	7.80
2131223.00	1.71	4.4	4.8	5.2	5.4	5.9	13333	6.11	7.02	7.93	8.39	9.52
2121223.00	1.70	4.4	4.7	5.1	5.4	5.8	13953	6.14	6.82	7.73	8.41	9.32
2111223.00	1.75	4.3	4.7	5.1	5.3	5.8	14634	5.80	6.70	7.61	8.07	9.20
2131123.00	1.64	4.5	4.9	5.3	5.5	6.0	12766	6.50	7.41	8.32	8.77	9.91
2121123.00	1.61	4.4	4.8	5.2	5.4	5.9	13636	6.34	7.25	8.16	8.61	9.75
2111123.00	1.64	4.3	4.6	5.0	5.2	5.7	15000	6.05	6.73	7.64	8.09	9.23
2131222.00	1.71	5.2	5.6	6.1	6.3	6.9	7895	7.93	8.84	9.98	10.43	11.80
2121222.00	1.70	5.2	5.6	6.1	6.3	6.9	7895	7.95	8.86	10.00	10.45	11.82
2111222.00	1.74	5.1	5.6	6.0	6.3	6.8	8219	7.64	8.77	9.68	10.36	11.50
2131122.00	1.63	5.2	5.7	6.1	6.4	6.9	7692	8.11	9.25	10.16	10.84	11.98
2121122.00	1.59	5.2	5.7	6.1	6.4	6.9	7792	8.20	9.34	10.25	10.93	12.07
2111122.00	1.59	5.1	5.5	5.9	6.2	6.7	8451	7.98	8.89	9.80	10.48	11.61
2131221.00	1.72	5.7	6.2	6.7	7.0	7.6	5607	9.05	10.18	11.32	12.00	13.36
2121221.00	1.70	5.8	6.2	6.7	7.0	7.6	5556	9.32	10.23	11.36	12.05	13.41
2111221.00	1.72	5.7	6.2	6.7	7.0	7.6	5660	9.05	10.18	11.32	12.00	13.36
2131121.00	1.63	5.8	6.3	6.7	7.0	7.6	5505	9.48	10.61	11.52	12.20	13.57
2121121.00	1.57	5.8	6.3	6.8	7.0	7.6	5455	9.61	10.75	11.89	12.34	13.70
2111121.00	1.55	5.7	6.2	6.7	7.0	7.5	5714	9.43	10.57	11.70	12.39	13.52

AASHTO: 2" AC 10" BASE Overlay Thickness Data

2" AC 12" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr (psi)	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99		50	75	90	95	99
1131234.00	2.13	4.7	5.2	5.6	5.8	6.3	10526	5.84	6.98	7.89	8.34	9.48
1121234.00	2.27	4.8	5.2	5.6	5.9	6.4	10345	5.75	6.66	7.57	8.25	9.39
1111234.00	2.45	4.8	5.2	5.6	5.9	6.4	10345	5.34	6.25	7.16	7.84	8.98
1131134.00	1.99	4.7	5.2	5.6	5.8	6.3	10526	6.16	7.30	8.20	8.66	9.80
1121134.00	2.08	4.7	5.2	5.6	5.8	6.3	10526	5.95	7.09	8.00	8.45	9.59
1111134.00	2.22	4.7	5.2	5.6	5.8	6.3	10526	5.64	6.77	7.68	8.14	9.27
1131233.00	2.12	5.5	6.0	6.4	6.7	7.3	6522	7.68	8.82	9.73	10.41	11.77
1121233.00	2.28	5.5	6.0	6.4	6.7	7.3	6452	7.32	8.45	9.36	10.05	11.41
1111233.00	2.49	5.5	6.0	6.5	6.7	7.3	6383	6.84	7.98	9.11	9.57	10.93
1131133.00	1.98	5.5	6.0	6.4	6.7	7.3	6522	8.00	9.14	10.05	10.73	12.09
1121133.00	2.09	5.5	6.0	6.4	6.7	7.3	6522	7.75	8.89	9.80	10.48	11.84
1111133.00	2.26	5.5	6.0	6.4	6.7	7.3	6452	7.36	8.50	9.41	10.09	11.45
1131232.00	2.07	7.1	7.6	8.2	8.6	9.3	2740	11.43	12.57	13.93	14.84	16.43
1121232.00	2.29	7.1	7.7	8.2	8.6	9.3	2691	10.93	12.30	13.43	14.34	15.93
1111232.00	2.55	7.2	7.8	8.3	8.7	9.4	2575	10.57	11.93	13.07	13.98	15.57
1131132.00	1.94	7.1	7.7	8.2	8.6	9.3	2691	11.73	13.09	14.23	15.14	16.73
1121132.00	2.12	7.1	7.7	8.3	8.6	9.3	2655	11.32	12.68	14.05	14.73	16.32
1111132.00	2.34	7.2	7.8	8.4	8.7	9.4	2564	11.05	12.41	13.77	14.45	16.05
1131231.00	1.89	9.2	9.9	10.6	11.1	12.0	1066	16.61	18.20	19.80	20.93	22.98
1121231.00	2.15	9.3	10.0	10.7	11.2	12.1	1033	16.25	17.84	19.43	20.57	22.61
1111231.00	2.49	9.5	10.2	11.0	11.4	12.3	952	15.93	17.52	19.34	20.25	22.30
1131131.00	1.80	9.3	10.0	10.8	11.2	12.1	1020	17.05	18.64	20.45	21.36	23.41
1121131.00	2.04	9.4	10.1	10.8	11.3	12.2	995	16.73	18.32	19.91	21.05	23.09
1111131.00	2.33	9.5	10.3	11.0	11.5	12.4	930	16.30	18.11	19.70	20.84	22.89
2131234.00	1.99	4.0	4.4	4.7	5.0	5.4	18182	4.57	5.48	6.16	6.84	7.75
2121234.00	1.99	3.9	4.3	4.6	4.9	5.3	19355	4.34	5.25	5.93	6.61	7.52
2111234.00	2.06	3.8	4.2	4.5	4.8	5.2	20690	3.95	4.86	5.55	6.23	7.14
2131134.00	1.90	4.0	4.4	4.8	5.0	5.4	17647	4.77	5.68	6.59	7.05	7.95
2121134.00	1.90	4.0	4.3	4.7	4.9	5.3	18750	4.77	5.45	6.36	6.82	7.73
2111134.00	1.95	3.8	4.2	4.5	4.8	5.2	20690	4.20	5.11	5.80	6.48	7.39
2131233.00	1.97	4.4	4.8	5.2	5.4	5.9	13333	5.52	6.43	7.34	7.80	8.93
2121233.00	1.97	4.4	4.7	5.1	5.4	5.8	13953	5.52	6.20	7.11	7.80	8.70
2111233.00	2.05	4.3	4.7	5.1	5.3	5.8	14286	5.11	6.02	6.93	7.39	8.52
2131133.00	1.88	4.5	4.9	5.3	5.5	6.0	12766	5.95	6.86	7.77	8.23	9.36
2121133.00	1.87	4.4	4.8	5.2	5.4	5.9	13636	5.75	6.66	7.57	8.02	9.16
2111133.00	1.92	4.3	4.7	5.1	5.3	5.8	14634	5.41	6.32	7.23	7.68	8.82
2131232.00	1.95	5.2	5.6	6.1	6.3	6.9	7895	7.39	8.30	9.43	9.89	11.25
2121232.00	1.96	5.2	5.6	6.0	6.3	6.9	8000	7.36	8.27	9.18	9.86	11.23
2111232.00	2.04	5.1	5.6	6.0	6.3	6.8	8219	6.95	8.09	9.00	9.68	10.82
2131132.00	1.87	5.2	5.7	6.1	6.4	7.0	7595	7.57	8.70	9.61	10.30	11.66
2121132.00	1.84	5.2	5.7	6.1	6.4	6.9	7792	7.64	8.77	9.68	10.36	11.50
2111132.00	1.88	5.1	5.5	6.0	6.2	6.8	8333	7.32	8.23	9.36	9.82	11.18
2131231.00	1.95	5.7	6.2	6.7	7.0	7.6	5660	8.52	9.66	10.80	11.48	12.84
2121231.00	1.96	5.7	6.2	6.7	7.0	7.6	5607	8.50	9.64	10.77	11.45	12.82
2111231.00	2.04	5.7	6.2	6.7	7.0	7.6	5660	8.32	9.45	10.59	11.27	12.64
2131131.00	1.86	5.8	6.3	6.8	7.0	7.6	5455	8.95	10.09	11.23	11.68	13.05
2121131.00	1.82	5.8	6.3	6.8	7.0	7.6	5455	9.05	10.18	11.32	11.77	13.14
2111131.00	1.85	5.7	6.2	6.7	7.0	7.6	5660	8.75	9.89	11.02	11.70	13.07

AASHTO: 2" AC 12" BASE Overlay Thickness Data

4" AC 8" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1132214.00	2.34	4.8	5.2	5.7	5.9	6.4	10000	5.59	6.50	7.64	8.09	9.23
1122214.00	2.32	4.8	5.2	5.6	5.9	6.4	10345	5.64	6.55	7.45	8.14	9.27
1112214.00	2.30	4.8	5.2	5.6	5.9	6.4	10345	5.68	6.59	7.50	8.18	9.32
1132114.00	2.25	4.8	5.2	5.6	5.9	6.4	10169	5.80	6.70	7.61	8.30	9.43
1122114.00	2.21	4.8	5.2	5.6	5.9	6.4	10345	5.89	6.80	7.70	8.39	9.52
1112114.00	2.14	4.7	5.2	5.6	5.8	6.3	10526	5.82	6.95	7.86	8.32	9.45
1132213.00	2.30	5.6	6.0	6.5	6.8	7.4	6250	7.50	8.41	9.55	10.23	11.59
1122213.00	2.33	5.5	6.0	6.5	6.8	7.3	6316	7.20	8.34	9.48	10.16	11.30
1112213.00	2.32	5.5	6.0	6.5	6.7	7.3	6383	7.23	8.36	9.50	9.95	11.32
1132113.00	2.22	5.6	6.0	6.5	6.8	7.4	6250	7.68	8.59	9.73	10.41	11.77
1122113.00	2.21	5.5	6.0	6.5	6.7	7.3	6383	7.48	8.61	9.75	10.20	11.57
1112113.00	2.16	5.5	6.0	6.4	6.7	7.3	6452	7.59	8.73	9.64	10.32	11.68
1132212.00	2.19	7.1	7.7	8.3	8.7	9.4	2620	11.16	12.52	13.89	14.80	16.39
1122212.00	2.30	7.2	7.8	8.3	8.7	9.4	2575	11.14	12.50	13.64	14.55	16.14
1112212.00	2.38	7.2	7.8	8.4	8.8	9.5	2521	10.95	12.32	13.68	14.59	16.18
1132112.00	2.12	7.2	7.8	8.3	8.7	9.4	2586	11.55	12.91	14.05	14.95	16.55
1122112.00	2.18	7.2	7.8	8.4	8.7	9.4	2553	11.41	12.77	14.14	14.82	16.41
1112112.00	2.22	7.2	7.8	8.4	8.8	9.5	2521	11.32	12.68	14.05	14.95	16.55
1132211.00	1.93	9.3	10.1	10.8	11.2	12.1	1010	16.75	18.57	20.16	21.07	23.11
1122211.00	2.13	9.4	10.2	10.9	11.4	12.3	963	16.52	18.34	19.93	21.07	23.11
1112211.00	2.33	9.6	10.4	11.1	11.6	12.5	902	16.52	18.34	19.93	21.07	23.11
1132111.00	1.89	9.4	10.1	10.9	11.3	12.2	984	17.07	18.66	20.48	21.39	23.43
1122111.00	2.06	9.5	10.3	11.0	11.5	12.4	935	16.91	18.73	20.32	21.45	23.50
1112111.00	2.20	9.7	10.4	11.2	11.6	12.6	886	17.05	18.64	20.45	21.36	23.64
2132214.00	2.37	4.0	4.4	4.8	5.0	5.4	17647	3.70	4.61	5.52	5.98	6.89
2122214.00	2.15	4.0	4.4	4.7	5.0	5.4	18182	4.20	5.11	5.80	6.48	7.39
2112214.00	1.92	3.9	4.2	4.6	4.8	5.2	20000	4.50	5.18	6.09	6.55	7.45
2132114.00	2.33	4.1	4.5	4.9	5.1	5.5	16667	4.02	4.93	5.84	6.30	7.20
2122114.00	2.07	4.0	4.4	4.8	5.0	5.4	17647	4.39	5.30	6.20	6.66	7.57
2112114.00	1.82	3.8	4.2	4.5	4.8	5.2	20690	4.50	5.41	6.09	6.77	7.68
2132213.00	2.37	4.4	4.8	5.2	5.5	6.0	13043	4.61	5.52	6.43	7.11	8.25
2122213.00	2.16	4.4	4.8	5.2	5.5	6.0	13043	5.09	6.00	6.91	7.59	8.73
2112213.00	1.91	4.3	4.7	5.1	5.3	5.8	14286	5.43	6.34	7.25	7.70	8.84
2132113.00	2.33	4.5	4.9	5.3	5.5	6.0	12500	4.93	5.84	6.75	7.20	8.34
2122113.00	2.07	4.5	4.9	5.3	5.5	6.0	12766	5.52	6.43	7.34	7.80	8.93
2112113.00	1.81	4.3	4.7	5.1	5.3	5.8	14286	5.66	6.57	7.48	7.93	9.07
2132212.00	2.39	5.2	5.6	6.1	6.3	6.9	7895	6.39	7.30	8.43	8.89	10.25
2122212.00	2.16	5.2	5.7	6.1	6.4	6.9	7792	6.91	8.05	8.95	9.64	10.77
2112212.00	1.92	5.2	5.6	6.0	6.3	6.9	8000	7.45	8.36	9.27	9.95	11.32
2132112.00	2.33	5.2	5.7	6.1	6.4	6.9	7792	6.52	7.66	8.57	9.25	10.39
2122112.00	2.08	5.2	5.7	6.1	6.4	7.0	7595	7.09	8.23	9.14	9.82	11.18
2112112.00	1.84	5.1	5.6	6.0	6.3	6.8	8108	7.41	8.55	9.45	10.14	11.27
2132211.00	2.40	5.7	6.2	6.7	7.0	7.5	5714	7.50	8.64	9.77	10.45	11.59
2122211.00	2.18	5.8	6.3	6.7	7.0	7.6	5505	8.23	9.36	10.27	10.95	12.32
2112211.00	1.93	5.8	6.2	6.7	7.0	7.6	5556	8.80	9.70	10.84	11.52	12.89
2132111.00	2.35	5.7	6.2	6.7	7.0	7.6	5607	7.61	8.75	9.89	10.57	11.93
2122111.00	2.09	5.8	6.3	6.8	7.1	7.7	5405	8.43	9.57	10.70	11.39	12.75
2112111.00	1.79	5.8	6.3	6.7	7.0	7.6	5505	9.11	10.25	11.16	11.84	13.20

AASHTO: 4" AC 8" BASE Overlay Thickness Data

4" AC 10" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1132224.00	2.62	4.8	5.2	5.6	5.9	6.4	10169	4.95	5.86	6.77	7.45	8.59
1122224.00	2.64	4.8	5.2	5.6	5.9	6.4	10345	4.91	5.82	6.73	7.41	8.55
1112224.00	2.62	4.8	5.2	5.6	5.9	6.4	10345	4.95	5.86	6.77	7.45	8.59
1132124.00	2.53	4.8	5.2	5.6	5.9	6.4	10169	5.16	6.07	6.98	7.66	8.80
1122124.00	2.50	4.8	5.2	5.6	5.9	6.4	10345	5.23	6.14	7.05	7.73	8.86
1112124.00	2.43	4.7	5.2	5.6	5.8	6.3	10526	5.16	6.30	7.20	7.66	8.80
1132223.00	2.58	5.5	6.0	6.5	6.7	7.3	6383	6.64	7.77	8.91	9.36	10.73
1122223.00	2.64	5.5	6.0	6.5	6.7	7.3	6383	6.50	7.64	8.77	9.23	10.59
1112223.00	2.66	5.5	6.0	6.5	6.7	7.3	6383	6.45	7.59	8.73	9.18	10.55
1132123.00	2.47	5.5	6.0	6.5	6.7	7.3	6383	6.89	8.02	9.16	9.61	10.98
1122123.00	2.49	5.5	6.0	6.5	6.7	7.3	6383	6.84	7.98	9.11	9.57	10.93
1112123.00	2.46	5.5	6.0	6.4	6.7	7.3	6452	6.91	8.05	8.95	9.64	11.00
1132222.00	2.42	7.1	7.6	8.2	8.6	9.3	2740	10.64	11.77	13.14	14.05	15.64
1122222.00	2.56	7.1	7.7	8.3	8.6	9.3	2679	10.32	11.68	13.05	13.73	15.32
1112222.00	2.69	7.2	7.8	8.3	8.7	9.4	2586	10.25	11.61	12.75	13.66	15.25
1132122.00	2.33	7.1	7.7	8.3	8.6	9.3	2679	10.84	12.20	13.57	14.25	15.84
1122122.00	2.44	7.1	7.7	8.3	8.6	9.4	2632	10.59	11.95	13.32	14.00	15.82
1112122.00	2.50	7.2	7.8	8.3	8.7	9.4	2575	10.68	12.05	13.18	14.09	15.68
1132221.00	2.07	9.1	9.9	10.6	11.0	11.9	1083	15.98	17.80	19.39	20.30	22.34
1122221.00	2.31	9.3	10.0	10.7	11.2	12.0	1036	15.89	17.48	19.07	20.20	22.02
1112221.00	2.56	9.4	10.2	10.9	11.4	12.3	963	15.55	17.36	18.95	20.09	22.14
1132121.00	2.03	9.2	10.0	10.7	11.1	12.0	1043	16.30	18.11	19.70	20.61	22.66
1122121.00	2.22	9.3	10.1	10.8	11.3	12.2	1000	16.09	17.91	19.50	20.64	22.68
1112121.00	2.43	9.5	10.3	11.0	11.5	12.4	939	16.07	17.89	19.48	20.61	22.66
2132224.00	2.64	4.0	4.4	4.8	5.0	5.4	17647	3.09	4.00	4.91	5.36	6.27
2122224.00	2.43	4.0	4.4	4.7	5.0	5.4	18182	3.57	4.48	5.16	5.84	6.75
2112224.00	2.21	3.9	4.2	4.6	4.8	5.2	20000	3.84	4.52	5.43	5.89	6.80
2132124.00	2.58	4.1	4.5	4.9	5.1	5.5	16667	3.45	4.36	5.27	5.73	6.64
2122124.00	2.35	4.1	4.5	4.8	5.0	5.5	17143	3.98	4.89	5.57	6.02	7.16
2112124.00	2.11	3.9	4.2	4.6	4.8	5.2	20000	4.07	4.75	5.66	6.11	7.02
2132223.00	2.63	4.4	4.8	5.2	5.5	6.0	13043	4.02	4.93	5.84	6.52	7.66
2122223.00	2.43	4.4	4.8	5.2	5.5	6.0	13043	4.48	5.39	6.30	6.98	8.11
2112223.00	2.22	4.4	4.7	5.1	5.4	5.8	13953	4.95	5.64	6.55	7.23	8.14
2132123.00	2.56	4.5	4.9	5.3	5.5	6.0	12500	4.41	5.32	6.23	6.68	7.82
2122123.00	2.34	4.5	4.9	5.3	5.5	6.0	12500	4.91	5.82	6.73	7.18	8.32
2112123.00	2.09	4.4	4.7	5.1	5.4	5.8	13953	5.25	5.93	6.84	7.52	8.43
2132222.00	2.62	5.2	5.6	6.0	6.3	6.9	8000	5.86	6.77	7.68	8.36	9.73
2122222.00	2.42	5.2	5.7	6.1	6.4	6.9	7792	6.32	7.45	8.36	9.05	10.18
2112222.00	2.22	5.2	5.6	6.0	6.3	6.9	8000	6.77	7.68	8.59	9.27	10.64
2132122.00	2.55	5.2	5.7	6.1	6.4	6.9	7692	6.02	7.16	8.07	8.75	9.89
2122122.00	2.32	5.2	5.7	6.1	6.4	7.0	7595	6.55	7.68	8.59	9.27	10.64
2112122.00	2.07	5.2	5.6	6.0	6.3	6.9	8000	7.11	8.02	8.93	9.61	10.98
2132221.00	2.60	5.7	6.2	6.6	6.9	7.5	5769	7.05	8.18	9.09	9.77	11.14
2122221.00	2.42	5.8	6.2	6.7	7.0	7.6	5556	7.68	8.59	9.73	10.41	11.77
2112221.00	2.22	5.7	6.2	6.7	7.0	7.6	5607	7.91	9.05	10.18	10.86	12.23
2132121.00	2.55	5.7	6.2	6.7	7.0	7.6	5607	7.16	8.30	9.43	10.11	11.48
2122121.00	2.31	5.8	6.3	6.8	7.1	7.7	5405	7.93	9.07	10.20	10.89	12.25
2112121.00	2.06	5.8	6.3	6.7	7.0	7.6	5505	8.50	9.64	10.55	11.23	12.59

AASHTO: 4" AC 10" BASE Overlay Thickness Data

4" AC 12" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL 50	75	90	95	99	Mr (psi)	OVERLAY THICKNESS (in) RELIABILITY LEVEL 50	75	90	95	99
1132234.00	2.93	4.8	5.2	5.6	5.9	6.4	10345	4.25	5.16	6.07	6.75	7.89
1122234.00	2.97	4.8	5.2	5.6	5.9	6.4	10345	4.16	5.07	5.98	6.66	7.80
1112234.00	2.95	4.8	5.2	5.6	5.9	6.4	10345	4.20	5.11	6.02	6.70	7.84
1132134.00	2.82	4.8	5.2	5.6	5.9	6.4	10169	4.50	5.41	6.32	7.00	8.14
1122134.00	2.81	4.8	5.2	5.6	5.9	6.4	10345	4.52	5.43	6.34	7.02	8.16
1112134.00	2.74	4.7	5.2	5.6	5.8	6.3	10526	4.45	5.59	6.50	6.95	8.09
1132233.00	2.85	5.5	5.9	6.4	6.7	7.2	6593	6.02	6.93	8.07	8.75	9.89
1122233.00	2.94	5.5	6.0	6.4	6.7	7.3	6522	5.82	6.95	7.86	8.55	9.91
1112233.00	2.97	5.5	6.0	6.4	6.7	7.3	6452	5.75	6.89	7.80	8.48	9.84
1132133.00	2.75	5.5	6.0	6.4	6.7	7.3	6452	6.25	7.39	8.30	8.98	10.34
1122133.00	2.78	5.5	6.0	6.4	6.7	7.3	6522	6.18	7.32	8.23	8.91	10.27
1112133.00	2.77	5.5	6.0	6.4	6.7	7.3	6452	6.20	7.34	8.25	8.93	10.30
1132232.00	2.64	7.0	7.5	8.1	8.4	9.1	2871	9.91	11.05	12.41	13.09	14.68
1122232.00	2.82	7.0	7.6	8.1	8.5	9.2	2804	9.50	10.86	12.00	12.91	14.50
1112232.00	2.98	7.1	7.7	8.3	8.6	9.3	2679	9.36	10.73	12.09	12.77	14.36
1132132.00	2.55	7.0	7.6	8.2	8.5	9.2	2791	10.11	11.48	12.84	13.52	15.11
1122132.00	2.68	7.1	7.6	8.2	8.6	9.3	2740	10.05	11.18	12.55	13.45	15.05
1112132.00	2.79	7.1	7.7	8.3	8.6	9.3	2643	9.80	11.16	12.52	13.20	14.80
1132231.00	2.23	9.0	9.7	10.4	10.8	11.7	1165	15.39	16.98	18.57	19.48	21.52
1122231.00	2.47	9.1	9.8	10.5	10.9	11.8	1117	15.07	16.66	18.25	19.16	21.20
1112231.00	2.77	9.3	10.0	10.7	11.2	12.1	1029	14.84	16.43	18.02	19.16	21.20
1132131.00	2.18	9.1	9.8	10.5	10.9	11.8	1113	15.73	17.32	18.91	19.82	21.86
1122131.00	2.39	9.2	9.9	10.6	11.1	11.9	1070	15.48	17.07	18.66	19.80	21.61
1112131.00	2.64	9.4	10.1	10.8	11.3	12.2	998	15.36	16.95	18.55	19.68	21.73
2132234.00	2.95	4.1	4.5	4.8	5.0	5.5	17143	2.61	3.52	4.20	4.66	5.80
2122234.00	2.72	4.0	4.4	4.7	5.0	5.4	18182	2.91	3.82	4.50	5.18	6.09
2112234.00	2.51	3.9	4.2	4.6	4.8	5.2	20000	3.16	3.84	4.75	5.20	6.11
2132134.00	2.84	4.2	4.5	4.9	5.1	5.6	16216	3.09	3.77	4.68	5.14	6.27
2122134.00	2.61	4.1	4.5	4.8	5.0	5.5	17143	3.39	4.30	4.98	5.43	6.57
2112134.00	2.38	3.9	4.2	4.6	4.8	5.2	20000	3.45	4.14	5.05	5.50	6.41
2132233.00	2.91	4.4	4.8	5.2	5.5	6.0	13043	3.39	4.30	5.20	5.89	7.02
2122233.00	2.71	4.4	4.8	5.2	5.5	6.0	13043	3.84	4.75	5.66	6.34	7.48
2112233.00	2.52	4.4	4.7	5.1	5.4	5.8	13953	4.27	4.95	5.86	6.55	7.45
2132133.00	2.82	4.5	4.9	5.3	5.6	6.1	12245	3.82	4.73	5.64	6.32	7.45
2122133.00	2.59	4.5	4.9	5.3	5.5	6.0	12500	4.34	5.25	6.16	6.61	7.75
2112133.00	2.36	4.4	4.7	5.1	5.4	5.8	13953	4.64	5.32	6.23	6.91	7.82
2132232.00	2.87	5.2	5.6	6.0	6.3	6.9	8000	5.30	6.20	7.11	7.80	9.16
2122232.00	2.70	5.2	5.7	6.1	6.4	6.9	7792	5.68	6.82	7.73	8.41	9.55
2112232.00	2.52	5.2	5.6	6.0	6.3	6.9	8000	6.09	7.00	7.91	8.59	9.95
2132132.00	2.79	5.2	5.7	6.1	6.4	6.9	7692	5.48	6.61	7.52	8.20	9.34
2122132.00	2.56	5.2	5.7	6.1	6.4	7.0	7595	6.00	7.14	8.05	8.73	10.09
2112132.00	2.35	5.2	5.6	6.1	6.3	6.9	7895	6.48	7.39	8.52	8.98	10.34
2132231.00	2.84	5.7	6.2	6.6	6.9	7.5	5769	6.50	7.64	8.55	9.23	10.59
2122231.00	2.67	5.7	6.2	6.7	7.0	7.6	5607	6.89	8.02	9.16	9.84	11.20
2112231.00	2.52	5.7	6.2	6.7	7.0	7.6	5660	7.23	8.36	9.50	10.18	11.55
2132131.00	2.76	5.7	6.2	6.7	7.0	7.6	5607	6.68	7.82	8.95	9.64	11.00
2122131.00	2.54	5.8	6.3	6.8	7.0	7.6	5455	7.41	8.55	9.68	10.14	11.50
2112131.00	2.33	5.8	6.2	6.7	7.0	7.6	5556	7.89	8.80	9.93	10.61	11.98

AASHTO: 4" AC 12" BASE Overlay Thickness Data

6" AC 8" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1133214.00	3.15	4.8	5.2	5.7	5.9	6.4	10000	3.75	4.66	5.80	6.25	7.39
1123214.00	3.08	4.8	5.2	5.7	5.9	6.4	10000	3.91	4.82	5.95	6.41	7.55
1113214.00	2.78	4.8	5.2	5.6	5.9	6.4	10345	4.59	5.50	6.41	7.09	8.23
1133114.00	3.10	4.8	5.3	5.7	5.9	6.5	9836	3.86	5.00	5.91	6.36	7.73
1123114.00	2.96	4.8	5.3	5.7	5.9	6.4	10000	4.18	5.32	6.23	6.68	7.82
1113114.00	2.65	4.8	5.2	5.6	5.9	6.4	10345	4.89	5.80	6.70	7.39	8.52
1133213.00	3.04	5.5	6.0	6.4	6.7	7.3	6452	5.59	6.73	7.64	8.32	9.68
1123213.00	3.02	5.5	6.0	6.5	6.8	7.3	6316	5.64	6.77	7.91	8.59	9.73
1113213.00	2.81	5.5	6.0	6.5	6.8	7.3	6316	6.11	7.25	8.39	9.07	10.20
1133113.00	2.99	5.5	6.0	6.5	6.7	7.3	6383	5.70	6.84	7.98	8.43	9.80
1123113.00	2.91	5.5	6.0	6.5	6.8	7.3	6316	5.89	7.02	8.16	8.84	9.98
1113113.00	2.66	5.5	6.0	6.5	6.7	7.3	6383	6.45	7.59	8.73	9.18	10.55
1133212.00	2.76	7.0	7.5	8.1	8.5	9.1	2857	9.64	10.77	12.14	13.05	14.41
1123212.00	2.85	7.1	7.7	8.2	8.6	9.3	2703	9.66	11.02	12.16	13.07	14.66
1113212.00	2.81	7.2	7.8	8.3	8.7	9.4	2586	9.98	11.34	12.48	13.39	14.98
1133112.00	2.72	7.0	7.6	8.1	8.5	9.2	2817	9.73	11.09	12.23	13.14	14.73
1123112.00	2.77	7.1	7.7	8.3	8.6	9.3	2655	9.84	11.20	12.57	13.25	14.84
1113112.00	2.67	7.2	7.8	8.4	8.7	9.4	2564	10.30	11.66	13.02	13.70	15.30
1133211.00	2.23	9.0	9.7	10.4	10.8	11.7	1170	15.39	16.98	18.57	19.48	21.52
1123211.00	2.45	9.2	9.9	10.6	11.1	12.0	1062	15.34	16.93	18.52	19.66	21.70
1113211.00	2.64	9.4	10.2	10.9	11.4	12.3	965	15.36	17.18	18.77	19.91	21.95
1133111.00	2.21	9.0	9.7	10.4	10.9	11.7	1143	15.43	17.02	18.61	19.75	21.57
1123111.00	2.41	9.3	10.0	10.7	11.2	12.1	1031	15.66	17.25	18.84	19.98	22.02
1113111.00	2.53	9.5	10.3	11.0	11.5	12.4	940	15.84	17.66	19.25	20.39	22.43
2133214.00	3.35	4.0	4.4	4.8	5.0	5.4	17647	1.48	2.39	3.30	3.75	4.66
2123214.00	2.95	4.0	4.4	4.8	5.0	5.4	17647	2.39	3.30	4.20	4.66	5.57
2113214.00	2.43	3.9	4.3	4.6	4.9	5.3	19355	3.34	4.25	4.93	5.61	6.52
2133114.00	3.26	4.1	4.5	4.8	5.0	5.5	17143	1.91	2.82	3.50	3.95	5.09
2123114.00	2.89	4.1	4.5	4.9	5.1	5.5	16667	2.75	3.66	4.57	5.02	5.93
2113114.00	2.34	4.0	4.3	4.7	4.9	5.3	18750	3.77	4.45	5.36	5.82	6.73
2133213.00	3.29	4.4	4.8	5.2	5.4	5.9	13333	2.52	3.43	4.34	4.80	5.93
2123213.00	2.95	4.4	4.8	5.2	5.5	6.0	13043	3.30	4.20	5.11	5.80	6.93
2113213.00	2.44	4.4	4.8	5.2	5.4	5.9	13636	4.45	5.36	6.27	6.73	7.86
2133113.00	3.28	4.5	4.9	5.3	5.5	6.0	12766	2.77	3.68	4.59	5.05	6.18
2123113.00	2.88	4.5	4.9	5.3	5.5	6.0	12500	3.68	4.59	5.50	5.95	7.09
2113113.00	2.32	4.4	4.8	5.2	5.4	5.9	13636	4.73	5.64	6.55	7.00	8.14
2133212.00	3.28	5.1	5.6	6.0	6.3	6.8	8219	4.14	5.27	6.18	6.86	8.00
2123212.00	2.95	5.2	5.7	6.1	6.4	6.9	7792	5.11	6.25	7.16	7.84	8.98
2113212.00	2.44	5.2	5.6	6.1	6.3	6.9	7895	6.27	7.18	8.32	8.77	10.14
2133112.00	3.24	5.2	5.6	6.0	6.3	6.9	8000	4.45	5.36	6.27	6.95	8.32
2123112.00	2.88	5.2	5.7	6.1	6.4	7.0	7595	5.27	6.41	7.32	8.00	9.36
2113112.00	2.32	5.2	5.7	6.1	6.4	6.9	7792	6.55	7.68	8.59	9.27	10.41
2133211.00	3.21	5.6	6.1	6.6	6.9	7.5	5941	5.43	6.57	7.70	8.39	9.75
2123211.00	2.93	5.7	6.2	6.7	7.0	7.6	5660	6.30	7.43	8.57	9.25	10.61
2113211.00	2.46	5.8	6.2	6.7	7.0	7.6	5556	7.59	8.50	9.64	10.32	11.68
2133111.00	3.18	5.7	6.2	6.6	6.9	7.5	5825	5.73	6.86	7.77	8.45	9.82
2123111.00	2.85	5.8	6.2	6.7	7.0	7.6	5556	6.70	7.61	8.75	9.43	10.80
2113111.00	2.33	5.8	6.3	6.8	7.0	7.6	5455	7.89	9.02	10.16	10.61	11.98

AASHTO: 6" AC 8" BASE Overlay Thickness Data

6" AC 10" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1133224.00	3.44	4.8	5.2	5.6	5.9	6.4	10169	3.09	4.00	4.91	5.59	6.73
1123224.00	3.39	4.8	5.2	5.6	5.9	6.4	10169	3.20	4.11	5.02	5.70	6.84
1113224.00	3.13	4.8	5.2	5.6	5.9	6.4	10345	3.80	4.70	5.61	6.30	7.43
1133124.00	3.38	4.8	5.2	5.7	5.9	6.4	10000	3.23	4.14	5.27	5.73	6.86
1123124.00	3.25	4.8	5.2	5.6	5.9	6.4	10169	3.52	4.43	5.34	6.02	7.16
1113124.00	2.96	4.8	5.2	5.6	5.9	6.4	10345	4.18	5.09	6.00	6.68	7.82
1133223.00	3.32	5.5	5.9	6.4	6.7	7.2	6593	4.95	5.86	7.00	7.68	8.82
1123223.00	3.32	5.5	6.0	6.4	6.7	7.3	6452	4.95	6.09	7.00	7.68	9.05
1113223.00	3.14	5.5	6.0	6.4	6.7	7.3	6452	5.36	6.50	7.41	8.09	9.45
1133123.00	3.24	5.5	6.0	6.4	6.7	7.3	6522	5.14	6.27	7.18	7.86	9.23
1123123.00	3.20	5.5	6.0	6.5	6.7	7.3	6383	5.23	6.36	7.50	7.95	9.32
1113123.00	2.97	5.5	6.0	6.4	6.7	7.3	6452	5.75	6.89	7.80	8.48	9.84
1133222.00	2.95	6.9	7.5	8.0	8.4	9.0	2970	8.98	10.34	11.48	12.39	13.75
1123222.00	3.10	7.0	7.6	8.1	8.5	9.2	2817	8.86	10.23	11.36	12.27	13.86
1113222.00	3.11	7.1	7.7	8.3	8.6	9.3	2679	9.07	10.43	11.80	12.48	14.07
1133122.00	2.90	6.9	7.5	8.1	8.4	9.1	2913	9.09	10.45	11.82	12.50	14.09
1123122.00	3.00	7.0	7.6	8.2	8.5	9.2	2752	9.09	10.45	11.82	12.50	14.09
1113122.00	2.95	7.1	7.7	8.3	8.6	9.3	2643	9.43	10.80	12.16	12.84	14.43
1133221.00	2.37	8.8	9.5	10.2	10.6	11.5	1232	14.61	16.20	17.80	18.70	20.75
1123221.00	2.61	9.0	9.8	10.5	10.9	11.8	1134	14.52	16.34	17.93	18.84	20.89
1113221.00	2.84	9.3	10.0	10.7	11.2	12.1	1031	14.68	16.27	17.86	19.00	21.05
1133121.00	2.35	8.9	9.6	10.3	10.7	11.6	1195	14.89	16.48	18.07	18.98	21.02
1123121.00	2.56	9.1	9.9	10.6	11.0	11.9	1093	14.86	16.68	18.27	19.18	21.23
1113121.00	2.74	9.3	10.1	10.8	11.3	12.2	1000	14.91	16.73	18.32	19.45	21.50
2133224.00	3.62	4.0	4.4	4.8	5.0	5.4	17647	0.86	1.77	2.68	3.14	4.05
2123224.00	3.24	4.0	4.4	4.8	5.0	5.4	17647	1.73	2.64	3.55	4.00	4.91
2113224.00	2.73	3.9	4.3	4.6	4.9	5.3	19355	2.66	3.57	4.25	4.93	5.84
2133124.00	3.56	4.1	4.5	4.9	5.1	5.5	16667	1.23	2.14	3.05	3.50	4.41
2123124.00	3.15	4.1	4.5	4.9	5.1	5.5	16667	2.16	3.07	3.98	4.43	5.34
2113124.00	2.61	4.0	4.3	4.7	4.9	5.3	18750	3.16	3.84	4.75	5.20	6.11
2133223.00	3.60	4.4	4.8	5.2	5.4	5.9	13333	1.82	2.73	3.64	4.09	5.23
2123223.00	3.23	4.4	4.8	5.2	5.5	6.0	13043	2.66	3.57	4.48	5.16	6.30
2113223.00	2.74	4.4	4.8	5.2	5.4	5.9	13636	3.77	4.68	5.59	6.05	7.18
2133123.00	3.51	4.5	4.9	5.3	5.5	6.0	12766	2.25	3.16	4.07	4.52	5.66
2123123.00	3.14	4.5	4.9	5.3	5.6	6.1	12245	3.09	4.00	4.91	5.59	6.73
2113123.00	2.60	4.4	4.8	5.2	5.4	5.9	13333	4.09	5.00	5.91	6.36	7.50
2133222.00	3.51	5.1	5.6	6.0	6.3	6.8	8219	3.61	4.75	5.66	6.34	7.48
2123222.00	3.19	5.2	5.6	6.1	6.3	6.9	7895	4.57	5.48	6.61	7.07	8.43
2113222.00	2.74	5.2	5.6	6.1	6.3	6.9	7895	5.59	6.50	7.64	8.09	9.45
2133122.00	3.46	5.2	5.6	6.0	6.3	6.9	8000	3.95	4.86	5.77	6.45	7.82
2123122.00	3.11	5.2	5.7	6.1	6.4	7.0	7595	4.75	5.89	6.80	7.48	8.84
2113122.00	2.59	5.2	5.7	6.1	6.4	6.9	7792	5.93	7.07	7.98	8.66	9.80
2133221.00	3.44	5.6	6.1	6.6	6.9	7.5	5941	4.91	6.05	7.18	7.86	9.23
2123221.00	3.17	5.7	6.2	6.7	7.0	7.6	5660	5.75	6.89	8.02	8.70	10.07
2113221.00	2.74	5.7	6.2	6.7	7.0	7.6	5607	6.73	7.86	9.00	9.68	11.05
2133121.00	3.38	5.7	6.2	6.6	6.9	7.5	5825	5.27	6.41	7.32	8.00	9.36
2123121.00	3.08	5.8	6.3	6.7	7.0	7.6	5505	6.18	7.32	8.23	8.91	10.27
2113121.00	2.59	5.8	6.3	6.8	7.0	7.6	5455	7.30	8.43	9.57	10.02	11.39

AASHTO: 6" AC 10" BASE Overlay Thickness Data

6" AC 12" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1133234.00	3.77	4.8	5.2	5.6	5.9	6.4	10345	2.34	3.25	4.16	4.84	5.98
1123234.00	3.72	4.8	5.2	5.6	5.9	6.4	10345	2.45	3.36	4.27	4.95	6.09
1113234.00	3.47	4.8	5.2	5.6	5.9	6.4	10345	3.02	3.93	4.84	5.52	6.66
1133134.00	3.68	4.8	5.2	5.6	5.9	6.4	10169	2.55	3.45	4.36	5.05	6.18
1123134.00	3.58	4.8	5.2	5.6	5.9	6.4	10169	2.77	3.68	4.59	5.27	6.41
1113134.00	3.28	4.8	5.2	5.6	5.9	6.4	10345	3.45	4.36	5.27	5.95	7.09
1133233.00	3.61	5.4	5.9	6.4	6.6	7.2	6742	4.07	5.20	6.34	6.80	8.16
1123233.00	3.62	5.4	5.9	6.4	6.7	7.2	6667	4.05	5.18	6.32	7.00	8.14
1113233.00	3.47	5.5	6.0	6.4	6.7	7.3	6522	4.61	5.75	6.66	7.34	8.70
1133133.00	3.50	5.4	5.9	6.4	6.7	7.2	6667	4.32	5.45	6.59	7.27	8.41
1123133.00	3.48	5.5	6.0	6.4	6.7	7.3	6522	4.59	5.73	6.64	7.32	8.68
1113133.00	3.28	5.5	6.0	6.4	6.7	7.3	6522	5.05	6.18	7.09	7.77	9.14
1133232.00	3.17	6.8	7.4	7.9	8.3	8.9	3109	8.25	9.61	10.75	11.66	13.02
1123232.00	3.33	6.9	7.5	8.0	8.4	9.1	2956	8.11	9.48	10.61	11.52	13.11
1113232.00	3.39	7.0	7.6	8.2	8.5	9.2	2791	8.20	9.57	10.93	11.61	13.20
1133132.00	3.12	6.9	7.4	8.0	8.3	9.0	3015	8.59	9.73	11.09	11.77	13.36
1123132.00	3.23	7.0	7.5	8.1	8.4	9.1	2871	8.57	9.70	11.07	11.75	13.34
1113132.00	3.23	7.1	7.6	8.2	8.6	9.3	2740	8.80	9.93	11.30	12.20	13.80
1133231.00	2.53	8.7	9.4	10.1	10.5	11.3	1302	14.02	15.61	17.20	18.11	19.93
1123231.00	2.78	8.9	9.6	10.3	10.7	11.6	1212	13.91	15.50	17.09	18.00	20.05
1113231.00	3.03	9.1	9.8	10.5	11.0	11.8	1103	13.80	15.39	16.98	18.11	19.93
1133131.00	2.50	8.8	9.5	10.2	10.6	11.4	1253	14.32	15.91	17.50	18.41	20.23
1123131.00	2.72	9.0	9.7	10.4	10.8	11.7	1161	14.27	15.86	17.45	18.36	20.41
1113131.00	2.93	9.2	9.9	10.6	11.1	12.0	1064	14.25	15.84	17.43	18.57	20.61
2133234.00	3.93	4.0	4.4	4.8	5.0	5.4	17647	0.16	1.07	1.98	2.43	3.34
2123234.00	3.56	4.1	4.5	4.8	5.0	5.5	17143	1.23	2.14	2.82	3.27	4.41
2113234.00	3.06	4.0	4.3	4.7	4.9	5.3	18750	2.14	2.82	3.73	4.18	5.09
2133134.00	3.85	4.2	4.5	4.9	5.1	5.6	16216	0.80	1.48	2.39	2.84	3.98
2123134.00	3.44	4.2	4.5	4.9	5.1	5.6	16216	1.73	2.41	3.32	3.77	4.91
2113134.00	2.90	4.0	4.4	4.7	5.0	5.4	18182	2.50	3.41	4.09	4.77	5.68
2133233.00	3.89	4.4	4.8	5.2	5.4	5.9	13333	1.16	2.07	2.98	3.43	4.57
2123233.00	3.52	4.4	4.8	5.2	5.5	6.0	13043	2.00	2.91	3.82	4.50	5.64
2113233.00	3.04	4.4	4.8	5.2	5.4	5.9	13636	3.09	4.00	4.91	5.36	6.50
2133133.00	3.79	4.5	4.9	5.3	5.5	6.0	12500	1.61	2.52	3.43	3.89	5.02
2123133.00	3.41	4.5	4.9	5.3	5.6	6.1	12245	2.48	3.39	4.30	4.98	6.11
2113133.00	2.89	4.4	4.8	5.2	5.5	6.0	13043	3.43	4.34	5.25	5.93	7.07
2133232.00	3.77	5.1	5.6	6.0	6.3	6.8	8219	3.02	4.16	5.07	5.75	6.89
2123232.00	3.47	5.2	5.6	6.1	6.3	6.9	7895	3.93	4.84	5.98	6.43	7.80
2113232.00	3.02	5.2	5.6	6.0	6.3	6.9	8000	4.95	5.86	6.77	7.45	8.82
2133132.00	3.70	5.2	5.6	6.0	6.3	6.9	8000	3.41	4.32	5.23	5.91	7.27
2123132.00	3.35	5.2	5.7	6.1	6.4	7.0	7595	4.20	5.34	6.25	6.93	8.30
2113132.00	2.86	5.2	5.7	6.1	6.4	6.9	7692	5.32	6.45	7.36	8.05	9.18
2133231.00	3.72	5.7	6.2	6.6	6.9	7.5	5769	4.50	5.64	6.55	7.23	8.59
2123231.00	3.42	5.7	6.2	6.7	7.0	7.5	5714	5.18	6.32	7.45	8.14	9.27
2113231.00	3.02	5.7	6.2	6.7	7.0	7.6	5660	6.09	7.23	8.36	9.05	10.41
2133131.00	3.61	5.7	6.2	6.6	6.9	7.5	5825	4.75	5.89	6.80	7.48	8.84
2123131.00	3.30	5.8	6.2	6.7	7.0	7.6	5556	5.68	6.59	7.73	8.41	9.77
2113131.00	2.84	5.8	6.3	6.7	7.0	7.6	5505	6.73	7.86	8.77	9.45	10.82

AASHTO: 6" AC 12" BASE Overlay Thickness Data

8" AC 8" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1134214.00	3.96	4.8	5.2	5.6	5.9	6.4	10345	1.91	2.82	3.73	4.41	5.55
1124214.00	3.77	4.8	5.2	5.6	5.9	6.4	10169	2.34	3.25	4.16	4.84	5.98
1114214.00	3.29	4.8	5.2	5.6	5.9	6.4	10169	3.43	4.34	5.25	5.93	7.07
1134114.00	3.87	4.8	5.2	5.6	5.9	6.4	10345	2.11	3.02	3.93	4.61	5.75
1124114.00	3.70	4.8	5.2	5.7	5.9	6.4	10000	2.50	3.41	4.55	5.00	6.14
1114114.00	3.14	4.8	5.2	5.6	5.9	6.4	10345	3.77	4.68	5.59	6.27	7.41
1134213.00	3.75	5.4	5.9	6.3	6.6	7.1	6897	3.75	4.89	5.80	6.48	7.61
1124213.00	3.67	5.5	6.0	6.4	6.7	7.3	6522	4.16	5.30	6.20	6.89	8.25
1114213.00	3.28	5.5	6.0	6.5	6.7	7.3	6383	5.05	6.18	7.32	7.77	9.14
1134113.00	3.70	5.4	5.9	6.3	6.6	7.2	6818	3.86	5.00	5.91	6.59	7.95
1124113.00	3.60	5.5	6.0	6.4	6.7	7.3	6452	4.32	5.45	6.36	7.05	8.41
1114113.00	3.16	5.5	6.0	6.5	6.7	7.3	6383	5.32	6.45	7.59	8.05	9.41
1134212.00	3.20	6.7	7.3	7.8	8.2	8.9	3209	7.95	9.32	10.45	11.36	12.95
1124212.00	3.34	6.9	7.5	8.1	8.4	9.1	2899	8.09	9.45	10.82	11.50	13.09
1114212.00	3.23	7.1	7.7	8.3	8.6	9.3	2679	8.80	10.16	11.52	12.20	13.80
1134112.00	3.18	6.8	7.3	7.9	8.2	8.9	3158	8.23	9.36	10.73	11.41	13.00
1124112.00	3.29	7.0	7.6	8.1	8.5	9.2	2844	8.43	9.80	10.93	11.84	13.43
1114112.00	3.10	7.1	7.7	8.3	8.6	9.3	2643	9.09	10.45	11.82	12.50	14.09
1134211.00	2.49	8.6	9.3	9.9	10.4	11.2	1364	13.89	15.48	16.84	17.98	19.80
1124211.00	2.72	8.9	9.6	10.3	10.8	11.6	1186	14.05	15.64	17.23	18.36	20.18
1114211.00	2.90	9.3	10.0	10.7	11.2	12.1	1034	14.55	16.14	17.73	18.86	20.91
1134111.00	2.47	8.6	9.3	10.0	10.4	11.2	1339	13.93	15.52	17.11	18.02	19.84
1124111.00	2.70	9.0	9.7	10.4	10.8	11.7	1156	14.32	15.91	17.50	18.41	20.45
1114111.00	2.83	9.3	10.1	10.8	11.3	12.1	1005	14.70	16.52	18.11	19.25	21.07
2134214.00	4.30	4.0	4.4	4.7	5.0	5.4	18182	0.00	0.23	0.91	1.59	2.50
2124214.00	3.78	4.0	4.4	4.8	5.0	5.4	17647	0.50	1.41	2.32	2.77	3.68
2114214.00	2.97	4.0	4.3	4.7	4.9	5.3	18750	2.34	3.02	3.93	4.39	5.30
2134114.00	4.20	4.0	4.4	4.8	5.0	5.4	17647	0.00	0.45	1.36	1.82	2.73
2124114.00	3.73	4.1	4.5	4.9	5.1	5.5	16667	0.84	1.75	2.66	3.11	4.02
2114114.00	2.88	4.0	4.4	4.7	5.0	5.4	18182	2.55	3.45	4.14	4.82	5.73
2134213.00	4.18	4.4	4.7	5.1	5.4	5.8	13953	0.50	1.18	2.09	2.77	3.68
2124213.00	3.77	4.4	4.8	5.2	5.5	6.0	13043	1.43	2.34	3.25	3.93	5.07
2114213.00	2.98	4.4	4.8	5.2	5.4	5.9	13333	3.23	4.14	5.05	5.50	6.64
2134113.00	4.16	4.4	4.8	5.2	5.4	5.9	13333	0.55	1.45	2.36	2.82	3.95
2124113.00	3.67	4.5	4.9	5.3	5.5	6.0	12766	1.89	2.80	3.70	4.16	5.30
2114113.00	2.87	4.4	4.8	5.2	5.5	6.0	13043	3.48	4.39	5.30	5.98	7.11
2134212.00	4.06	5.1	5.5	5.9	6.2	6.7	8451	2.36	3.27	4.18	4.86	6.00
2124212.00	3.73	5.1	5.6	6.0	6.3	6.8	8108	3.11	4.25	5.16	5.84	6.98
2114212.00	2.99	5.2	5.6	6.1	6.3	6.9	7895	5.02	5.93	7.07	7.52	8.89
2134112.00	4.04	5.1	5.5	6.0	6.2	6.8	8333	2.41	3.32	4.45	4.91	6.27
2124112.00	3.65	5.2	5.6	6.1	6.3	6.9	7895	3.52	4.43	5.57	6.02	7.39
2114112.00	2.88	5.2	5.7	6.1	6.4	6.9	7692	5.27	6.41	7.32	8.00	9.14
2134211.00	3.91	5.6	6.1	6.5	6.8	7.4	6122	3.84	4.98	5.89	6.57	7.93
2124211.00	3.67	5.7	6.2	6.6	6.9	7.5	5825	4.61	5.75	6.66	7.34	8.70
2114211.00	3.01	5.8	6.2	6.7	7.0	7.6	5556	6.34	7.25	8.39	9.07	10.43
2134111.00	3.91	5.6	6.1	6.6	6.9	7.4	6000	3.84	4.98	6.11	6.80	7.93
2124111.00	3.61	5.7	6.2	6.7	7.0	7.5	5714	4.75	5.89	7.02	7.70	8.84
2114111.00	2.89	5.8	6.3	6.8	7.0	7.6	5455	6.61	7.75	8.89	9.34	10.70

AASHTO: 8" AC 8" BASE Overlay Thickness Data

8" AC 10" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1134224.00	4.24	4.7	5.2	5.6	5.8	6.3	10526	1.05	2.18	3.09	3.55	4.68
1124224.00	4.09	4.8	5.2	5.6	5.9	6.4	10345	1.61	2.52	3.43	4.11	5.25
1114224.00	3.62	4.8	5.2	5.6	5.9	6.4	10345	2.68	3.59	4.50	5.18	6.32
1134124.00	4.20	4.8	5.2	5.6	5.9	6.4	10345	1.36	2.27	3.18	3.86	5.00
1124124.00	4.00	4.8	5.2	5.6	5.9	6.4	10169	1.82	2.73	3.64	4.32	5.45
1114124.00	3.47	4.8	5.2	5.6	5.9	6.4	10345	3.02	3.93	4.84	5.52	6.66
1134223.00	3.99	5.4	5.8	6.3	6.5	7.1	7059	3.20	4.11	5.25	5.70	7.07
1124223.00	3.97	5.4	5.9	6.4	6.7	7.2	6667	3.25	4.39	5.52	6.20	7.34
1114223.00	3.61	5.5	6.0	6.4	6.7	7.3	6522	4.30	5.43	6.34	7.02	8.39
1134123.00	3.97	5.4	5.9	6.3	6.6	7.2	6897	3.25	4.39	5.30	5.98	7.34
1124123.00	3.88	5.5	5.9	6.4	6.7	7.2	6593	3.68	4.59	5.73	6.41	7.55
1114123.00	3.46	5.5	6.0	6.4	6.7	7.3	6452	4.64	5.77	6.68	7.36	8.73
1134222.00	3.40	6.7	7.2	7.8	8.1	8.8	3315	7.50	8.64	10.00	10.68	12.27
1124222.00	3.57	6.9	7.4	8.0	8.3	9.0	3015	7.57	8.70	10.07	10.75	12.34
1114222.00	3.50	7.0	7.6	8.2	8.5	9.2	2791	7.95	9.32	10.68	11.36	12.95
1134122.00	3.37	6.7	7.3	7.8	8.2	8.8	3243	7.57	8.93	10.07	10.98	12.34
1124122.00	3.51	6.9	7.5	8.0	8.4	9.1	2941	7.70	9.07	10.20	11.11	12.70
1114122.00	3.37	7.1	7.6	8.2	8.6	9.3	2740	8.48	9.61	10.98	11.89	13.48
1134221.00	2.65	8.5	9.2	9.8	10.3	11.1	1415	13.30	14.89	16.25	17.39	19.20
1124221.00	2.88	8.8	9.5	10.2	10.6	11.4	1253	13.45	15.05	16.64	17.55	19.36
1114221.00	3.09	9.1	9.8	10.5	11.0	11.8	1105	13.66	15.25	16.84	17.98	19.80
1134121.00	2.63	8.6	9.2	9.9	10.3	11.2	1382	13.57	14.93	16.52	17.43	19.48
1124121.00	2.85	8.9	9.6	10.3	10.7	11.6	1212	13.75	15.34	16.93	17.84	19.89
1114121.00	3.01	9.2	9.9	10.6	11.1	11.9	1068	14.07	15.66	17.25	18.39	20.20
2134224.00	4.58	4.0	4.4	4.7	5.0	5.4	18182	0.00	0.00	0.27	0.95	1.86
2124224.00	4.09	4.0	4.4	4.8	5.0	5.4	17647	0.00	0.70	1.61	2.07	2.98
2114224.00	3.30	4.0	4.4	4.7	5.0	5.4	18182	1.59	2.50	3.18	3.86	4.77
2134124.00	4.52	4.1	4.5	4.8	5.0	5.5	17143	0.00	0.00	0.64	1.09	2.23
2124124.00	3.99	4.1	4.5	4.9	5.1	5.5	16667	0.25	1.16	2.07	2.52	3.43
2114124.00	3.17	4.0	4.4	4.8	5.0	5.4	17647	1.89	2.80	3.70	4.16	5.07
2134223.00	4.47	4.4	4.7	5.1	5.4	5.8	13953	0.00	0.52	1.43	2.11	3.02
2124223.00	4.07	4.4	4.8	5.2	5.5	6.0	13043	0.75	1.66	2.57	3.25	4.39
2114223.00	3.29	4.4	4.8	5.2	5.4	5.9	13333	2.52	3.43	4.34	4.80	5.93
2134123.00	4.45	4.4	4.8	5.2	5.4	5.9	13333	0.00	0.80	1.70	2.16	3.30
2124123.00	3.96	4.5	4.9	5.3	5.5	6.0	12500	1.23	2.14	3.05	3.50	4.64
2114123.00	3.17	4.5	4.9	5.3	5.5	6.0	12766	3.02	3.93	4.84	5.30	6.43
2134222.00	4.30	5.1	5.5	5.9	6.2	6.7	8571	1.82	2.73	3.64	4.32	5.45
2124222.00	3.98	5.1	5.6	6.0	6.3	6.8	8108	2.55	3.68	4.59	5.27	6.41
2114222.00	3.29	5.2	5.6	6.1	6.3	6.9	7895	4.34	5.25	6.39	6.84	8.20
2134122.00	4.26	5.1	5.5	6.0	6.2	6.8	8333	1.91	2.82	3.95	4.41	5.77
2124122.00	3.90	5.2	5.6	6.1	6.3	6.9	7895	2.95	3.86	5.00	5.45	6.82
2114122.00	3.14	5.2	5.7	6.1	6.4	6.9	7692	4.68	5.82	6.73	7.41	8.55
2134221.00	4.16	5.6	6.1	6.5	6.8	7.4	6122	3.27	4.41	5.32	6.00	7.36
2124221.00	3.91	5.7	6.1	6.6	6.9	7.5	5882	4.07	4.98	6.11	6.80	8.16
2114221.00	3.28	5.7	6.2	6.7	7.0	7.6	5660	5.50	6.64	7.77	8.45	9.82
2134121.00	4.12	5.6	6.1	6.6	6.9	7.4	6000	3.36	4.50	5.64	6.32	7.45
2124121.00	3.84	5.7	6.2	6.7	7.0	7.5	5714	4.23	5.36	6.50	7.18	8.32
2114121.00	3.14	5.8	6.3	6.8	7.0	7.6	5455	6.05	7.18	8.32	8.77	10.14

AASHTO: 8" AC 10" BASE Overlay Thickness Data

8" AC 12" BASE AASHTO STATION	SNeff	SNf RELIABILITY LEVEL					Mr	OVERLAY THICKNESS (in) RELIABILITY LEVEL				
		50	75	90	95	99	(psi)	50	75	90	95	99
1134234.00	4.57	4.7	5.1	5.5	5.8	6.3	10714	0.30	1.20	2.11	2.80	3.93
1124234.00	4.43	4.7	5.2	5.6	5.8	6.3	10526	0.61	1.75	2.66	3.11	4.25
1114234.00	3.96	4.7	5.2	5.6	5.8	6.3	10526	1.68	2.82	3.73	4.18	5.32
1134134.00	4.50	4.7	5.2	5.6	5.8	6.3	10526	0.45	1.59	2.50	2.95	4.09
1124134.00	4.31	4.8	5.2	5.6	5.9	6.4	10345	1.11	2.02	2.93	3.61	4.75
1114134.00	3.81	4.8	5.2	5.6	5.9	6.4	10345	2.25	3.16	4.07	4.75	5.89
1134233.00	4.27	5.3	5.8	6.2	6.5	7.1	7229	2.34	3.48	4.39	5.07	6.43
1124233.00	4.27	5.4	5.9	6.3	6.6	7.1	6897	2.57	3.70	4.61	5.30	6.43
1114233.00	3.94	5.4	5.9	6.4	6.7	7.2	6667	3.32	4.45	5.59	6.27	7.41
1134133.00	4.22	5.4	5.8	6.3	6.5	7.1	7059	2.68	3.59	4.73	5.18	6.55
1124133.00	4.17	5.4	5.9	6.4	6.6	7.2	6742	2.80	3.93	5.07	5.52	6.89
1114133.00	3.78	5.5	5.9	6.4	6.7	7.2	6593	3.91	4.82	5.95	6.64	7.77
1134232.00	3.61	6.6	7.2	7.7	8.0	8.7	3429	6.80	8.16	9.30	9.98	11.57
1124232.00	3.80	6.8	7.3	7.9	8.2	8.9	3158	6.82	7.95	9.32	10.00	11.59
1114232.00	3.78	6.9	7.5	8.1	8.4	9.1	2913	7.09	8.45	9.82	10.50	12.09
1134132.00	3.59	6.7	7.2	7.8	8.1	8.8	3333	7.07	8.20	9.57	10.25	11.84
1124132.00	3.73	6.8	7.4	7.9	8.3	9.0	3061	6.98	8.34	9.48	10.39	11.98
1114132.00	3.64	7.0	7.6	8.1	8.5	9.2	2844	7.64	9.00	10.14	11.05	12.64
1134231.00	2.84	8.4	9.1	9.7	10.1	10.9	1478	12.64	14.23	15.59	16.50	18.32
1124231.00	3.06	8.6	9.3	10.0	10.4	11.3	1327	12.59	14.18	15.77	16.68	18.73
1114231.00	3.28	8.9	9.7	10.3	10.8	11.6	1179	12.77	14.59	15.95	17.09	18.91
1134131.00	2.80	8.5	9.2	9.8	10.2	11.0	1432	12.95	14.55	15.91	16.82	18.64
1124131.00	3.02	8.7	9.4	10.1	10.6	11.4	1274	12.91	14.50	16.09	17.23	19.05
1114131.00	3.20	9.0	9.8	10.5	10.9	11.8	1134	13.18	15.00	16.59	17.50	19.55
2134234.00	4.91	4.0	4.4	4.7	5.0	5.4	18182	0.00	0.00	0.00	0.20	1.11
2124234.00	4.41	4.0	4.4	4.8	5.0	5.4	17647	0.00	0.00	0.89	1.34	2.25
2114234.00	3.62	4.0	4.4	4.7	5.0	5.4	18182	0.86	1.77	2.45	3.14	4.05
2134134.00	4.82	4.1	4.5	4.8	5.0	5.5	17143	0.00	0.00	0.00	0.41	1.55
2124134.00	4.31	4.2	4.5	4.9	5.1	5.6	16216	0.00	0.43	1.34	1.80	2.93
2114134.00	3.47	4.1	4.5	4.8	5.0	5.5	17143	1.43	2.34	3.02	3.48	4.61
2134233.00	4.81	4.4	4.8	5.2	5.4	5.9	13636	0.00	0.00	0.89	1.34	2.48
2124233.00	4.37	4.4	4.8	5.2	5.5	6.0	13043	0.07	0.98	1.89	2.57	3.70
2114233.00	3.60	4.4	4.8	5.2	5.4	5.9	13333	1.82	2.73	3.64	4.09	5.23
2134133.00	4.75	4.4	4.8	5.2	5.5	6.0	13043	0.00	0.11	1.02	1.70	2.84
2124133.00	4.25	4.5	4.9	5.3	5.5	6.0	12500	0.57	1.48	2.39	2.84	3.98
2114133.00	3.45	4.5	4.9	5.3	5.5	6.0	12766	2.39	3.30	4.20	4.66	5.80
2134232.00	4.56	5.1	5.5	5.9	6.2	6.7	8571	1.23	2.14	3.05	3.73	4.86
2124232.00	4.28	5.1	5.6	6.0	6.3	6.8	8108	1.86	3.00	3.91	4.59	5.73
2114232.00	3.57	5.2	5.6	6.0	6.3	6.9	8000	3.70	4.61	5.52	6.20	7.57
2134132.00	4.54	5.1	5.6	6.0	6.3	6.8	8219	1.27	2.41	3.32	4.00	5.14
2124132.00	4.17	5.2	5.7	6.1	6.4	6.9	7792	2.34	3.48	4.39	5.07	6.20
2114132.00	3.41	5.2	5.7	6.1	6.4	6.9	7692	4.07	5.20	6.11	6.80	7.93
2134231.00	4.41	5.6	6.1	6.5	6.8	7.4	6122	2.70	3.84	4.75	5.43	6.80
2124231.00	4.17	5.7	6.1	6.6	6.9	7.5	5882	3.48	4.39	5.52	6.20	7.57
2114231.00	3.56	5.7	6.2	6.7	7.0	7.5	5714	4.86	6.00	7.14	7.82	8.95
2134131.00	4.35	5.6	6.1	6.6	6.9	7.4	6000	2.84	3.98	5.11	5.80	6.93
2124131.00	4.08	5.7	6.2	6.7	7.0	7.5	5714	3.68	4.82	5.95	6.64	7.77
2114131.00	3.39	5.8	6.3	6.7	7.0	7.6	5505	5.48	6.61	7.52	8.20	9.57

AASHTO: 8" AC 12" BASE Overlay Thickness Data