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DEVELOPMENT AND IMPLEMENTATION OF A PERFORMANCE-RELATED SPECIFICATION FOR A JOINTED PLAIN CONCRETE PAVEMENT— I-39/90/94 MADISON, WISCONSIN

FINAL REPORT

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16. Abstract

The primary objective of this study was to develop, implement, and evaluate a Level 1 performance-related specification (PRS) for the construction of a jointed plain concrete (JPC) pavement in the State of Wisconsin.

The research entailed a thorough evaluation of the construction quality levels achieved on recent Wisconsin JPC projects and the formulation of a Level 1 PRS using the results of the quality evaluation and defined WisDOT pavement practices as a basis. The Level 1 PRS defined the sampling and testing requirements for four acceptance quality characteristics (AQCs)—thickness, strength, air content, and smoothness—and the corresponding performance-based pay factor curves for each AQC. The Level 1 PRS was included as an overriding special provision in the December 2005 letting of a JPC paving project located on I-39/90/94 near Madison, Wisconsin. Implementation of the PRS took place March through June 2006, corresponding to the mainline and tied-shoulder paving performed in both directions on this project.

AQC measurements obtained from the I-39/90/94 project were used to compute PRS pay factors and establish pay adjustments for the contractor. High smoothness and strength levels achieved by the contractor coupled with more generous incentives for smoothness as compared to existing WisDOT specifications, resulted in significant incentives for the contractor under the PRS. Feedback from WisDOT and the contractor indicated that this first PRS implementation in Wisconsin was successful, particularly with respect to the layouts of lots and sublots. Several suggestions were received to improve and streamline the PRS process.

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- Mr. Mike Rampetsreiter, WisDOT Southwest Region
- Mr. Rodney Taylor, WisDOT Bureau of Project Development
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- Mr. Joe Matchey, Progressive Contractors Inc.
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TABLE OF CONTENTS

TABLE OF CONTENTS (CONT.)

LIST OF FIGURES

LIST OF FIGURES (CONT.)

LIST OF TABLES

LIST OF TABLES (CONT.)

CHAPTER 1. INTRODUCTION

BACKGROUND

Since the late 1980's, there has been a national movement to develop a practical methodology for specifying the construction of jointed plain concrete (JPC) pavements in relation to their expected performance over time. The methodology builds upon the traditional materials-and-methods specifications or quality assurance (QA) specifications used by State Highway Agencies, by linking key materials and construction quality characteristics (e.g., strength, thickness, smoothness) with pavement performance and, subsequently, future pavement upkeep costs.

The underlying premise of the methodology is that lower or more variable materials/ construction quality levels result in reduced pavement performance, which, in turn, requires an agency to spend more money in the future through sooner, more frequent, and/or more comprehensive maintenance and rehabilitation (M&R) work. By passing the expected consequences of particularly good or bad construction quality onto the paving contractor through bonuses or penalties, a more rational approach to construction is achieved, one that is more equitable to both the highway agency and the contractor.

This methodology is known as performance-related specifications (PRS) and its initial development can be traced back to the mid 1980's and the work of the New Jersey Department of Transportation (DOT) (Weed, 1989). The New Jersey DOT developed comprehensive procedures for deriving acceptance plans and payment schedules based on as-constructed Portland cement concrete (PCC) thickness and strength. Using the American Association of State Highway and Transportation Officials (AASHTO) rigid pavement performance equation, the expected difference in performance between a pavement with as-designed and as-constructed quality levels could be computed, with the resulting life-cycle cost difference passed onto the contractor.

The first of four Federal Highway Administration (FHWA)-sponsored studies on PRS for concrete pavements was performed in the late 1980's and resulted in an expansion of the procedure to include surface profile (i.e., smoothness) as a key construction quality attribute (Irick et al., 1990). It also introduced the use of concrete pavement performance models developed in the National Cooperative Highway Research Program (NCHRP) Project 1-19.

The second FHWA-sponsored study took place between 1990 and 1993 (Darter et al., 1993a; Darter et al., 1993b; Okamoto, 1993). Under that study, the first demonstration software (PaveSpec 1) of JPC PRS was developed and an extensive laboratory testing program was conducted to evaluate various PCC material properties (strength, modulus, air content), inter-strength relationships (e.g., flexural versus compressive strength, core versus cylinder strength), and the effects of entrained air content on spalling.

In the third FHWA PRS study (1994 through 1998) (Hoerner and Darter, 1999; Hoerner et al., 1999a; Hoerner et al., 1999b; Hoerner, 1999), the variability of key materials/construction quality characteristics was investigated. Two new characteristics (air content and consolidation around dowels) and new pavement performance models were evaluated, and several field trials of the prototype PRS were conducted. In addition, version 2.0 of the PaveSpec software program was developed, incorporating many of the results of these undertakings.

Performance model refinement was the primary focus of the final FHWA PRS study conducted between 1998 and 2000 (Hoerner et al., 2000; Hoerner and Darter, 2000). Each of four PRS models (transverse joint faulting, transverse slab cracking, transverse joint spalling, and smoothness) were evaluated, improved, and incorporated into PaveSpec Version 3.0.

PERFORMANCE-RELATED SPECIFICATION CONCEPT

Specifications that describe how the finished product should perform over time are described as performance specifications. Performance-related specifications (PRS) are defined as QA specifications that describe the desired levels of key materials and construction acceptance quality characteristics (AQCs) (e.g., concrete strength, slab thickness, and initial smoothness) that have been found to correlate with fundamental engineering properties that predict performance (TRB, 2005). PRS are improved QA specifications. Like QA specifications, PRS specify the desired product quality rather than the desired product performance. However, in PRS, when one specifies quality, they know what performance they are specifying.

Another major difference comes from the methods used to determine the overall pay adjustment for a given lot (i.e., the amount of material or construction produced by the same process). Conventional QA acceptance plans use engineering judgment to establish individual AQC pay adjustments (and weighting factors for each) for determining the overall price adjustment for the lot (FHWA, 1997). PRS, however, use mathematical models (taking AQC values into account) to estimate future pavement performance and corresponding life-cycle costs (LCC's) to compute one overall lot price adjustment (FHWA, 1997).

As illustrated in figure 1, PRS pay adjustments are based on the difference between the LCC's associated with the target (as-designed) pavement and those associated with the as-constructed pavement. AQC target values represent the number or range of values for which a highway agency is willing to pay 100 percent of the contracted unit price for PCC. These AQC targets are used to predict the future performance (using mathematical distress prediction models) and the associated estimated future LCC's defining the as-designed pavement. (Note: The future LCC's include those M&R costs expected to be incurred by the agency and potential users [user costs may be included by the agency] over the life of the project, assuming a given rehabilitation policy.)

The estimated LCC's corresponding to the as-designed quality levels of each AQC are then summarized into one LCC (LCC_{des}) representing the overall quality of the as-designed pavement. The as-constructed AQCs are measured at the time of construction and used to predict the future pavement performance and LCC's associated with the as-constructed pavement. The estimated

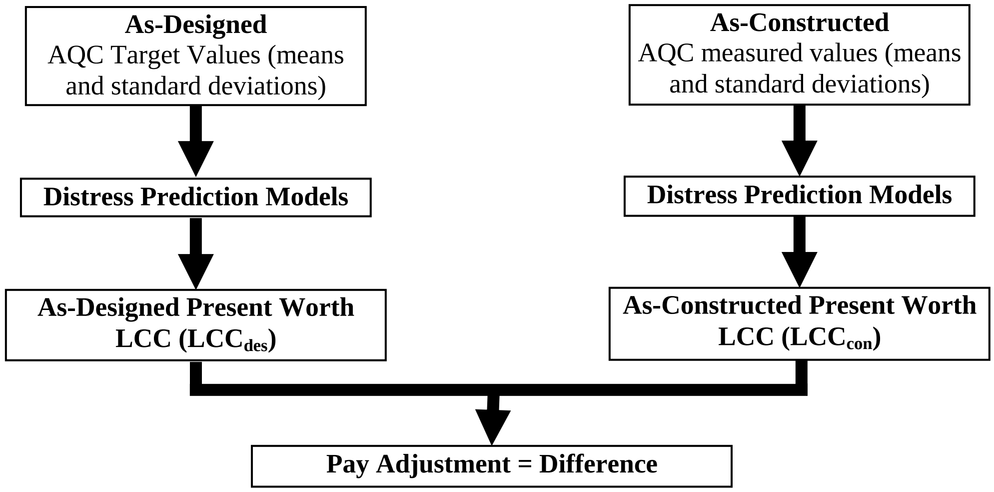

Figure 1. Basic concepts of LCC-based PRS.

LCC's corresponding to the measured as-constructed quality levels of each AQC are then summarized into one LCC (LCC_{con}) representing the overall quality of the as-constructed pavement.

An incentive pay adjustment is computed if the as-constructed quality is measured to be better than the agency-specified target values (due to a predicted increase in pavement life, resulting in a corresponding decrease in LCC's). Conversely, a disincentive pay adjustment is computed if the as-constructed quality is measured to be poorer than the agency-specified target values (due to a predicted decrease in pavement life, resulting in a corresponding increase in LCC's) (Darter et al., 1993a; Darter et al., 1993b, Okamoto, 1993). The amount of the pay adjustment (incentive or disincentive) is determined as a percentage of the bid price using the following equation:

$$PF = 100 \times (BID + (LCC_{des} - LCC_{con})) / BID \qquad \text{Eq. 1}$$

where:
- PF = Pay Factor, %
- BID = Contractor's unit price bid for PCC pavement, $.
- LCC_{des} = As-designed life-cycle cost per unit length, $.
- LCC_{con} = As-constructed life-cycle cost per unit length, $.

PRS can be developed and implemented at different levels of complexity and detail. Level 1 PRS represent the most basic form of PRS and involve only a minor deviation from an agency's QA specifications. Only the most fundamental quality characteristics (e.g., strength, thickness, initial smoothness) are considered in a Level 1 PRS, and changes to the agency's sampling and testing protocol are kept to a minimum. Level 2 PRS is a significant expansion of Level 1 PRS and represents a dynamic transition to an ideal PRS (Level 3) that includes all AQC's that affect pavement performance.

STUDY OBJECTIVES AND SCOPE

The primary objective of this study was to develop, implement, and evaluate a Level 1 PRS for the construction of a JPC pavement in the State of Wisconsin. This specification would provide the Wisconsin Department of Transportation (WisDOT) with a methodology that (a) assures that pavement design assumptions are being fulfilled, (b) promotes high quality construction, and (c) protects the Department from poor workmanship. At the same time, the specification would allow the contractor the maximum freedom in deciding how to perform the construction. Note that for this first Wisconsin PRS project, it was not desired to force an increase in quality through increased AQC requirements (i.e., higher target concrete strength or increased target smoothness). Higher quality may occur as a result of the PRS approach, however. Previous concrete pavement PRS projects have been implemented in Indiana (3), Florida, and Tennessee. The scope of this project consisted of the following tasks:

1. **Conduct Project Coordination Meeting** with the Project Oversight Panel to provide an overview of the research project, present the PRS approach, select the AQCs to be included in the Level 1 PRS, identify candidate paving projects, discuss the research project schedule, and arrange for data collection from WisDOT records.
2. **Collect and Analyze Pre-Construction Data** on several recent Wisconsin concrete paving projects identified as representative of the project selected for PRS implementation. Data analysis results provided an understanding of the typical quality levels achieved, which were then used as a framework for developing the Level 1 PRS.
3. **Develop and Finalize Level 1 PRS** based on a review of existing WisDOT specifications, results of the task 2 data analyses, incorporation of PRS concepts and methodologies, and collaboration with key WisDOT staff regarding proposed PRS inputs, assumptions, and corresponding pay factor curves.
4. **Prepare for the Field Trial Implementation of the PRS** through participation in pre-bid/pre-construction meetings, completion of spreadsheet-based PRS program, and training of WisDOT field staff on use of the program.
5. **Implement the PRS** on the selected concrete paving project, providing as-needed assistance to WisDOT field personnel with respect to sampling and testing plan layout, AQC test value reporting, and computation of lot pay factors.
6. **Evaluate the PRS** by assessing contractor bidding and paving strategies/practices under the PRS, comparing PRS-based pay factors with conventional specification pay factors, and obtaining feedback from WisDOT and the contractor on the adequacy, practicality, and effectiveness of the PRS.
7. **Develop Project Deliverables** including this final report and a presentation of the study results to the Project Oversight Panel.

REPORT ORGANIZATION

This report is presented in six chapters. Chapter 1 is this introduction. Chapter 2 provides an overview of the Wisconsin highway paving project selected for PRS implementation. Chapters 3 and 4 discuss in detail the development and implementation, respectively, of the Level 1 PRS. Chapter 5 reports on the evaluations performed on the PRS and Chapter 6 summarizes the results of the study and presents key recommendations concerning future PRS development and implementation efforts.

Also included in this report are three appendixes. Appendix A shows the screen shots of PaveSpec 3.0 used in the development of the PRS. Appendix B features the final Level 1 PRS utilized in this study. Appendix C summarizes the primary sets of data collected and analyzed throughout the study.

CHAPTER 2. OVERVIEW OF WISCONSIN I-39/90/94 PROJECT

LOCATION

The PRS developed and evaluated in this study were implemented on a highway reconstruction project (ID 1011-01-88) located on I-39/90/94 north of Madison (see figure 2). The 5-mi project, which extended approximately from County Trunk Highway (CTH) V (Exit 126) to the Dane-Columbia County Line (see figure 3), consisted of a 6-lane mainline concrete pavement, inside and outside tied concrete shoulders, entrance and exit ramps for the CTH V interchange, and various roadside improvements. The PRS were applied to both the mainline pavement and shoulders located within a 4.2-mi segment of the project, between mileposts 123.2 and 127.4 (stations 407+69.5 and 629+00). Ramps were not included in the PRS.

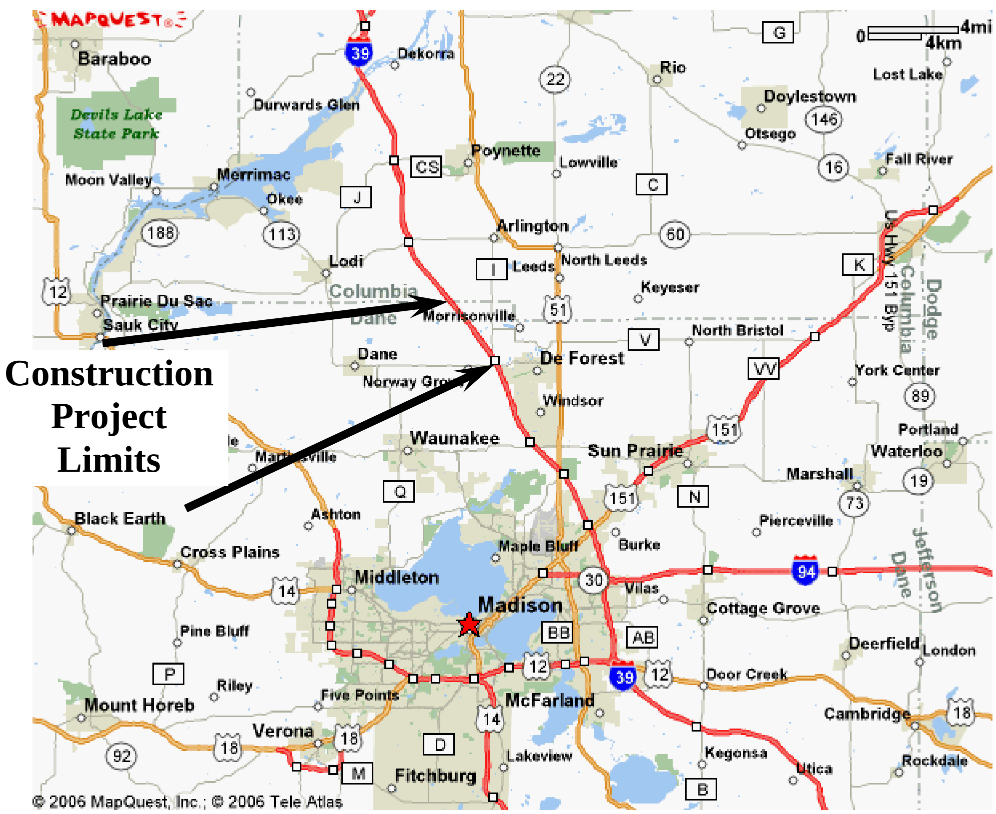

Figure 2. General location of I-39/90/94 construction project.

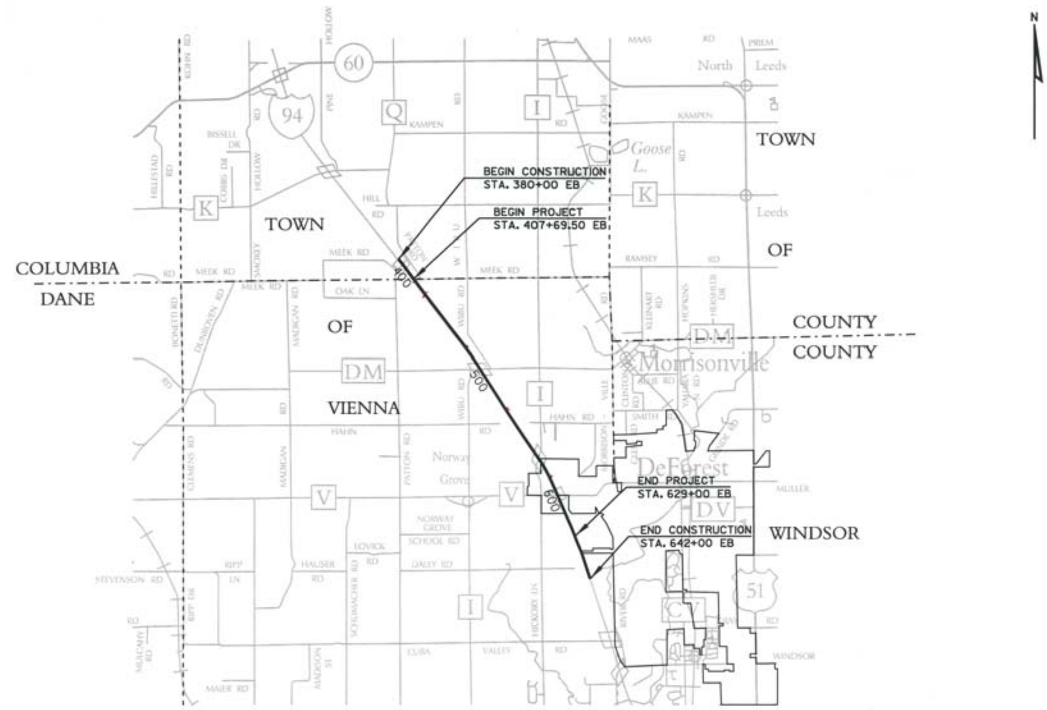

Figure 3. Construction limits of I-39/90/94 construction project.

DESIGN

The design of the pavement cross-section was as follows:

<u>Mainline (12-ft wide lanes)</u>

- 12.5-in jointed plain concrete (JPC) pavement.
- 18-ft transverse joint spacing.
- 1.5-in dowel bars spaced at 12-in intervals at transverse joints.
- No. 4 steel tie bars spaced at 12-in intervals at longitudinal joints.
- 6-in dense aggregate base (existing and new).
- 9-in granular subbase (existing).
- Tied concrete shoulders.

<u>Shoulders (10-ft wide outside, 12-ft wide inside)</u>

- 8-in jointed plain concrete (JPC) pavement.
- 18-ft transverse joint spacing.
- 1.25-in dowel bars spaced at 12-in intervals at transverse joints.
- 10.5-in dense aggregate base.
- 12-in select crushed material.
- Tied to mainline.

The I-39/90/94 project is located in a wet-freeze climate. The mean daily temperature in the area ranges from about 18°F in January to 73°F in July (NOAA, 1983). The mean annual number of days above 90°F is approximately 11, while the mean annual number of days below 32°F is approximately 160. The mean annual precipitation is about 33 in/year.

CHAPTER 3. DEVELOPMENT OF THE PERFORMANCE-RELATED SPECIFICATION

The PRS methodology outlined in the FHWA's *Guide to Developing Performance-Related Specifications* (Hoerner and Darter, 1999) and the PaveSpec 3.0 software were used in developing the PRS for the I-39/90/94 project. As illustrated previously in figure 1, PaveSpec 3.0 computes the pay adjustment (termed pay factor) for a given lot based on the effect of construction quality on the predicted pavement performance and subsequent LCC. The pay adjustment is computed as the difference in LCC between the as-designed "target" pavement and the as-constructed pavement (lot).

SELECTION OF ACCEPTANCE QUALITY CHARACTERISTICS

The following AQCs can be considered directly in the PaveSpec PRS methodology for JPC pavements:

- Concrete strength.
- Slab thickness.
- Initial smoothness.
- Entrained-air content.
- Percent consolidation around dowel bars.

These AQCs affect pavement performance and are under the control of the paving contractor. Of the AQCs listed above, WisDOT includes concrete strength, slab thickness, and initial smoothness in their existing quality management provisions (QMP) for concrete pavements. Entrained air content is also measured and the control limits need to be met in order for the contractor to receive concrete strength incentive pay for that particular lot. After significant discussion with WisDOT, all four current AQCs were selected for use in the PRS for I-39/90/94; percent consolidation around dowel bars was not used. In addition, no significant changes in the test methods from the current WisDOT specifications were specified for this project. The proposed test methods included:

- Compressive Strength—The compressive strength at 28 days is the standard quality characteristic used, and was also used in the WisDOT PRS.
- Slab Thickness—WisDOT measures concrete thickness using thickness probes as part of their conventional quality control (QC) procedures. The same was specified for use on this project.
- Initial Smoothness—As in the current WisDOT specifications, initial smoothness following construction was specified to be measured using the California profilograph with a zero or 0.01-in width blanking band (herein denoted as $PI_{0.0}$).
- Entrained Air Content—Entrained air content measured using a pressure meter was used in the PRS as a factor affecting pavement performance.

WisDOT Concrete Pavement Specifications

The current method specifications include the following items:

- Slab Thickness—Measured using a series of two probings at a single longitudinal location selected at random every basic unit (250 lane feet). The transverse locations of the two probings are at locations defined by the contractor in the Quality Control Plan.
- Compressive Strength—Measured by taking cylinders at the paving site and curing them for 28 days to determine their compressive strength. One batch of PCC is taken each 500 yd^3, for a minimum of two cylinders. In this case, the average compressive strength of the two cylinders is used. A contractor can choose to cast three cylinders. After breaking two cylinders, if the strength of the lower cylinder is less than 90 percent of the higher cylinder, the contractor can break the third cylinder and the lowest of the three cylinder compressive strengths is discarded. The average of the two higher compressive strengths is used.
- Initial Smoothness—Measured by testing both the inside and the outside wheelpath every 0.1 lane mile using the California profilograph with a zero or 0.01-in width blanking band.
- Entrained Air Content—One entrained air content measurement using a pressure meter is taken for every 500 yd^3 of PCC. Additional measurements are taken if air content values are beyond the upper and lower control limits.

Details of measurement and pay are provided later in this chapter.

Establishment of As-Designed Target Values

PRS differ from other QC specifications in that target means and standard deviations are specified instead of minimums. The target means and standard deviations of the AQCs are those values that, if achieved by the contractor for an as-constructed lot, will be paid for at 100 percent of the bid price.

To determine the level of quality currently being achieved, historical data from seven projects were obtained. PCC compressive strength and entrained air content data were obtained from five of these seven projects. PCC thickness and initial smoothness ($PI_{0.0}$) data were obtained from six of these seven projects. A summary of these projects is given in table 1. Tables 2 through 5 show the mean and standard deviation summaries of the historical data for the four AQCs under consideration.

Table 1. Summary of data types obtained from seven previous PCC paving projects.

Project ID	Description	Strength	Air Content	Thickness	Initial Smoothness
1160-00-73, 1160-03-61,62,63	IH 39, Stevens Point to Mosinee—Cape	√	√	√	√
1161-00-73	IH 39, USH 51 to North County Line (Portage)—PCC	√	√	√	√
1209-02-73	USH 151, Belmont to Platteville—Cape	√	√	√	√
1517-04-71	USH 10, STH 110 to USH 45—Streu	√	√		
1420-09-70/72	USH 151, Madison to Fond du Lac Rd—Streu	√	√	√	√
5300-03-77	USH 12, STH 78 to CTH KP—PCC			√	√
6290-05-72	USH 10, Amherst Junction to CTH A—PCC			√	√

Table 2. Summary of PCC compressive strength data from five historical projects in Wisconsin.

Project ID	Number of Lots	Number of Sublots	Average Strength, lb/in^2	Strength Standard Deviation, lb/ft^2
1420-09-70/72	9	56	4,976	280
1161-00-73	7	40	3,923	210
1517-04-71	9	60	4,893	261
1209-02-73	18	141	4,928	452
1160-00-73 1160-03-61,62,63	7	85	5,308	505
TOTAL	50	382		
		Mean:	**4,843 (weighted)**	**402 (weighted)**
		Median:	**4,979**	

Table 3. Summary of PCC thickness data from six historical projects in Wisconsin.

Project ID	Number of 500-ft 2-lane Segments	Average Thickness, in	Target Thickness, in	Thickness Difference, in	Thickness Standard Deviation, in
1209-02-73 (EB)	23	9.37	9.50	-0.13	0.20
1209-02-73 (WB)	81	9.43	9.50	-0.07	0.26
1160-00-73 1160-03-61,62,63 (EB)	63	10.90	11.00	-0.10	0.22
1160-00-73 1160-03-61,62,63 (WB)	20	10.84	11.00	-0.16	0.19
5300-03-77	81	9.14	9.00	0.14	0.22
6290-05-72	80	9.91	10.00	-0.09	0.19
1161-00-73	101	11.07	11.00	0.07	0.18
1420-09-70/72	95	10.09	10.00	0.09	0.17
TOTAL	544				
			Mean:	**-0.03 (weighted)**	**0.21 (weighted)**
			Median:	**-0.08**	

Table 4. Summary of initial smoothness ($PI_{0.0}$) data from six historical projects in Wisconsin.

Project ID	Number of 0.1-mi Segments	Average $PI_{0.0}$, in/mi	$PI_{0.0}$ Standard Deviation, in/mi
1209-02-73 (EB)	158	21.5	4.8
1209-02-73 (WB)	162	23.7	5.0
1160-00-73 1160-03-61,62,63	178	29.4	13.3
5300-03-77	134	26.5	6.6
6290-05-72	136	22.9	4.6
1161-00-73	142	26.3	4.8
1420-09-70/72	194	23.6	5.9
TOTAL	1,104		
	Mean:	**24.8 (weighted)**	**7.3 (weighted)**
	Median:	**24.3**	

Table 5. Summary of PCC entrained air content data from five historical projects in Wisconsin.

Project ID	Number of Lots	Number of Sublots	Average Air Content, %	Air Content Standard Deviation, %
1420-09-70/72	10	63	6.66	0.33
1161-00-73	8	43	6.67	0.51
1517-04-71	16	112	6.90	0.50
1209-02-73	19	149	6.53	0.74
1160-00-73	7	83	6.54	0.64
TOTAL	60	450		
		Mean:	**6.67 (weighted)**	**0.60 (weighted)**
		Median:	**6.66**	

Tables 2 through 5 show the following:

- PCC Compressive Strength
  - Compressive strength lot averages ranged from 3,543 to 6,078 lb/in^2. The average strengths for the five projects ranged from 3,923 to 5,308 lb/in^2 with a weighted mean of 4,843 lb/in^2 (weighted by the number of lots in each project) and a median for the 50 lots of 4,979 lb/in^2.
  - Compressive strength lot standard deviations ranged from 66 to 711 lb/in^2. The average standard deviations for the five projects ranged from 210 to 505 lb/in^2 with a weighted mean (computed from the mean of the variances and weighted by the number of lots in each project) of 402 lb/in^2. The median standard deviation for the 50 lots was 277 lb/in^2.
- PCC Thickness
  - Average thickness for the six projects representing 544 500-ft long 2-lane segments ranged from a deficit of 0.16 in to a surplus of 0.14 in with a mean of 0.03 in deficit and a median of 0.08 in deficit.
  - Average standard deviations for the six projects representing 544 500-ft long 2-lane segments ranged from 0.17 in to 0.26 in. The weighted mean (computed from the mean of the variances and weighted by the number of 500-ft long 2-lane segments in each project) standard deviation for the six projects was 0.21 in.
- Initial Smoothness
  - $PI_{0.0}$ for the 1,104 0.1-mile lane segments ranged from 11.7 to 53.2 in/mi. The average $PI_{0.0}$ for the six projects ranged from 21.5 to 29.4 in/mi, with a weighted mean of 24.8 in/mi (weighted by the number of 0.1-mi segments in each project) and a median for the 1,104 segments of 24.3 in/mi.
  - $PI_{0.0}$ standard deviation for the six projects representing 1,104 0.1-mi lane segments, ranged from 4.6 to 13.3 in/mi. The weighted mean (computed from the mean of the variances and weighted by the number of 0.1-mi lane segments in each project) standard deviation for the six projects was 7.3 in/mi.

- Entrained Air Content
  - Entrained air content lot averages ranged from 5.9 to 7.4 percent. The average air contents for the five projects ranged from 6.53 to 6.90 percent, with a weighted mean of 6.67 percent (weighted by the number of lots in each project) and a median for the 60 lots of 6.66 percent.
  - Entrained air content lot standard deviations ranged from 0.10 to 1.74 percent. The average standard deviations for the five projects ranged from 0.33 to 0.74 percent, with a weighted mean (computed from the mean of the variances and weighted by the number of lots in each project) of 0.60 percent. The median standard deviation for the 60 lots was 0.39 percent.

If the WisDOT mean and standard deviation targets for each of the AQCs used for pay adjustment are met, the agency will pay 100 percent of the bid price. Table 6 shows the target quality levels (mean and standard deviations) selected after examination of the results achieved on previous PCC projects and subsequent discussion with the Project Oversight Panel about the impacts of selection of AQC target levels. Summaries of how the target quality levels, as well as the rejectable and maximum quality levels (RQLs and MQLs) (i.e., lower and upper control limits), were set for each AQC, are as follows:

- Slab Thickness—The logical target mean was the design thickness (12.5 in for the mainline pavement and 8.0 in for the shoulder). Specification of anything different would be inappropriate because this is what is called for in the design. To require more than the mean thickness would be artificially adding to the reliability used in the design and is not recommended. The target standard deviation of thickness was set at 0.2 in, which is close to the weighted average standard deviations for the six historical projects. The RQL was set at 1 in below the design thickness (i.e., 12.5 – 1.0 = 11.5 in), corresponding to WisDOT's current lower control limit. The MQL was set at 13.0 in, the level at which no further incentive is paid.
- PCC Compressive Strength—Although past projects showed a mean compressive strength of 4,843 lb/in^2 (see table 2), a somewhat lower value of 4,500 lb/in^2 was selected as representing the quality level desired by WisDOT at 100 percent pay factor. The standard deviation of compressive strength was set slightly higher (500 lb/in^2) than the past historical data indicated (402 lb/in^2). Current WisDOT QMP plan assumes a target range of 4,200 to 4,300 lb/in^2 for no incentive/disincentive, and a standard deviation of 550 lb/in^2. The RQL was set at 3,250 lb/in^2 and the MQL was set at 5,500 lb/in^2, following discussions with WisDOT.
- Initial Smoothness ($PI_{0.0}$)—Values of the $PI_{0.0}$ achieved on previous projects showed approximately 25 in/mi. This value was considered too low, since many of the historical projects used for the analysis were the higher quality projects constructed in Wisconsin. After significant discussions with the Project Oversight Panel, a value of 30 in/mi was chosen for the PRS. This value was considered to be more representative of typical quality obtained. This was also done to keep in line with current WisDOT QMP specifications that call for a target of 25.3 to 44.4 in/mi for zero incentive/disincentive pay. The standard deviation of $PI_{0.0}$ was set at 7 in/mi, slightly lower than historical data (7.3 in/mi). The RQL was set at 50 in/mi and the MQL was set at 10 in/mi, following discussions with WisDOT.

Table 6. Lot AQC target mean and standard deviation and rejectable and maximum quality levels selected for I-39/90/94 project.

Acceptance Quality Characteristic, AQC	Lot Target Values			Rejectable Quality Level (Sublot)		Maximum Quality Level (Lot)	
	Mean		Standard Deviation	Mean		Mean	
Slab Thickness, in	12.5[a] Mainline	8.0[a] Shoulder	0.20[a]	11.5[a] Mainline	7.0[a] Shoulder	13.0[a] Mainline	8.5[a] Shoulder
Concrete 28-day Compressive Strength, lb/in^2	4,500[b]		500[b]	3,250[b]		5,500[b]	
Air Content, %	7.0[c]		0.6[c]	5.5[c]		8.5[c]	
Initial Smoothness $PI_{0.0}$, in/mi	30.0[d]		7.0[d]	50.0[d]		10.0[d]	

[a] Thickness: mean and standard deviation computed from eight independent probe measurements per sublot (two measurements per 0.05 lane-mi).
[b] Strength: mean and standard deviation computed from averages of two cylinders per sublot.
[c] Air content: mean and standard deviation computed from one pressure meter test per sublot.
[d] Smoothness: mean and standard deviation computed from four measurements – inside and outside wheelpaths of the lane per 0.1 mi (two pairs per sublot) for mainline pavement only.

- Entrained Air Content—The entrained air content mean target value was chosen as 7.0 percent, with a standard deviation of 0.6 percent, based on historical data and based on current WisDOT specifications. The RQL was set at 5.5 percent and the MQL was set at 8.5 percent, which are the same values used as lower and upper control limits in the current WisDOT QMP. A stipulation was added that allows the contractor to adjust air content as needed within a sublot, and to use prorated test values (i.e., weighted average based on quantity represented by each air content test) in the PRS pay factor calculation.

WISDOT PAVEMENT PERFORMANCE INDICATORS

The PaveSpec PRS uses inputs from the as-designed target lot and predicts performance over a designated analysis period. The key JPC performance indicators included in PaveSpec are as follows:

- Slab transverse fatigue cracking, percent slabs.
- Joint faulting, in.
- Joint spalling, percent joints.
- Smoothness, expressed in terms of the International Roughness Index (IRI), in/mi.

Definitions of these distress types are provided in the FHWA's *Guide to Developing Performance-Related Specifications for PCC Pavements—Volume IV* (Hoerner, 1999).

INPUTS USED FOR PAVESPEC 3.0

This section provides information on the critical terminal values for use in PaveSpec 3.0 analysis of pavement life. Screen shots of the various input and output PaveSpec 3.0 screens are shown in Appendix A.

General Information

- Project Number: I-39/90/94 from Lake Delton to Madison Rd (North County Line to CTH V).
- Location: District 1, Dane County, Wisconsin.
- Project length: 4.2 mi.
- Number of lanes: 3 in each direction.

Pavement Design Features

Table 7 shows the design feature inputs used in PaveSpec 3.0.

Traffic Loadings

Table 8 shows the traffic loading inputs used in PaveSpec 3.0. The listed traffic inputs result in a projected 76 million equivalent single axle loads (ESALs) in the design lane over the 20-year analysis period.

Climate

Table 9 shows the climatic inputs used in PaveSpec 3.0.

M&R Plan

The following M&R activities were established based on discussions and email communication with WisDOT staff:

Maintenance Plan Summary
- No longitudinal joint sealing, transverse joint sealing, or crack sealing is specified as part of the maintenance plan.

Localized Rehabilitation Plan Summary
- Every 1 year, apply 100 percent partial slab replacements to cracked slabs.
- Every 1 year, apply partial-depth repairs to 100 percent of spalled joints.

The rehabilitation frequency of 1 year was selected to evenly distribute the rehabilitation costs.

Table 7. Design feature inputs used in PaveSpec 3.0.

Design Feature	Value
Design Life, years	20
Pavement Type	JPC
Dowel Bar Diameter, in	1.50
Transverse Joint Spacing, ft	18
Shoulder Type	Tied PCC
PCC Modulus of Elasticity, lb/in^2	4,200,000
Transverse Joint Sealant Type	None
Modulus of Subgrade reaction (k-value), lb/in^2/in	125
Water-Cement Ratio	0.40
Subgrade Material Pass Sieve #200, %	60
Base Type	Aggregate
Base Permeability	No
Base Thickness, in	6
Base Modulus of Elasticity, lb/in^2	20,832
PCC-Base Interface	Unbonded
Base Erodibility Factor (1= totally non-erodible material, 5=granular)	4.5

Table 8. Traffic inputs used in PaveSpec 3.0.

Item	Value
ADT (both directions), veh/day	72,825
Growth Type	Compound
Growth Rate, %	1.85
Directional factor, %	50
Commercial trucks, %	22.1
Commercial trucks in outer lane, %	60
Avg. truck load equivalency factor (LEF)	1.60 ESALs/truck[1]

[1] WisDOT Facilities Development Manual recommends a LEF of 1.6 for 3-S2 trucks. The majority of trucks forecasted for I-39/90/94 project were 3-S2.

Table 9. Climatic inputs used in PaveSpec 3.0.

Item	Value
Average Annual Freezing Index, °F-days	1,250
Average Annual Precipitation, in	33
Average Annual Air Freeze-Thaw Cycles	98
Average Annual No. of days > 90°F	11
Climate Zone	Wet-Freeze

Sublot Failure Thresholds

- Consider the sublot failed if cumulative percent cracked slabs exceeds 10 percent.
- Consider the sublot failed if average transverse joint faulting exceeds 0.15 in.
- Consider the sublot failed if IRI exceeds 175 in/mi.
- Consider the sublot failed if cumulative percent joints spalled exceeds 60 percent.

It should be noted that initial smoothness $PI_{0.0}$ values are converted to IRI values using an established relationship within PaveSpec 3.0. The converted IRI values are then used in the IRI performance model to predict time until IRI exceeds 175 in/mi.

If 20 percent of the sublots fail, the global rehabilitation activities in table 10 are to be applied. This selection of 20 percent is important in that it triggers overall lot rehabilitation if 20 percent of the sublots reach a terminal level of cracking, spalling, faulting, or IRI. The estimated cost of the rehabilitation is factored into the life-cycle cost computation, which in turn affects the pay factor. Thus, more variability within the project will result in 20 percent of sublots failing earlier in cracking, spalling, faulting, or IRI.

Unit Costs

Table 11 shows the unit costs estimated for this project and used in PaveSpec 3.0.

Table 10. Global rehabilitation activities if 20 percent of sublots fail.

Global Rehab Activity	Activities
Prior to Phase I	▪ Repair 100% of outstanding spalled joints with partial-depth repairs. ▪ Repair 100% of outstanding cracked slabs with partial slab replacements.
Phase I (Diamond Grinding)	▪ Assumed Life: 8 years ▪ Starting IRI: 50 in/mi ▪ Terminal IRI: 175 in/mi
Phase II (Diamond Grinding)	▪ Assumed Life: 8 years ▪ Starting IRI: 50 in/mi ▪ Terminal IRI: 175 in/mi
Phase III (AC Overlay)	▪ Assumed Life: 15 years ▪ Starting IRI: 50 in/mi ▪ Terminal IRI: 175 in/mi
Phase IV (AC Overlay)	▪ Assumed Life: 15 years ▪ Starting IRI: 50 in/mi ▪ Terminal IRI: 175 in/mi

Table 11. Design feature inputs used in PaveSpec 3.0.

Cost Item	Unit Cost (in 2006 Dollars)
Transverse Joint Sealing	N/A
Longitudinal Joint Sealing	N/A
Transverse Crack Sealing	N/A
Local: Partial-depth repairs of transverse joints[a], $/joint-ft	18.00
Local: Full slab replacements	N/A
Local: Partial slab replacements[b], $/yd^2	65.00
Global: AC overlay, $/yd^2	9.00
Global: Diamond grinding, $/yd^2	2.50
Percent User Cost	0.25 (provides about the right amount of user impact on pay factor)
Estimated bid price, $/yd^2	30.00 (contractors bid for 12.5-in JPC)
Annual interest rate, %	8
Annual inflation rate, %	3
Annual discount rate[c], %	5

[a] Length of partial-depth repair of transverse joints = 12 in (typically across the full lane-width).
[b] Length of partial slab replacement = 6 ft (typically across the full lane-width).
[c] Discount rate ≈ interest rate − inflation rate.

DEFINITIONS OF LOTS AND SUBLOTS

The PRS AQCs of thickness, entrained air content, compressive strength, and initial smoothness must each be measured within each sublot. All values measured within the lot are combined to compute a mean and standard deviation for the lot. The pay adjustment for a given lot is then computed by PaveSpec 3.0 software using these values in the simulation. Pay is determined on a lot-by-lot basis, not by the sublot.

There must be precise and easily understood definitions of lots and sublots, as ambiguity can cause significant problems in the field. Thus, sublots were set at a constant 0.2 lane-mi area to provide simple, consistent testing methods. Sublot boundaries are marked and maintained until finalizing the payment computation. Each lot is divided into a minimum of four sublots for sampling and testing purposes. Markers are placed every 0.1 mi along the mainline traffic lanes to aid in determining the lot and sublot limits.

The definitions of lot, sublot, and sampling frequency for thickness, entrained air content, concrete compressive strength, and initial smoothness are presented below.

Lot Definition

A pavement lot is defined as the amount of material or construction produced by the same process, so that each AQC is likely to be from the same distribution. Each lot is one paving pass in width and can be equal to one or two traffic lanes. A lot cannot be divided into two adjacent or separated paving lanes but can include work from one or more days of paving. Within a lot, the sublots exist consecutively (longitudinally) along the same paving width.

For the I-39/90/94, the minimum lot size was defined as four sublots. For one-lane paving, each lot was defined as one lane wide and at least 0.8 mi long. For two-lane paving each lot was defined as two lanes wide and at least 0.4 mi long. The maximum lot size was defined as eight sublots. The engineer had the option to terminate a lot if there was any reason to believe that a special cause affected the process and resulted in a significant shift in the mean or standard deviation of any of the AQCs. If the lot length was less than 0.8 mi for a one-lane lot and 0.4 mi for a two-lane lot, the lot was allowed to be grouped with the next lot. If the last lot in the paving project was less than 0.8 mi for a one-lane lot and 0.4 mi for a two-lane lot, the lot was allowed to be grouped with the previous lot.

A partial lot is defined as a lot for which concrete strength testing was conducted on none or only one of the planned sublots due to premature stoppage of paving. Premature stoppage of paving is defined as the stoppage of pavement construction operations due to unexpected conditions such as weather or equipment problems.

For the I-39/90/94 project, partial lots were allowed to be combined with the previous or next days paving to produce a full lot with a minimum length of 0.8 mi (for a one-lane lot) and 0.4 mi (for a two-lane lot) and a maximum length of 1.6 mi for a one-lane lot and 0.8 mi for a two-lane lot. If the combined length of paving of a partial lot and the current lot being paved was greater than 1.6 mi for a one-lane lot and 0.8 mi for a two-lane lot, the lot would still be limited to 1.6 mi for a one-lane lot and 0.8 mi for a two-lane lot and another partial lot would be identified to be added to the next lot. If a section of paving had been designated as a partial lot but could not be combined with the adjacent lot (e.g., a one-lane widening or tapered paving that is less than 0.8 mi), as described above, or if it was the last lot in the paving project and was less than 0.8 mi for a one-lane lot and 0.4 mi for a two-lane lot, they were allowed to be grouped with a previous lot. This was allowed even if it resulted in a lot that was greater than 1.6 mi for a one-lane lot and 0.8 mi for a two-lane lot.

Sublot Definition

For the I-39/99/94 project, for one-lane paving, each sublot was defined as one lane wide and 0.2 mi long. For two-lane paving, each sublot was defined as two lanes wide and 0.1 mi long. This was done for $PI_{0.0}$ measurement and for field location expediency. In cases when there was a partial sublot which belonged to a particular lot (due to operational changes or end of paving), the engineer had the discretion to allow the length of one sublot within that lot to exceed the constant value of 0.1 mi for a two-lane sublot and 0.2 mi for a one-lane sublot.

Sampling Frequency within Sublots.

Table 12 lists the test procedures used for measuring slab thickness, compressive strength, air content, and initial smoothness under the PRS. The sampling frequencies for these AQCs within a given 500-ft sublot are described below.

- Slab Thickness—The contractor probing of the freshly placed concrete is the primary method for determining thickness. All probing tests are performed as specified in WisDOT's CMM 4-25-70. For each sublot, eight probe (four pairs) measurements are performed. For a one-lane 0.2-mi sublot, two probings at four longitudinal locations selected at random every 0.05 mi are performed. For a two-lane 0.1-mi sublot, two probings at two longitudinal locations per lane selected at random every 0.05 mi per lane are performed. The individual probings at all locations are reported, and not the averages of two readings per longitudinal location.
- Concrete Strength—The compressive strength testing is performed as described in WisDOT's QMP Concrete Pavement, Item 415.3000.S and Incentive Strength Concrete Pavement, Item 415.2000.S. The contractor has the option of casting two or three cylinders for 28-day compressive strength testing. The sublot strength is the average of two sublot QC test cylinders chosen by the contractor.
- Entrained Air Content—The air content is tested as described in B.7.5 of QMP Concrete Pavement, Item 415.3000.S and Incentive Strength Concrete Pavement, Item 415.2000.S. The sublot air content is the reading of one pressure meter measurement tested on the same sample used for QC strength cylinders.
- Initial Smoothness ($PI_{0.0}$)—The pavement surface smoothness is tested as described in WisDOT's Profiling Concrete Pavement special provision. For each sublot, four profile measurements (one measurement on inside and outside wheelpath of each of two segments) are taken. For a one-lane 0.2-mi sublot, the sublot is divided into two equal longitudinal segments. For a two-lane 0.1-mi sublot, each lane is one segment. The profile measurements of each individual wheelpath for each segment is reported, and not the average of the two wheelpaths. Profile traces are not taken on shoulders and ramps.

Table 12. Testing procedures used for PRS evaluation.

Acceptance Quality Characteristic (AQC)	Test Method[a]
Slab Thickness, in	Probes (CMM 4-25-70)
28-day Compressive Strength, lb/in^2	Cylinders (AASHTO T 22, T 23, T 141, M 201)
Air Content, %	Pressure Meter (AASHTO T 152[b])
Initial Smoothness ($PI_{0.0}$), in/mi	Department-approved profile measuring device with zero or 0.01-in blanking band

[a] All AQCs must be measured within the same sublot limits.
[b] As modified in CMM 4-25-70.

Existing Wisconsin Pay Factor Curves

The existing WisDOT pay factor curves are provided in Chapter 5 and compared with the final PRS pay factor curves. The WisDOT QMP program provides incentive and disincentive pay for PCC 28-day compressive strength and for initial smoothness, $PI_{0.0}$. The main difference between the WisDOT QMP program and the PRS is that there are no incentives available with the existing WisDOT QMP program for thickness, only disincentives. No incentives or disincentives are available with the existing WisDOT QMP program for entrained air content. However, if the entrained air content is outside the control limits, the PCC 28-day compressive strength incentive is not paid for that lot.

DEVELOPMENT OF PAY FACTOR CURVES USING PAVESPEC 3.0

PRS recognize that higher quality products have additional value and provide payment adjustment for this higher quality up to a maximum value. PRS also recognize that marginal quality products have reduced value and advocate payment reduction instead of requiring complete removal, unless the pavement is so deficient that replacement or corrective action is warranted.

Individual Pay Adjustment Factors

Pay adjustment factors for the four concrete pavement AQCs are determined using the pay factor curves shown in figures 4 through 8 or tables 13 through 17. These curves and tables were developed using the PaveSpec 3.0 software and slightly adjusted based on input from the Oversight Panel. They account for the mean and standard deviation of the AQCs for the selected pavement project. Linear interpolation or extrapolation is used between the values shown in these tables, if needed.

Figure 4 and table 13 show that as strength increases within the specified limits, the pay factor increases due to greater resistance to fatigue cracking from repeated truck loadings, resulting in fewer cracked slabs and lower rehabilitation costs. Also, the lower the variability (as indicated by standard deviation) of strength, the higher the pay factor. This is caused by fewer slabs containing low strength concrete.

Figure 5 and table 14 show that as the mainline pavement slab thickness increases within the specified limits, the pay factor increases. This is due to greater resistance to fatigue cracking from repeated truck loadings, resulting in fewer cracked slabs and lower rehabilitation costs. Also, the lower the variability (as indicated by standard deviation) of thickness, the higher the pay factor. This results from having fewer thin slabs. Note that as the slab thickness increases from 12.5 to 13 in, the gain in pay factor is not very significant within the range shown because of the conservative thickness design used (12.5 in, as determined using the AASHTO 1972 design procedure) relative to the models in the PRS software. The models in the PRS software are based on mechanistic-empirical (M-E) principles, whereas the AASHTO 1972 models were developed empirically.

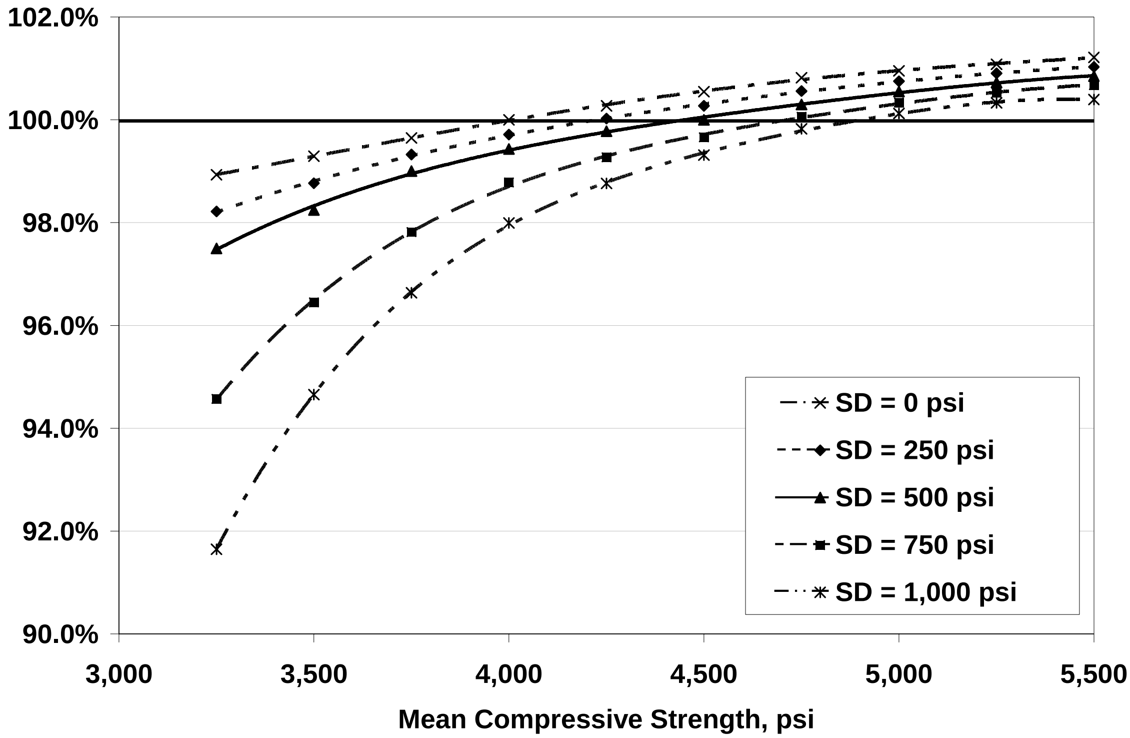

Figure 4. 28-day concrete compressive strength pay adjustment curve (applicable to mainline and shoulder pavement lots).

Table 13. 28-day concrete compressive strength pay adjustment table (applicable to mainline and shoulder pavement lots).

Mean Compressive Strength, lb/in^2	**% Pay Factor Corresponding to Compressive Strength Standard Deviation of:**				
	0 lb/in^2	**250 lb/in^2**	**500 lb/in^2 [a]**	**750 lb/in^2**	**1,000 lb/in^2**
3,250	98.93	98.22	97.50	94.57	91.65
3,500	99.29	98.77	98.25	96.45	94.66
3,750	99.65	99.33	99.00	97.82	96.63
4,000	100.00	99.71	99.43	98.78	97.99
4,250	100.27	100.02	99.78	99.27	98.76
4,500[a]	100.55	100.27	100.00	99.66	99.31
4,750	100.82	100.56	100.30	100.06	99.82
5,000	100.95	100.75	100.55	100.34	100.12
5,250	101.08	100.90	100.72	100.53	100.33
5,500	101.21	101.03	100.85	100.68	100.39

[a] Target quality level

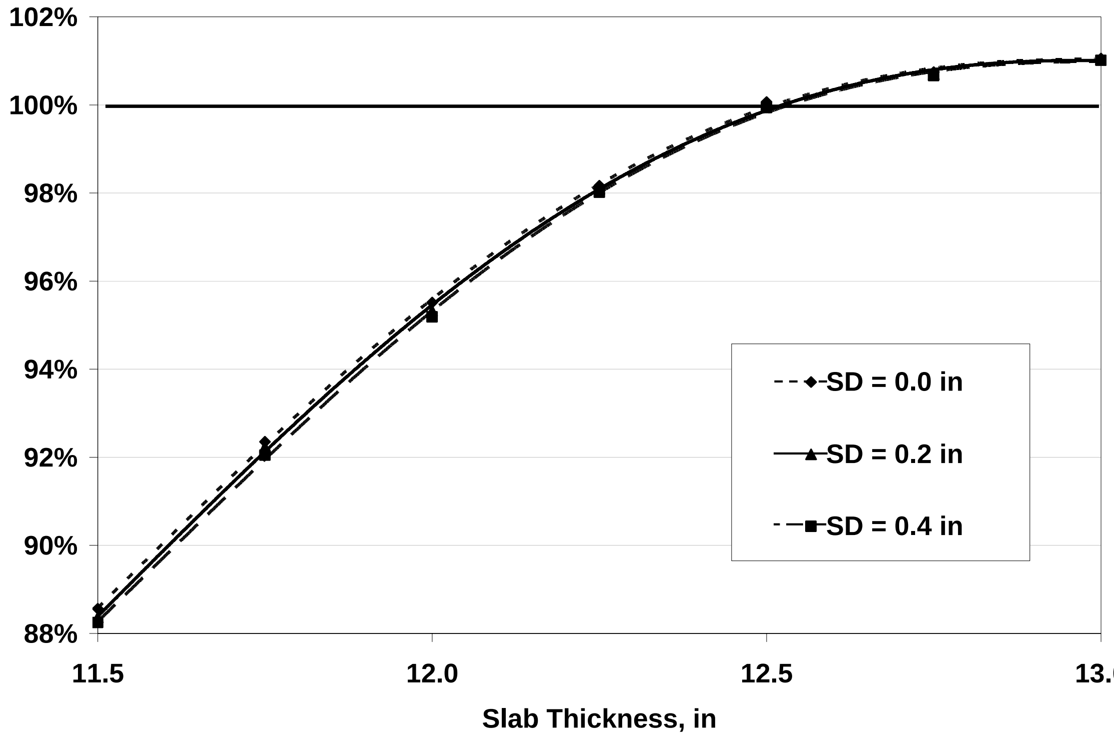

Figure 5. Slab thickness pay adjustment curve (applicable only to mainline pavement lots).

Table 14. Slab thickness pay adjustment table (applicable only to mainline pavement lots).

Mean Slab Thickness, in	**% Pay Factor Corresponding to Slab Thickness Standard Deviation of:**		
	0.00 in	**0.20 in[a]**	**0.40 in**
11.50	88.56	88.36	88.25
11.75	92.35	92.23	92.05
12.00	95.51	95.33	95.19
12.25	98.16	98.09	98.02
12.50[a]	100.06	100.00	99.94
12.75	100.74	100.70	100.66
13.00	101.05	101.03	101.01

[a] Target quality level

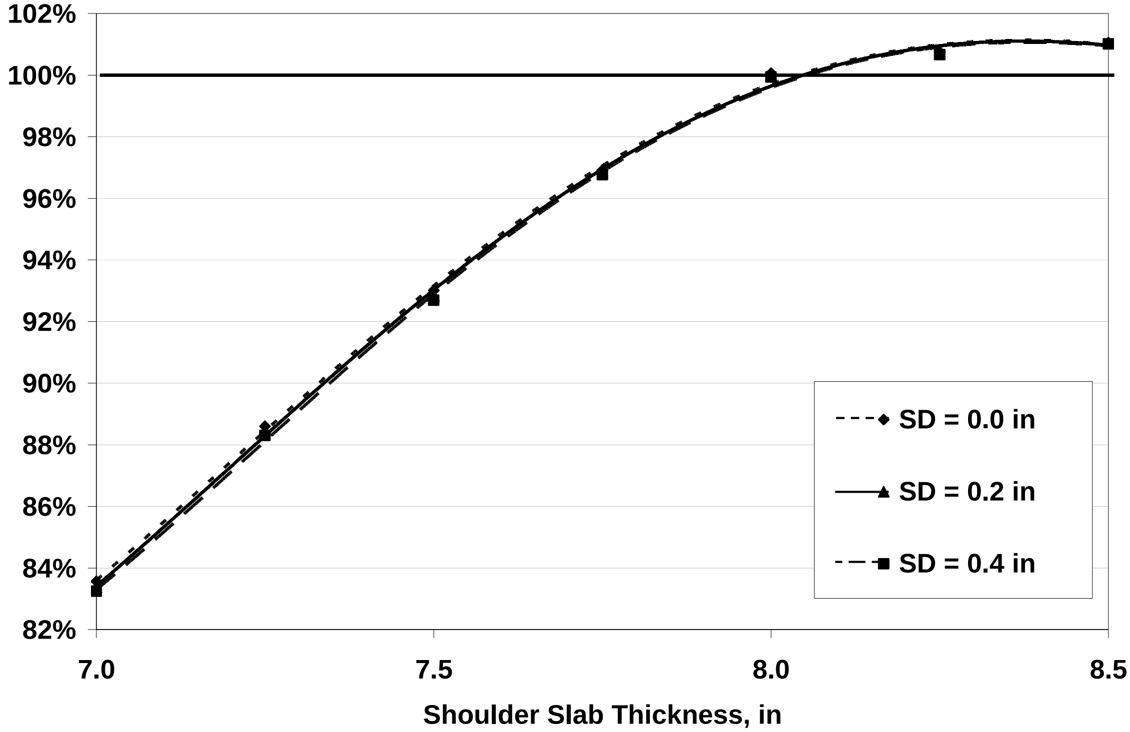

Figure 6. Slab thickness pay adjustment curve (applicable only to shoulder pavement lots).

Table 15. Slab thickness pay adjustment table (applicable only to shoulder pavement lots).

Mean Slab Thickness, in	**% Pay Factor Corresponding to Slab Thickness Standard Deviation of:**		
	0.00 in	**0.20 in[a]**	**0.40 in**
7.00	83.56	83.36	83.25
7.25	88.60	88.48	88.30
7.50	93.01	92.83	92.69
7.75	96.91	96.84	96.77
8.00[a]	100.06	100.00	99.94
8.25	100.74	100.70	100.66
8.50	101.05	101.03	101.01

[a] Target quality level

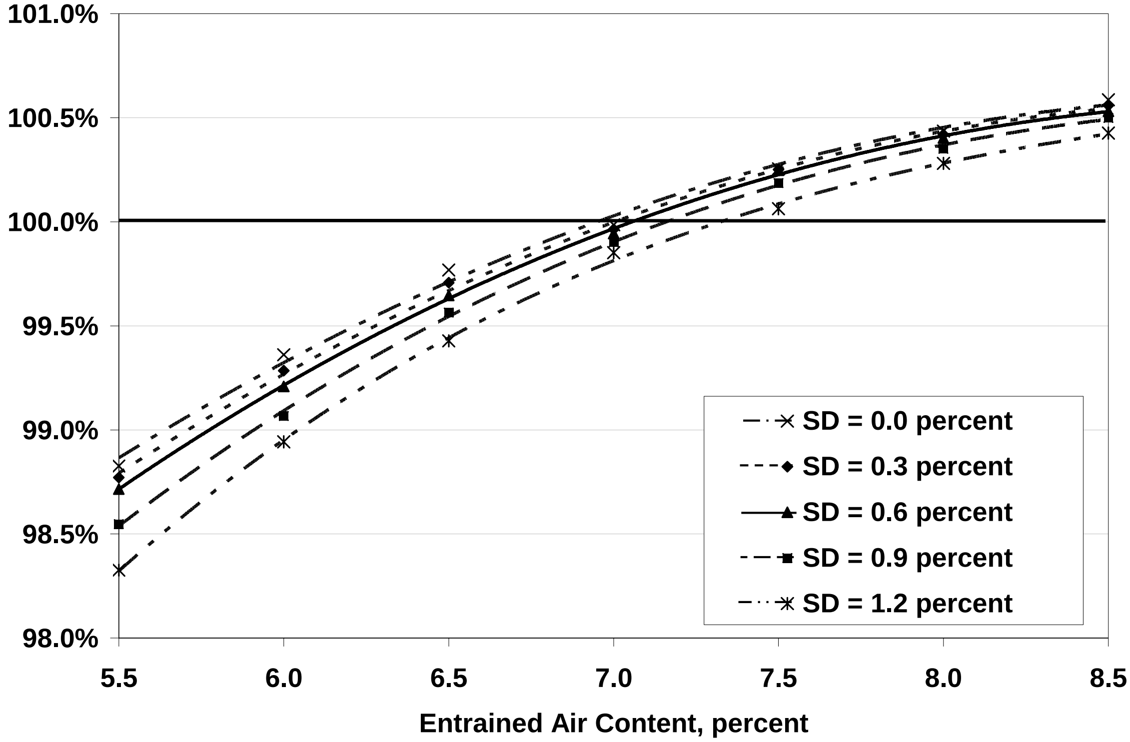

Figure 7. Entrained air content pay adjustment curve
(applicable to mainline and shoulder pavement lots).

Table 16. Entrained air content pay adjustment table
(applicable to mainline and shoulder pavement lots).

Mean Air Content, %	% Pay Factor Corresponding to Air Content Standard Deviation of:				
	0.0%	**0.3%**	**0.6%[a]**	**0.9%**	**1.2%**
5.5	98.87	98.79	98.71	98.54	98.34
6.0	99.32	99.27	99.21	99.09	98.97
6.5	99.71	99.67	99.63	99.55	99.47
7.0[a]	100.06	100.03	100.00	99.93	99.87
7.5	100.28	100.25	100.23	100.18	100.12
8.0	100.45	100.44	100.41	100.37	100.33
8.5	100.56	100.54	100.53	100.49	100.48

[a] Target quality level

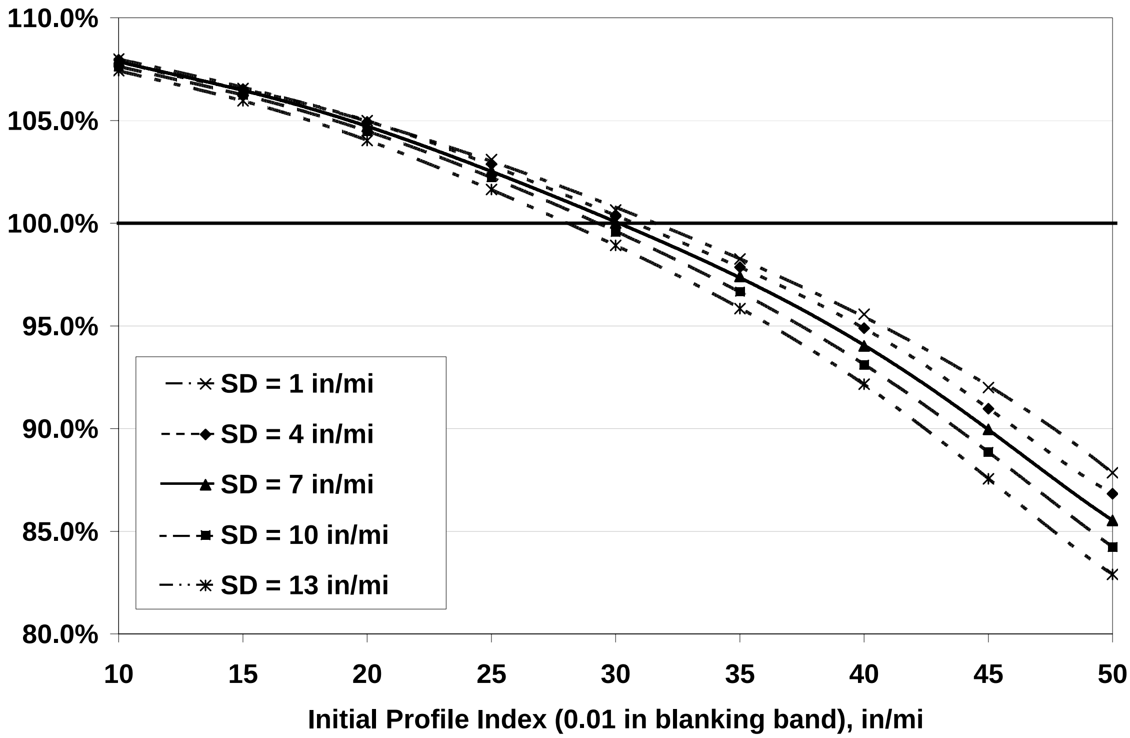

Figure 8. Initial smoothness ($PI_{0.0}$) pay adjustment curve (applicable only to mainline pavement lots).

Table 17. Initial smoothness ($PI_{0.0}$) pay adjustment table (applicable only to mainline pavement lots).

Mean $PI_{0.0}$, in/mi	**% Pay Factor Corresponding to $PI_{0.0}$ Standard Deviation of:**				
	1 in/mi	**4 in/mi**	**7 in/mi[a]**	**10 in/mi**	**13 in/mi**
10	107.99	107.95	107.87	107.63	107.42
15	106.56	106.53	106.47	106.25	105.96
20	105.00	104.93	104.71	104.47	104.02
25	103.10	102.89	102.55	102.24	101.64
30[a]	100.63	100.33	100.00	99.57	98.92
35	98.25	97.85	97.41	96.66	95.84
40	95.56	94.89	94.02	93.11	92.16
45	91.99	90.97	89.96	88.86	87.55
50	87.85	86.83	85.53	84.23	82.90

[a] Target quality level

The slab cracking model in PRS predicts that increasing the slab thickness to, say, 13 in, does not greatly improve performance, because the PRS models do not predict any significant amount of cracking for this design. For thinner pavement designs (e.g., 9 to 11 in), this change would be much more dramatic. In developing the models, adjustments were made to ensure that the percent decrease in pay at every point along the curve was greater than the percent decrease in PCC thickness to discourage the contractor from constructing at or just above the RQL.

The PCC shoulders were also included in the PRS for I-39/90/94. The design thickness for these shoulders was specified as 8.0 in. Since no traffic and failure modeling of shoulders are available in PaveSpec 3.0, the models from the mainline pavement were adapted to the shoulder pavement by shifting the curves along the abscissa (x-axis) 4.5 in to account for the 4.5 in difference in thickness between the shoulder and the mainline pavement (see figure 6 and table 15).

Adjustments were also made to ensure that the percent decrease in pay at every point along the curve was greater than the percent decrease in PCC thickness to discourage the contractor from constructing at or just above the RQL.

Figure 7 and table 16 show that as entrained air content increases within the specified limits, the pay factor increases to the MQL. Higher percentage of entrained air in the PCC results in fewer durability problems over the life of the pavement, thus resulting in less spalling, increased smoothness, and lower rehabilitation costs. Also, the lower the variability of the entrained air content, the higher the pay factor, as fewer sublots reach the terminal spalling and IRI levels, yielding lower rehabilitation costs.

Figure 8 and table 17 show that as initial smoothness improves (lower $PI_{0.0}$) within the specified limits, the pay factor increases. This is due to longer pavement life from better initial smoothness (i.e., smoother pavements last longer). Also, the lower the variability (as indicated by standard deviation) of $PI_{0.0}$, the higher the pay factor. This is caused by fewer sublots reaching a terminal $PI_{0.0}$ level and lower rehabilitation costs. Smoothness was a factor considered only for the mainline pavement lots and not for the shoulder lots.

COMPUTATION OF MEAN AND STANDARD DEVIATION OF AQCS

The determination of individual pay factors requires computing the mean and standard deviation of the concrete strength, air content, slab thickness, and initial smoothness ($PI_{0.0}$) for the as-constructed lot based on the field testing results. These statistics are calculated as follows:

$$\overline{X} = \frac{\sum_{i=1}^{n} X_i}{n} \qquad \text{Eq. 2}$$

where: $\overline{X}$ = Mean of *n* random samples of the AQC under consideration for the lot.
X_i = Sample measurement (for strength, X_i is a mean of two replicates).
n = Sample size per lot, n for each AQC is as follows:

Strength: One sample per sublot (each is a mean of two cylinder measurements).
Air content: One sample per sublot.
Thickness: Eight samples per sublot.
Smoothness: Four samples per sublot.

For example, for a lot with six sublots, n = 6 for strength and air content measurements, n = 6 × 8 = 48 for thickness measurements, and n = 6 × 4 = 24 for initial smoothness measurements.

The lot standard deviation is computed as follows:

$$s = \frac{\sqrt{\frac{\sum (X_i - \overline{X})^2}{(n-1)}}}{C_{SD}} \qquad \text{Eq. 3}$$

where: C_{SD} = Correction factor (based on the total sample size, n) used to obtain unbiased estimates of the actual lot sample standard deviation. Appropriate C_{SD} values are determined as shown in table 18.

For n > 10, linear interpolation is used to compute the correction factor.

Table 18. Correction factor for computing unbiased estimates of the actual lot sample standard deviation.

Number of Samples, n	**Correction Factor, C_{SD}**
2	0.7979
3	0.8862
4	0.9213
5	0.9399
6	0.9515
7	0.9594
8	0.9650
9	0.9693
10	0.9726
30	0.9915
50	0.9949

CHAPTER 4. IMPLEMENTATION OF THE PERFORMANCE-RELATED SPECIFICATION

PRE-BID MEETING

A mandatory pre-bid conference for the I-39/90/94 project (ID 1011-01-88) was held at the Southwest Region Office in Madison on December 20, 2005. Attendees included representatives from various contractors, subcontractors, and materials producers, as well as WisDOT and ARA. Information about the letting date (January 10, 2006), the contract completion date (November 16, 2006), and incentives/disincentives for completion of the work was provided, along with the requirement that no work be completed between June 30 and September 5, 2006 (tourist season).

Also discussed in the meeting was Article 30 of the Contract Special Provisions covering the PRS (Item SPV.0055.01). In addition to stating that the PRS replaces both the QMP specification for strength and the profiling/ smoothness specification, WisDOT representatives announced that an addendum to the Special Provisions was forthcoming regarding, among other items, non-conformance with respect to air content. Specifically, the change would allow the contractor to adjust the air content within a sublot, have the mix tested for air a second time, and then use a prorated value for air content (weighted average calculation based on quantity within the sublot) in the PRS pay factor calculation, as described in the QMP. The addendum was distributed to all potential bidders on December 28, 2005.

PRE-CONSTRUCTION MEETING

The I-39/90/94 project was let on January 10, 2006 and awarded on January 13, 2006 to Trierweiler Construction. On February 16, 2006, a pre-construction meeting was held with representatives from WisDOT, Trierweiler Construction, and various subcontractors. No major concerns with respect to the PRS were raised by either Trierweiler Construction or their subcontractors at the pre-construction meeting.

CONSTRUCTION

The I-39/90/94 pavement construction work was performed March through June 2006. An incentive/disincentive plan was instituted in the contract to help ensure completion of the new pavement and opening to traffic (all six lanes) by June 30, 2006.

The project included three 12-ft wide lanes in both the eastbound and westbound directions, accompanied by 12-ft wide inside shoulders and 10-ft wide outside shoulders. During construction, at least two lanes of through traffic in both directions were maintained by installing traffic barrier walls and switching traffic off of the lanes being constructed to the opposite side (the outside shoulder for a given direction of roadway served as the outside lane for that direction).

Work commenced first on the west/northbound direction, resulting in all traffic being routed through the east/southbound lanes. Following completion of paving in the west/northbound direction, traffic was then diverted to the new west/northbound lanes for construction of the east/southbound lanes. Figure 9 shows the general progression of paving operations on the project. Further details regarding the construction, including individual pavement operations, the layout of PRS lots and sublots, the sampling and testing of AQCs, and the calculation of PRS pay factors, are provided below.

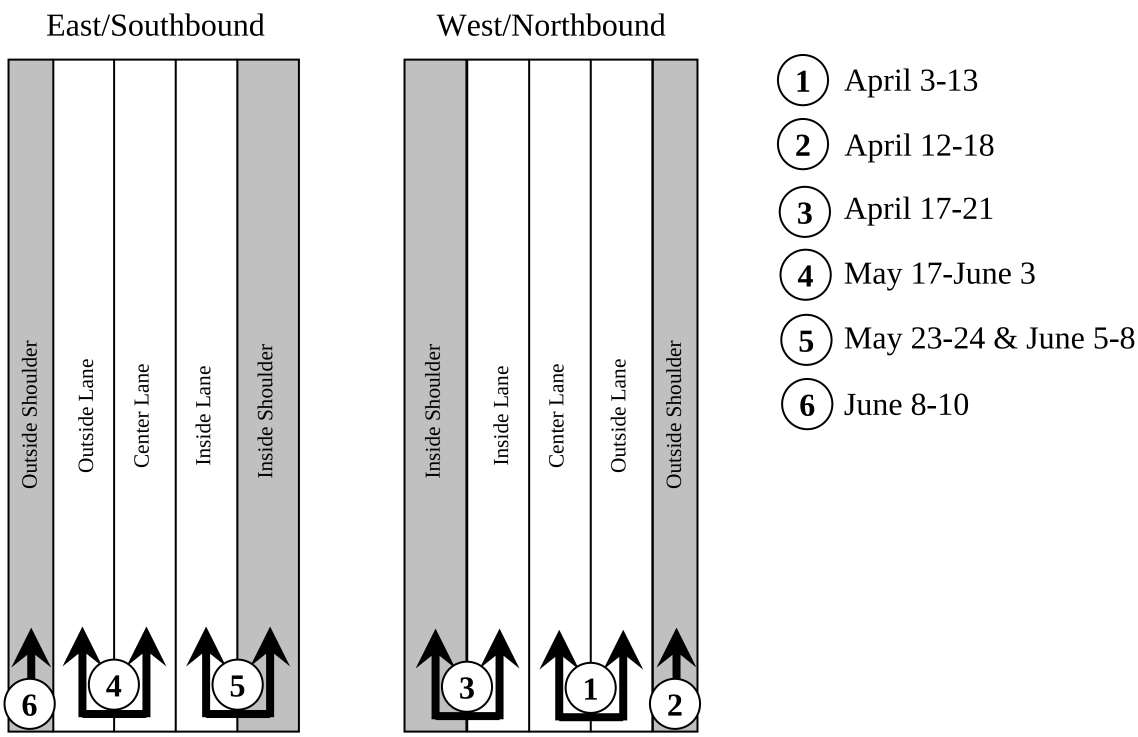

Figure 9. Progression of PCC paving on I-39/90/94 project.

Paving Operations

Pavement construction operations consisted primarily of the following:

- Removal of existing concrete pavement—The existing concrete pavement was broken using numerous concrete breakers. The concrete was then raked using an excavator and the existing steel bar reinforcement was cut using a hydraulic pincher. The steel was hauled off site by the contractor. The broken concrete was removed from the roadway using excavators, loaders, dump trucks, and off-road haul trucks. The concrete was taken to an off-site crusher and processed to be used, as needed, in the base course for the new roadway.
- Partial excavation and regrading of base/subbase material—The existing base remained in place for use in the new roadway. In places where it was deficient with respect to the new grade, its surface was rough-graded and the crushed recycled concrete was placed on

it and shaped using graders, vibratory drum rollers, and water. Prior to paving, the paving contractor used a trimmer guided by string lines to shape the paving foundation to the exact profile/cross slope.

- Placement and compaction of dense aggregate base—The crushed and processed concrete was placed and compacted as the base course for the new roadway.
- Placement of dowel bar assemblies—The contractor placed dowel baskets at each contraction joint location. The baskets were held in place by steel stakes. A small mark was made in the fresh concrete on each side of the slab to mark the center of the joint for future sawing.
- PCC slipform paving—Paving was accomplished using a mobile conveyor belt to place the concrete onto the grade. A spreader followed behind to evenly spread the material across the roadway. The spreader was followed by the paving machine. The paving machine had a hand-fed tie bar inserter to place the tie bars in the longitudinal joint. Workers on either side of the paver inserted bent tie bars into the side of the slab.
- Finishing and curing of the PCC surface—Finishers worked behind the paver to float the fresh concrete and used a 10 ft straightedge to insure the final product had a desirable profile. Following the finishers was a mobile bridge with a turf drag to provide the broom finish. Following the turf drag was a mechanical tining machine placing transverse tines, which also had an apparatus to spray the curing compound onto the slab.

Photos of the PCC pavement placement are shown in figures 10 through 14.

Figure 10. General view of completed concrete pavement on east/southbound I-39/90/94.

Figure 11. Remote shot of PCC paving on east/southbound I-39/90/94.

Figure 12. PCC placement and paving on inside lane (lane 1) and shoulder on east/southbound I-39/90/94.

Figure 13. PCC augering and spreading at paver on inside lane (lane 1) and shoulder on east/southbound I-39/90/94.

Figure 14. Completed paving operation on inside lane (lane 1) and shoulder on east/southbound I-39/90/94.

Layout of Lots and Sublots

Figure 15 shows the mainline and shoulder pavement lots established during construction. As can be seen, the integrally paved center and outside lanes of both the west/northbound direction and the east/southbound direction consisted of 24-ft wide lots ranging in length from 3,486 to 3,775 ft. The integrally paved inside lane and inside shoulder of both the west/northbound and east/southbound were established as separate 12-ft wide lots corresponding to the 12.5-in thick mainline pavement and 8-in thick shoulder pavement. These lots ranged in length from 7,182 to 7,471 ft. Finally, the outside shoulders in each direction were established as 10-ft wide lots ranging in length from 7,182 to 7,471 ft.

Each mainline and shoulder lot was subdivided into seven sublots of near equal dimension. The layout and sampling of typical 1- and 2-lane sublots are shown in figures 16 and 17. Sampling within each sublot was done randomly.

The lot composite (overall) pay factor for mainline pavement was computed as the product of the four individual AQC pay factors, as shown below.

$$PF_{composite} = (PF_{smoothness} \times PF_{air} \times PF_{strength} \times PF_{thickness})/1{,}000{,}000 \qquad \text{Eq. 4}$$

where:
- $PF_{composite}$ = Composite (overall) pay factor, percent.
- $PF_{strength}$ = Strength pay factor, percent.
- PF_{air} = Air content pay factor, percent.
- $PF_{thickness}$ = Mainline pavement slab thickness pay factor, percent.
- $PF_{smoothness}$ = Initial smoothness pay factor, percent.

Although an approach of averaging the pay factors from each AQC could have been used, the above multiplicative model was believed to more closely approximate actual performance and life cycle cost analysis (LCCA).

The lot composite (overall) pay factor for shoulder pavement was computed as the product of the three individual AQC pay factors, as shown below.

$$PF_{composite} = (PF_{air} \times PF_{strength} \times PF_{thickness})/10{,}000 \qquad \text{Eq. 5}$$

where:
- $PF_{composite}$ = Composite (overall) pay factor, percent.
- $PF_{strength}$ = Strength pay factor, percent.
- PF_{air} = Air content pay factor, percent.
- $PF_{thickness}$ = Shoulder slab thickness pay factor, percent.

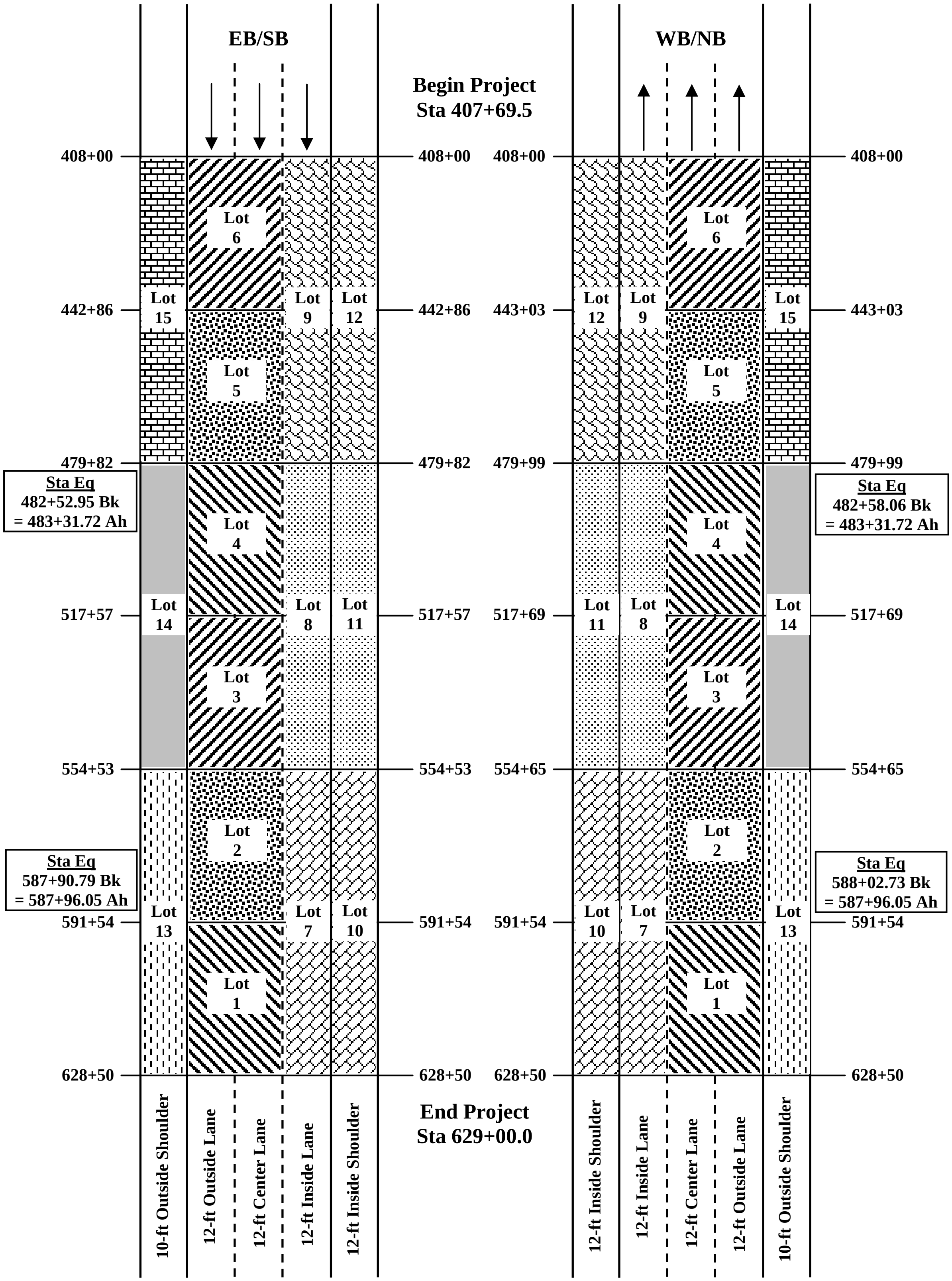

Figure 15. Layout of mainline and shoulder pavement lots.

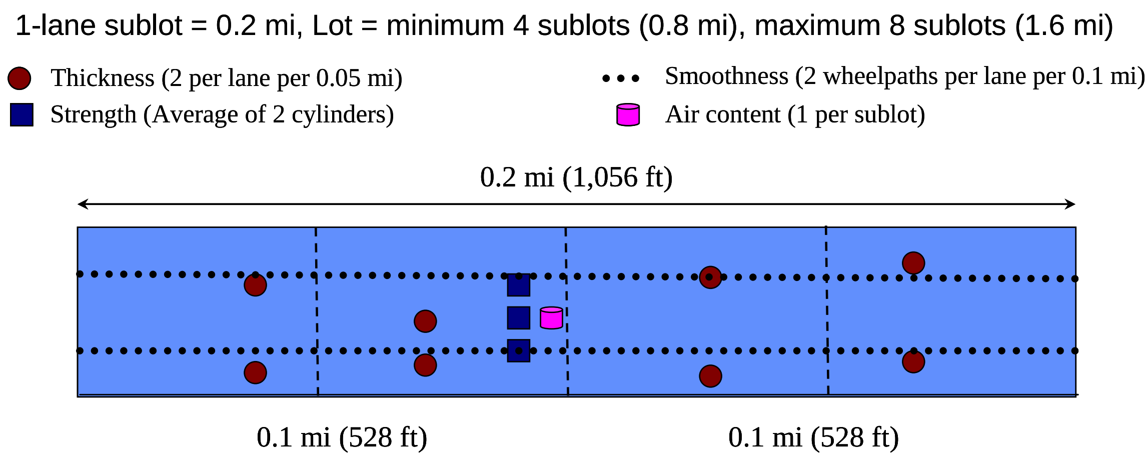

Figure 16. Layout of 1-lane sublot and sampling plan.

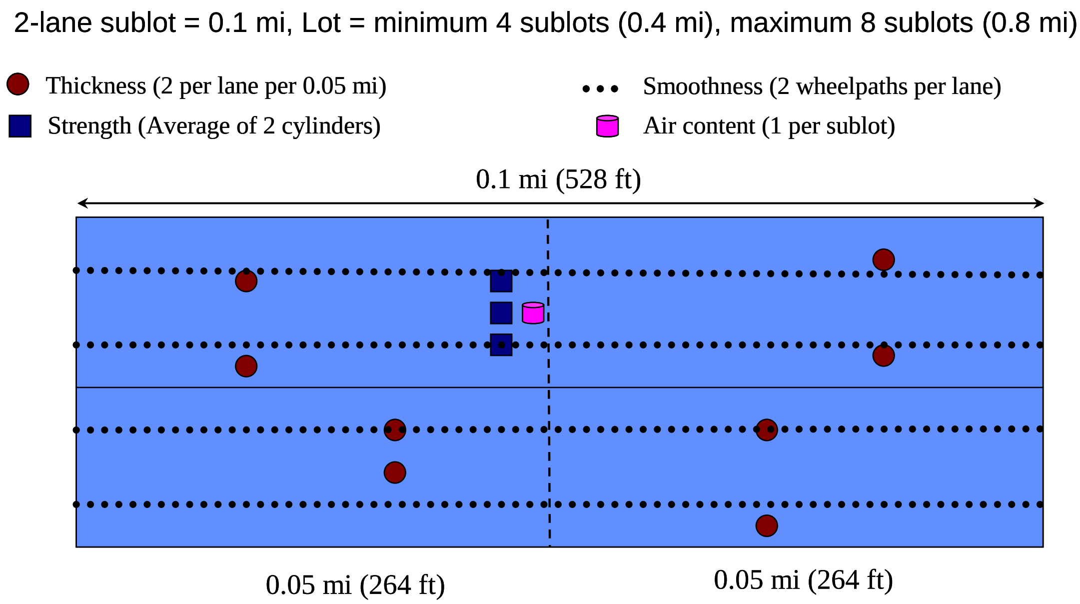

Figure 17. Layout of 2-lane sublot and sampling plan.

The actual incentive/disincentive pay for the as-constructed lot using the lot composite pay factor was computed as follows:

$$PAY_{Lot} = \{(BID \times PF_{composite}/100) - BID\} \times AREA_{Lot} \qquad \text{Eq. 6}$$

where:
- PAY_{Lot} = \$ (+ or -).
- BID = Contractor bid price for concrete pay item per yd^2.
- $AREA_{Lot}$ = Measured actual qualified area of the as-constructed lot, yd^2.
- $PF_{composite}$ = Composite pay factor (from Eq. 4 or 5), percent (e.g., 101 percent is expressed as 101.0).

The absolute minimum value of the Composite Pay Adjustment Factor for a given lot was limited to 80 percent, and the absolute maximum value was limited to 110 percent.

Testing and Calculations of Pay Factors

As partly illustrated by figures 18 (air content testing) and 19 (cylinder fabrication for 28-day compressive strength testing), samples were collected and tests were run, as required, for each sublot and lot. The results of each test were recorded in the spreadsheet shown in figure 20. This figure shows results for a typical mainline pavement lot with seven sublots. The pay factors were calculated for thickness, strength, air content, and smoothness, separately. The overall lot pay factor was then determined and the contractor pay for the lot was calculated as shown. Results from all 18 mainline pavement lots are provided in appendix C (C-1 through C-18).

Figure 21 shows results for a typical shoulder lot with seven sublots. The pay factors were calculated for thickness, strength, and air content, separately. Smoothness was not a consideration for the shoulder lots. The overall lot pay factor was then determined and the contractor pay for the lot was calculated as shown. Results from all 12 shoulder pavement lots are also provided in appendix C (C-19 through C-30).


Figure 18. Entrained air content testing using a pressure meter on east/southbound I-39/90/94.


Figure 19. Casting of cylinder from fresh concrete for 28-day compressive strength testing on east/southbound I-39/90/94.

LOT INFORMATION

Lot Number	WB3		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	517+69.0	
Lot Length, mi	0.7	<< Formula	End Station	554+65.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	9856.00	<< Formula	Paving Date(s)	April 4, 10	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	12.75	12.75	12.50	12.50	12.50	12.75				
Thickness - Probe 2, in		12.75	12.50	12.75	12.50	12.50	12.50	12.75				
Thickness - Probe 3, in		12.75	12.75	12.75	12.50	12.75	12.50	12.75				
Thickness - Probe 4, in		13.00	12.75	12.75	12.50	12.75	13.00	12.75				
Thickness - Probe 5, in		12.50	12.50	12.50	12.50	12.50	12.50	12.50				
Thickness - Probe 6, in		13.00	12.50	12.50	12.50	12.75	12.50	12.50				
Thickness - Probe 7, in		13.00	12.50	12.75	12.50	12.50	12.50	13.00				
Thickness - Probe 8, in		12.50	12.50	12.75	12.50	12.50	12.75	13.00				
Sublot Thickness, in	Formula >>	**12.81**	**12.59**	**12.69**	**12.50**	**12.59**	**12.59**	**12.75**				

Resulting Samples per lot (n)	56	<< Formula		Lot AQL, in	12.5
Lot Thickness Mean, in	12.647	<< Formula		Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes			Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL				
Number of Non-Conforming Sublots:	0				
Std. Dev. Correction Factor	0.9952				
Lot Thickness Std. Dev., in	0.17781	<< Formula			
Thickness Pay Factor:	**100.418%**				

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		4410	6260	5010	4890	5000	5740	5730				
Strength - Cylinder 2, psi		3970	5810	5150	4960	5170	5930	5950				
Sublot Strength, psi	Formula >>	**4190**	**6035**	**5080**	**4925**	**5085**	**5835**	**5840**				

Resulting Samples per lot (n)	7	<< Formula		Lot AQL, psi	4,500
Lot Strength Mean, in	5284.286	<< Formula		Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes			Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL				
Number of Non-Conforming Sublots:	0				
Std. Dev. Correction Factor	0.9594				
Lot Strength Std. Dev., in	683.97984	<< Formula			
Strength Pay Factor:	**100.600%**				

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.1**	**6.8**	**6.9**	**7.4**	**6.7**	**7.0**				

Resulting Samples per lot (n)	7	<< Formula		Lot AQL, %	7.0
Lot Air Content Mean, in	6.771	<< Formula		Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes			Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL				
Number of Non-Conforming Sublots:	0				
Std. Dev. Correction Factor	0.9594				
Lot Air Content Std. Dev., %	0.42431	<< Formula			
Air Content Pay Factor:	**99.851%**				

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		25.6	25	20.7	19.5	25.7	33.1	24.2				
Profile Index - Run 2, in/mi		23.4	21.6	13.6	21.1	23.8	26.7	17.6				
Profile Index - Run 3, in/mi		19.6	19	18.2	14	21.9	30.8	16.3				
Profile Index - Run 4, in/mi		21.4	19.5	17.4	19.5	21.7	29.2	20				
Sublot Profile Index, in/m	Formula >>	**22.5**	**21.3**	**17.5**	**18.5**	**23.3**	**30.0**	**19.5**				

Resulting Samples per lot (n)	28	<< Formula		Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	21.789	<< Formula		Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes			Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL				
Number of Non-Conforming Sublots:	0				
Std. Dev. Correction Factor	0.9896				
Lot Profile Index Std. Dev., in/mi	4.69020	<< Formula			
Profile Index Pay Factor:	**104.139%**				

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.42%
PF Strength	100.60%
PF Air Content	99.85%
PF Smoothness	104.14%
PF Composite	**105.05%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$13,222.67**

Figure 20. Illustration of spreadsheet used to calculate pay for a given mainline pavement lot.

LOT INFORMATION

Lot Number	WB10		Project No.	1011-01-88	
Bid Price, $/sq yd	20.95		Begin Station	554+65.0	
Lot Length, mi	1.4	<< Formula	End Station	628+50.0	<< Formula
Lot Width, feet	12	<< Formula	Number of Lanes	1	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 17, 18, 19	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.50	8.25	8.50	8.75	8.00	8.25	8.00				
Thickness - Probe 2, in		9.00	8.25	8.50	9.00	8.25	8.50	8.00				
Thickness - Probe 3, in		8.50	8.00	8.50	9.00	8.25	8.00	8.00				
Thickness - Probe 4, in		9.00	8.00	8.50	9.00	8.25	8.00	8.00				
Thickness - Probe 5, in		8.50	8.25	8.50	8.75	8.00	8.25	8.25				
Thickness - Probe 6, in		8.50	8.00	8.50	8.50	8.25	8.25	8.25				
Thickness - Probe 7, in		8.50	8.50	9.00	8.50	8.25	8.00	8.50				
Thickness - Probe 8, in		8.50	8.50	9.00	8.75	8.25	8.25	8.50				
Sublot Thickness, in	Formula >>	**8.63**	**8.22**	**8.63**	**8.78**	**8.19**	**8.19**	**8.19**				

Resulting Samples per lot (n)	**56**	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	**8.402**	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.31296	<< Formula		

Thickness Pay Factor: 100.885%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5140	4750	5510	5380	6000	4920	5820				
Strength - Cylinder 2, psi		4930	4920	5550	5550	6090	5020	5440				
Sublot Strength, psi	Formula >>	**5035**	**4835**	**5530**	**5465**	**6045**	**4970**	**5630**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5358.571	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	449.40428	<< Formula		

Strength Pay Factor: 100.813%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**7.2**	**6.3**	**6.5**	**7.0**	**6.6**	**6.9**	**6.6**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.729	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.32804	<< Formula		

Air Content Pay Factor: 99.831%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.88%
PF Strength	100.81%
PF Air Content	99.83%
PF Composite	**101.53%**
Bid (Lot)	**$206,483.20**
Pay (lot)	**$3,165.56**

Figure 21. Illustration of spreadsheet used to calculate pay for a given shoulder pavement lot.

CHAPTER 5. EVALUATION OF THE PERFORMANCE-RELATED SPECIFICATION

To evaluate the practicality and effectiveness of the PRS and assess the overall value of the PRS process, detailed reviews were made of the test data and corresponding PRS outputs, as well as feedback provided by individuals/parties directly involved in the PRS. This chapter presents the results of these reviews, starting with a quantitative assessment of the AQCs and pay factors for each lot and ending with a qualitative assessment made possible through surveys/interviews with key WisDOT personnel and representatives of the paving contractor (Trierweiler Construction). This chapter includes:

- An analysis of all data collected during the implementation of the PRS.
- An assessment of the "value" of the entire PRS process. This investigation will attempt to answer questions such as, "How was PRS-generated data used by the construction contractor? By WisDOT?"
- An assessment of the actual AQC values targeted by the contractor.
- An assessment of the overall adequacy of the PaveSpec 3.0 software.
- An assessment of the level of contractor and WisDOT satisfaction with PRS.

QUANTITATIVE ASSESSMENT

A quantitative assessment of the PRS was accomplished by examining the final PRS pay factors and comparing them to the factors that would have been implemented under the standard WisDOT specification. The quality requirements set forth by the PRS and by WisDOT standard specifications are summarized in table 19. In addition, figures 22 through 25 show the pay factors for each quality attribute over the range of conformance and non-conformance. As can be seen, the target quality levels are the same for air content, slightly different for compressive strength, thickness and smoothness.

Under the PRS, the target mean thickness is the plan thickness of 12.5 in, whereas under the current specification, full pay can be obtained with a mean thickness between 12.125 and 12.5 in. Also, while both specs use 11.5 in for the RQL, the current specification gives no credit for mean thickness in excess of the plan thickness, whereas the PRS does (i.e., MQL = 13.0 in). The WisDOT standard pay factors for thickness decline significantly more than the PRS pay factors for thicknesses between 11.5 and 12.5 in. For thinner pavement designs (e.g., 9.5 to 11.5 in), these curves might be more similar, as thickness greatly affects performance. However, as described in Chapter 3, because of the conservative thickness design relative to the models in the PRS software, the PRS pay factors indicate that the pavement LCC is reduced by only about 12 percent when the thickness is reduced to 11.5 in.

Table 19. Quality requirements for concrete pavement under PRS and current WisDOT specifications.

Factor	Detail	PRS	WisDOT Specification
Thickness (mainline & shoulders)	Test methods	Probes (CMM 4-25-70)	Probes (CMM 4-25-70)
	Lot AQC mean (std. dev.), in	Mainline: 12.5 (0.2) Shoulder: 8.0 (0.2)	Mainline: 12.125-12.5 Shoulder: 7.625-8.0
	Lot RQL, in	Mainline: 11.5 Shoulder: 7.0	Mainline: 11.5 Shoulder: 7.0
	Lot MQL, in	Mainline: 13.0 Shoulder: 8.5	Mainline: 12.5 Shoulder: 8.0
28-day Compressive Strength (cylinders) (mainline & shoulders)	Test methods	Cylinders (AASHTO T 22, T 23[a], T 141[a], & M 201)	Cylinders (AASHTO T 22, T 23[a], & T 141[a], & M 201)
	Lot AQC mean (std. dev.), lb/in^2	4,500 (500)	4,200-4,300[b]
	Lot RQL, lb/in^2	3,250	3,050[b]
	Lot MQL, lb/in^2	5,500	5,200[b]
Air Content (mainline & shoulders)	Test methods	Pressure Meter (AASHTO T 152[a])	Pressure Meter (AASHTO T 152[a])
	Lot AQC mean (std. dev.), %	7.0 (0.6)	7.0
	Lot RQL, %	5.5	5.5
	Lot MQL, %	8.5	8.5
Smoothness (Profile Index $PI_{0.0}$) (mainline only)	Test methods	California Profilograph, zero or 0.01-in blanking Band	California Profilograph, zero or 0.01-in blanking band
	AQC mean (std. dev.), in/mi	30.0 (7.0)	25.3-44.4
	Lot RQL, in/mi	50.0	50.7
	Lot MQL, in/mi	10.0	19.0

CMM = WisDOT Construction and Materials Manual.
[a] As modified by CMM.
[b] WisDOT QMP specifications use (Mean-Standard Deviation) to compute strength incentives and were developed assuming strength standard deviation of 550 lb/in^2.

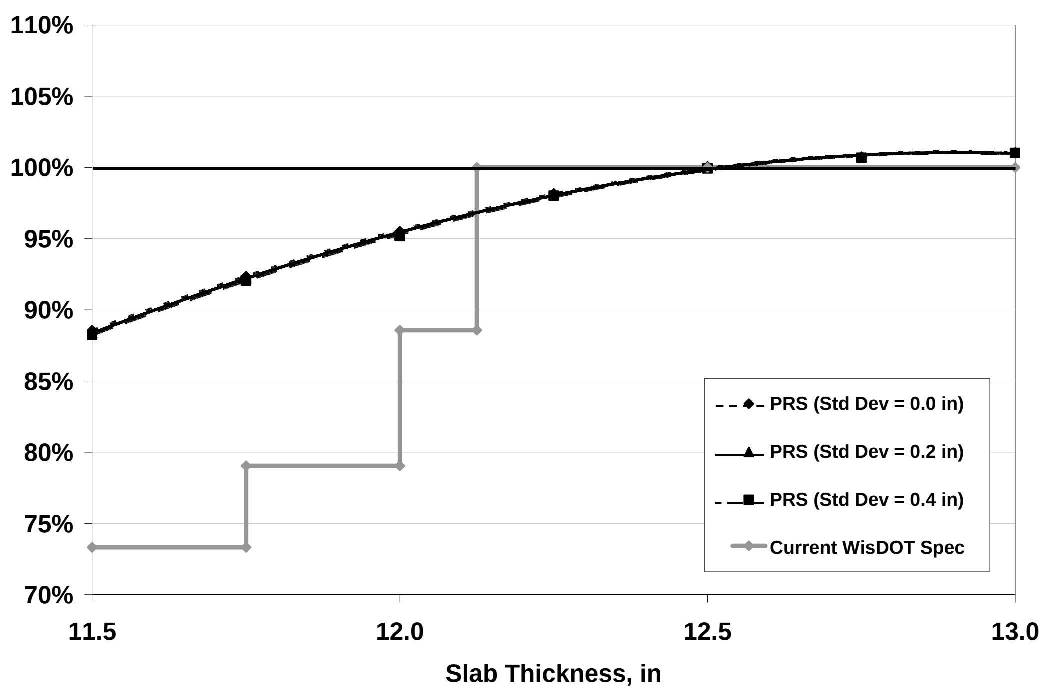

Figure 22. Comparison of PRS and WisDOT thickness pay factors.

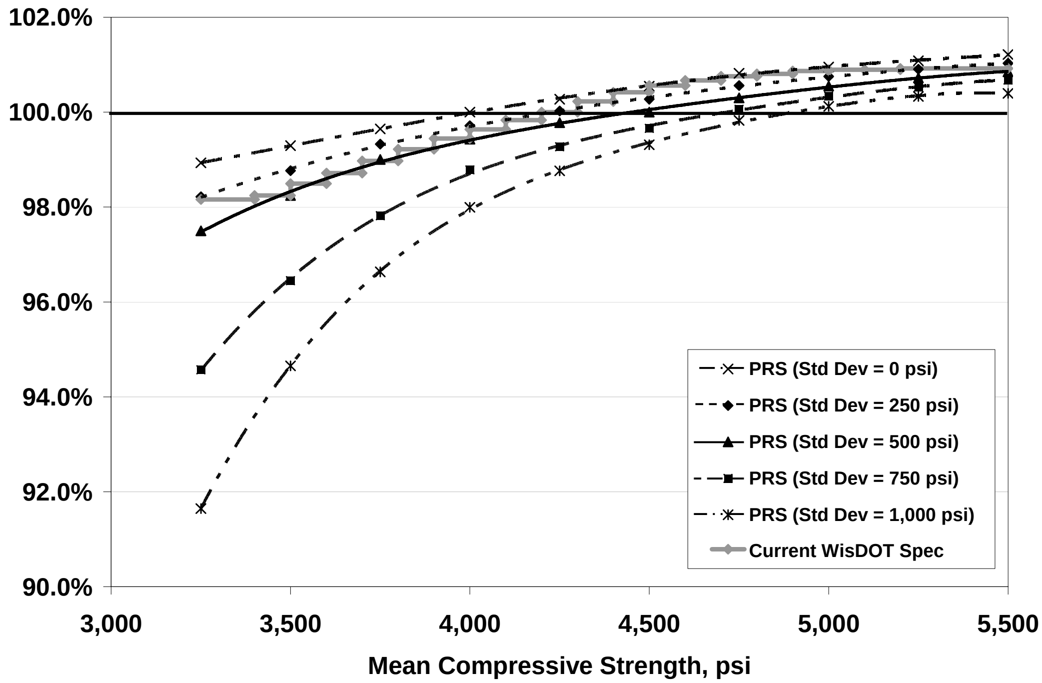

Figure 23. Comparison of PRS and WisDOT compressive strength pay factors.

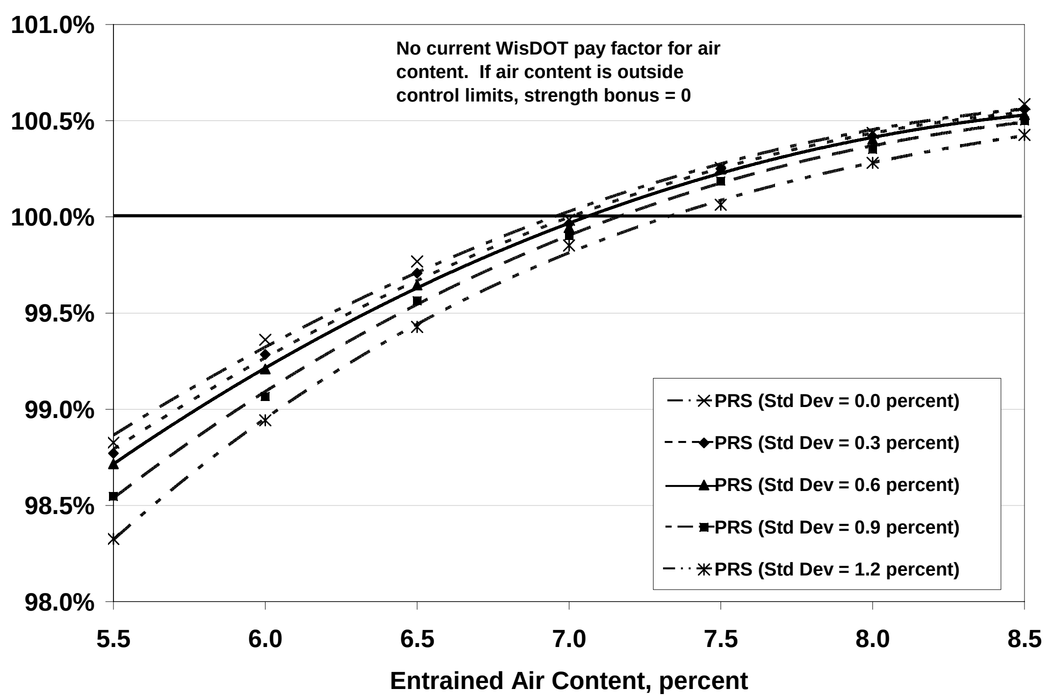

Figure 24. Comparison of PRS and WisDOT air content pay factors.

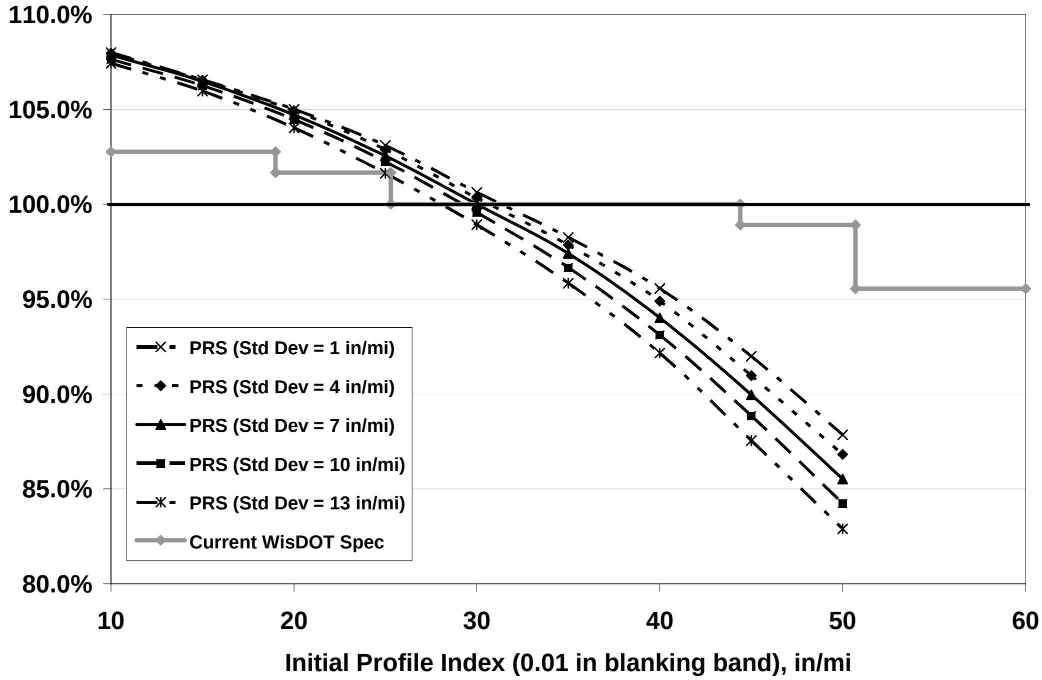

Figure 25. Comparison of PRS and WisDOT profile/smoothness pay factors.

For smoothness, the target mean is slightly lower for PRS than for the current specification—30.0 in/mi versus a range of 20.5 to 44.4 in/mi. The RQLs are about the same, however, the MQL for the PRS is somewhat lower than that given by the current specification (10.0 in/mi versus 19.0 in/mi). Also, the PRS pay factor curves are more extreme than the current specification, with maximum bonuses in the 7.5 to 8 percent range and maximum penalties in the −12 to −17 percent range, versus the current maximums of 3 percent for bonus and −5 percent for penalty.

The greatest deviation from the current specification is how the 28-day compressive strength is specified. The target mean under the PRS is 4,500 lb/in^2 versus the range of 3,650 to 3,750 lb/in^2 for mean minus one standard deviation, given by the current specification. The current specification was developed assuming a standard deviation of 550 lb/in^2. After accounting for this standard deviation, the target mean in the current specification is in the range of 4,200 to 4,300 lb/in^2. The RQL and MQL values are proportionally different, with those of the PRS being about 200 to 300 lb/in^2 higher. The two specification's pay factor curves are fairly similar.

PRS Pay Factors

PRS pay factors for the as-constructed west/northbound and east/southbound lots indicate that the pavement in both directions was constructed to a quality above the design level. Lot quality levels and pay factors for thickness, strength, air content, and smoothness in the west/northbound mainline lanes are shown in table 20, while table 21 shows the quality levels and pay factors for the east/southbound mainline lanes. Tables 22 and 23 contain the shoulder pavement quality levels and pay factors for each respective direction.

Table 20. PRS lot quality and pay factors for the west/northbound mainline.

Item	Target	West/Northbound Lot Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
No. Sublots		7	7	7	7	7	7	7	7	7
Thickness										
Mean, in	12.5	12.75	12.68	12.65	12.66	12.75	12.65	12.76	12.74	12.60
Std. Dev., in	0.2	0.19	0.23	0.18	0.21	0.19	0.18	0.20	0.18	0.15
Pay Factor, %	100.00	100.70	100.51	100.42	100.45	100.70	100.43	100.71	100.67	100.29
28-day Compressive Strength										
Mean, lb/in^2	4500	5720	5795	5284	5251	5543	5645	5640	5574	5555
Std. Dev., lb/in^2	500	851	709	684	416	510	485	506	311	401
Pay Factor, %	100.00	100.56	100.71	100.60	100.78	100.84	100.86	100.85	100.99	100.92
Air Content										
Mean, %	7.0	6.66	6.59	6.77	6.79	6.80	6.70	6.83	6.56	6.51
Std. Dev., %	0.6	0.41	0.59	0.42	0.32	0.29	0.38	0.33	0.28	0.30
Pay Factor, %	100.00	99.77	99.70	99.85	99.87	99.89	99.81	99.90	99.71	99.68
Profile Index/Smoothness										
Mean, in/mi	30.0	20.40	28.70	21.79	23.74	19.83	19.36	26.81	18.97	19.65
Std. Dev., in/mi	7.0	3.41	4.69	4.69	4.29	3.69	3.37	8.76	3.41	2.84
Pay Factor, %	100.00	104.78	100.92	104.14	103.38	104.99	105.15	101.42	105.27	105.87
Composite Pay Factor, %	**100.00**	**105.87**	**101.83**	**105.05**	**104.52**	**106.50**	**106.30**	**102.91**	**106.71**	**106.00**

Table 21. PRS lot quality and pay factors for the east/southbound mainline.

Item	Target	East/Southbound Lot Number								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
No. Sublots		7	7	7	7	7	7	7	7	7
Thickness										
Mean, in	12.5	12.69	12.51	12.46	12.54	12.59	12.50	12.57	12.62	12.55
Std. Dev., in	0.2	0.31	0.24	0.19	0.16	0.14	0.14	0.25	0.22	0.13
Pay Factor, %	100.00	100.52	100.00	99.67	100.12	100.25	100.02	100.19	100.32	100.16
28-day Compressive Strength										
Mean, lb/in^2	4500	4925	5117	4923	4769	5241	5271	5017	5295	5068
Std. Dev., lb/in^2	500	659	379	441	485	497	446	483	420	519
Pay Factor, %	100.00	100.34	100.72	100.52	100.34	100.72	100.77	100.58	100.80	100.58
Air Content										
Mean, %	7.0	6.76	6.34	6.51	6.41	6.24	6.44	6.66	6.33	6.47
Std. Dev., %	0.6	0.28	0.34	0.36	0.33	0.39	0.38	0.44	0.37	0.05
Pay Factor, %	100.00	99.86	99.54	99.67	99.60	99.45	99.61	99.77	99.52	99.68
Profile Index/Smoothness										
Mean, in/mi	30.0	21.76	24.75	18.48	19.96	16.73	20.77	25.30	20.77	20.55
Std. Dev., in/mi	7.0	3.31	4.92	2.70	2.47	3.26	2.39	7.51	4.57	4.73
Pay Factor, %	100.00	104.24	102.89	105.44	104.98	105.99	104.67	102.34	104.57	104.65
Composite Pay Factor, %	**100.00**	**104.98**	**103.16**	**105.30**	**105.03**	**106.43**	**105.09**	**102.88**	**105.24**	**105.09**

Table 22. PRS lot quality and pay factors for the west/northbound shoulders.

Item	Target	West/Northbound Lot Number					
		10	**11**	**12**	**13**	**14**	**15**
No. Sublots		7	7	7	7	7	7
Thickness							
Mean, in	8.0	8.40	8.33	8.27	8.34	8.34	8.31
Std. Dev., in	0.2	0.31	0.25	0.23	0.37	0.29	0.23
Pay Factor, %	100.00	100.89	100.79	100.73	100.79	100.80	100.77
28-day Compressive Strength							
Mean, lb/in^2	4500	5359	5667	6040	5260	5542	5063
Std. Dev., lb/in^2	500	449	456	265	369	454	493
Pay Factor, %	100.00	100.81	100.88	101.02	100.82	100.88	100.60
Air Content							
Mean, %	7.0	6.73	6.66	6.39	7.14	6.49	6.84
Std. Dev., %	0.6	0.33	0.30	0.32	0.19	0.25	0.29
Pay Factor, %	100.00	99.83	99.78	99.58	100.10	99.67	99.92
Composite Pay Factor, %	**100.00**	**101.53**	**101.46**	**101.32**	**101.72**	**101.35**	**101.29**

Table 23. PRS lot quality and pay factors for the east/southbound shoulders.

Item	Target	East/Southbound Lot Number					
		10	**11**	**12**	**13**	**14**	**15**
No. Sublots		7	7	7	7	7	7
Thickness							
Mean, in	8.0	8.34	8.24	8.22	8.43	8.32	8.33
Std. Dev., in	0.2	0.23	0.22	0.28	0.33	0.18	0.23
Pay Factor, %	100.00	100.81	100.68	100.61	100.91	100.80	100.80
28-day Compressive Strength							
Mean, lb/in^2	4500	5014	5318	5202	5081	5499	5301
Std. Dev., lb/in^2	500	213	317	425	615	410	414
Pay Factor, %	100.00	100.79	100.89	100.74	100.51	100.92	100.81
Air Content							
Mean, %	7.0	6.69	6.36	6.34	6.47	6.64	6.51
Std. Dev., %	0.6	0.30	0.42	0.21	0.58	0.42	0.37
Pay Factor, %	100.00	99.80	99.54	99.56	99.61	99.76	99.67
Composite Pay Factor, %	**100.00**	**101.40**	**101.10**	**100.91**	**101.03**	**101.47**	**101.28**

The result of the PRS was that an average of 4.9 percent incentive pay would be received by the contractor for the mainline lots and an average of 1.3 percent incentive pay would be received by the contractor for the shoulder lots. This incentive was due to PCC strength and PCC slab thickness being of somewhat better quality than the specified target values and initial smoothness being significantly better quality than the target values. The mean values are shown in table 24.

Table 24. Target and as-built AQC values.

Pavement	Acceptance Quality Characteristic (AQC)	Target (100% Pay)	As-Built
Mainline	PCC compressive strength, lb/in^2	4,500	5,313
	PCC slab thickness, in	12.50	12.63
	Initial Smoothness/PI$_{0.0}$, in/mi	30.0	21.6
	Entrained Air Content, %	7.00	6.58
Shoulder	PCC compressive strength, lb/in^2	4,500	5,362
	PCC slab thickness, in	8.00	8.32
	Entrained Air Content, %	7.00	6.60

A closer look at the values and pay factors provides additional insight. For each of the four AQCs, figures 26 through 29 show the target quality range within one standard deviation, the measured field quality mean and range within one standard deviation for each of the 18 mainline lots, and the corresponding pay factors for each of the 18 mainline lots. The figures show that the west/northbound direction, which was paved first, had slightly higher values for PCC thickness and PCC strength as compared to the east/southbound direction. This could be attributed to the difference in construction time—the west/northbound direction was paved in early spring while the east/southbound direction was paved in late spring/early summer. The initial smoothness levels for lots 2 and 7 in both paving directions were lower than the rest of the lots. This was attributed by the contractor to special areas that required extensive hand working.

Figures 30 through 32 show the target quality range within one standard deviation, the measured field quality mean and range within one standard deviation for each of the 12 shoulder lots, and the corresponding pay factors for each of the 12 shoulder lots. The figures show that the shoulders were paved closer to the maximum quality level than the target quality level for both thickness and PCC strength.

Figure 33 shows a summary of the PRS pay factors for each of the 18 mainline lots used in the analysis. It also includes an overall pay factor, which averages 105.1 percent for the west/northbound lots and 104.8 percent for the east/southbound lots. The initial smoothness pay factor was the controlling factor that affected the overall pay factor. Figure 34 shows a summary of the PRS pay factors for each of the 12 shoulder lots used in the analysis. The overall pay factor average was 101.4 percent for the west/northbound lots and 101.2 percent for the east/southbound lots. The lower pay factors relative to the mainline pavement can be attributed to the fact that initial smoothness was not included as a pay factor for the shoulders.

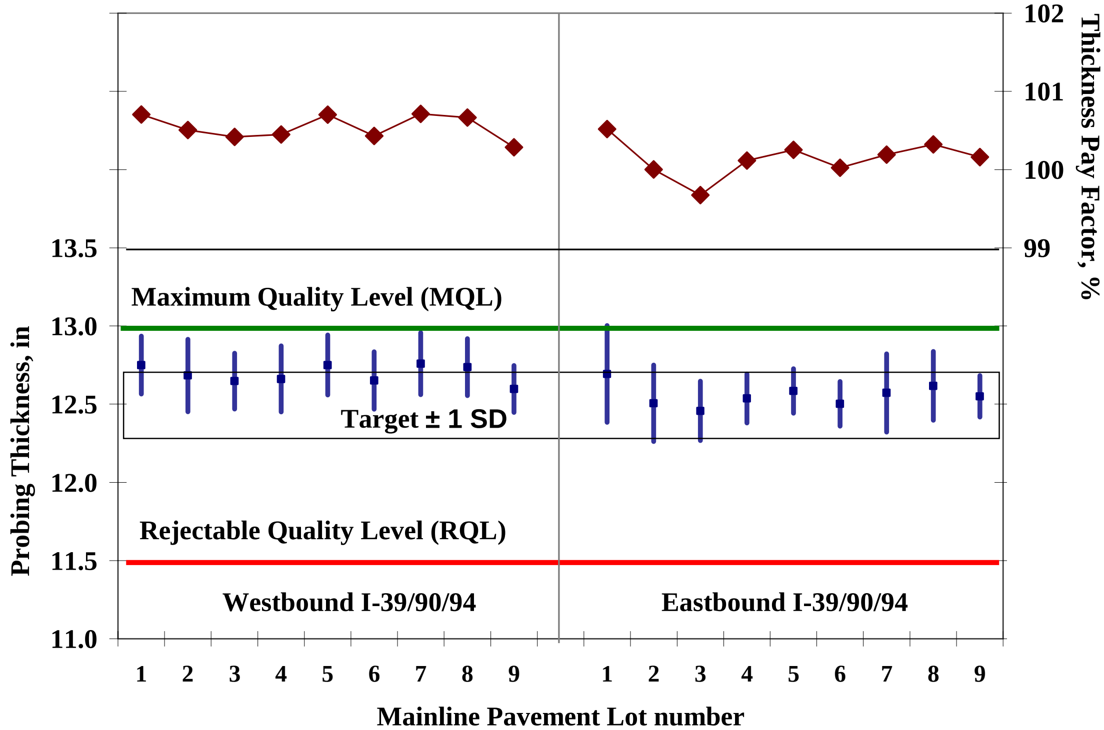

Figure 26. Comparison of PRS thickness requirements and results for mainline pavement.

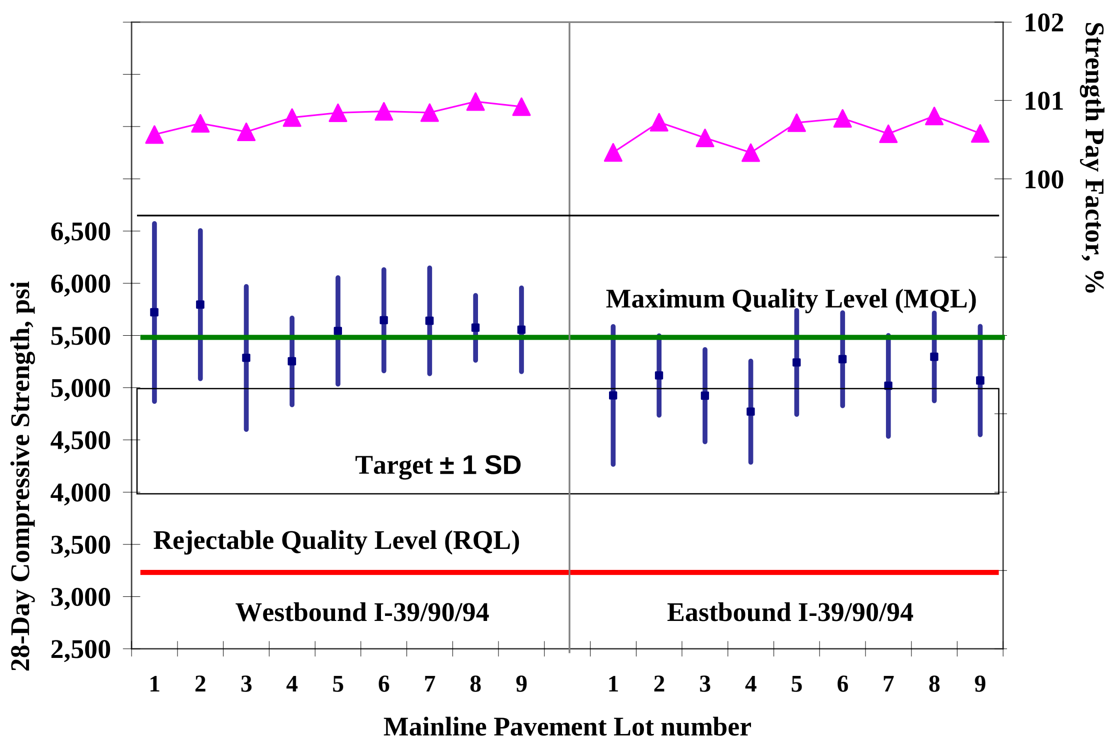

Figure 27. Comparison of PRS strength requirements and results for mainline pavement.

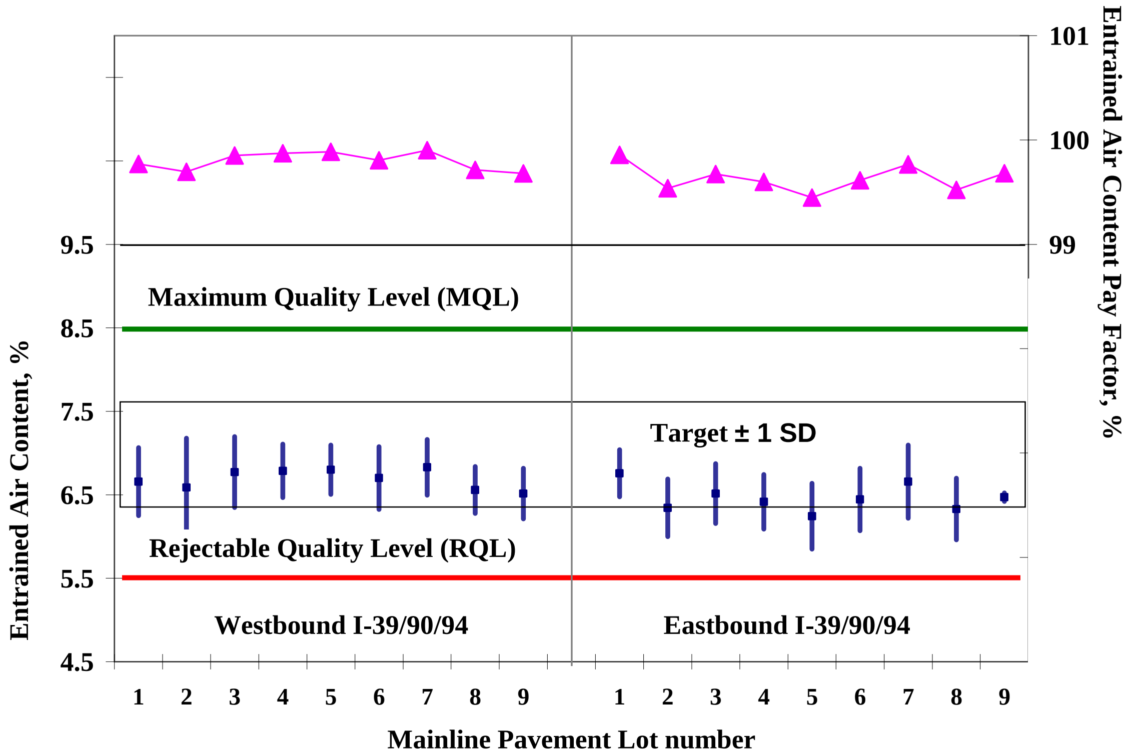

Figure 28. Comparison of PRS air content requirements and results for mainline pavement.

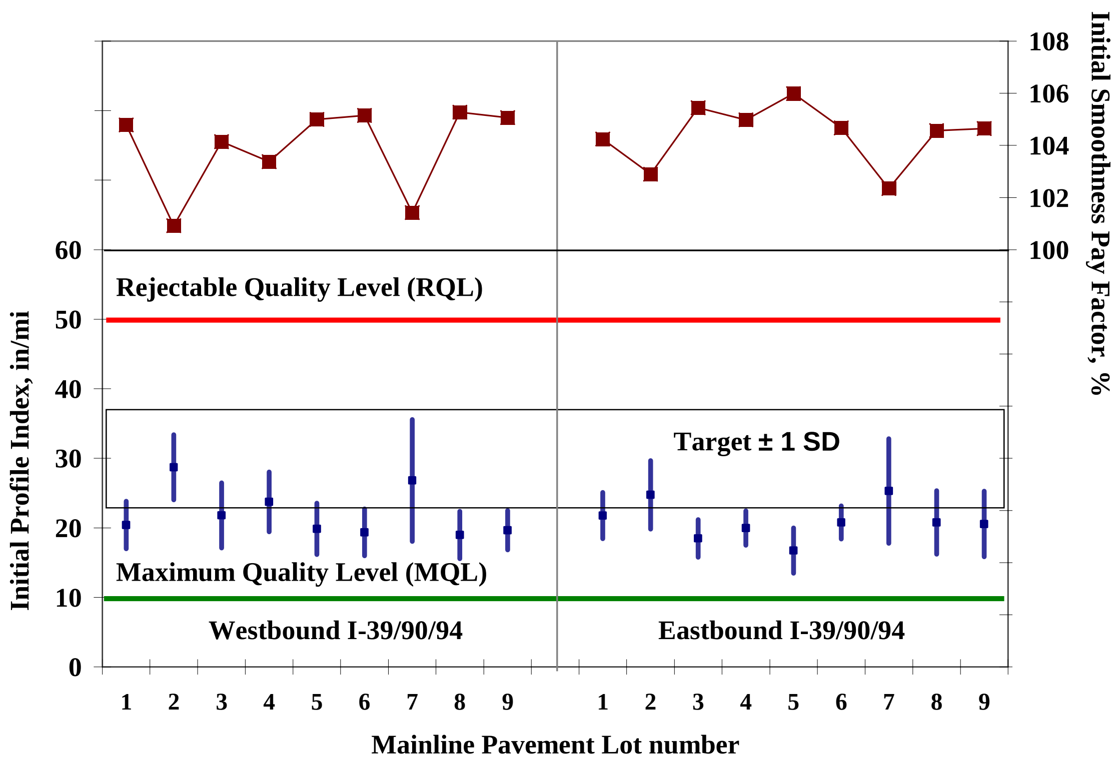

Figure 29. Comparison of PRS smoothness requirements and results for mainline pavement.

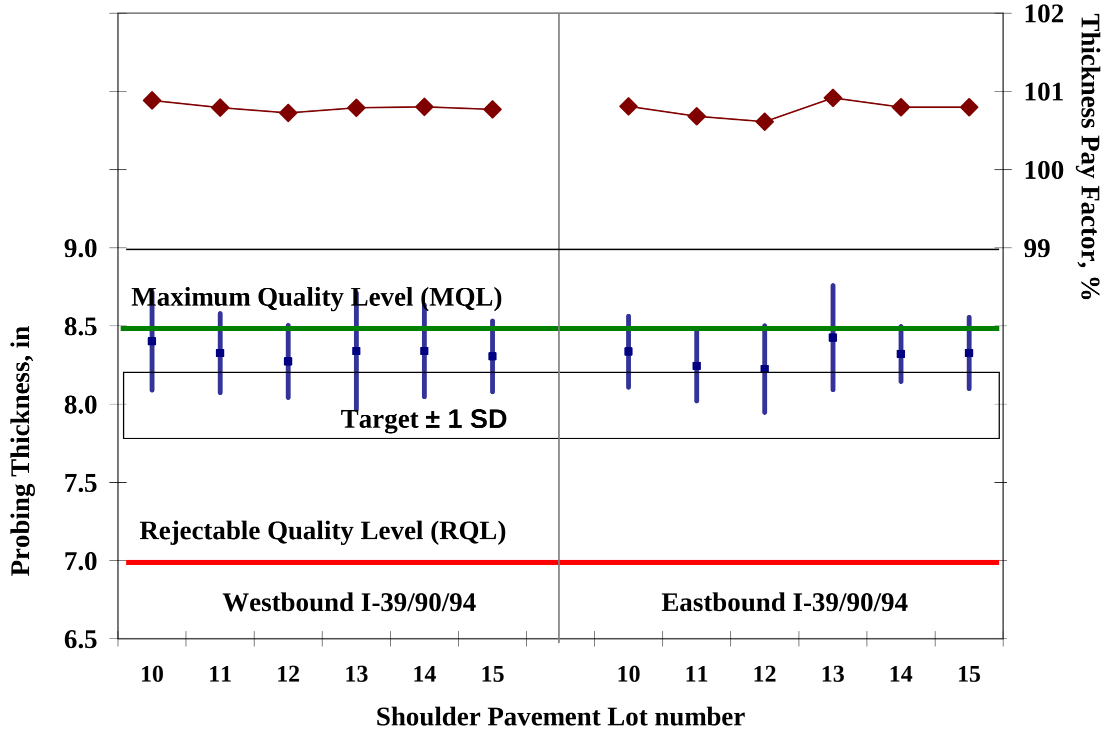

Figure 30. Comparison of PRS thickness requirements and results for shoulder pavement.

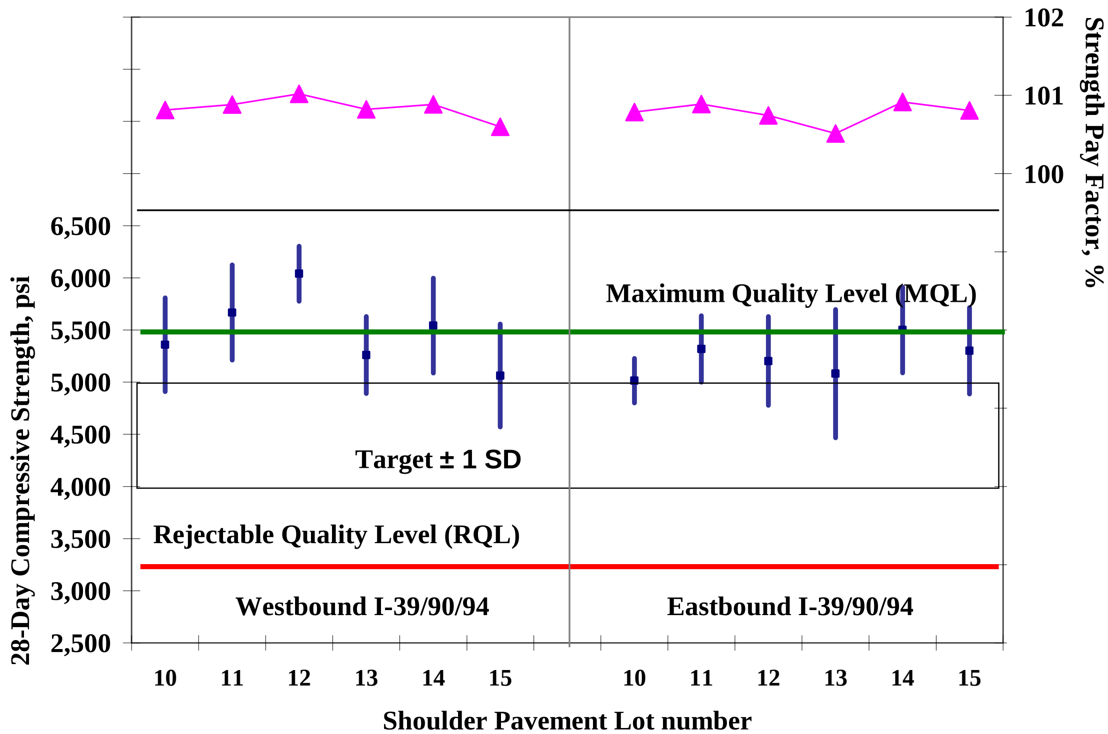

Figure 31. Comparison of PRS strength requirements and results for shoulder pavement.

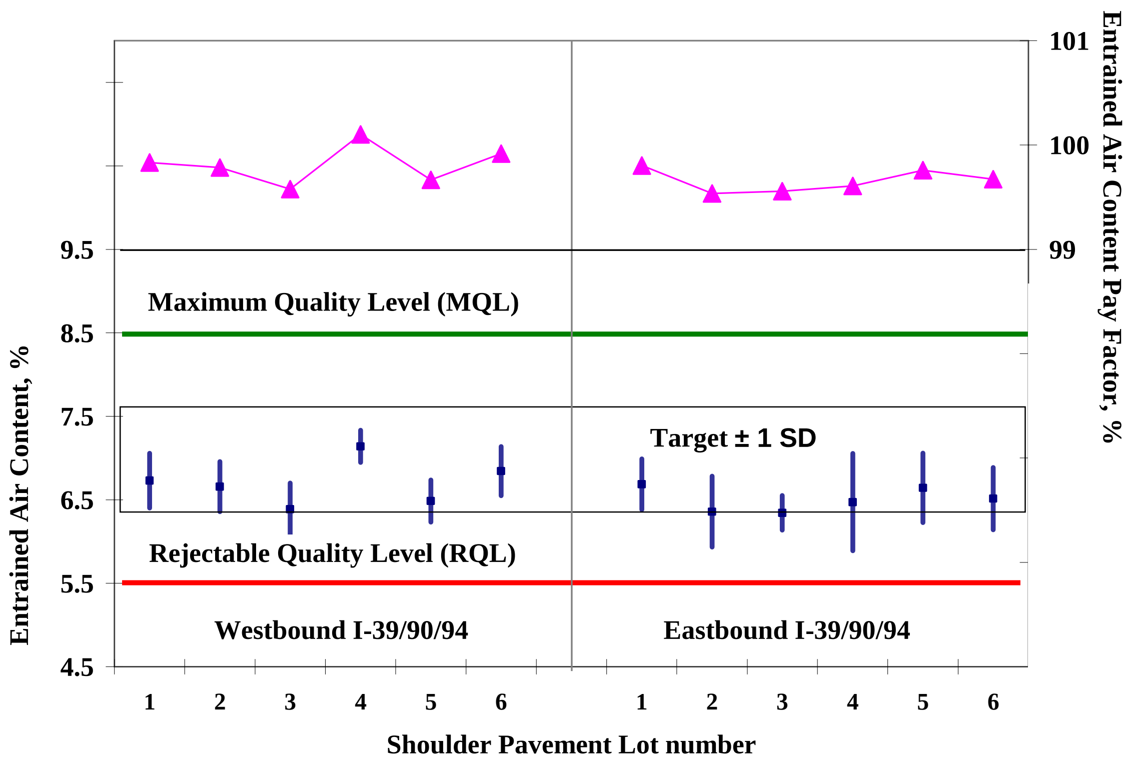

Figure 32. Comparison of PRS air content requirements and results for shoulder pavement.

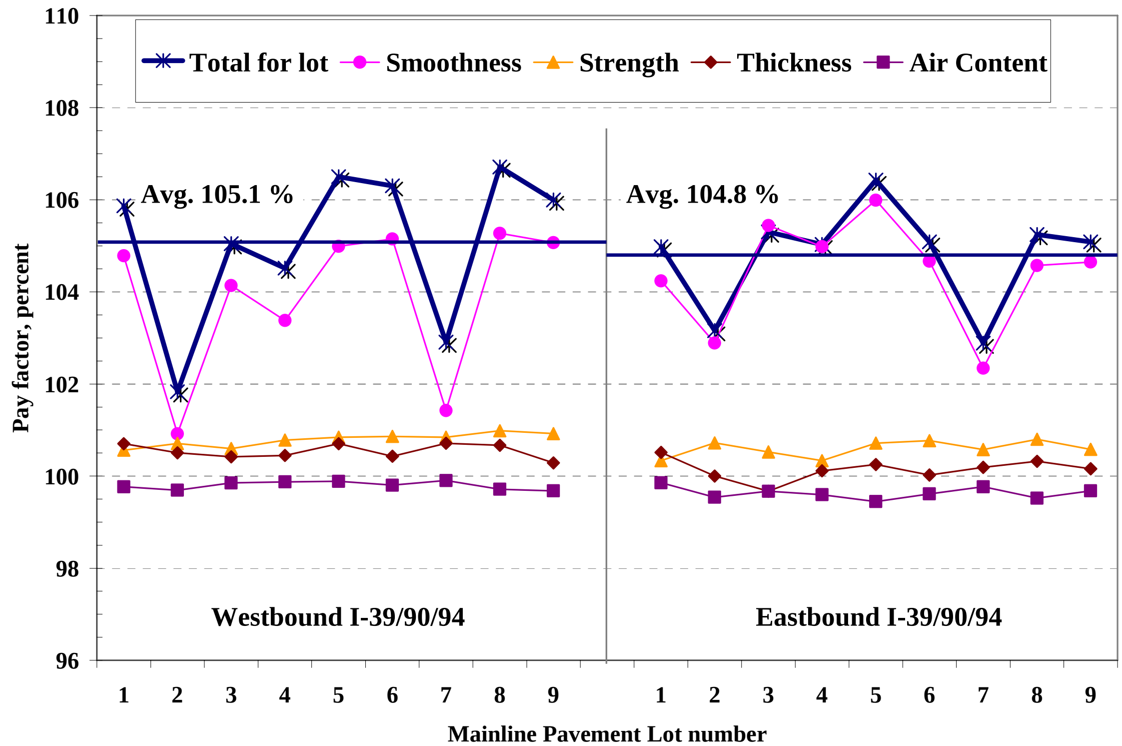

Figure 33. Summary of PRS pay factor results for mainline pavement

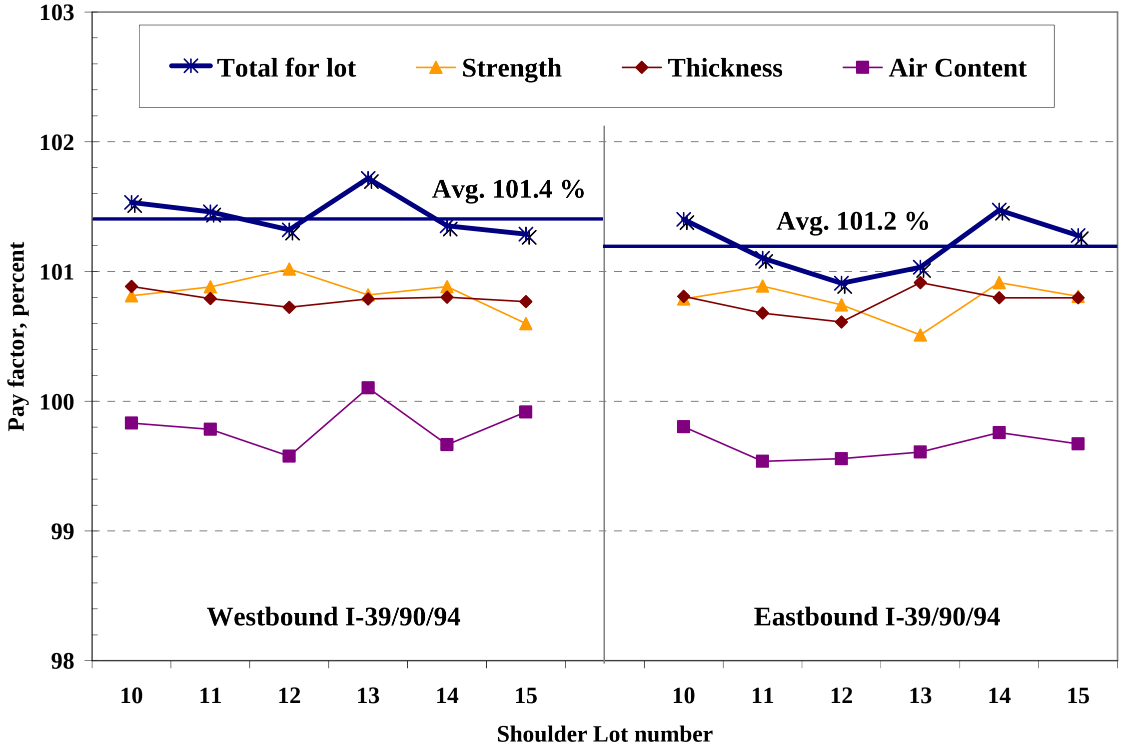

Figure 34. Summary of PRS pay factor results for shoulder pavement.

Comparison of PRS and WisDOT Standard Specification Results

The PRS pay factor curves provide for incentives and disincentives for PCC compressive strength, PCC thickness, entrained air content, and initial smoothness. The PRS curves are based on economic analysis of LCC, indicating that there will be changes in pavement performance depending on the level of quality achieved during construction of these four AQCs. It is believed that the PRS pay factor curves will provide the contractor with more opportunity to achieve incentive pay and to avoid disincentives, thereby providing a pavement with a longer life and lower LCC.

Under the current WisDOT QMP program, contractors can receive incentives for exceeding PCC compressive strength and initial smoothness targets and have to pay disincentives for not meeting PCC compressive strength, initial smoothness, and thickness target levels. The QMP compressive strength incentives/disincentives are computed for each sublot using mean minus one standard deviation and the QMP compressive strength pay adjustment ($/yd^2) is shown in table 25. The QMP thickness disincentive are computed for each 250-ft lane using pay adjustment ($) shown in table 26. The QMP initial smoothness incentive/disincentive are computed for each 0.1 lane-mi using pay adjustment ($) shown in table 27.

Table 25. Current WisDOT QMP incentive/disincentive pay adjustment for PCC compressive strength (per yd^2 paid for each 500 yd^3 sublot).

Compressive Strength Avg − Std Dev		Pay Adjustment ($/$yd^2$)
Greater Than or Equal to	**Less Than**	
	2,850	−0.552
2,850	2,950	−0.527
2,950	3,050	−0.452
3,050	3,150	−0.385
3,150	3,250	−0.309
3,250	3,350	−0.234
3,350	3,450	−0.167
3,450	3,550	−0.109
3,550	3,650	−0.050
3,650	3,750	0.000
3,750	3,850	+0.067
3,850	3,950	+0.125
3,950	4,050	+0.167
4,050	4,150	+0.201
4,150	4,250	+0.226
4,250	4,350	+0.242
4,350	4,450	+0.259
4,450	4,550	+0.268
4,550	4,650	+0.268
4,650		+0.276

Table 26. Current WisDOT QMP disincentive pay adjustment for PCC thickness (per 250-ft section per lane).

Avg Thickness Deficiency, in	Pay Adjustment
0 to ≤ 3/8	$0
> 3/8 to ≤ 1/2	−$1,143
> 1/2 to ≤ 3/4	−$2,095
> 3/4 to ≤ 1	−$2,667

Table 27. Current WisDOT QMP incentive/disincentive pay adjustment for PCC initial smoothness (per 0.1-mi section per lane).

Profile Index $PI_{0.0}$ (in/mi)	Pay Adjustment
< 19.0	+$585
≥ 19.0 to < 25.3	+$350
≥ 25.3 to < 44.4	$0
≥ 44.4 to < 50.7	−$230
≥ 50.7	−$940

The current WisDOT QMP specifications were used to compute pay factors for each mainline and shoulder lot. The results are shown in table 28 and 29 for the mainline pavement lots and the shoulder lots, respectively. Since all 250-ft lane units have average thicknesses within or above the current QMP thickness target range, no thickness disincentives are applicable. The computed QMP incentive and the bid price for each lot were used to compute the QMP overall pay factor.

Table 28 shows that under the current QMP program, for the mainline pavement, the QMP pay factor would range from 101.4 to 104.0 percent (PRS pay factors ranged from 101.8 to 106.7 percent). The average for the west/northbound lots was 102.9 percent (west/northbound PRS pay factor average was 105.1 percent) and the average for the east/southbound lots was 103.1 percent (east/southbound PRS pay factor average was 104.8 percent), with an overall average QMP pay factor of 103.0 percent (overall PRS pay factor average was 104.9 percent).

Table 29 shows that if the QMP program was applied to the shoulder, the pay factor would be 101.3 percent for all 12 of the shoulder lots (PRS pay factors ranged from 100.9 to 101.7 percent).

These comparisons are shown graphically in figures 35 and 36.

Table 28. Comparison of pay factors computed using PRS and current WisDOT QMP for each of the 18 mainline pavement lots.

Lot	Area	Bid	PRS Pay	PRS Pay Factor	QMP Strength Pay	QMP Strength Pay	QMP Smoothness Pay	Total QMP Pay	QMP Pay Factor
	sq. yd.	$	$	%	$/sq. yd.	$	$	$	%
WB1	9,856	262,071.04	15,382.43	**105.9**	0.276	2,720.26	5,605.00	8,325.26	**103.2**
WB2	9,856	262,071.04	4,805.01	**101.8**	0.276	2,720.26	1,050.00	3,770.26	**101.4**
WB3	9,856	262,071.04	13,222.67	**105.0**	0.268	2,641.41	5,140.00	7,781.41	**103.0**
WB4	9,856	262,071.04	11,837.99	**104.5**	0.276	2,720.26	3,385.00	6,105.26	**102.3**
WB5	9,856	262,071.04	17,029.63	**106.5**	0.276	2,720.26	5,960.00	8,680.26	**103.3**
WB6	9,341	248,377.19	15,652.09	**106.3**	0.276	2,578.12	6,780.00	9,358.12	**103.8**
WB7	9,856	262,071.04	7,620.47	**102.9**	0.276	2,720.26	2,340.00	5,060.26	**101.9**
WB8	9,856	262,071.04	17,587.96	**106.7**	0.276	2,720.26	6,310.00	9,030.26	**103.4**
WB9	9,598	255,210.82	15,305.43	**106.0**	0.276	2,649.05	6,075.00	8,724.05	**103.4**
EB1	9,856	262,071.04	13,050.46	**105.0**	0.242	2,385.15	5,255.00	7,640.15	**102.9**
EB2	9,856	262,071.04	8,272.07	**103.2**	0.276	2,720.26	3,150.00	5,870.26	**102.2**
EB3	9,856	262,071.04	13,897.77	**105.3**	0.268	2,641.41	6,780.00	9,421.41	**103.6**
EB4	9,856	262,071.04	13,178.97	**105.0**	0.242	2,385.15	5,840.00	8,225.15	**103.1**
EB5	9,856	262,071.04	16,843.74	**106.4**	0.276	2,720.26	7,720.00	10,440.26	**104.0**
EB6	9,296	247,180.64	12,576.14	**105.1**	0.276	2,565.70	5,370.00	7,935.70	**103.2**
EB7	9,856	262,071.04	7,558.85	**102.9**	0.268	2,641.41	3,620.00	6,261.41	**102.4**
EB8	9,856	262,071.04	13,742.39	**105.2**	0.276	2,720.26	5,610.00	8,330.26	**103.2**
EB9	9,576	254,625.84	12,951.26	**105.1**	0.268	2,566.37	5,960.00	8,526.37	**103.3**
Sum/Average	**175,795**	**4,674,389**	**230,515**	**104.9**	**0.270**	**47,536**	**91,950**	**139,486**	**103.0**

Table 29. Comparison of pay factors computed using PRS and current WisDOT QMP for each of the 12 shoulder pavement lots.

Lot	Area	Bid	PRS Pay	PRS Pay Factor	QMP Strength Pay	QMP Strength Pay	Total QMP Pay	QMP Pay Factor
	sq. yd.	$	$	%	$/sq. yd.	$	$	%
WB10	9,856	206,483.20	3,165.56	**101.5**	0.276	2,720.26	2,720.26	**101.3**
WB11	9,856	206,483.20	3,013.10	**101.5**	0.276	2,720.26	2,720.26	**101.3**
WB12	9,598	201,078.10	2,655.21	**101.3**	0.276	2,649.05	2,649.05	**101.3**
WB13	6,751	141,433.45	2,430.33	**101.7**	0.276	1,863.28	1,863.28	**101.3**
WB14	8,211	172,020.45	2,326.28	**101.4**	0.276	2,266.24	2,266.24	**101.3**
WB15	7,999	167,579.05	2,157.90	**101.3**	0.268	2,143.73	2,143.73	**101.3**
EB10	9,856	206,483.20	2,895.59	**101.4**	0.276	2,720.26	2,720.26	**101.3**
EB11	9,856	206,483.20	2,275.73	**101.1**	0.276	2,720.26	2,720.26	**101.3**
EB12	9,576	200,617.20	1,824.28	**100.9**	0.276	2,642.98	2,642.98	**101.3**
EB13	6,801	142,480.95	1,472.20	**101.0**	0.268	1,822.67	1,822.67	**101.3**
EB14	8,211	172,020.45	2,534.41	**101.5**	0.276	2,266.24	2,266.24	**101.3**
EB15	7,980	167,181.00	2,135.63	**101.3**	0.276	2,202.48	2,202.48	**101.3**
Sum/Average	**104,551**	**2,190,343**	**28,886**	**101.3**	**0.275**	**28,738**	**28,738**	**101.3**

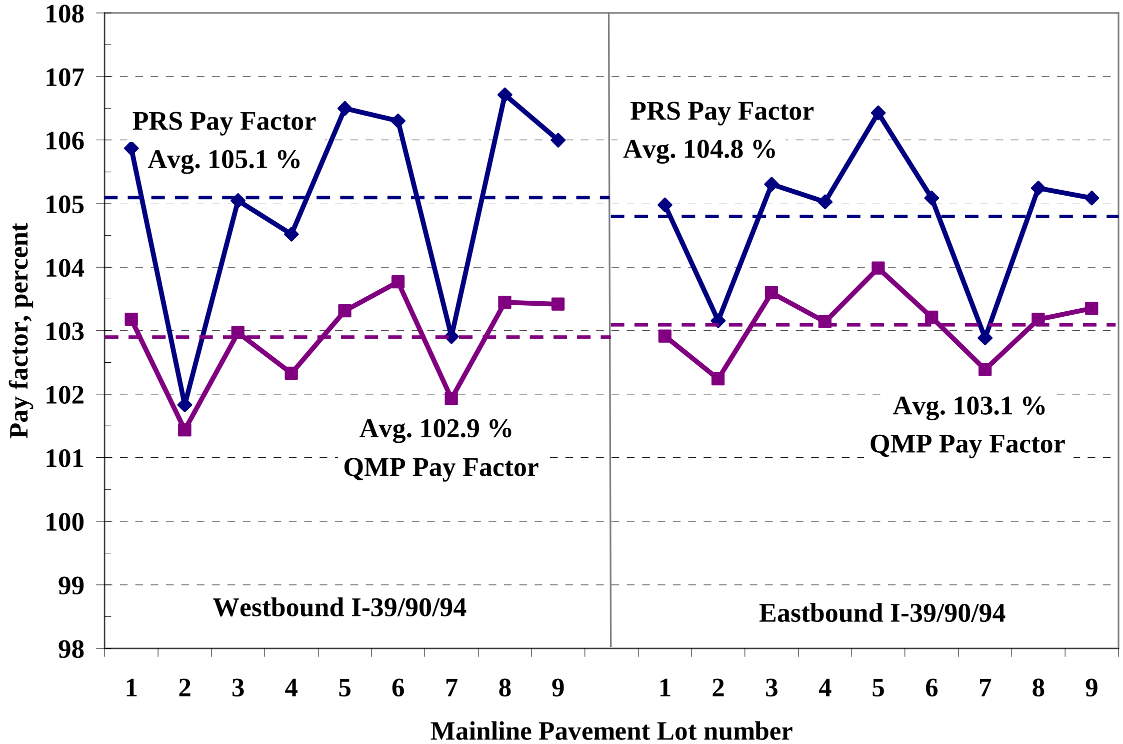

Figure 35. Comparison of pay factors computed using PRS and current WisDOT QMP for each of the 18 mainline pavement lots.

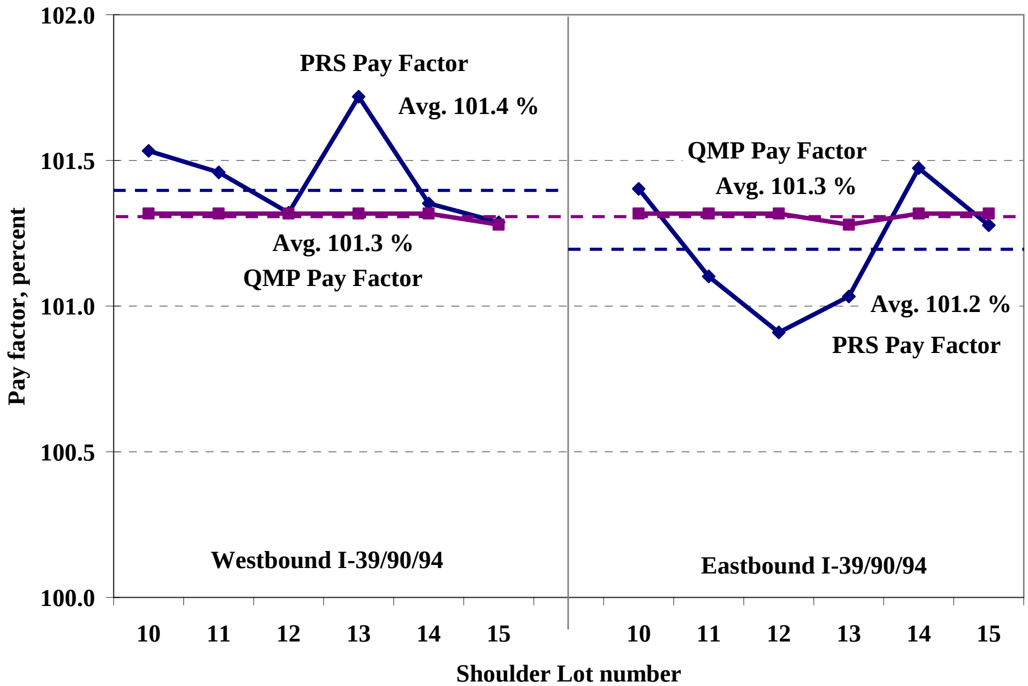

Figure 36. Comparison of pay factors computed using PRS and current WisDOT QMP for each of the 12 shoulder pavement lots.

QUALITATIVE ASSESSMENT

Separate meetings were held at the end of construction to obtain responses by the contractor and WisDOT staff regarding the PRS implementation project. The research team met WisDOT representatives on September 26, 2006 between 1:00 and 2:30 pm and with Trierweiler Construction and the Wisconsin Concrete Pavement Association (WCPA) between 3:00 and 4:30 pm. During the meetings, the results from the project were presented and explained, and questions were addressed. Then, survey forms were provided to the Trierweiler Construction, WCPA, and WisDOT personnel who participated in the PRS implementation.

This survey included questions assessing the functionality of the PRS, any related problems encountered in the process, and changes that were made in response to the PRS. Results of general questions are summarized in table 30, which indicate that the PRS documents were adequate, the PRS concept is desirable, and PRS implementation was not difficult. Additional detailed questions were asked of the contractors and WisDOT personnel. Their responses are provided in the following sections.

Table 30. General survey responses.

Question No.	Question	Contractors			WisDOT		
		Yes	Maybe	No	Yes	Maybe	No
1	Do you think the responsibilities and roles of the contractors and WisDOT are well defined in the PRS document?	2	0	0	4	1	0
2	Do you think PRS (including the incentives) would improve the quality of concrete pavements in Wisconsin?	1	0	1	3	2	0
3	Do you think that the PRS testing and sampling plan can lead to more accurate measurement of the quality of WisDOT PCC pavements?	0	1	1	3	1	1
4	Did you think that the PRS process was complicated and lengthy?[1]	0	0	2	0	1	3
5	Would you like to see PRS implemented on more Wisconsin PCC pavement projects?	1	0	1	3	2	0

[1] No response from 1 of the 5 WisDOT respondents for this question.

Contractor Assessment

Surveys were completed with representatives of the prime contractor (Trierweiler Construction and WCPA. Their responses to questions 6 through 9 are shown in tables 31 through 35.

Table 31. Contractor responses to Question 6a–What average cumulative pay factor did you expect to receive for the PRS sections prior to construction?

Pay Factor, %	Reason for this estimate
> 102	Knowledge of current specifications.
100	

Table 32. Contractor responses to Question 6b–Was the pay factor you received worth the effort you spent achieving it?

Yes	Maybe	No	Comments and suggestions
☐	☐	☐	
☒	☐	☐	

Table 33. Contractor responses to Question 7–What problems did you see or encounter in preparing for and constructing the I-39/90/94 PRS sections?

Problem encountered in:	Description and suggestions
Discussing the PRS specification with WisDOT	WisDOT staff understanding the background No problem
Understanding the PRS specification.	Pay factors and how they were developed is where most work needs to be done No problem
Adjusting processes to meet the PRS specification	No problem
Preparing subgrade and base	No problem
Setting grade stakes and string lines	No problem
Placing and finishing the concrete surface	No problem
Sampling and testing for strength, thickness, and smoothness	Heard of none How to handle gaps, ramps, etc.
Understanding the PRS pay factors	No problem
Resolving any conflicts related to PRS	No problem
Other related activities	No problem

Table 34. Contractor responses to Question 8–What changes did you make in the design and/or construction process to avoid penalties or receive bonuses under the PRS?

Activities affected:	Description of any changes
Mix design	No changes
Subgrade and base preparation	No changes
Grade stakes and string lines	No changes
PCC batch mixing	No changes
PCC hauling to paver	No changes
PCC transfer to paver	No changes
Paving machine type and setup	No changes
PCC placement methods	No changes
Pavement surface finishing	No changes
Pavement curing	No changes
Surface grinding	No changes

Table 35. Contractor responses to Question 9–What changes might you make in the design and/or construction process under similar PRS projects?

Possible changes	Description of any changes
1. Thickness design	More updated process than AASHTO 72 procedure
2. Type of project	Project with more phases/paving days.

Other comments that were received included the following:

- For PRS to improve the quality of concrete pavements in Wisconsin, WisDOT would have to buy into the concept of PRS and commit to it.
- We (Wisconsin) were already doing the same tests and frequencies, with the same certified testers, so the PRS testing and sampling plan may not necessarily lead to more accurate measurement of the quality of WisDOT PCC pavements. The key with the PRS is the incentive.
- More work needs to be done so that contractors have understanding of the pre-bid work required in developing the specifications.
- FHWA commitment and WisDOT staff commitment is required for PRS implementation on more Wisconsin PCC pavement projects. Industry will be there to support it.

WisDOT Assessment

WisDOT engineers who participated in the design, implementation, and management of the PRS project responded to the survey and follow-up interviews with generally positive responses. Tables 36 and 37 show their responses to survey questions 7 and 8.

Table 36. WisDOT responses to Question 7–What problems did you see or encounter in developing or implementing the I-39/90/94 PRS?

Problem encountered in:	Descriptions and suggestions
Collecting data for PRS input	No problems to my knowledge except projects selected were above par projects. The definition of sublots was a concern initially. However, it was ironed out.
Selecting pay factor limits	Harder on first project. Will become easier with additional experience. Some negotiating was involved between WisDOT and PCC industry. I would like to know if the PRS affected average bid prices. Outside of norm and what people are used to this process could take some time to develop for each project—perhaps could be standardized. I do not see this as a problem because people recognized the issues and discussed them.
Introducing PRS to contractors	Just had to get accustomed to the changes from the normal QMP spec. Getting industry on board early was a big plus in getting the word out. None.
Completing the PRS sampling	Not aware of any; None; I do not see this as a problem.
Completing the PRS testing	Not aware of any; None; I do not see this as a problem.
Determining the PRS pay factor values	No problems; None; I do not see this as a problem.
Informing contractors of bonus or penalty values	No problems; I don't know; I do not see this as a problem.
Resolving conflicts over payments	No problems, yet; None; I do not see this as a problem.
Other PRS activities	None; I do not see this as a problem.

Table 37. WisDOT responses to Question 8–What other possible problems do you foresee in future PRS use?

Potential problems	Descriptions and suggestions
1. Favoring strength at expense of air	Monitor and adjust pay factors
2. Other projects with many gaps	
3. Differing materials	Spec should be project specific
4. Gaps/HES concrete	Assume strength is okay. All other parameters can be tested.
5. Developing pay factors for future projects	Some training would be needed with FHWA software (PaveSpec 3.0)
6. Comparing to or future use of warrantees	
7. Complexity of project	No straight-aways, but an interchange.
8. Different geographic location of project	Temperature and aggregate concerns.

Additional comments provided by WisDOT engineers included the following:

- Given that this was the first usage in Wisconsin, I suppose there is room for improvement. However, it seemed like it went well.
- Anything that requires the contractor to focus on quality is a good thing.
- This method of data gathering appeared to work well.
- At first, I believed so (PRS development process was complicated and lengthy). However, once people got familiar with the intent and process, I think there was a comfort level.
- If the results show that a better product resulted, I would say “definitely” (to recommend implementing PRS in more pavement projects in Wisconsin).
- It got me thinking about the different factors that play into “quality pavement.”
- Assess after receiving written report (to recommend implementing PRS in more pavement projects in Wisconsin).
- Field personnel should have best assessment of this (if responsibilities and roles of WisDOT and the contractors are well defined in the PRS document).
- QA/QC measures achieve accurate measurements.
- Final report should address how WisDOT should proceed if PRS are to be used on future WisDOT projects (if PRS development process was complicated and lengthy).
- Perhaps start with just a couple of more difficult/complicated projects (to recommend implementing PRS in more pavement projects in Wisconsin).
- But not enough so that I could develop pay factor curves for future projects (was the PRS development process educational for you).
- QMP has the basic same principles/incentives.
- Existing QMP measures quality.

- Depends on the project. Long, rural projects with no gaps – yes. Urban projects with staging and paving gaps – no (to recommend implementing PRS in more pavement projects in Wisconsin).
- Need to watch balance of pay factors carefully to assure that contractors do not start to favor one property more heavily at the expense of another.
- Not compared to some other spec development processes that has taken place here (if PRS development process was complicated and lengthy).
- Yes, while watching the balance of pay factors and making adjustments (to recommend implementing PRS in more pavement projects in Wisconsin).

Qualitative Assessment Summary

The general consensus was that the PRS process was not complicated or lengthy and that it should be implemented on more Wisconsin PCC pavement projects. However, WisDOT would require training in the process of development of pay factors, particularly with PaveSpec 3.0. Success of regular implementation of PRS in Wisconsin would require that all stakeholders including contractors, industry, WisDOT, and FHWA be committed to it.

Other aspects of the PRS that need to be considered include how to handle gaps/ramps etc., differences in aggregate sources for various locations throughout Wisconsin, and projects with multiple stages. The PRS process would need to be standardized so that it can be applied easily for different projects. However, the balance of pay factors should be carefully watched and adjusted to ensure that contractors do not start to favor one AQC at the expense of others.

CHAPTER 6. SUMMARY AND RECOMMENDATIONS

SUMMARY

This trial implementation of a PRS on I-39/90/94 in Dane County, Wisconsin, provided WisDOT and the Wisconsin concrete industry with an understanding of the PRS development and implementation process, and the results achieved. It also provided useful information for developing future PRS projects by WisDOT and other agencies.

Significant efforts were made up front to develop a practical and effective PRS by the researchers, WisDOT, and the Project Oversight Panel. Four AQCs were selected for consideration in the mainline pavement PRS: PCC 28-day compressive strength, slab thickness, entrained air content, and initial smoothness ($PI_{0.0}$). Three AQCs were selected for consideration in the shoulder PRS: PCC 28-day compressive strength, slab thickness, and entrained air content.

Acceptance levels that were selected for these characteristics are shown previously in table 6. Inputs listed in Chapter 3 were used to develop pay factor curves using the PaveSpec 3.0 software available from the FHWA. These pay factor curves are based on economic justification, not opinion as to the impact of changes in AQCs on a project. A detailed but practical field sampling and testing plan was also prepared. The PRS is included in appendix B.

The I-39/90/94 PCC paving used to test the PRS was completed between March and June 2006. The project included three 12-ft wide lanes in both the eastbound and westbound directions, accompanied by 12-ft wide inside shoulders and 10-ft wide outside shoulders. The results of 18 mainline lots and the 12 PCC shoulder lots were obtained and analyzed using the PRS procedure. Pay factors were determined for all lots and summarized in tables and graphs.

The average pay incentive was 4.9 percent for the mainline pavement and 1.3 percent for the shoulder pavement. This incentive was due to PCC strength and PCC slab thickness being of somewhat better quality than the specified target values and initial smoothness being significantly better quality than the target values. Air content was somewhat below the target values on average and thus reduced the overall incentive pay. Under the current WisDOT QMP program, the contractor would have received an average pay incentive of 3.0 percent for the mainline pavement and 1.3 percent for the PCC shoulder.

Following construction, separate meetings were held after construction to obtain responses by the contractor and WisDOT staff regarding the PRS implementation project. Many interesting comments were received from the contractor, WCPA, and the WisDOT staff involved. The comments indicated general support of the PRS approach.

This project provides strong support for the concept that a PRS that considers AQCs that relate directly to performance and are under the control of the contractor, is practical and can produce a win-win situation for the contractor and the highway agency.

RECOMMENDATIONS

The trial PRS worked very well on this major I-39/90/94 project and all parties appear to be supportive of constructing future projects fully under PRS. Additional trial implementations of PRS are recommended on projects with higher levels of complexity (ramps, gaps, stages, etc.) to iron out all the kinks and streamline the process.

Some key recommendations are provided as follows:

- Carefully define lots and sublots.
  - Must be very carefully defined to meet the technical requirements of the PRS. This includes clear definition of the sublots and the sampling of all AQCs from each sublot, which are then used to compute the means and standard deviations for the lots and the subsequent pay factor.
  - Must also allow for flexibility of unusual situations in the field, such as partial sublots and lots.
  - The definitions of lots and sublots developed for I-39/90/94 appeared to meet both technical requirements and be practical in the field.
- Carefully select target means and standard deviations of AQCs.
  - Carefully consider these selections so that the level of quality for the project is as desired by the owning agency at the 100 percent pay level.
  - Determine if the agency wishes to increase the previously typical State quality level, decrease the quality level, or specify a quality level similar to previous contracts that performed well. Given the typical incentive level provided by the economic analysis, the level of quality will likely increase over that of previous projects.
  - The balance of pay factors between different AQCs should be carefully watched and adjusted to ensure that contractors do not start favoring one AQC at the expense of another. This was done by limiting the maximum pay factors for each AQC and the total possible pay factor for a lot, and by adjusting the theoretical pay factor curves in limited cases to prevent undesirable high or low target values for some AQCs.
- Carefully consider impacts of pay factor curves derived using PaveSpec on the highway agency and the contractor.
  - The incentives and disincentives must be sufficient to cause the contractor to take actions to consider appropriate AQC targets, but not too large to cause management and political concerns.
  - Limits must be placed on each AQC so that above which no further incentive is paid (MQL) and below which the lot acceptance is decided through other means than pay reduction (RQL). These are absolutely essential to avoid problems and prevent the contractor from significantly reducing one factor with the goal of maximizing profit.
  - Some practical adjustment may be needed in some of the theoretical economic-based pay factor curves to meet the desires of the highway agency.
- Given the positive outcome of this project and the positive comments from contractor and WisDOT staff, it is recommended that WisDOT conduct additional PRS projects. Procedures to implement a PRS throughout the State will require some thought. It might be that projects could be divided into two or three levels depending on complexity of the

job (e.g., urban projects consisting of frequent interchanges, varying geometric profiles, and many stages of work versus rural projects with limited interchanges, a fairly uniform profile, and minimal staging requirements), and that “generic” pay factor curves could be developed and used for projects that fall into each of these levels.

BENEFITS OF PRS

The clear and rational approach of PRS, with well-defined quality levels that are understandable to the contractor, are expected to lead to significantly improved highway construction quality, improved pavement performance, and a reduction in LCC. The full possibility of PRS may also offer the opportunity to optimize the design and construction process to provide acceptable performance for lower LCC’s at acceptable risks. Key benefits of PRS are listed below, some of which were demonstrated on this I-39/90/94 project:

- Better linkage between design and construction. The very conservative design of the I-39/90/94 project was evident in relatively flat pay factor curve for thickness. This was acceptable for the most part by adjusting the lower end of the thickness curve to increase the disincentive for building a thinner pavement.
- Higher quality pavements (through incentives). The true effect of lower variability (all AQCs had lower standard deviations than the target) may also have benefits that are not calculated or known at this time.
- Testing that focuses on key quality characteristics that relate to the pavement long-term performance. Any factor that is measured and paid by incentive will receive a lot of attention and focus on the project. It will not be ignored. Other AQCs such as dowel-bar alignment, tie-bar alignment, and consolidation around dowels would add to the comprehensiveness of a PRS project and avoid a disastrous situation where something (such as tie-bar location) is not measured until well into the project only to discover it is out of specification.
- Incentives and disincentives that are justified through reduction or increase in future LCC. They are not based solely on judgment. The PaveSpec program provided reasonable pay factors for I-39/90/94.
- Specifications that give the contractors more responsibility and flexibility yet increased accountability may benefit both the contractor and owner. Additional full PRS projects are needed to further demonstrate this possibility.
- Allow contractors to be more innovative and more competitive. When contractors are asked what they do with the incentives they obtain from projects, most state that part of the incentive is used to lower their initial bid to improve their possibility to win the project and part is used to update aging equipment when possible.
- PRS may provide a lower “fear factor” for contractors and less administrative complexity and work over the long term for the agency than warranty specifications.

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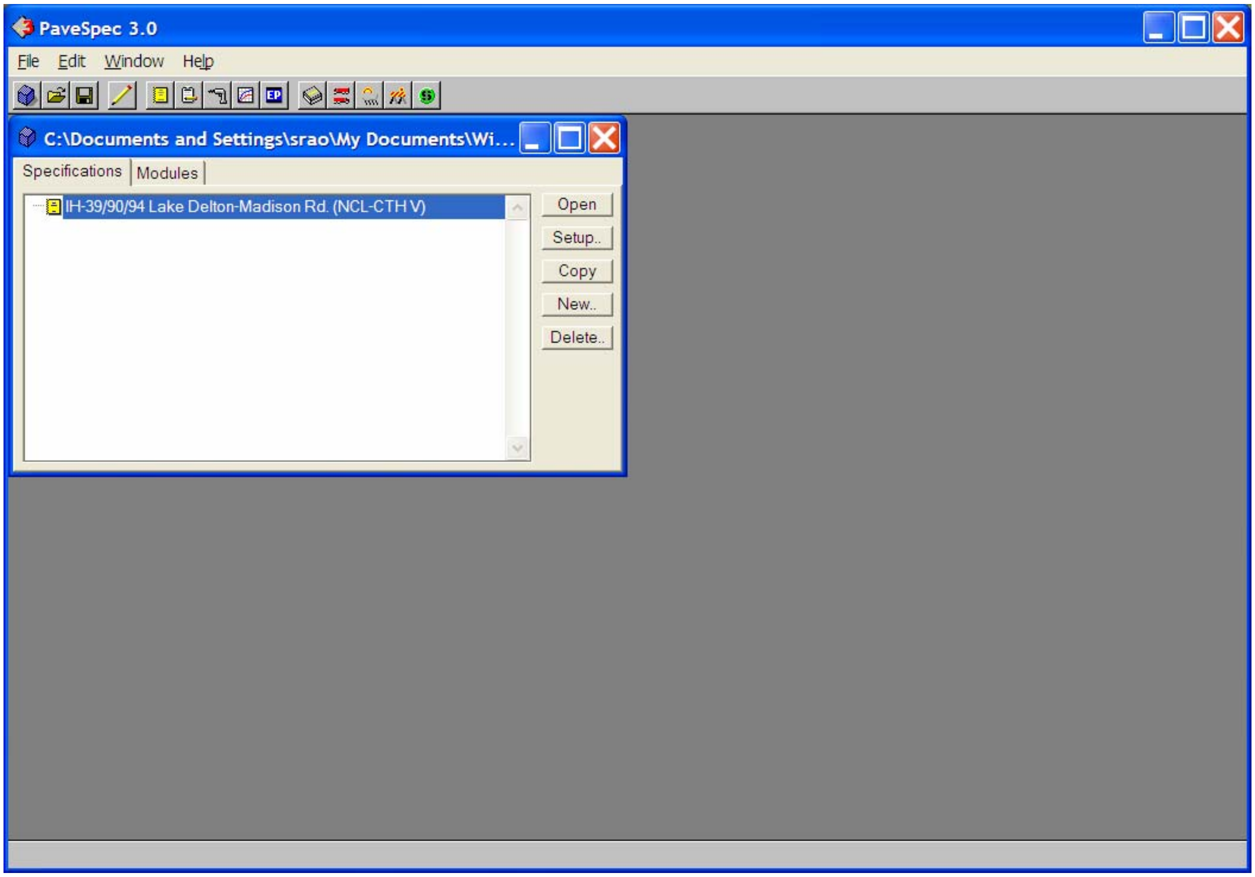
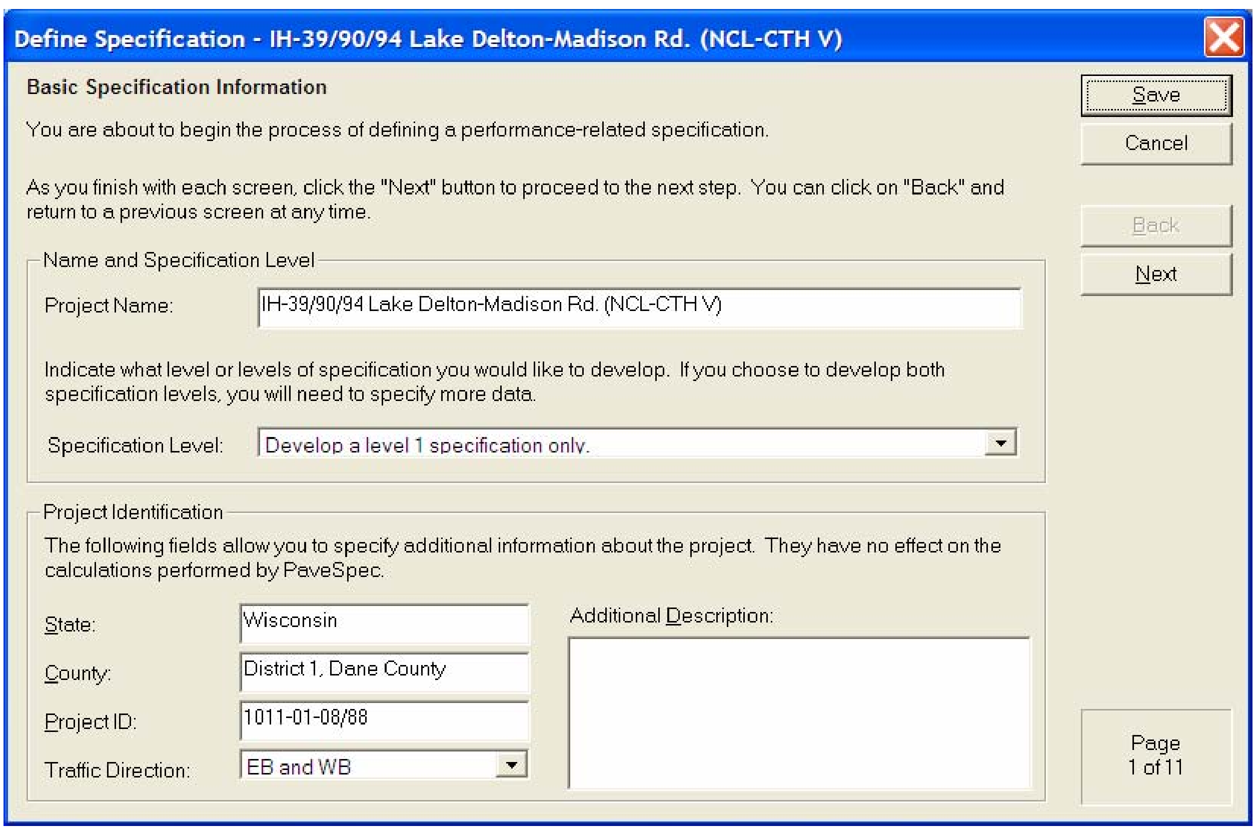
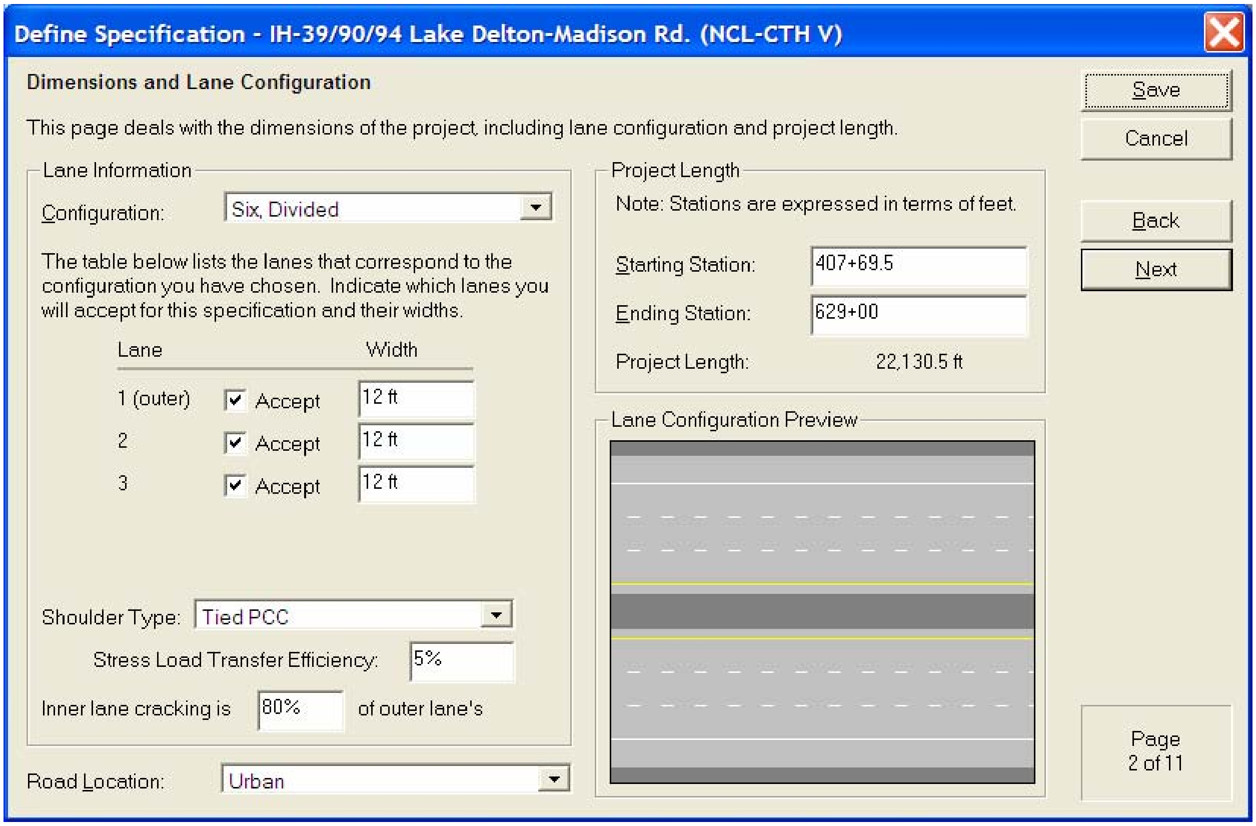
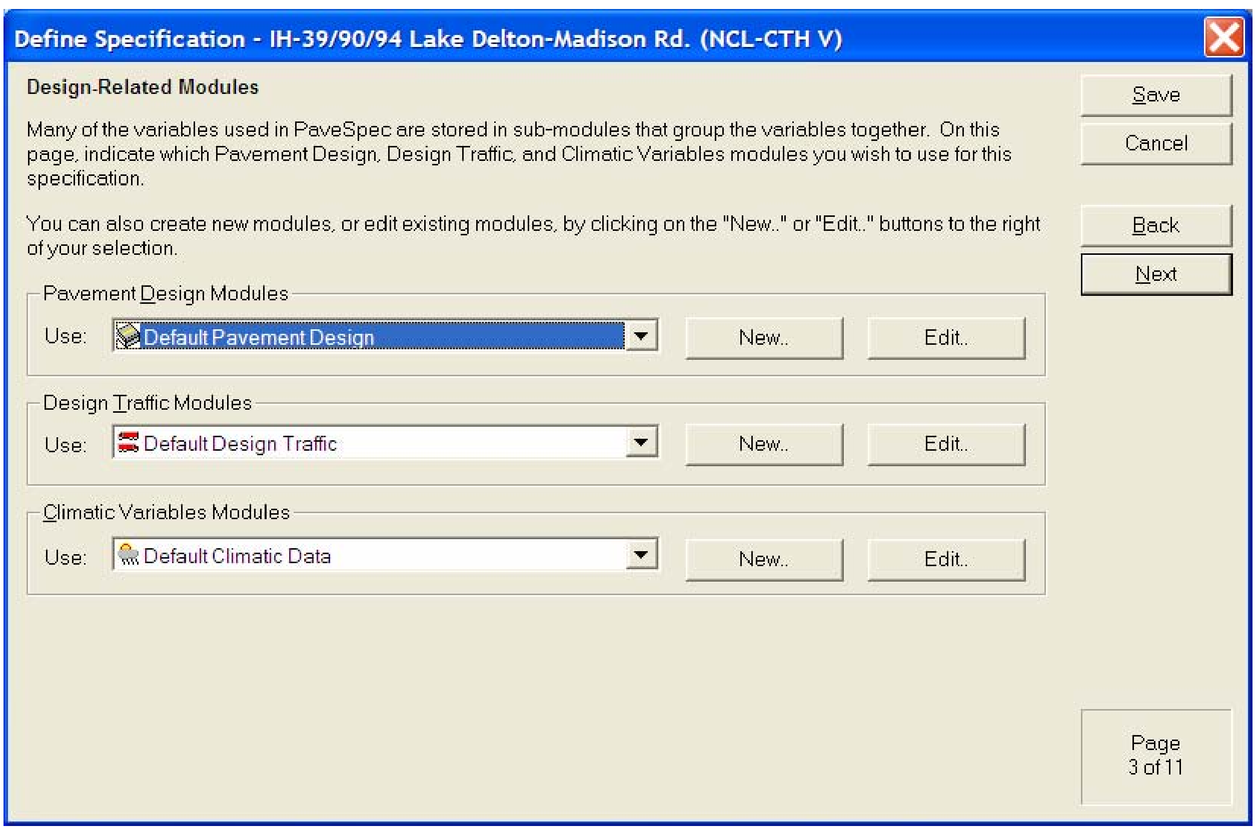
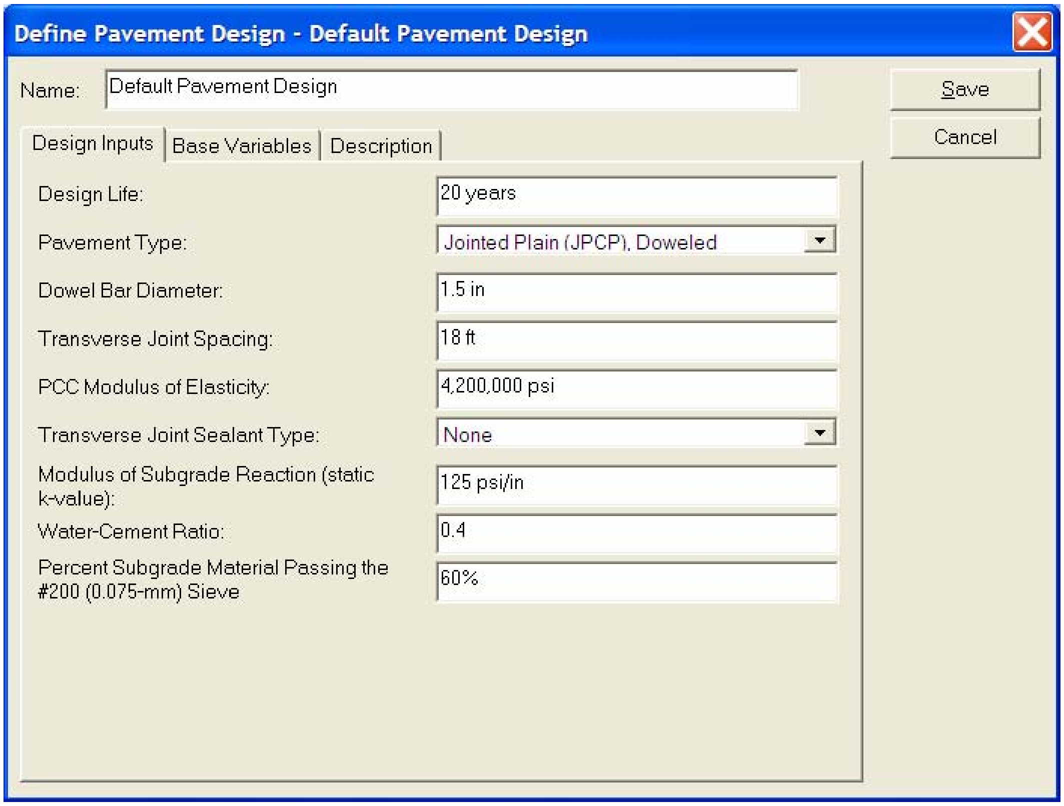
APPENDIX A: PAVESPEC 3.0 SCREENSHOTS

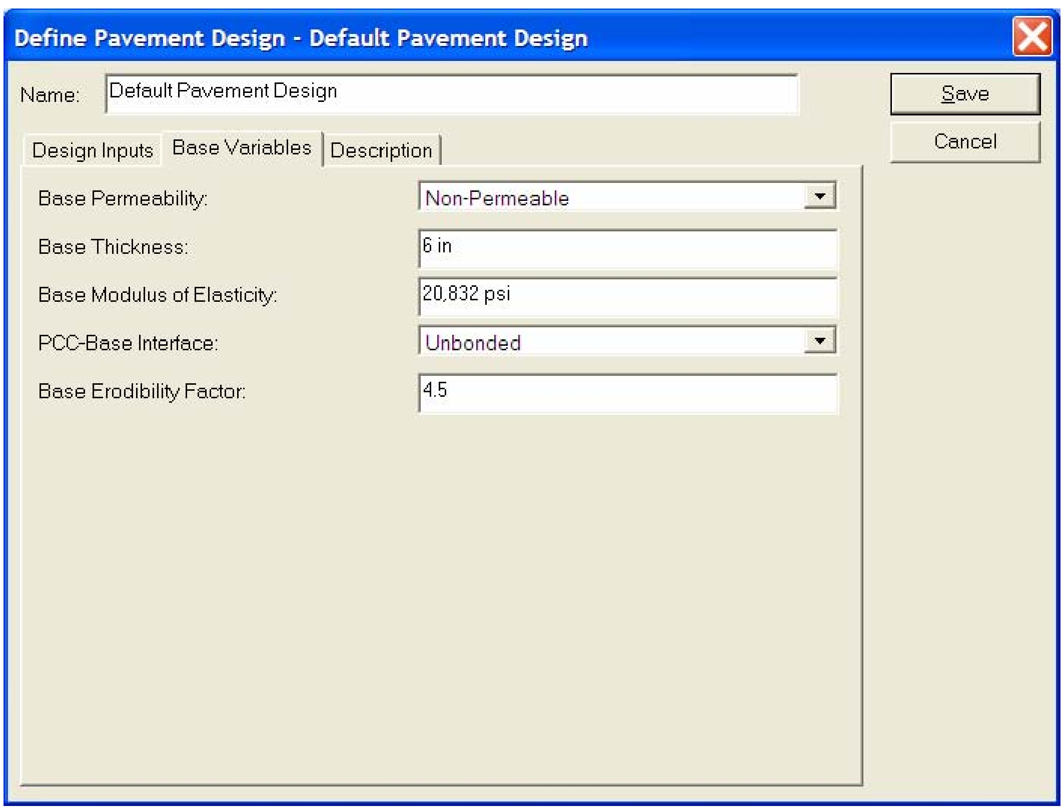

PaveSpec 3.0
File Edit Window Help
C:\Documents and Settings\srao\My Documents\Wi...
Specifications
Modules
IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Open
Setup..
Copy
New..
Delete..

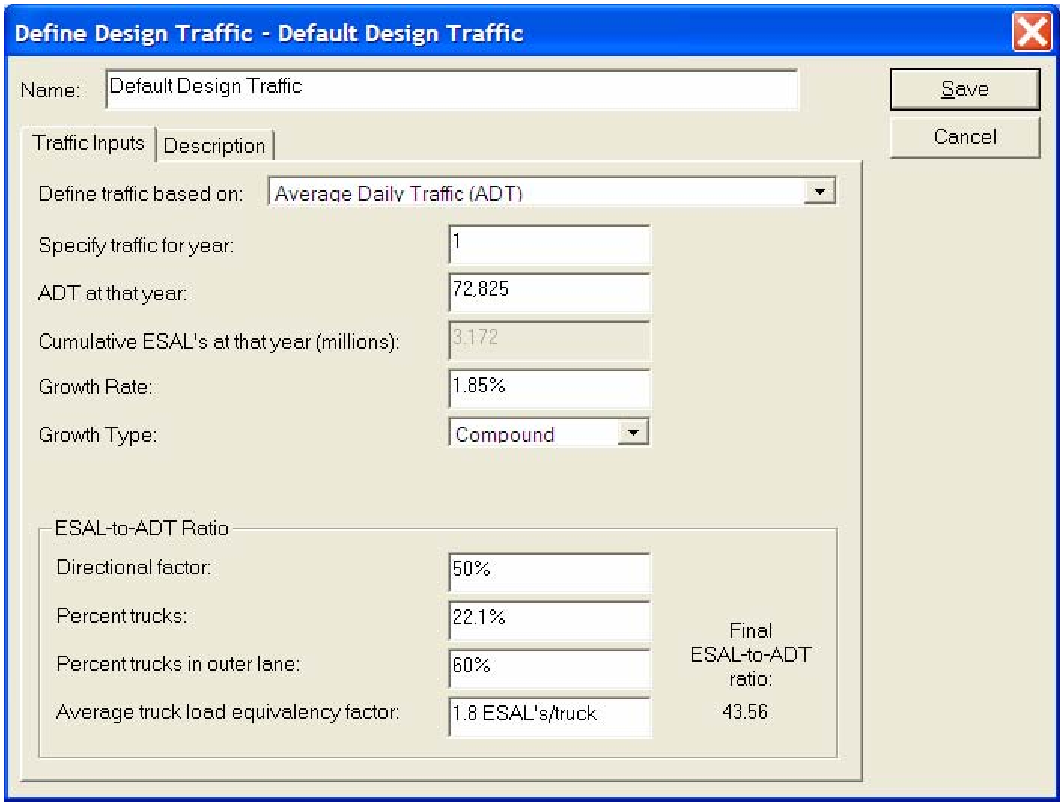

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Basic Specification Information
You are about to begin the process of defining a performance-related specification.
As you finish with each screen, click the "Next" button to proceed to the next step. You can click on "Back" and return to a previous screen at any time.
Name and Specification Level
Project Name:
IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Indicate what level or levels of specification you would like to develop. If you choose to develop both specification levels, you will need to specify more data.
Specification Level:
Develop a level 1 specification only.
Project Identification
The following fields allow you to specify additional information about the project. They have no effect on the calculations performed by PaveSpec.
State:
Wisconsin
County:
District 1, Dane County
Project ID:
1011-01-08/88
Traffic Direction:
EB and WB
Additional Description:
Save
Cancel
Back
Next
Page
1 of 11

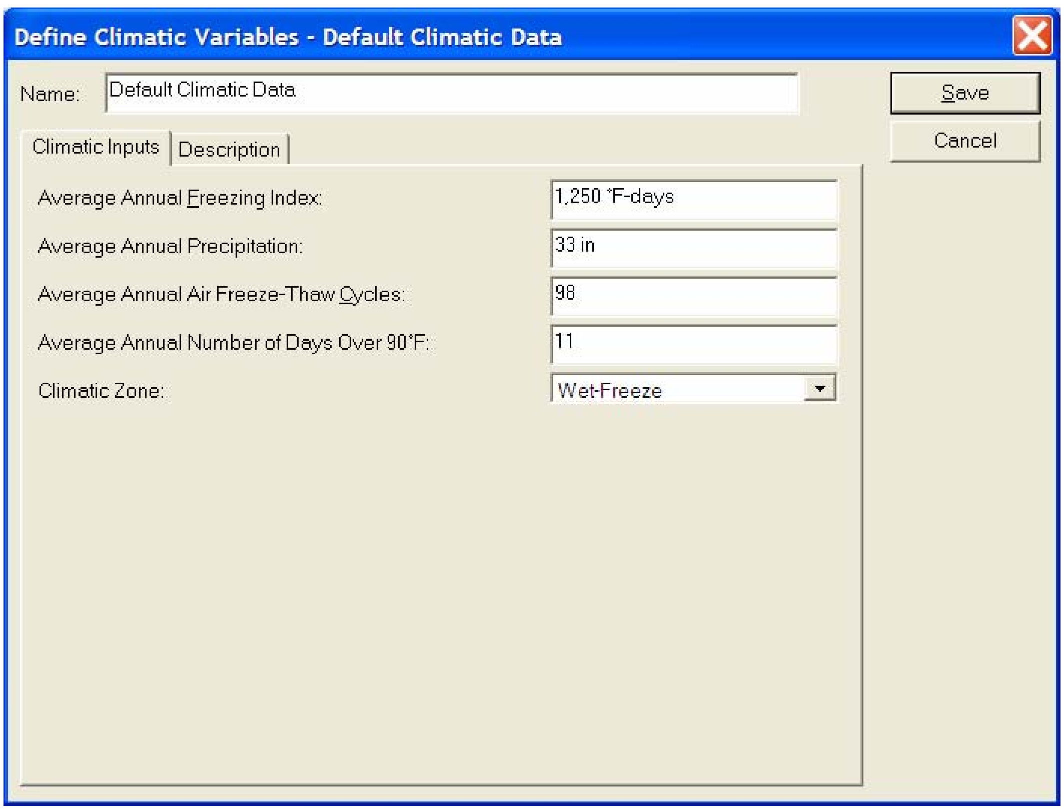

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Dimensions and Lane Configuration
This page deals with the dimensions of the project, including lane configuration and project length.
Lane Information
Configuration:
Six, Divided
The table below lists the lanes that correspond to the configuration you have chosen. Indicate which lanes you will accept for this specification and their widths.
Lane
Width
1 (outer)
Accept
12 ft
2
Accept
12 ft
3
Accept
12 ft
Shoulder Type:
Tied PCC
Stress Load Transfer Efficiency:
5%
Inner lane cracking is
80%
of outer lane's
Road Location:
Urban
Project Length
Note: Stations are expressed in terms of feet.
Starting Station:
407+69.5
Ending Station:
629+00
Project Length:
22,130.5 ft
Lane Configuration Preview
Save
Cancel
Back
Next
Page
2 of 11

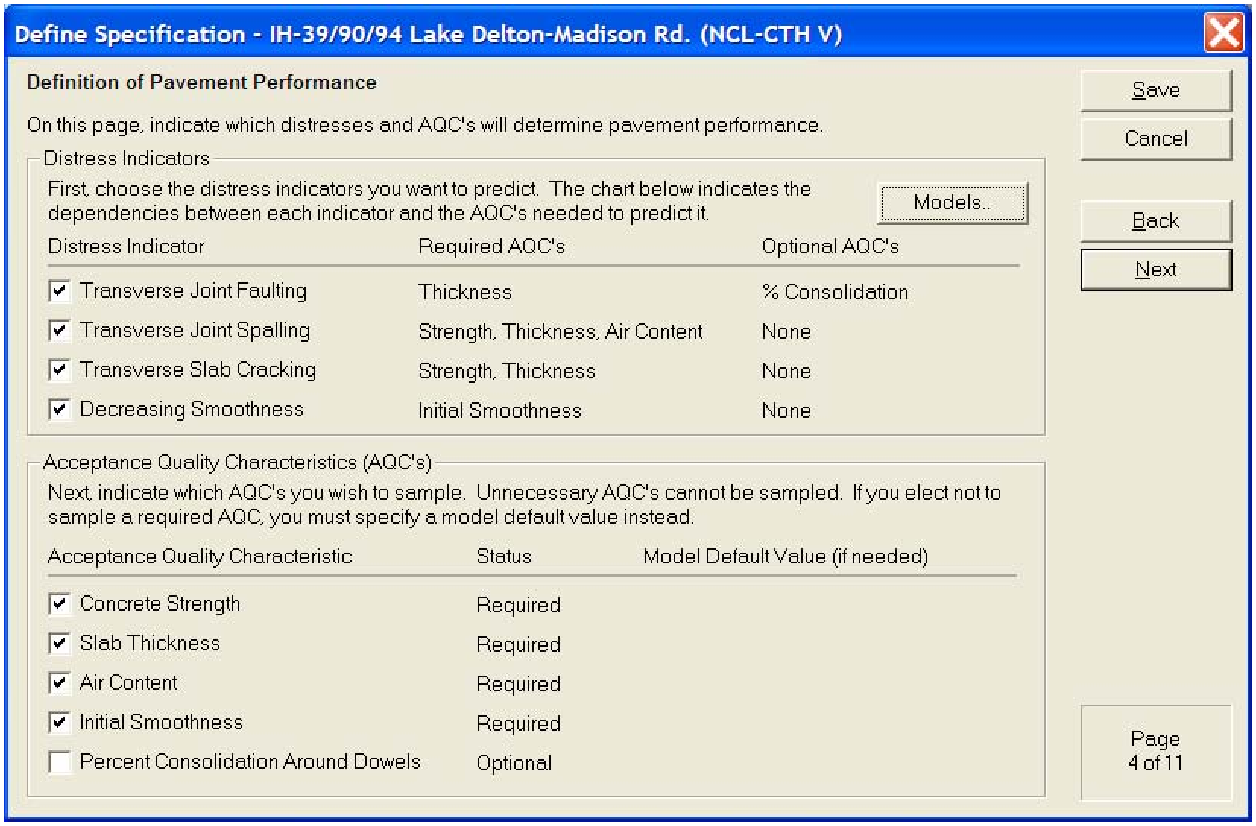

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Design-Related Modules
Many of the variables used in PaveSpec are stored in sub-modules that group the variables together. On this page, indicate which Pavement Design, Design Traffic, and Climatic Variables modules you wish to use for this specification.
You can also create new modules, or edit existing modules, by clicking on the "New.." or "Edit.." buttons to the right of your selection.
Pavement Design Modules
Use:
Default Pavement Design
New..
Edit..
Design Traffic Modules
Use:
Default Design Traffic
New..
Edit..
Climatic Variables Modules
Use:
Default Climatic Data
New..
Edit..
Save
Cancel
Back
Next
Page
3 of 11

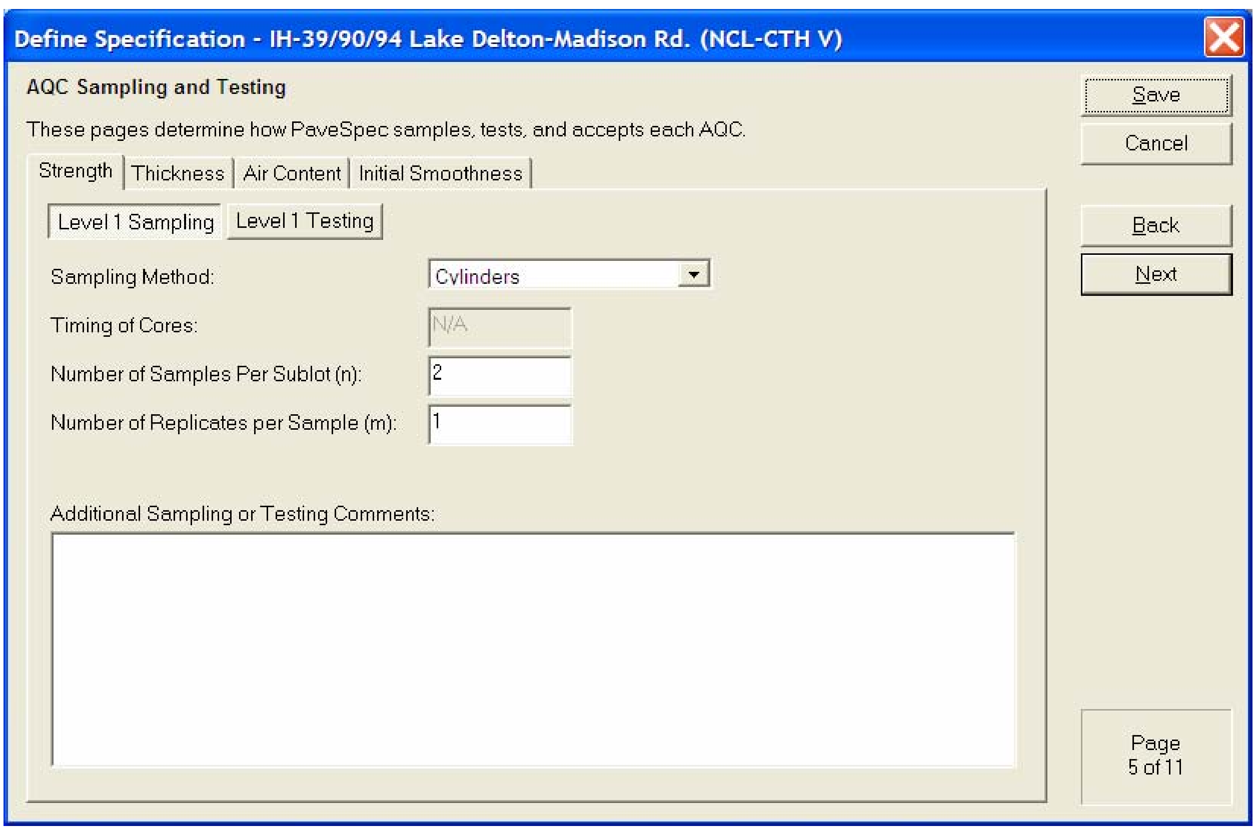

Define Pavement Design - Default Pavement Design
Name:
Default Pavement Design
Save
Cancel
Design Inputs
Base Variables
Description
Design Life:
20 years
Pavement Type:
Jointed Plain (JPCP), Doweled
Dowel Bar Diameter:
1.5 in
Transverse Joint Spacing:
18 ft
PCC Modulus of Elasticity:
4,200,000 psi
Transverse Joint Sealant Type:
None
Modulus of Subgrade Reaction (static k-value):
125 psi/in
Water-Cement Ratio:
0.4
Percent Subgrade Material Passing the #200 (0.075-mm) Sieve
60%

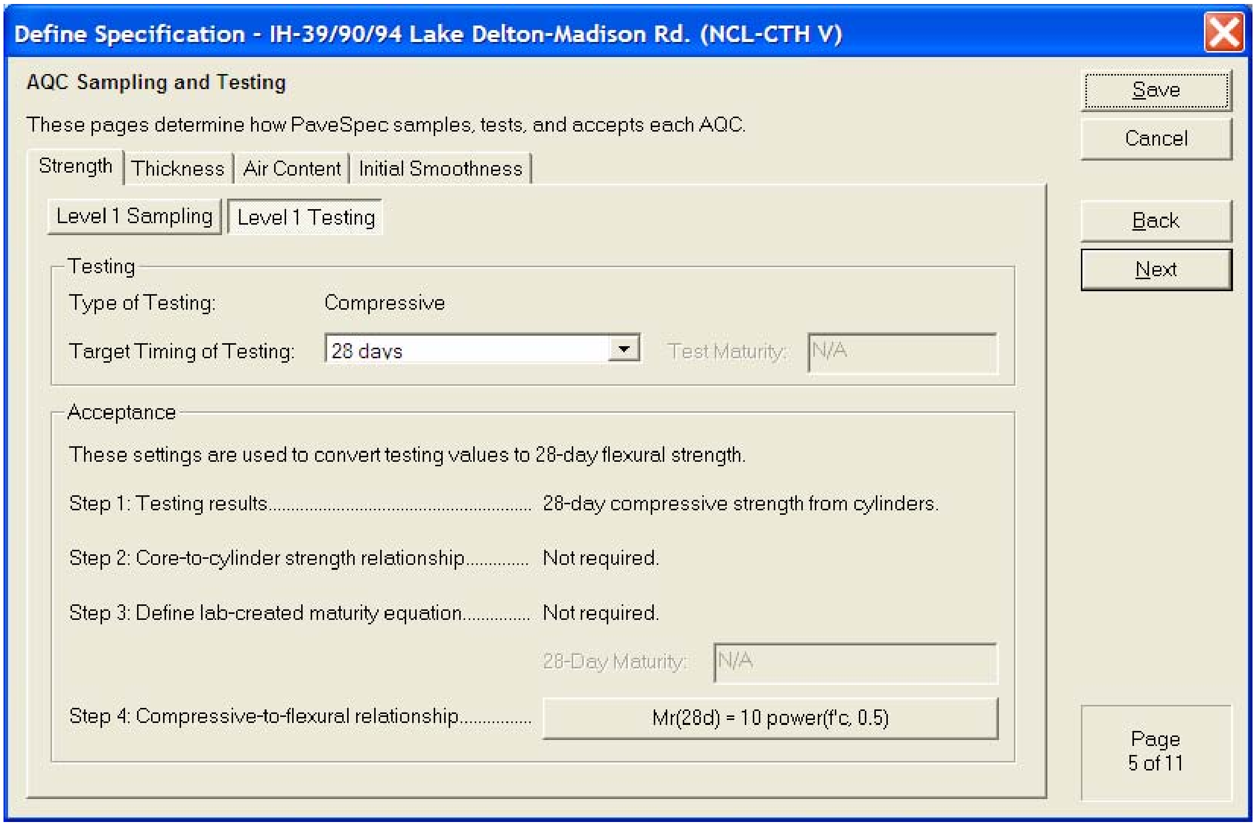

Define Pavement Design - Default Pavement Design
Name:
Default Pavement Design
Save
Cancel
Design Inputs
Base Variables
Description
Base Permeability:
Non-Permeable
Base Thickness:
6 in
Base Modulus of Elasticity:
20,832 psi
PCC-Base Interface:
Unbonded
Base Erodibility Factor:
4.5


Define Design Traffic - Default Design Traffic
Name:
Default Design Traffic
Save
Cancel
Traffic Inputs
Description
Define traffic based on:
Average Daily Traffic (ADT)
Specify traffic for year:
1
ADT at that year:
72,825
Cumulative ESAL's at that year (millions):
3.172
Growth Rate:
1.85%
Growth Type:
Compound
ESAL-to-ADT Ratio
Directional factor:
50%
Percent trucks:
22.1%
Percent trucks in outer lane:
60%
Average truck load equivalency factor:
1.8 ESAL's/truck
Final ESAL-to-ADT ratio:
43.56

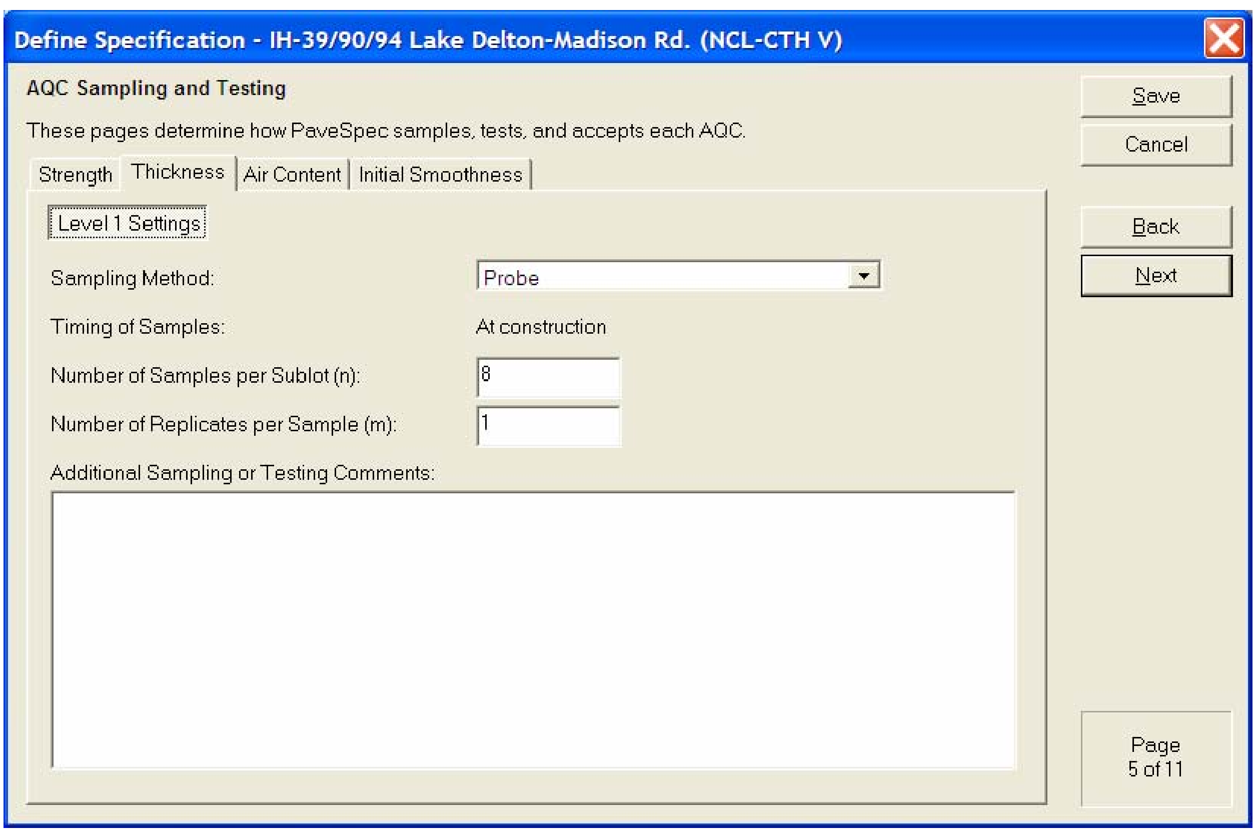

Define Climatic Variables - Default Climatic Data
Name:
Default Climatic Data
Save
Cancel
Climatic Inputs
Description
Average Annual Freezing Index:
1,250 °F-days
Average Annual Precipitation:
33 in
Average Annual Air Freeze-Thaw Cycles:
98
Average Annual Number of Days Over 90°F:
11
Climatic Zone:
Wet-Freeze


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Definition of Pavement Performance
On this page, indicate which distresses and AQC's will determine pavement performance.
Distress Indicators
First, choose the distress indicators you want to predict. The chart below indicates the dependencies between each indicator and the AQC's needed to predict it.
Models..
Distress Indicator
Required AQC's
Optional AQC's
Transverse Joint Faulting
Thickness
% Consolidation
Transverse Joint Spalling
Strength, Thickness, Air Content
None
Transverse Slab Cracking
Strength, Thickness
None
Decreasing Smoothness
Initial Smoothness
None
Acceptance Quality Characteristics (AQC's)
Next, indicate which AQC's you wish to sample. Unnecessary AQC's cannot be sampled. If you elect not to sample a required AQC, you must specify a model default value instead.
Acceptance Quality Characteristic
Status
Model Default Value (if needed)
Concrete Strength
Required
Slab Thickness
Required
Air Content
Required
Initial Smoothness
Required
Percent Consolidation Around Dowels
Optional
Save
Cancel
Back
Next
Page
4 of 11

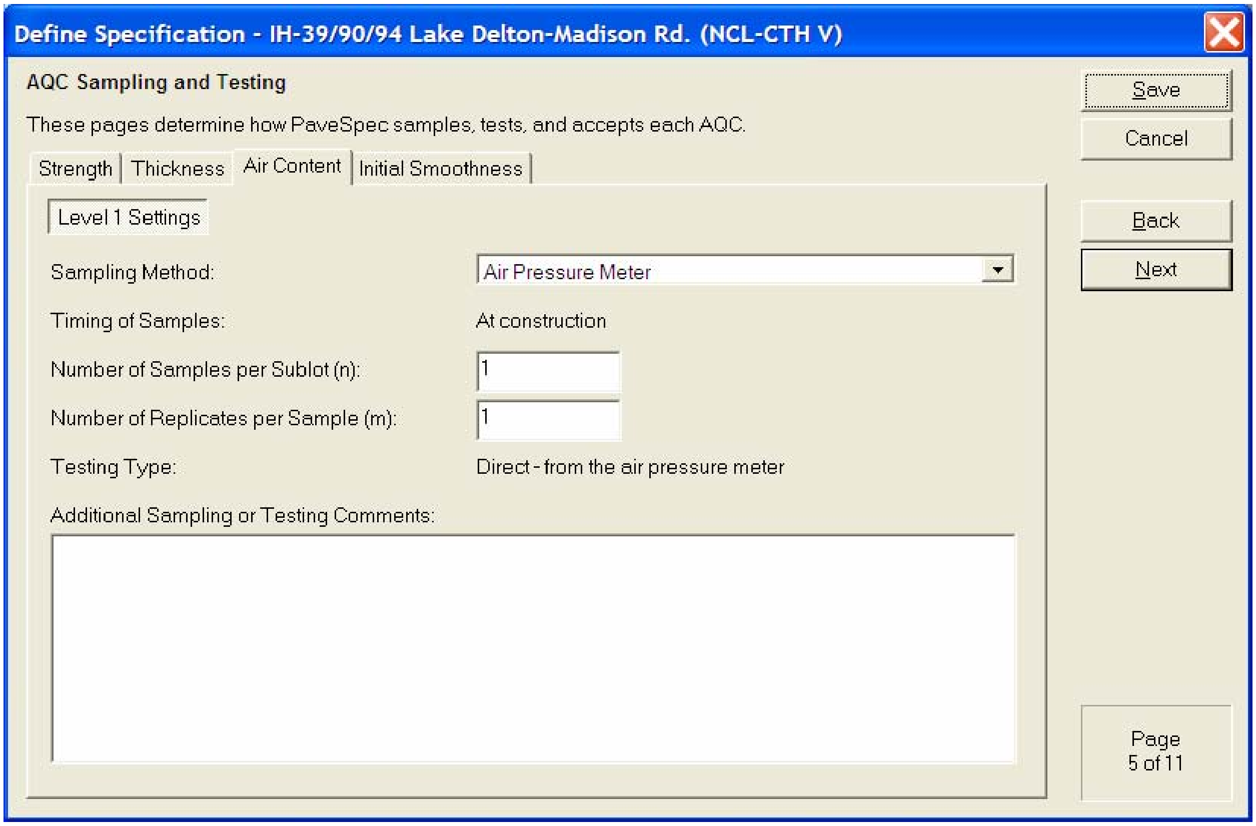

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
AQC Sampling and Testing
These pages determine how PaveSpec samples, tests, and accepts each AQC.
Strength
Thickness
Air Content
Initial Smoothness
Level 1 Sampling
Level 1 Testing
Sampling Method:
Cylinders
Timing of Cores:
N/A
Number of Samples Per Sublot (n):
2
Number of Replicates per Sample (m):
1
Additional Sampling or Testing Comments:
Save
Cancel
Back
Next
Page
5 of 11

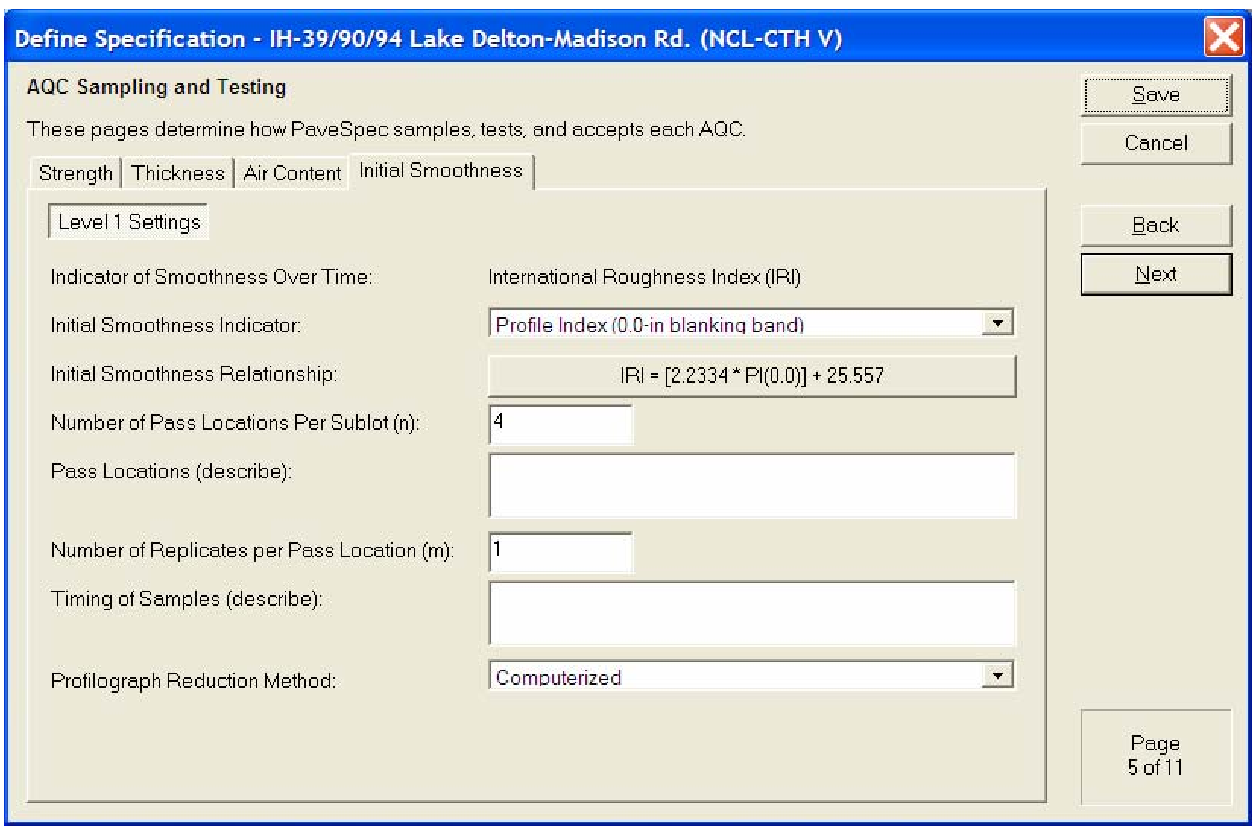


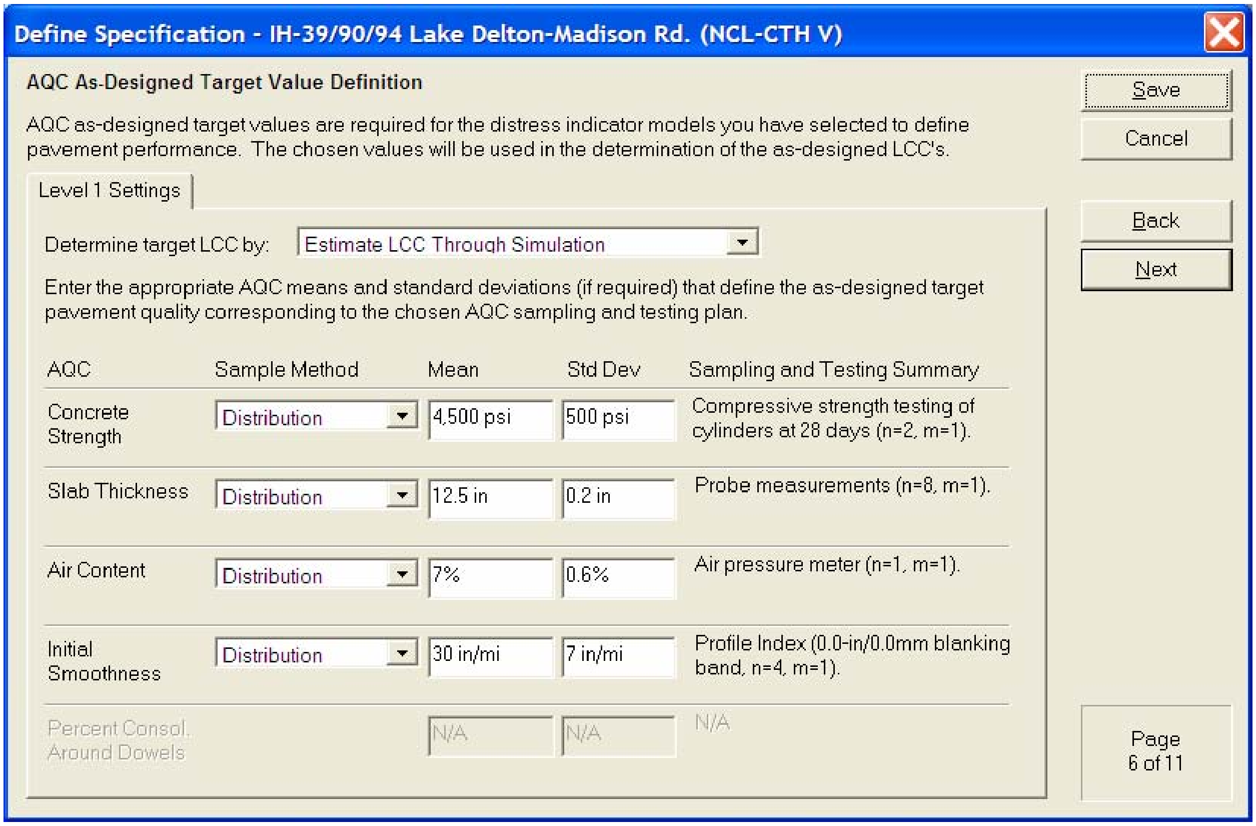
Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
AQC Sampling and Testing
These pages determine how PaveSpec samples, tests, and accepts each AQC.
Strength
Thickness
Air Content
Initial Smoothness
Level 1 Sampling
Level 1 Testing
Testing
Type of Testing:
Compressive
Target Timing of Testing:
28 days
Test Maturity:
N/A
Acceptance
These settings are used to convert testing values to 28-day flexural strength.
Step 1: Testing results.. 28-day compressive strength from cylinders.
Step 2: Core-to-cylinder strength relationship............. Not required.
Step 3: Define lab-created maturity equation.............. Not required.
28-Day Maturity:
N/A
Step 4: Compressive-to-flexural relationship...............
Mr(28d) = 10 power(f'c, 0.5)
Save
Cancel
Back
Next
Page
5 of 11

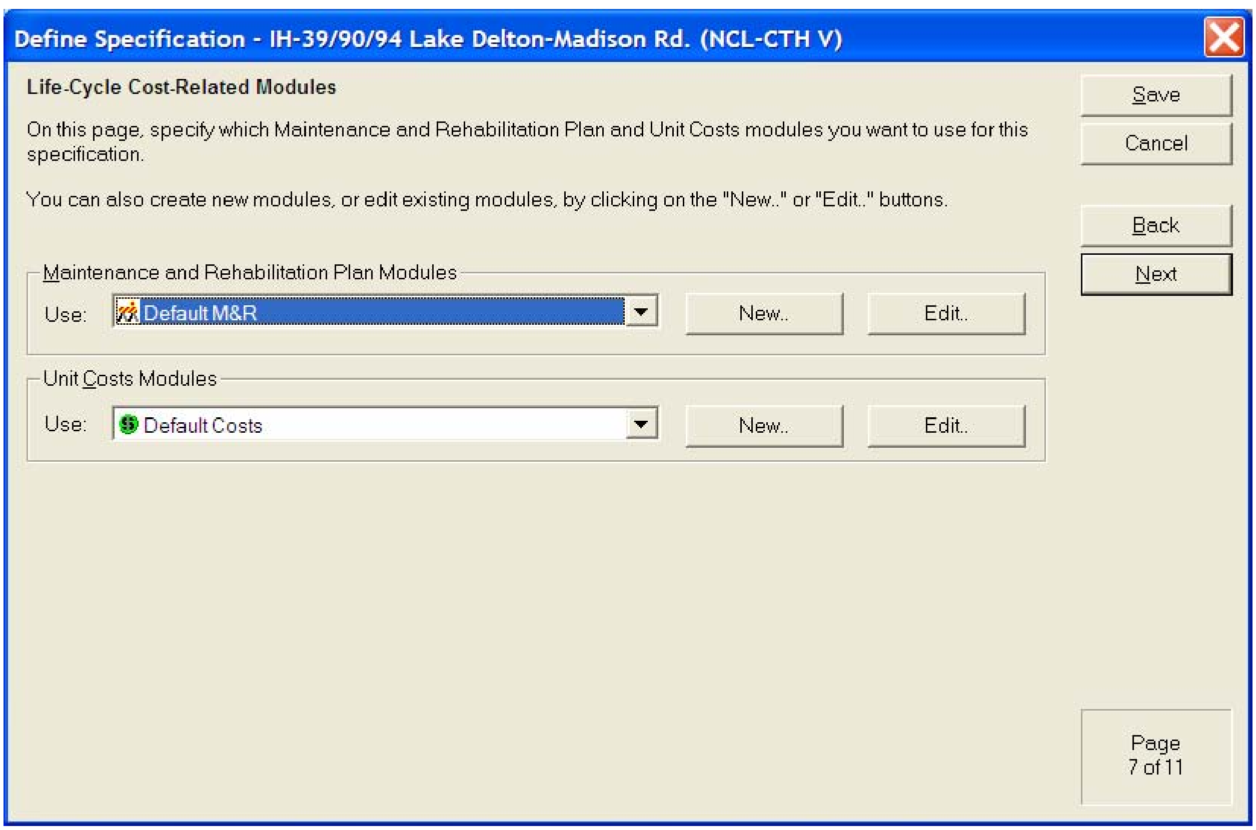


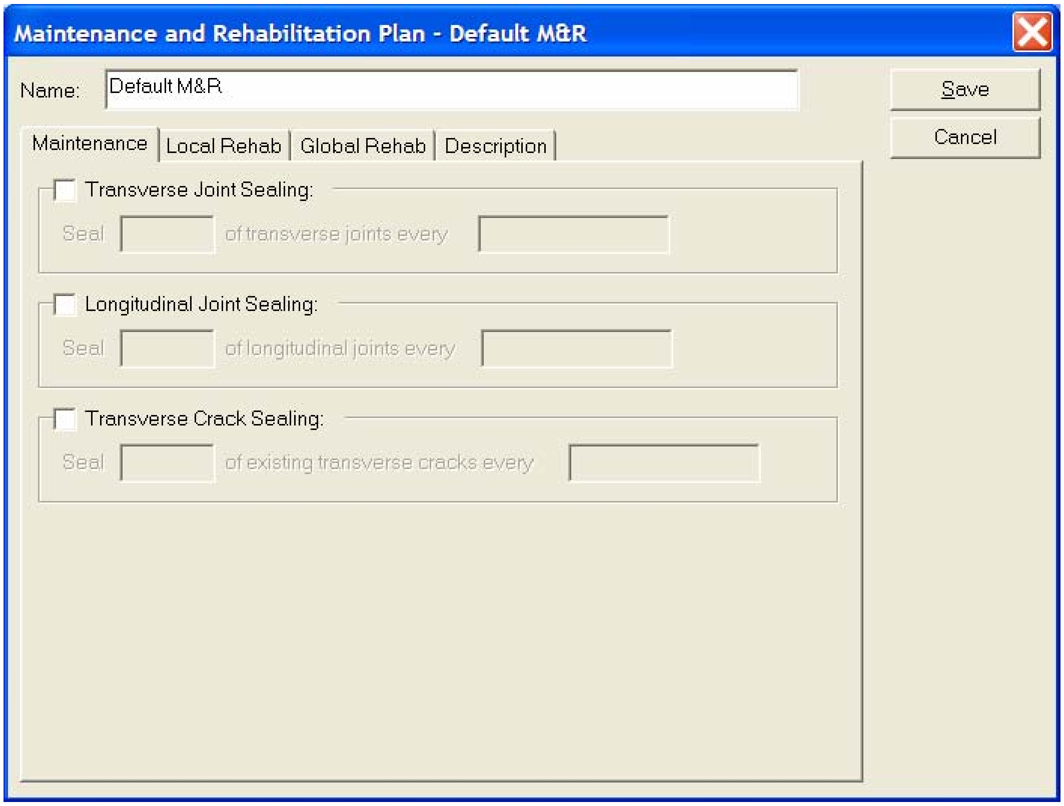
Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
AQC Sampling and Testing
These pages determine how PaveSpec samples, tests, and accepts each AQC.
Strength
Thickness
Air Content
Initial Smoothness
Level 1 Settings
Sampling Method:
Probe
Timing of Samples:
At construction
Number of Samples per Sublot (n):
8
Number of Replicates per Sample (m):
1
Additional Sampling or Testing Comments:
Save
Cancel
Back
Next
Page
5 of 11

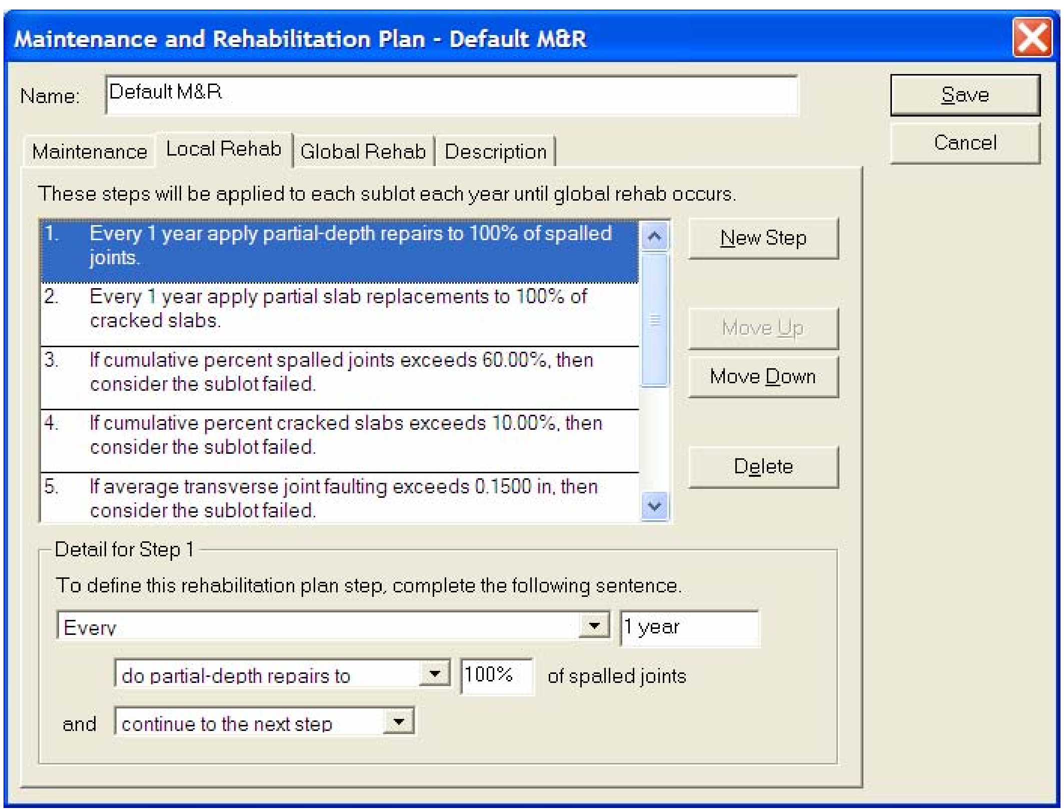

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
AQC Sampling and Testing
These pages determine how PaveSpec samples, tests, and accepts each AQC.
Strength
Thickness
Air Content
Initial Smoothness
Level 1 Settings
Sampling Method:
Air Pressure Meter
Timing of Samples:
At construction
Number of Samples per Sublot (n):
1
Number of Replicates per Sample (m):
1
Testing Type:
Direct - from the air pressure meter
Additional Sampling or Testing Comments:
Save
Cancel
Back
Next
Page
5 of 11

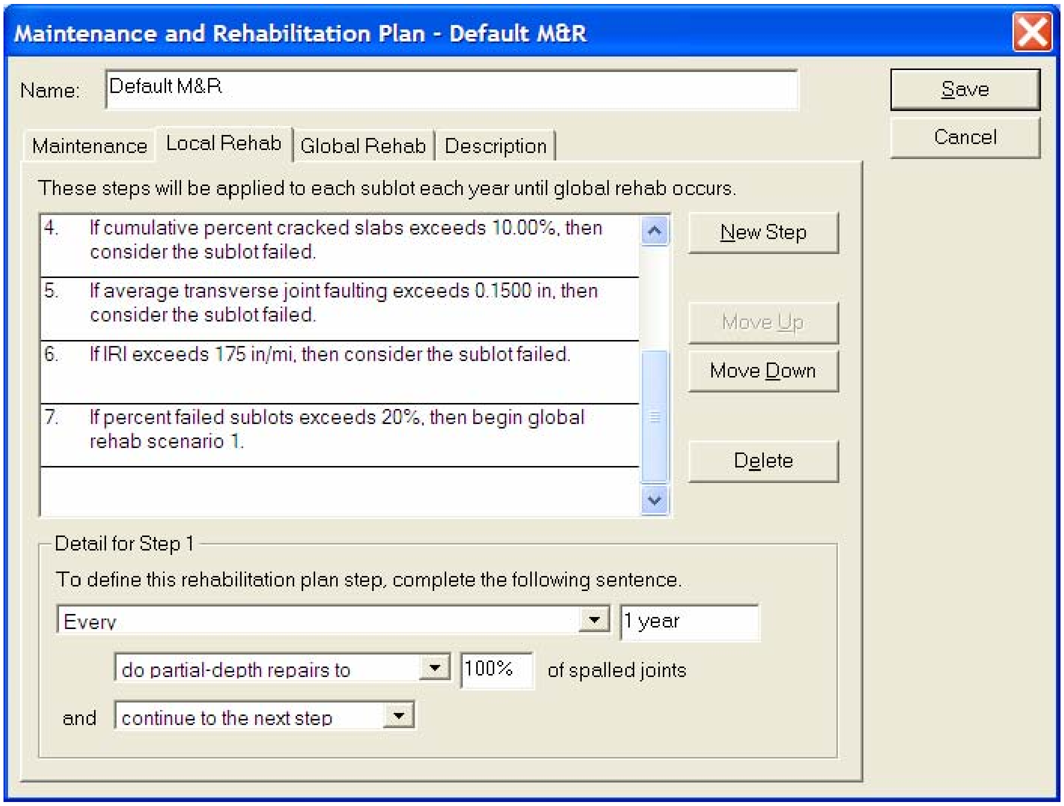

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
AQC Sampling and Testing
These pages determine how PaveSpec samples, tests, and accepts each AQC.
Strength
Thickness
Air Content
Initial Smoothness
Level 1 Settings
Indicator of Smoothness Over Time:
International Roughness Index (IRI)
Initial Smoothness Indicator:
Profile Index (0.0-in blanking band)
Initial Smoothness Relationship:
IRI = [2.2334 * PI(0.0)] + 25.557
Number of Pass Locations Per Sublot (n):
4
Pass Locations (describe):
Number of Replicates per Pass Location (m):
1
Timing of Samples (describe):
Profilograph Reduction Method:
Computerized
Save
Cancel
Back
Next
Page
5 of 11

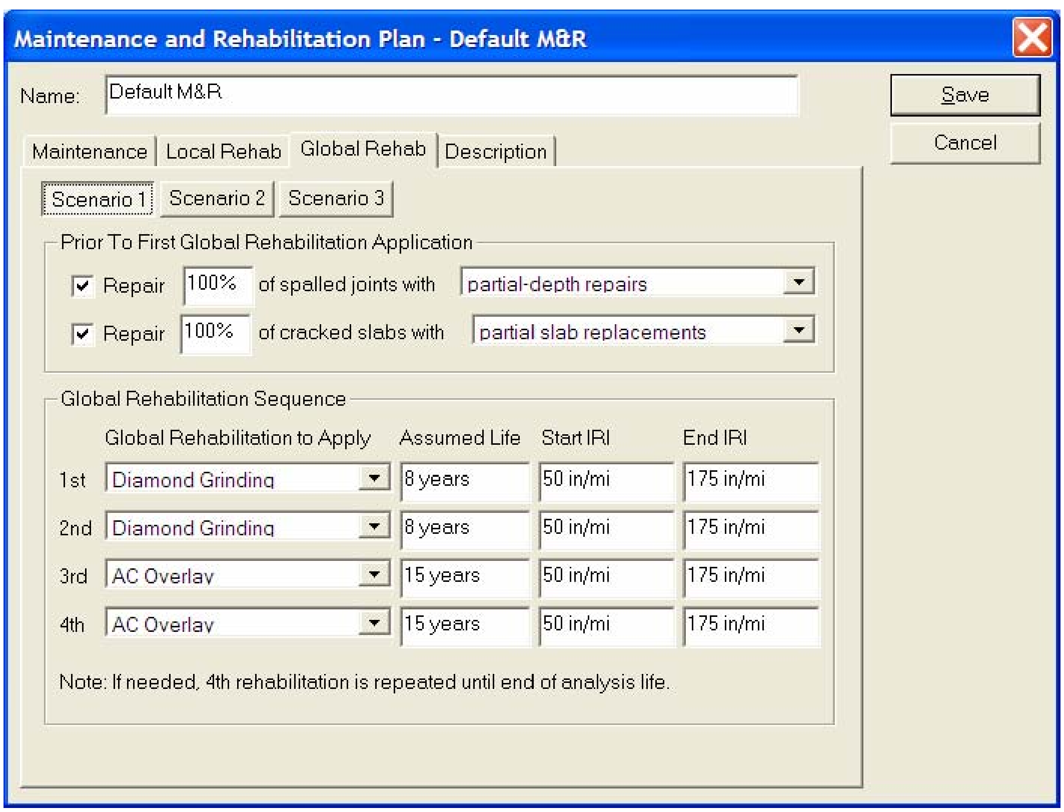

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
AQC As-Designed Target Value Definition
AQC as-designed target values are required for the distress indicator models you have selected to define pavement performance. The chosen values will be used in the determination of the as-designed LCC's.
Level 1 Settings
Determine target LCC by:
Estimate LCC Through Simulation
Enter the appropriate AQC means and standard deviations (if required) that define the as-designed target pavement quality corresponding to the chosen AQC sampling and testing plan.
AQC
Sample Method
Mean
Std Dev
Sampling and Testing Summary
Concrete Strength
Distribution
4,500 psi
500 psi
Compressive strength testing of cylinders at 28 days (n=2, m=1).
Slab Thickness
Distribution
12.5 in
0.2 in
Probe measurements (n=8, m=1).
Air Content
Distribution
7%
0.6%
Air pressure meter (n=1, m=1).
Initial Smoothness
Distribution
30 in/mi
7 in/mi
Profile Index (0.0-in/0.0mm blanking band, n=4, m=1).
Percent Consol. Around Dowels
N/A
N/A
N/A
Save
Cancel
Back
Next
Page 6 of 11

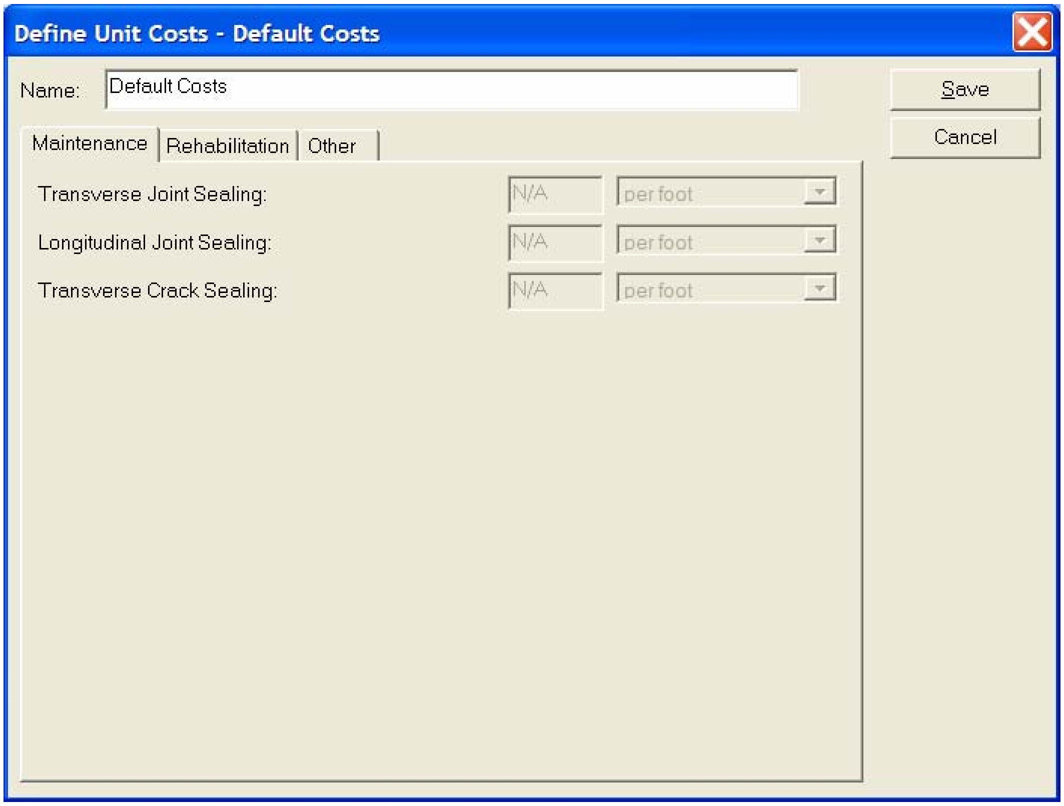

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Life-Cycle Cost-Related Modules
On this page, specify which Maintenance and Rehabilitation Plan and Unit Costs modules you want to use for this specification.
You can also create new modules, or edit existing modules, by clicking on the "New.." or "Edit.." buttons.
Maintenance and Rehabilitation Plan Modules
Use:
Default M&R
New..
Edit..
Unit Costs Modules
Use:
Default Costs
New..
Edit..
Save
Cancel
Back
Next
Page 7 of 11

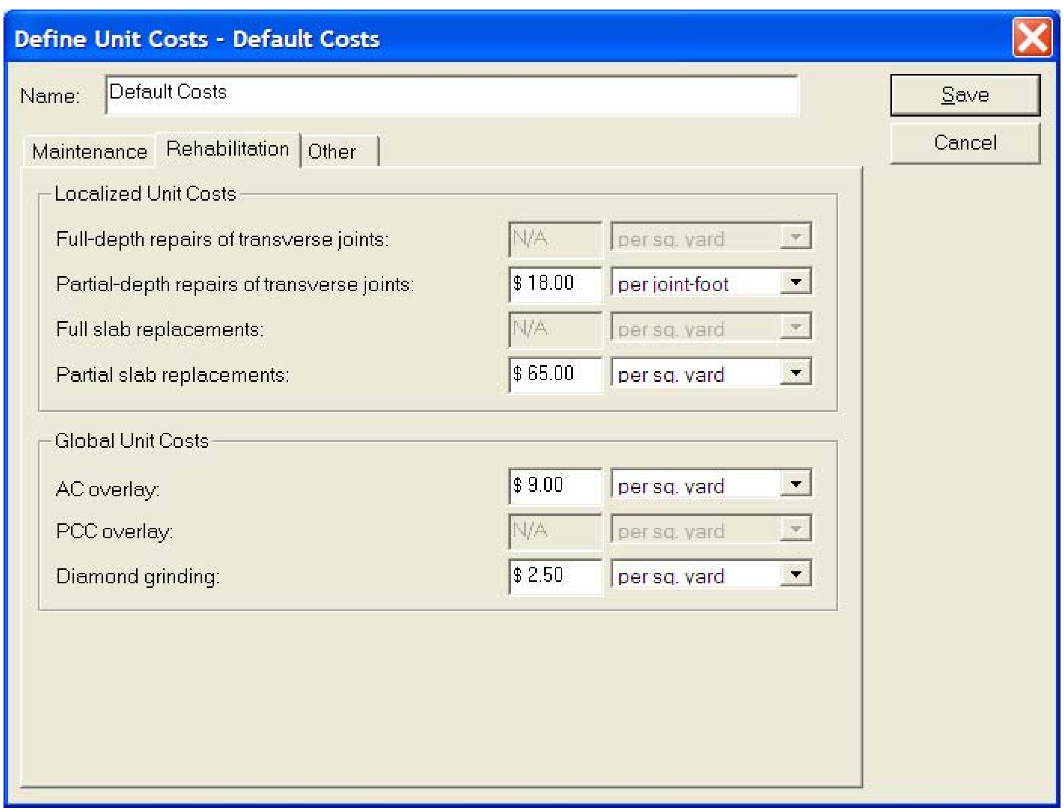

Maintenance and Rehabilitation Plan - Default M&R
Name: Default M&R
Save
Cancel
Maintenance
Local Rehab
Global Rehab
Description
Transverse Joint Sealing:
Seal
of transverse joints every
Longitudinal Joint Sealing:
Seal
of longitudinal joints every
Transverse Crack Sealing:
Seal
of existing transverse cracks every

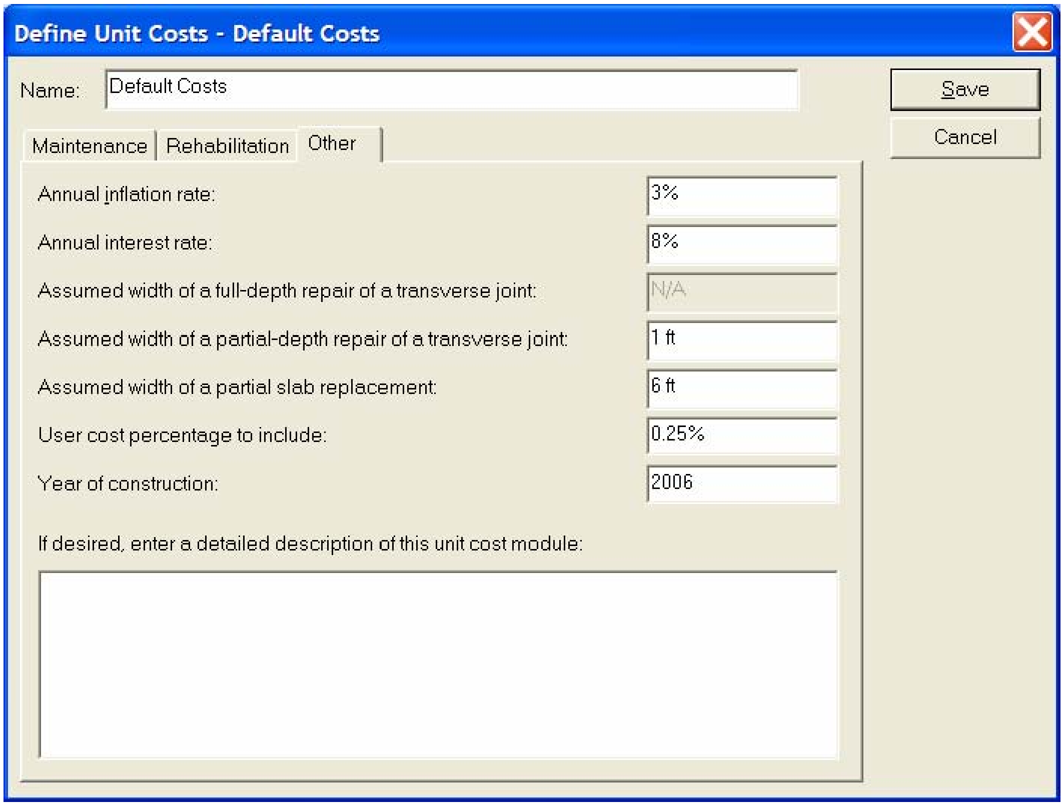

Maintenance and Rehabilitation Plan - Default M&R
Name: Default M&R
Save
Cancel
Maintenance
Local Rehab
Global Rehab
Description
These steps will be applied to each sublot each year until global rehab occurs.
1. Every 1 year apply partial-depth repairs to 100% of spalled joints.
2. Every 1 year apply partial slab replacements to 100% of cracked slabs.
3. If cumulative percent spalled joints exceeds 60.00%, then consider the sublot failed.
4. If cumulative percent cracked slabs exceeds 10.00%, then consider the sublot failed.
5. If average transverse joint faulting exceeds 0.1500 in, then consider the sublot failed.
New Step
Move Up
Move Down
Delete
Detail for Step 1
To define this rehabilitation plan step, complete the following sentence.
Every
1 year
do partial-depth repairs to
100%
of spalled joints
and
continue to the next step

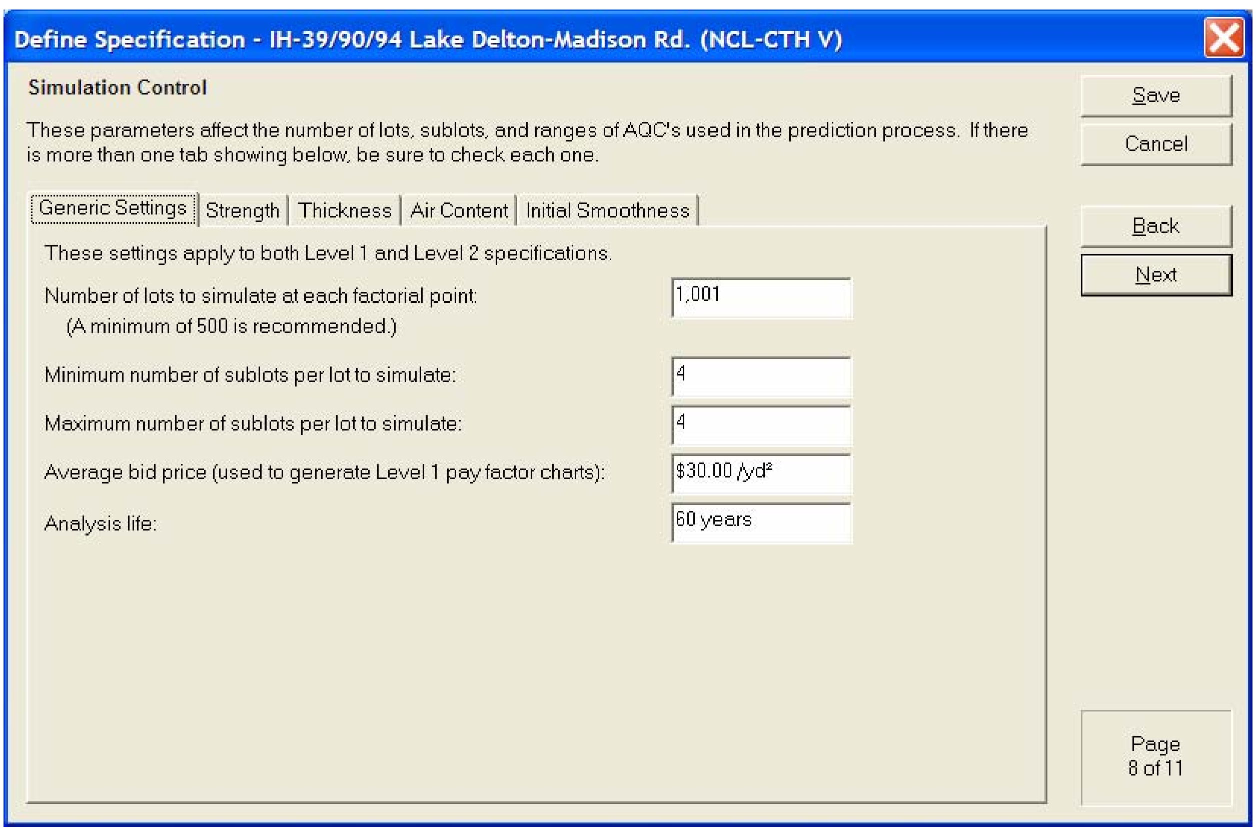

Maintenance and Rehabilitation Plan - Default M&R
Name:
Default M&R
Save
Cancel
Maintenance
Local Rehab
Global Rehab
Description
These steps will be applied to each sublot each year until global rehab occurs.
4. If cumulative percent cracked slabs exceeds 10.00%, then consider the sublot failed.
5. If average transverse joint faulting exceeds 0.1500 in, then consider the sublot failed.
6. If IRI exceeds 175 in/mi, then consider the sublot failed.
7. If percent failed sublots exceeds 20%, then begin global rehab scenario 1.
New Step
Move Up
Move Down
Delete
Detail for Step 1
To define this rehabilitation plan step, complete the following sentence.
Every
1 year
do partial-depth repairs to
100%
of spalled joints
and
continue to the next step

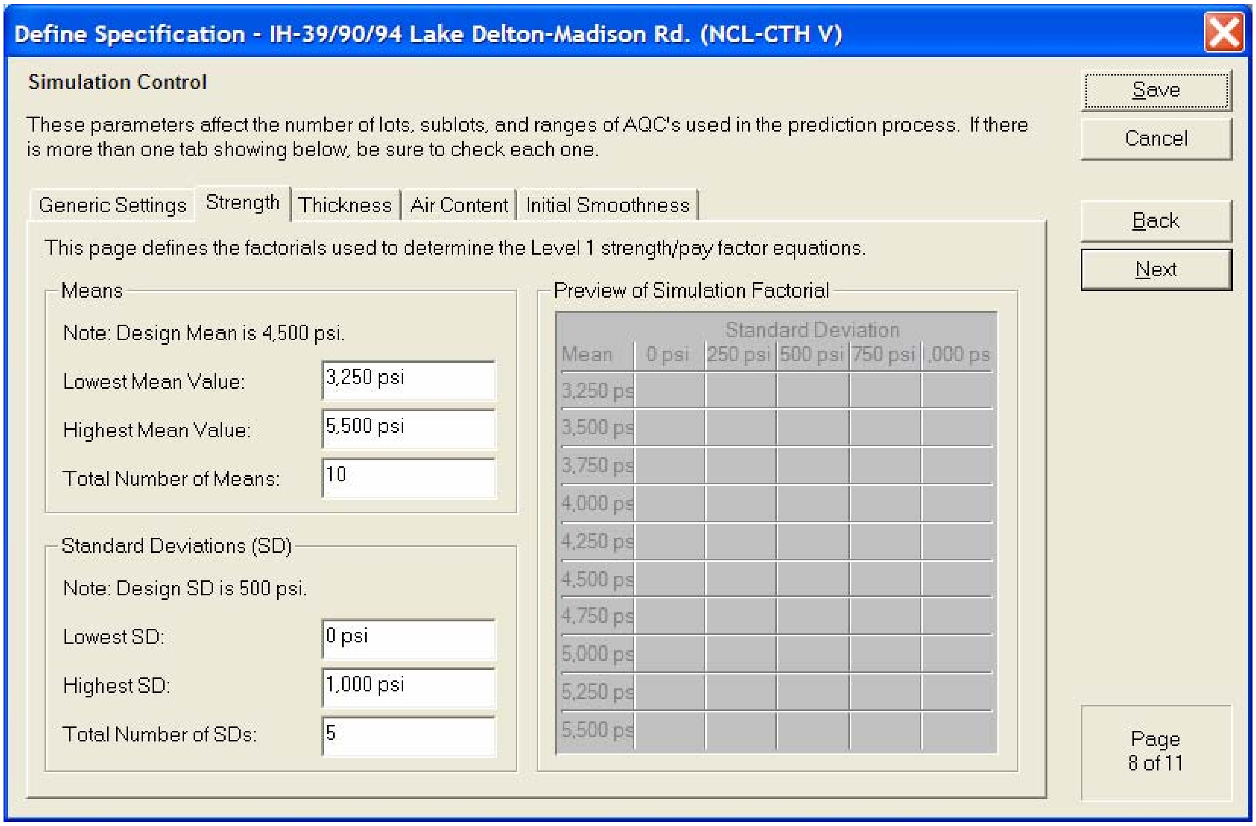

Maintenance and Rehabilitation Plan - Default M&R
Name:
Default M&R
Save
Cancel
Maintenance
Local Rehab
Global Rehab
Description
Scenario 1
Scenario 2
Scenario 3
Prior To First Global Rehabilitation Application
Repair
100%
of spalled joints with
partial-depth repairs
Repair
100%
of cracked slabs with
partial slab replacements
Global Rehabilitation Sequence
Global Rehabilitation to Apply
Assumed Life
Start IRI
End IRI
1st
Diamond Grinding
8 years
50 in/mi
175 in/mi
2nd
Diamond Grinding
8 years
50 in/mi
175 in/mi
3rd
AC Overlay
15 years
50 in/mi
175 in/mi
4th
AC Overlay
15 years
50 in/mi
175 in/mi
Note: If needed, 4th rehabilitation is repeated until end of analysis life.

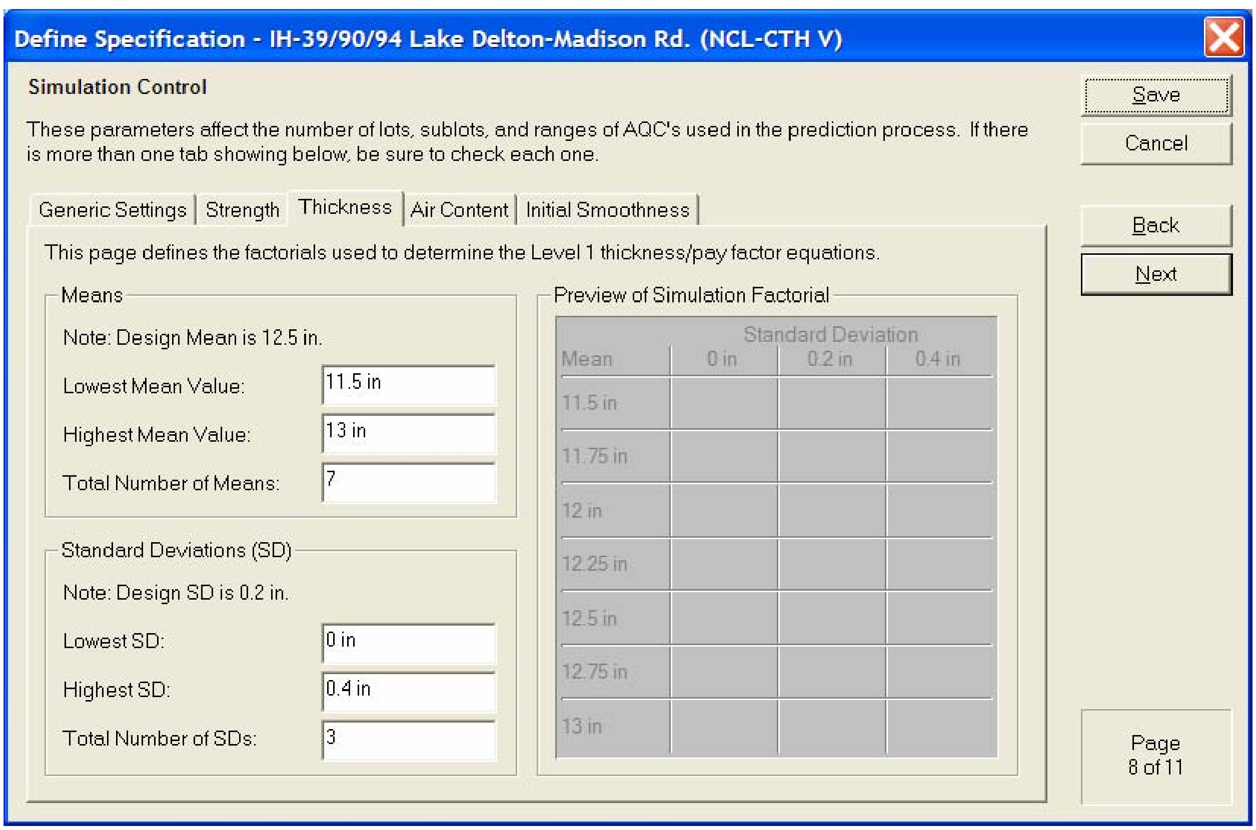

Define Unit Costs - Default Costs
Name:
Default Costs
Save
Cancel
Maintenance
Rehabilitation
Other
Transverse Joint Sealing:
N/A
per foot
Longitudinal Joint Sealing:
N/A
per foot
Transverse Crack Sealing:
N/A
per foot

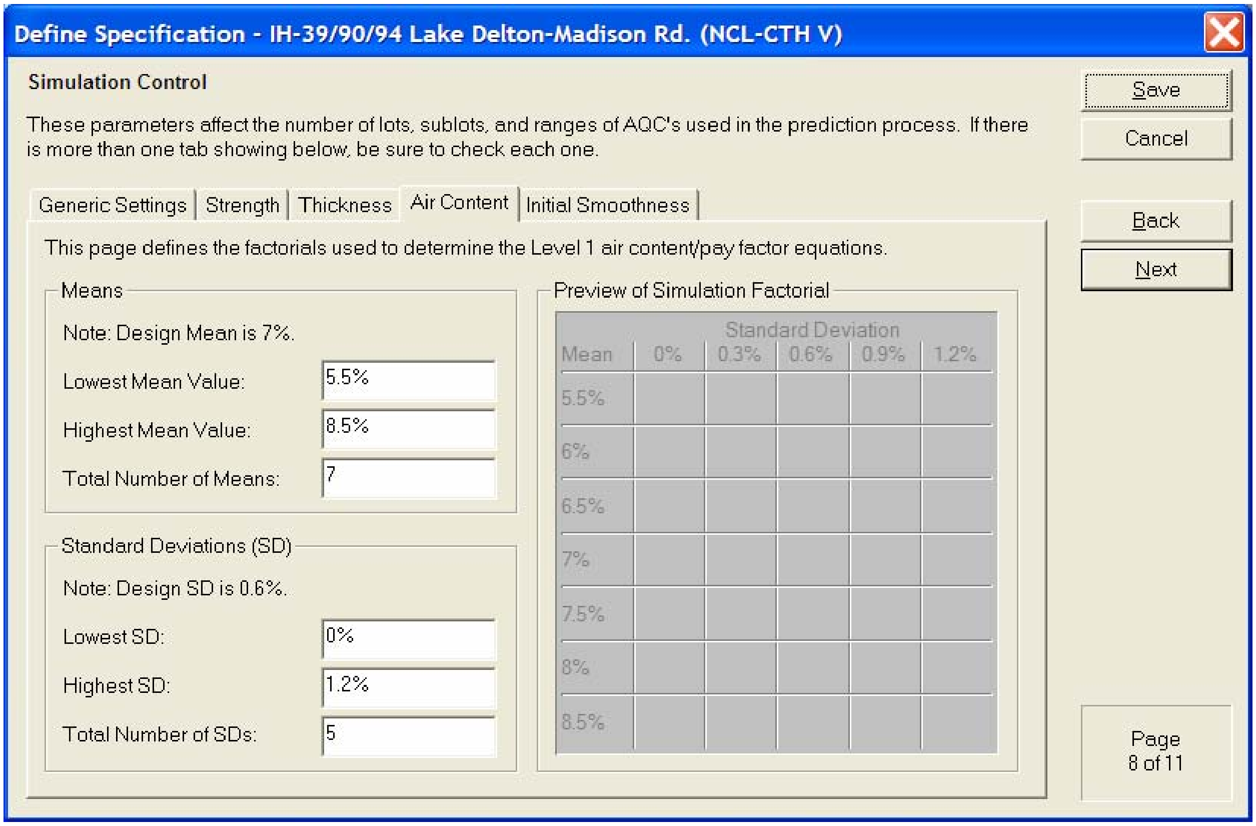

Define Unit Costs - Default Costs
Name:
Default Costs
Save
Cancel
Maintenance
Rehabilitation
Other
Localized Unit Costs
Full-depth repairs of transverse joints:
N/A
per sq. yard
Partial-depth repairs of transverse joints:
$ 18.00
per joint-foot
Full slab replacements:
N/A
per sq. yard
Partial slab replacements:
$ 65.00
per sq. yard
Global Unit Costs
AC overlay:
$ 9.00
per sq. yard
PCC overlay:
N/A
per sq. yard
Diamond grinding:
$ 2.50
per sq. yard

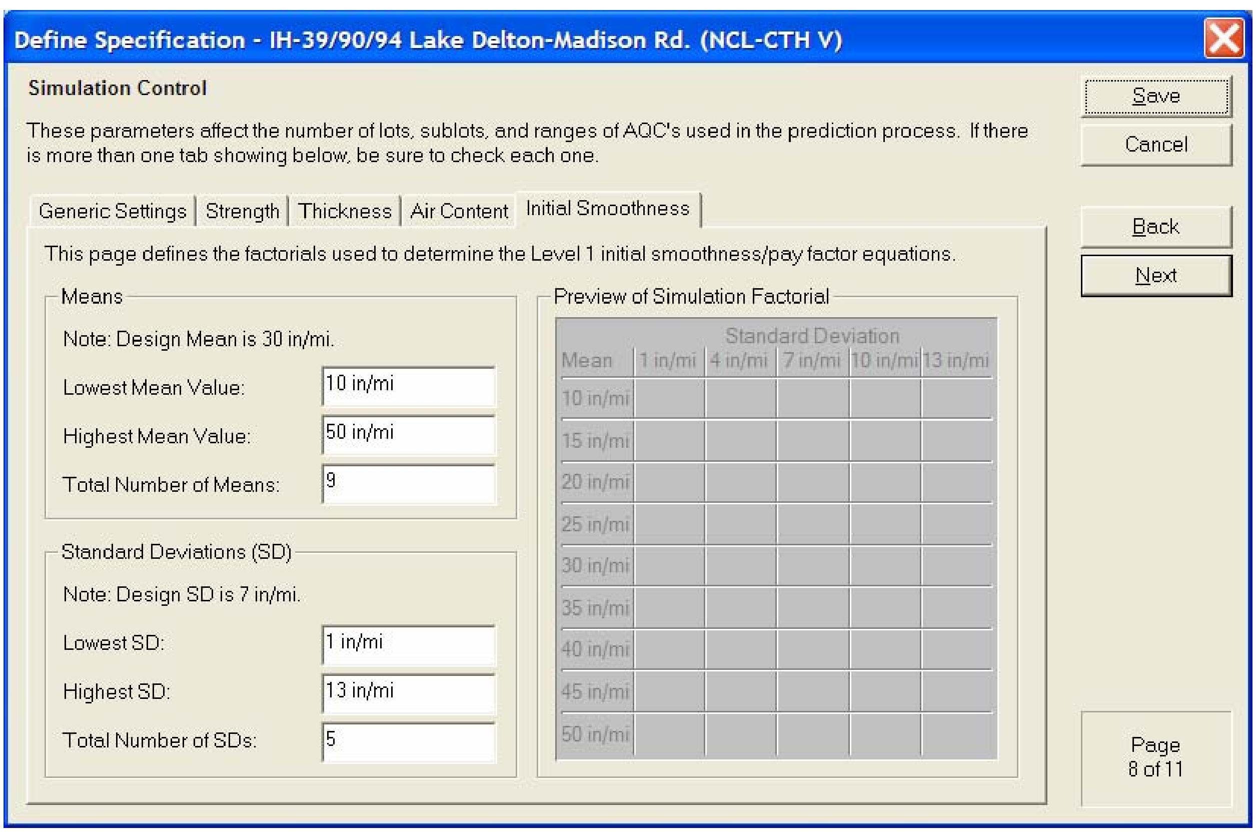

Define Unit Costs - Default Costs
Name:
Default Costs
Save
Cancel
Maintenance
Rehabilitation
Other
Annual inflation rate:
3%
Annual interest rate:
8%
Assumed width of a full-depth repair of a transverse joint:
N/A
Assumed width of a partial-depth repair of a transverse joint:
1 ft
Assumed width of a partial slab replacement:
6 ft
User cost percentage to include:
0.25%
Year of construction:
2006
If desired, enter a detailed description of this unit cost module:

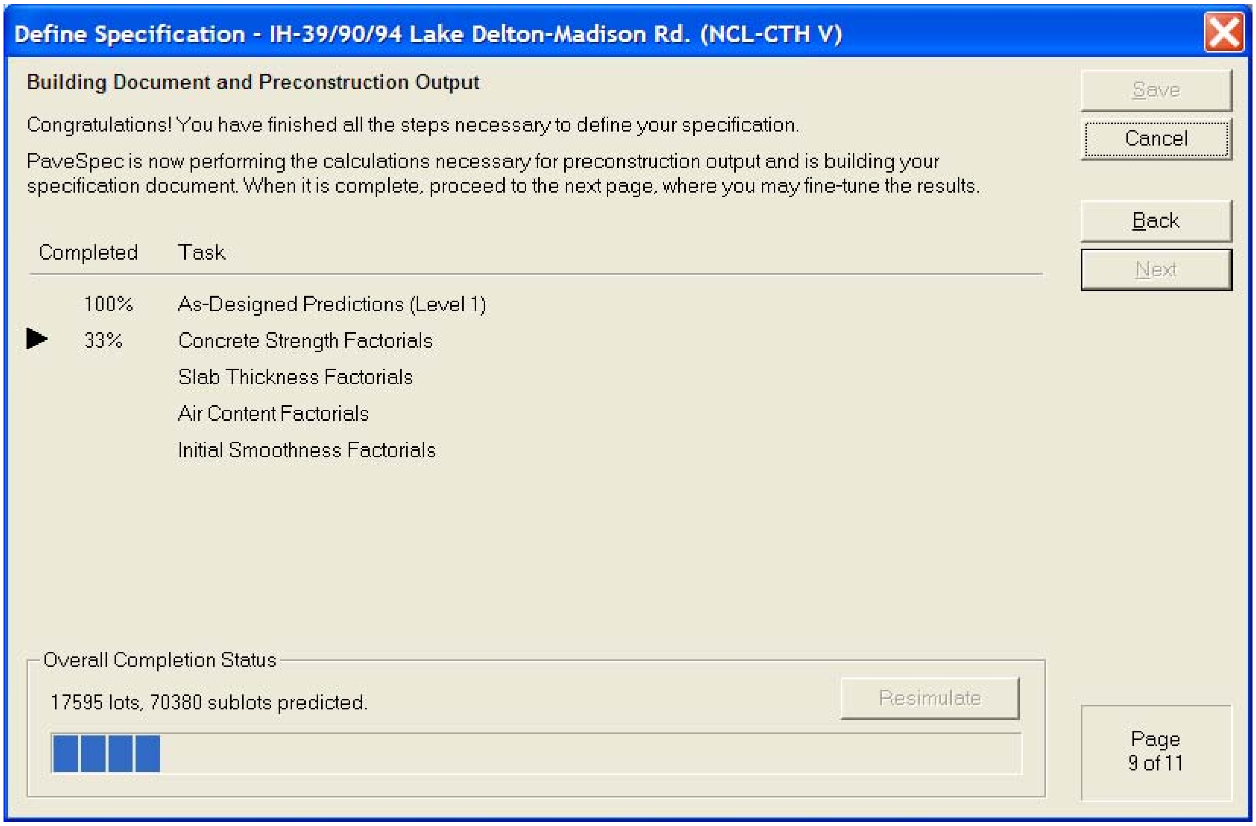

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Simulation Control
These parameters affect the number of lots, sublots, and ranges of AQC's used in the prediction process. If there is more than one tab showing below, be sure to check each one.
Save
Cancel
Generic Settings
Strength
Thickness
Air Content
Initial Smoothness
Back
Next
These settings apply to both Level 1 and Level 2 specifications.
Number of lots to simulate at each factorial point:
(A minimum of 500 is recommended.)
1,001
Minimum number of sublots per lot to simulate:
4
Maximum number of sublots per lot to simulate:
4
Average bid price (used to generate Level 1 pay factor charts):
$30.00 /yd²
Analysis life:
60 years
Page
8 of 11

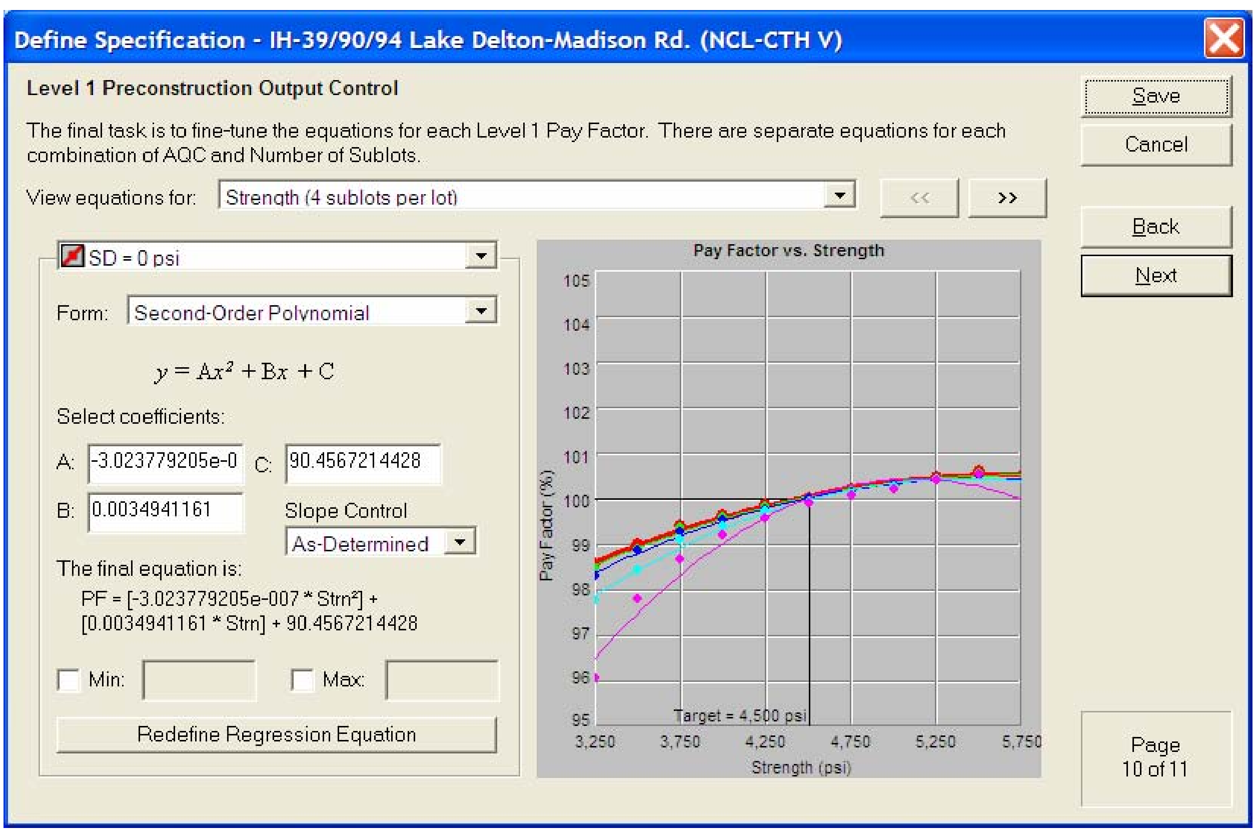

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Simulation Control
These parameters affect the number of lots, sublots, and ranges of AQC's used in the prediction process. If there is more than one tab showing below, be sure to check each one.
Save
Cancel
Back
Next
Generic Settings
Strength
Thickness
Air Content
Initial Smoothness
This page defines the factorials used to determine the Level 1 strength/pay factor equations.
Means
Note: Design Mean is 4,500 psi.
Lowest Mean Value: 3,250 psi
Highest Mean Value: 5,500 psi
Total Number of Means: 10
Standard Deviations (SD)
Note: Design SD is 500 psi.
Lowest SD: 0 psi
Highest SD: 1,000 psi
Total Number of SDs: 5
Preview of Simulation Factorial
Standard Deviation
Mean
0 psi
250 psi
500 psi
750 psi
1,000 ps
3,250 ps
3,500 ps
3,750 ps
4,000 ps
4,250 ps
4,500 ps
4,750 ps
5,000 ps
5,250 ps
5,500 ps
Page 8 of 11

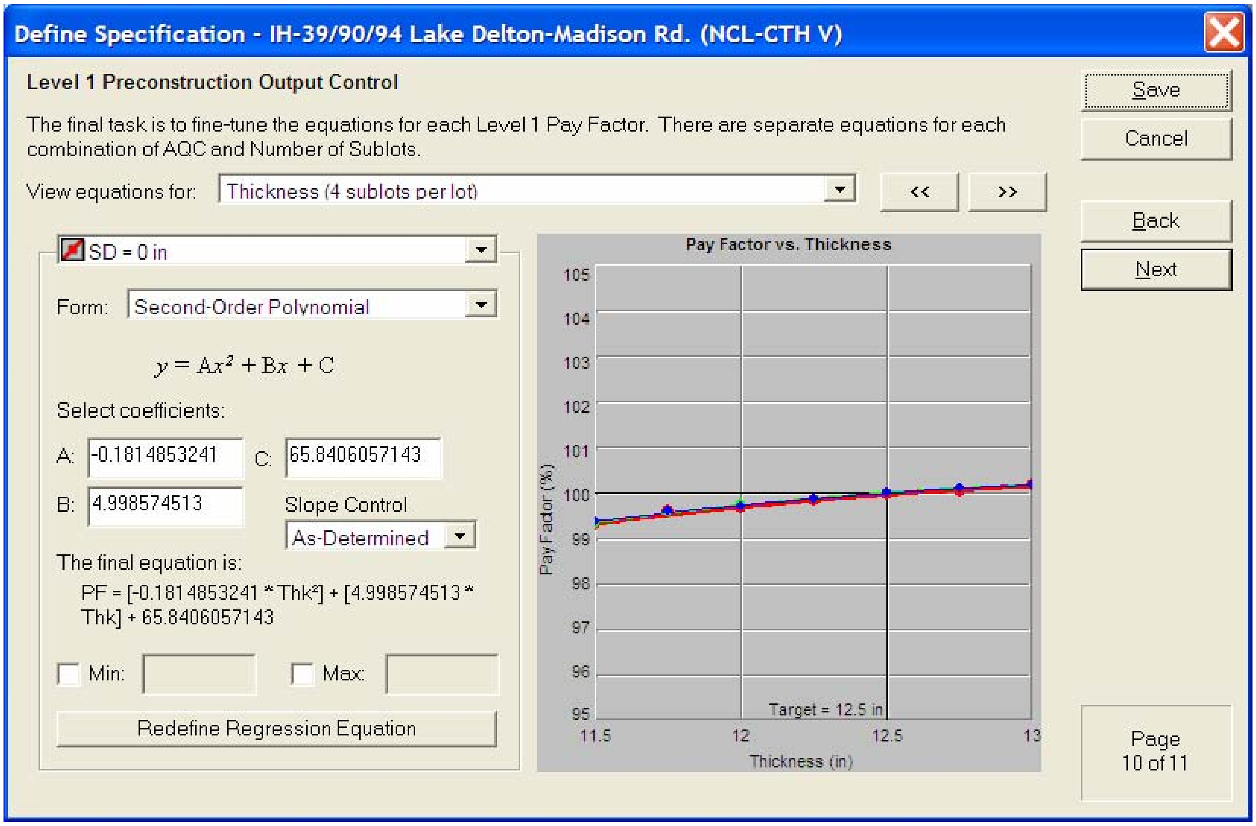

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Simulation Control
These parameters affect the number of lots, sublots, and ranges of AQC's used in the prediction process. If there is more than one tab showing below, be sure to check each one.
Save
Cancel
Back
Next
Generic Settings
Strength
Thickness
Air Content
Initial Smoothness
This page defines the factorials used to determine the Level 1 thickness/pay factor equations.
Means
Note: Design Mean is 12.5 in.
Lowest Mean Value: 11.5 in
Highest Mean Value: 13 in
Total Number of Means: 7
Standard Deviations (SD)
Note: Design SD is 0.2 in.
Lowest SD: 0 in
Highest SD: 0.4 in
Total Number of SDs: 3
Preview of Simulation Factorial
Standard Deviation
Mean
0 in
0.2 in
0.4 in
11.5 in
11.75 in
12 in
12.25 in
12.5 in
12.75 in
13 in
Page 8 of 11

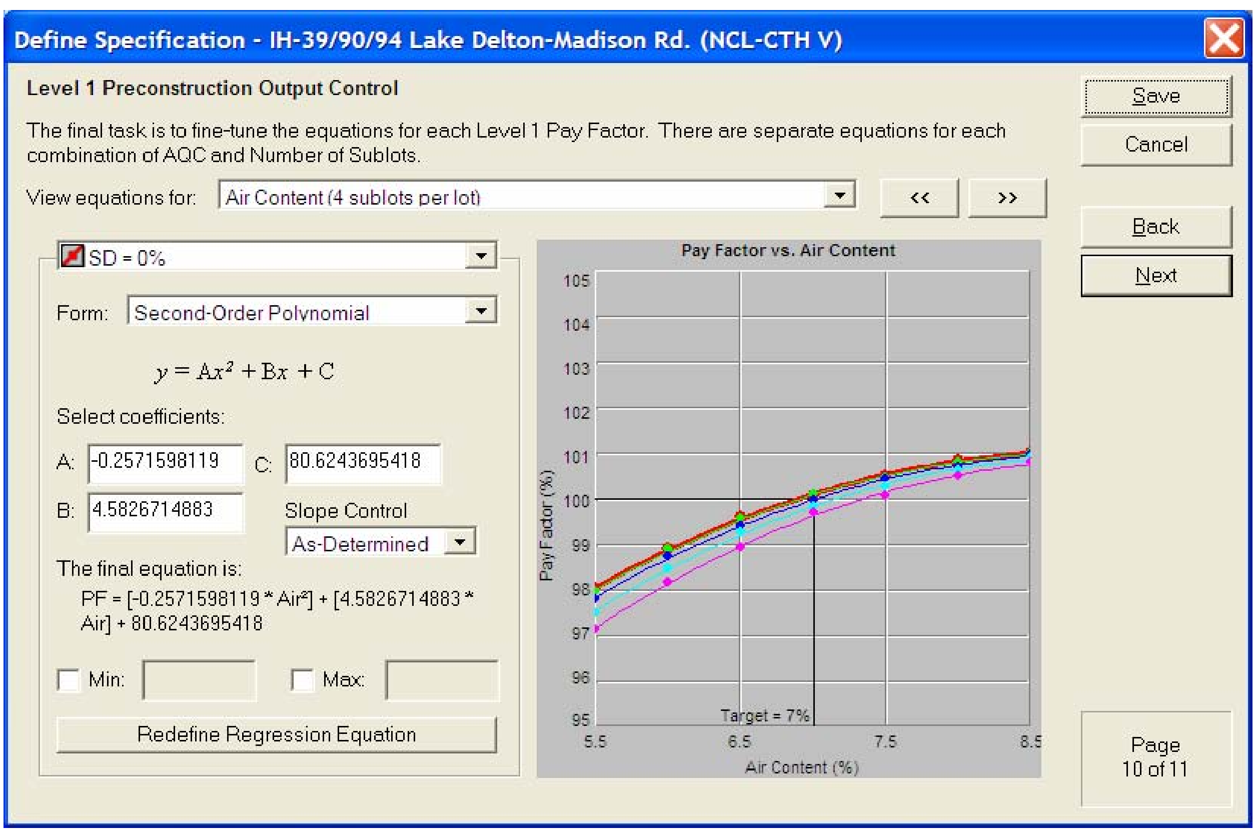

Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Simulation Control
These parameters affect the number of lots, sublots, and ranges of AQC's used in the prediction process. If there is more than one tab showing below, be sure to check each one.
Generic Settings
Strength
Thickness
Air Content
Initial Smoothness
This page defines the factorials used to determine the Level 1 air content/pay factor equations.
Means
Note: Design Mean is 7%.
Lowest Mean Value: 5.5%
Highest Mean Value: 8.5%
Total Number of Means: 7
Standard Deviations (SD)
Note: Design SD is 0.6%.
Lowest SD: 0%
Highest SD: 1.2%
Total Number of SDs: 5
Preview of Simulation Factorial
Standard Deviation
Mean
0%
0.3%
0.6%
0.9%
1.2%
5.5%
6%
6.5%
7%
7.5%
8%
8.5%
Save
Cancel
Back
Next
Page 8 of 11


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Simulation Control
These parameters affect the number of lots, sublots, and ranges of AQC's used in the prediction process. If there is more than one tab showing below, be sure to check each one.
Generic Settings
Strength
Thickness
Air Content
Initial Smoothness
This page defines the factorials used to determine the Level 1 initial smoothness/pay factor equations.
Means
Note: Design Mean is 30 in/mi.
Lowest Mean Value: 10 in/mi
Highest Mean Value: 50 in/mi
Total Number of Means: 9
Standard Deviations (SD)
Note: Design SD is 7 in/mi.
Lowest SD: 1 in/mi
Highest SD: 13 in/mi
Total Number of SDs: 5
Preview of Simulation Factorial
Standard Deviation
Mean
1 in/mi
4 in/mi
7 in/mi
10 in/mi
13 in/mi
10 in/mi
15 in/mi
20 in/mi
25 in/mi
30 in/mi
35 in/mi
40 in/mi
45 in/mi
50 in/mi
Save
Cancel
Back
Next
Page 8 of 11


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Building Document and Preconstruction Output
Congratulations! You have finished all the steps necessary to define your specification.
PaveSpec is now performing the calculations necessary for preconstruction output and is building your specification document. When it is complete, proceed to the next page, where you may fine-tune the results.
Save
Cancel
Back
Next
Completed
Task
100%
As-Designed Predictions (Level 1)
33%
Concrete Strength Factorials
Slab Thickness Factorials
Air Content Factorials
Initial Smoothness Factorials
Overall Completion Status
17595 lots, 70380 sublots predicted.
Resimulate
Page
9 of 11


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Level 1 Preconstruction Output Control
The final task is to fine-tune the equations for each Level 1 Pay Factor. There are separate equations for each combination of AQC and Number of Sublots.
View equations for:
Strength (4 sublots per lot)
Save
Cancel
Back
Next
SD = 0 psi
Form:
Second-Order Polynomial
$y = Ax^2 + Bx + C$
Select coefficients:
A: -3.023779205e-0
C: 90.4567214428
B: 0.0034941161
Slope Control
As-Determined
The final equation is:
PF = [-3.023779205e-007 * Strn²] + [0.0034941161 * Strn] + 90.4567214428
Min:
Max:
Redefine Regression Equation
Pay Factor vs. Strength
Pay Factor (%)
Strength (psi)
Target = 4,500 psi
105
104
103
102
101
100
99
98
97
96
95
3,250
3,750
4,250
4,750
5,250
5,750
Page
10 of 11


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Level 1 Preconstruction Output Control
The final task is to fine-tune the equations for each Level 1 Pay Factor. There are separate equations for each combination of AQC and Number of Sublots.
View equations for:
Thickness (4 sublots per lot)
SD = 0 in
Form:
Second-Order Polynomial
y = Ax² + Bx + C
Select coefficients:
A: -0.1814853241
C: 65.8406057143
B: 4.998574513
Slope Control
As-Determined
The final equation is:
PF = [-0.1814853241 * Thk²] + [4.998574513 * Thk] + 65.8406057143
Min:
Max:
Redefine Regression Equation
Pay Factor vs. Thickness
Pay Factor (%)
Target = 12.5 in
Thickness (in)
Save
Cancel
Back
Next
Page 10 of 11


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Level 1 Preconstruction Output Control
The final task is to fine-tune the equations for each Level 1 Pay Factor. There are separate equations for each combination of AQC and Number of Sublots.
View equations for:
Air Content (4 sublots per lot)
SD = 0%
Form:
Second-Order Polynomial
y = Ax² + Bx + C
Select coefficients:
A: -0.2571598119
C: 80.6243695418
B: 4.5826714883
Slope Control
As-Determined
The final equation is:
PF = [-0.2571598119 * Air²] + [4.5826714883 * Air] + 80.6243695418
Min:
Max:
Redefine Regression Equation
Pay Factor vs. Air Content
Pay Factor (%)
Target = 7%
Air Content (%)
Save
Cancel
Back
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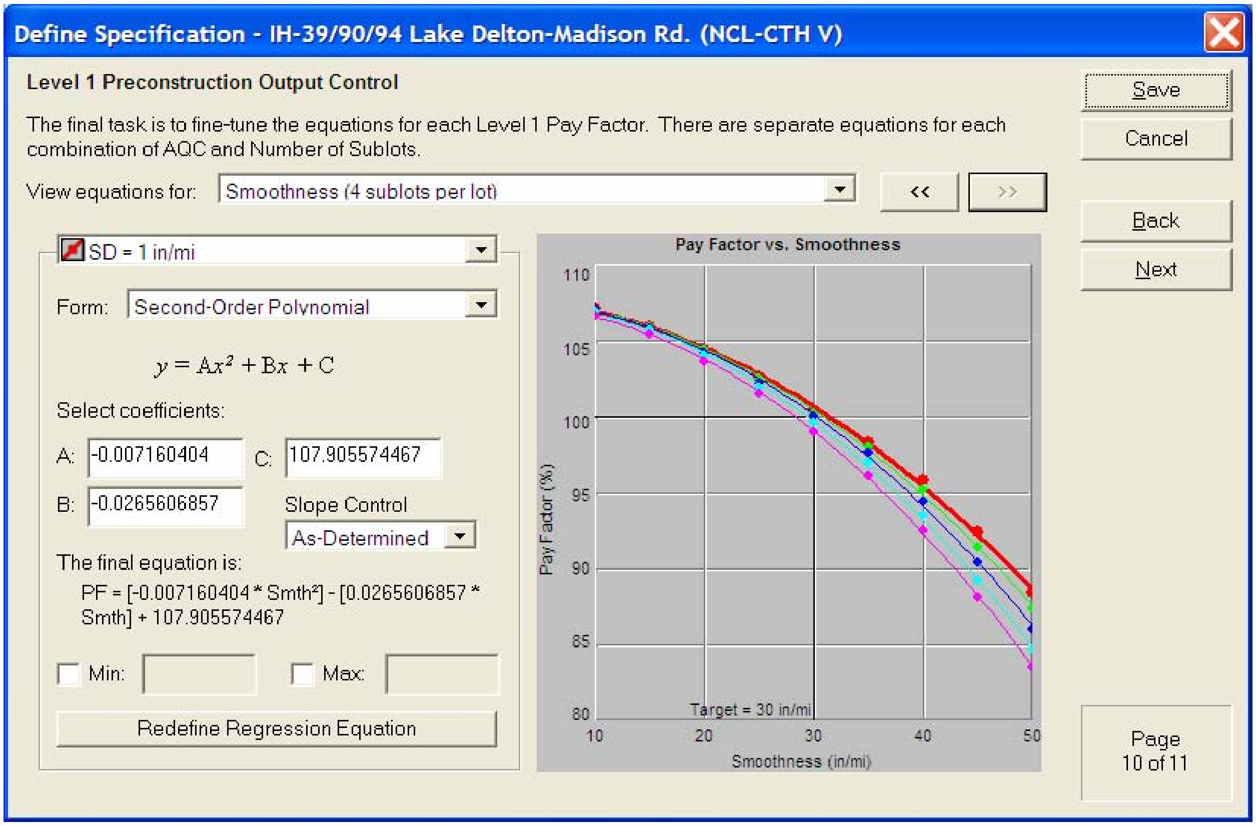
Page 10 of 11


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Level 1 Preconstruction Output Control
The final task is to fine-tune the equations for each Level 1 Pay Factor. There are separate equations for each combination of AQC and Number of Sublots.
View equations for: Smoothness (4 sublots per lot)
SD = 1 in/mi
Form: Second-Order Polynomial
y = Ax² + Bx + C
Select coefficients:
A: -0.007160404
C: 107.905574467
B: -0.0265606857
Slope Control
As-Determined
The final equation is:
PF = [-0.007160404 * Smth²] - [0.0265606857 * Smth] + 107.905574467
Min:
Max:
Redefine Regression Equation
Pay Factor vs. Smoothness
Pay Factor (%)
Smoothness (in/mi)
Target = 30 in/mi
110
105
100
95
90
85
80
10
20
30
40
50
Save
Cancel
Back
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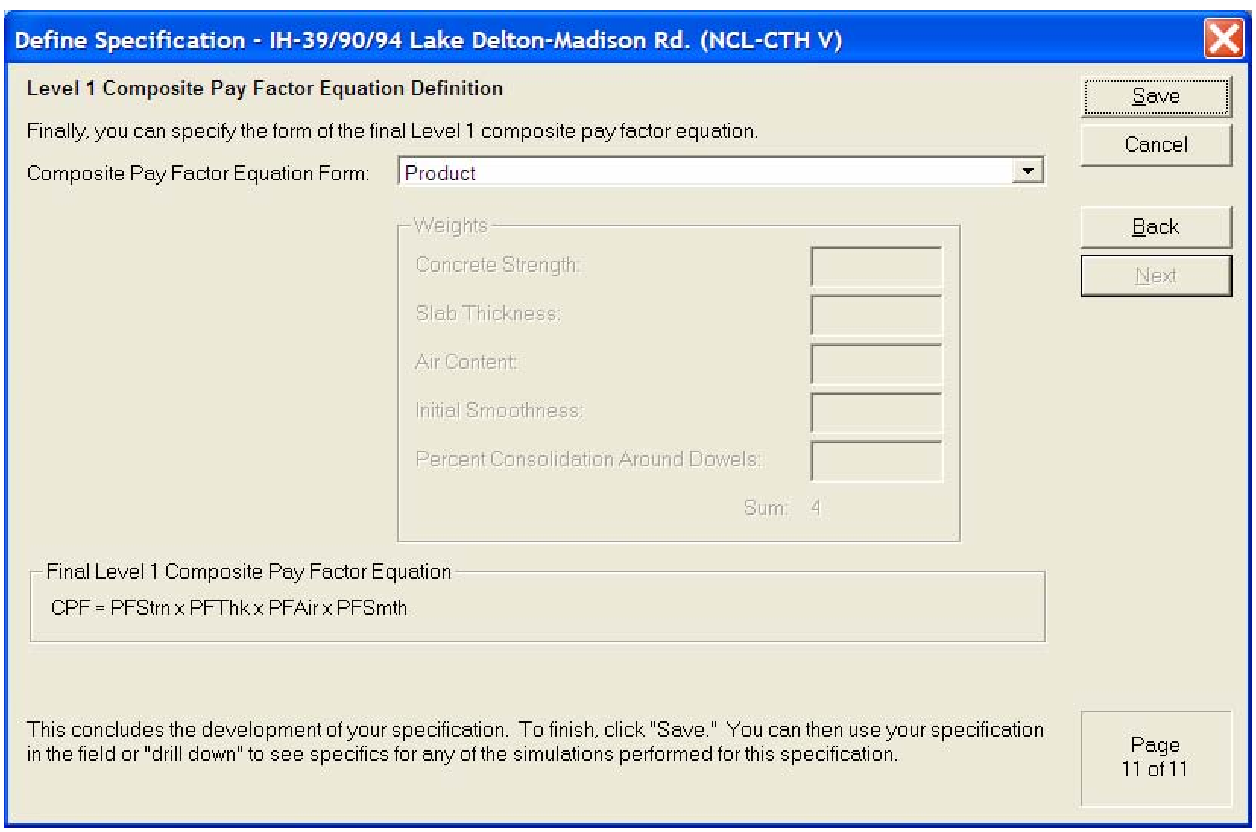
Page 10 of 11


Define Specification - IH-39/90/94 Lake Delton-Madison Rd. (NCL-CTH V)
Level 1 Composite Pay Factor Equation Definition
Finally, you can specify the form of the final Level 1 composite pay factor equation.
Composite Pay Factor Equation Form: Product
Weights
Concrete Strength:
Slab Thickness:
Air Content:
Initial Smoothness:
Percent Consolidation Around Dowels:
Sum: 4
Final Level 1 Composite Pay Factor Equation
CPF = PFStrn x PFThk x PFAir x PFSmth
This concludes the development of your specification. To finish, click "Save." You can then use your specification in the field or "drill down" to see specifics for any of the simulations performed for this specification.
Save
Cancel
Back
Next
Page 11 of 11

APPENDIX B: FINAL PERFORMANCE-RELATED SPECIFICATION

PROJECT ID 1011-01-88

IH-39/90/94
LAKE DELTON-MADISON RD (NCL – CTH V)
DISTRICT 1, DANE COUNTY, WISCONSIN

TECHNICAL SPECIAL PROVISIONS FOR PERFORMANCE-RELATED SPECIFICATION FOR RIGID PAVEMENT

Prepared By:
Applied Research Associates, Inc.
505 W. University Ave.
Champaign, IL 61820

August 12, 2005

Concrete Pavement Performance-Related Specification, Item SPV.0055.01

A Description

This special provision describes the procedure for computing incentive/disincentive pay for the 12 1/2-in mainline concrete pavement and the 8-in concrete shoulder.

A.1 General

Apply this special provision only to the following bid items:
SPV.0180.01 Concrete Pavement 12 1/2-Inch
415.0080 Concrete Pavement 8-Inch

A.2 Introduction

The department will pilot this Performance-Related Specification (PRS) for concrete pavement as part of this project. The PRS provides for incentive/disincentive pay to the contractor depending on the level of construction quality achieved in the field. The Composite Pay Factor for a specific lot of pavement is based on the difference between the estimated long-term Life Cycle Cost (LCC) of the as-designed (target) pavement and the estimated long-term LCC of the as-constructed pavement, as determined by the PaveSpec 3.0 software on a lot-by-lot basis. This methodology is detailed in the Federal Highway Administration (FHWA) report FHWA-RD-98-155, *Guide to Developing Performance Related Specifications for PCC Pavements*.

The Composite Pay Factor is based on four individual pay factors for the concrete: 28-day compressive strength, concrete slab thickness, concrete entrained air content, and initial pavement smoothness (Profile Index [PI] measured using a zero or 0.01-inch blanking band).

For any given lot, the absolute minimum value of the Composite Pay Factor shall be limited to 80 percent and the absolute maximum value shall be limited to 110 percent provided the acceptance quality characteristics (AQCs) are above the Rejectable Quality Levels (RQLs) for concrete strength, air content, and thickness, and below the RQL for smoothness, as described in C.1.2 of these special provisions. The department will accept or reject concrete on a sublot-by-sublot basis. If any AQC for a given sublot is below the corresponding RQL for concrete strength, air content, or thickness, or above the RQL for smoothness, all current department procedures for non-conforming materials (WisDOT Standard Specification 106.5 and WisDOT C&M Manual, 4-5-20) shall apply for all non-conforming material within that particular sublot. If the air content is adjusted and retested within a sublot, the actual values of all individual tests will be prorated using a weighted average calculation based on quantity within the sublot for use in the PRS pay factor calculation. The department will not pay PRS incentive or disincentive for a sublot with nonconforming material.

A.3 Specification Changes

Conform to 415, 416, and 501 of the standard specifications, the supplemental specifications, and to QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S, except as modified in this special provision.

Delete definitions of conforming and nonconforming from 415.3.18.2 of the standard specifications. Delete 415.3.18.3, 415.3.18.4, 415.3.18.8, 415.3.18.9, and 415.5.2 of the standard specifications.

Delete B.7.4.1.1(1), B.7.4.1.2, B.7.4.1.3, B.7.5(2), G.1, and G.3 of QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S.

Delete “2,500 psi” from section B.7.4.4 of QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S and replace with “3,250 psi” as the nonconforming limit for mean sublot strength.

Delete the sentence “The department will in no case pay a compressive strength incentive for nonconforming material” from B.7.5.2(4) of QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S and replace with “The department will not pay PRS incentive or disincentive for a sublot with nonconforming material.”

A.4 Background

The main objective of this PRS is to provide the department with a methodology to assure that all design assumptions are being fulfilled, promote high quality construction, and to protect the agency from poor workmanship. At the same time, it allows the contractor the maximum freedom in deciding how to perform the construction. The PRS provides rational methods for contract adjustments based on the difference between the as-designed and as-constructed LCCs of the pavements.

The proposed PRS incentive/disincentive pay schedules were developed using the FHWA methodology as defined in the report FHWA-RD-98-155, *Guide to Developing Performance-Related Specifications for PCC Pavements,* and implemented in the PaveSpec 3.0 software. The PRS employs distress prediction models to relate the AQCs to future pavement performance and associated LCC.

Figure 1 illustrates how the PRS methodology works. The FHWA Web site provides additional information about PRS and the PaveSpec 3.0 software (www.tfhrc.gov/pavement/pccp/pavespec/pavespec.htm).

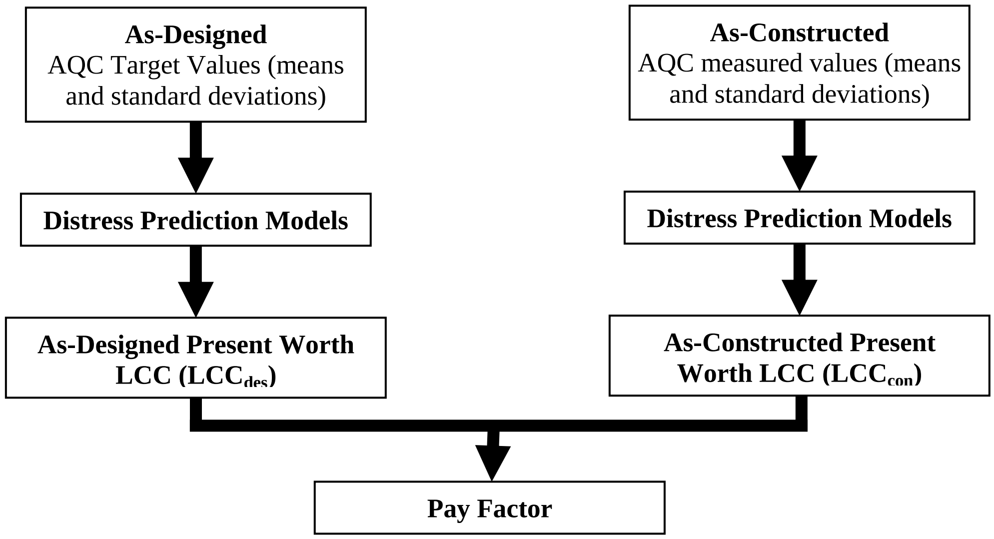


Figure 1

BASIC CONCEPTS OF LCC-BASED PRS

The *pay factor* (PF) is defined as the percentage of the bid price that the contractor is paid for the construction of a concrete pavement lot and the pay factor curves were developed based on the difference between the as-constructed and as-designed LCC (in present worth dollars) as follows:

$$PF^* = 100(BID_e + [LCC_{des} - LCC_{con}]) / BID_e \qquad \text{Eq. 1}$$

Where:

BID_e = Estimated bid price that was used for calculating PF, $.
LCC_{des} = As-designed life cycle cost, $.
LCC_{cons} = As-constructed life cycle cost, $.

* The pay factor (PF) will apply to bid items SPV.0180.01, Concrete Pavement 12 1/2 – Inch and 415.0080, Concrete Pavement 8-Inch only, but will be paid for under Concrete Pavement Performance-Related Specification, Item SPV.0055.01.

The LCC was computed using future maintenance and rehabilitation (M&R) activities and agency costs that were determined based on prediction models for slab cracking, joint spalling, joint faulting, and pavement smoothness. A key aspect of using LCC to define the pay factors is that the LCC of the as-constructed lot is the overall measure of quality, providing a rational way to develop an overall pay factor for the lot. The pay factors computed by this procedure have been adjusted slightly for practical application by the department.

B (Vacant)

C Construction

C.1 General

Pay in this specification is based on the following acceptance quality characteristics (AQC) only:

- Concrete compressive strength at 28 days.
- Concrete entrained air content.
- Concrete slab thickness.
- Initial smoothness (Profile Index measured using a zero or 0.01-inch blanking band).

Several other quality characteristics (e.g., aggregate properties and gradation, surface friction, slump, dowel placement, tie bar placement) are very important but are not directly considered in this PRS. These quality characteristics and construction requirements are considered as described in the department's existing specifications. For these quality characteristics conform to 415, 416, and 501 of the standard specifications, the supplemental specifications, QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S, and Profiling Concrete Pavement special provision.

C.1.1 Target Quality Levels

If the department's mean and standard deviation targets for each of the AQCs used for payment calculations are met, the agency will not pay any incentive or disincentive. The target quality levels (mean and standard deviations) at which the department will not pay any incentive or disincentive are as follows:

Acceptance Quality Characteristic, AQC	Lot Target Values		
	Mean		Standard Deviation
Slab Thickness, in	12 1/2(1)	8(1)	0.20(1)
Concrete 28-day Compressive Strength, psi	4,500(2)		500(2)
Air Content, %	7.0(3)		0.6(3)
Initial Profile Index, in/mile (zero or 0.01-inch blanking band)	30.0(4)		7.0(4)

(1) Thickness: mean and standard deviation computed from eight independent probe measurements per sublot (two measurements per 0.05 lane-mile).
(2) Strength: mean and standard deviation computed from averages of two cylinders per sublot.
(3) Air content: mean and standard deviation computed from one pressure meter test per sublot.
(4) Smoothness: mean and standard deviation computed from four measurements – inside and outside wheelpaths of the lane per 0.1 mile (two pairs per sublot).

C.1.2 Rejectable Quality Levels

Rejectable quality level (RQL) is the level of quality below which for thickness, air content, and compressive strength, or above which for smoothness, the pavement is deficient enough that a corrective action is warranted. The RQLs (sublot mean values) for each of the AQCs used for payment calculations in this PRS are as follows:

Acceptance Quality Characteristic, AQC	Rejectable Quality Level, RQL (Sublot Mean)	
Slab Thickness, in	11 1/2	7
Concrete 28-day Compressive Strength, psi	3,250	
Air Content, %	5.5	
Initial Profile Index, in/mile (zero or 0.01-inch blanking band)	50	

The department will accept or reject concrete on a sublot-by-sublot basis.

If the quality of the as-constructed sublot (as measured by the acceptance test results) of *any* of the AQCs is below the corresponding RQL for concrete strength, air content, or thickness, or above the RQL for smoothness, the engineer will determine the appropriate corrective actions, as governed by current department procedures and specifications for non-conforming materials. All current department procedures for non-conforming materials shall apply for all non-conforming materials in that particular sublot.

The actual values will be used to calculate the mean and standard deviation for the lot. If the air content is adjusted and retested within a sublot, the actual values of all individual tests will be prorated using a weighted average calculation based on quantity within the sublot for use in the PRS pay factor calculation. If the computed mean falls below the RQL for concrete strength, air content, or thickness, or above the RQL for smoothness, the RQL will be used in determining the composite pay factor.

C.1.3 Maximum Quality Level

Maximum quality level (MQL) is the level of quality at which the pavement is unnecessarily more conservative than the design so that no further pay increase will be applied. The MQLs (lot mean values) for each of the AQCs used for payment calculations in this PRS are as follows:

Acceptance Quality Characteristic, AQC	Maximum Quality Level, MQL (Lot Mean)	
Slab Thickness, in	13	8 1/2
Concrete 28-day Compressive Strength, psi	5,500	
Air Content, %	8.5	
Initial Profile Index, in/mile (zero or 0.01-inch blanking band)	10.0	

The actual values will be used to calculate the mean and standard deviation for the lot. If the computed mean falls above the MQL for concrete strength, air content, or thickness, or below the MQL for smoothness, the MQL will be used in determining the composite pay factor.

D Measurement

D.1 General

The statistical acceptance procedures are based on the vital assumption of randomness of sampling. Random sampling is defined as a manner of sampling that allows every member of the population (lot) to have an equal opportunity of appearing in the sample. The PRS AQCs are measured for each sublot, and payment is made on a lot-by-lot basis. Thus, the sublot boundaries must be marked and maintained until finalizing the payment computation. The lot shall be divided into sublots for sampling and testing purposes. Markers shall be placed every 0.1 mile along the mainline traffic lanes to help determine the lot and sublot limits.

The definitions of lot, sublot, and sampling frequency for compressive strength, air content, thickness, and initial smoothness are presented below.

D.2 Lots and Sublots

D.2.1 Pavement Lot

A pavement lot is defined as the amount of material or construction produced by the same process, so that each AQC is likely to be from the same distribution. Divide the paving project into lots as described in this section.

The minimum lot size is defined as four sublots. For one-lane paving, each lot is one lane wide and at least 0.8 miles long. For two-lane paving each lot is two lanes wide and at least 0.4 miles long.

The maximum lot size is defined as eight sublots. The engineer may terminate the lot if there is any reason to believe that a special cause affected the process and resulted in a significant shift in the mean or standard deviation of any of the AQCs. Changes in the concrete mix design do not necessarily terminate the lot. This determination is made by the engineer.

If the lot length is less than 0.8 miles for a one-lane lot and 0.4 miles for a two-lane lot, group it with the next lot. If the last lot in the paving project is less than 0.8 miles for a one-lane lot and 0.4 miles for a two-lane lot, group it with the previous lot.

A partial lot is defined as a lot for which concrete strength testing was conducted on none or only one of the planned sublots due to premature stoppage of paving. Premature stoppage of paving is defined as the stoppage of pavement construction operations due to unexpected conditions such as weather or equipment problems. A partial lot shall be re-divided into sublots similar to a new lot.

The characteristics of a lot are summarized as follows:

1. Each lot is one paving pass in width and can be equal to one or two traffic lanes.
2. A lot consists of a minimum of four sublots which are each 0.2 lane miles. The sublots exist consecutively (longitudinally) along the same paving width. A lot cannot be divided between two adjacent or separated paving lanes.
3. The minimum length of a lot is 0.8 miles for a one-lane lot and 0.4 miles for a two-lane lot and this lot can include work from one or more days of paving.
4. The maximum lot length is defined as 8 sublots or 1.6 miles for a one-lane lot and 0.8 miles for a two-lane lot. The engineer may terminate the lot if there is any reason to believe that a special cause affected the process and resulted in a significant shift in the mean or standard deviation of thickness, air content, strength, or smoothness (AQCs).
5. Partial lots: if the contractor builds a paving pass in a given day that, for whatever reason, is less than a complete lot, this is defined as a partial lot. A partial lot is combined with the previous or next days paving to produce a full lot with a minimum length of 0.8 miles (for a one-lane lot) and 0.4 miles (for a two-lane lot) and a maximum length of 1.6 miles for a one-lane lot and 0.8 miles for a two-lane lot. If the combined length of paving of a partial lot and the current lot being paved is greater than 1.6 miles for a one-lane lot and 0.8 miles for a two-lane lot, the lot shall still be limited to 1.6 miles for a one-lane lot and 0.8 miles for a two-lane lot and another partial lot identified to be added to the next lot.
6. If a section of paving has been designated as a partial lot but cannot be combined with the adjacent lot described under #2 (e.g., a one-lane of widening or tapered paving that is less than 0.8 miles), or if it is the last lot in the paving project and is less than 0.8 miles for a one-lane lot and 0.4 miles for a two-lane lot, they shall be allowed to be grouped with a previous lot. This will be allowed even if it results in a lot that is greater than 1.6 miles for a one-lane lot and 0.8 miles for a two-lane lot.
7. Concrete shoulders are only tested for strength, air content, and thickness, but not for smoothness. The smoothness for the shoulder (Profile Index) is assumed to be at the target values of 30.0 in/mile mean and 7.0 in/mile standard deviation.

D.2.2 Pavement Sublot

The application of this PRS requires that a lot be divided into discrete sublots and that sampling be conducted in each sublot for all AQCs. This means that strength, air content, thickness, and smoothness shall be measured within each mainline sublot boundary and strength, air content, and thickness shall be measured within each shoulder sublot boundary. Divide each lot into sublots as described in this section.

For one-lane paving, each sublot is one lane wide and 0.2 miles long. For two-lane paving each sublot is two lanes wide and 0.1 miles long. A paving sublot has the following characteristics:

1. The sublot length is established at a constant 0.1 mile for a two-lane sublot and 0.2 mile for a one-lane sublot and is equivalent to 0.2 lane-miles. This is done for measurement of Profile Index and for field location expediency.
2. The width of a sublot can be one lane or two lanes.
3. There shall be a minimum of four sublots and a maximum of eight sublots in each lot.
4. In cases when there is a partial sublot which belongs to a particular lot (due to operational changes or end of paving), the engineer may allow the length of one sublot within that lot to exceed the constant value of 0.1 mile for a two-lane sublot and 0.2 mile for a one-lane sublot.

D.3 Testing Methods and Sampling Frequency

D.3.1 General

The testing methods for slab thickness, concrete strength, air content, and initial smoothness, are shown below.

Acceptance Quality Characteristic, AQC	Test Method(1)
Slab Thickness, in	Probes (CMM 4-25-70)
Concrete 28-day Compressive Strength, psi	Cylinders (AASHTO T 22, T 23, T 141, M 201)
Air Content, %	Pressure Meter (AASHTO T 152(2))
Initial Profile Index, in/mile	department approved profile measuring device with zero or 0.01-inch blanking band

(1) All AQCs must be measured within the same sublot limits.
(2) As modified in CMM 4-25-70.

The lot and sublot definitions and size for concrete sampling are the same for all four AQCs and are described in D.2 of these special provisions.

D 3.2 Concrete Compressive Strength

Perform compressive strength testing as described in B.7.4 of QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S.

The sublot strength is the average of 2 sublot QC test cylinders chosen by the contractor.

D 3.3 Air Content

Test air content as described in B.7.5 of QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S.

The sublot air content is the reading of 1 pressure meter measurement tested on the same sample used for QC strength cylinders.

The lower and upper control limits for air content are the values specified in C.1.2 and C.1.3 of this special provision. The lower warning limit for air content is 0.5 percent above the lower control limit. There is no upper warning limit.

D.3.4 Slab Thickness

The department will use contractor probing of the freshly placed concrete as the primary method for determining thickness. The required quality control test measurements shall be recorded and will become part of the permanent project record. Conduct all probing tests as specified in CMM 4-25-70.

For each sublot, the contractor shall make eight probe (four pairs) measurements.

For a one-lane 0.2-mile sublot, make two probings at four longitudinal locations selected at random every 0.05 miles. For a two-lane 0.1-mile sublot, make two probings at two longitudinal locations per lane selected at random every 0.05 miles per lane. Report the individual probings at all locations and not the averages of two readings per longitudinal location.

Perform individual probings at transverse locations as agreed upon by the engineer. The engineer may approve or change probing locations at the engineer's discretion.

D.3.5 Initial Smoothness

Test the pavement surface smoothness as described in Profiling Concrete Pavement special provision.

For each sublot, the contractor shall make four profile measurements (one measurement on inside and outside wheelpath of each of two segments).

For a one-lane 0.2-mile sublot, divide the sublot into two equal longitudinal segments. For a two-lane 0.1-mile sublot, each lane is one segment. Report the profile measurements of each individual wheelpath for each segment and not the average of the two wheelpaths. Profile traces shall not be taken on shoulders and ramps.

E Payment

E.1 General

The PRS recognize that higher quality products have additional value and provide payment for this higher quality up to a maximum value. The PRS also recognize that marginal products still have some value and advocate payment schedules instead of requiring complete removal unless the pavement is so deficient that replacement or corrective action is warranted.

Individual pay factors for concrete strength, air content, slab thickness, and initial smoothness shall be determined using the pay factor tables. These curves and tables were developed using the PaveSpec 3.0 PRS software and account for the mean and standard deviation of the AQCs.

The department will use linear interpolation or extrapolation between the values shown in these tables, if needed.

E.2 PRS Testing

Payment under QMP Concrete Pavement, Item 415.3000.S, Incentive Strength Concrete Pavement, Item 415.2000.S is full compensation for all sampling, testing, and documentation required under this special provision.

E.3 Computation of Means and Standard Deviations

The determination of individual pay factors requires computing the mean and standard deviation of the concrete strength, air content, slab thickness, and initial smoothness for the as-constructed lot based on the field testing results. These statistics shall be calculated as follows:

$$\overline{X} = \frac{\sum_{i=1}^{n} X_i}{n} \qquad \text{Eq. 2}$$

Where:

$\overline{X}$ = Mean of *n* random samples of the AQC under consideration for the lot.
X_i = Sample measurement (for strength, X_i is a mean of two replicates).
n = Sample size per lot, n for each AQC is as follows:
Strength: one sample per sublot (each is a mean of two cylinder measurements).
Air content: one sample per sublot.
Thickness: eight samples per sublot.
Smoothness: four samples per sublot.

For example, for a lot with six sublots, n = 6 for strength and air content measurements, n = 6 × 8 = 48 for thickness measurements, and n = 6 × 4 = 24 for smoothness measurements.

The lot standard deviation is computed as follows:

$$s = \frac{\sqrt{\frac{\sum (X_i - \overline{X})^2}{(n-1)}}}{C_{SD}} \qquad \text{Eq. 3}$$

Where:

C_{SD} = Correction factor (based on the total sample size, n) used to obtain unbiased estimates of the actual lot sample standard deviation. Appropriate C_{SD} values are determined as follows:

Number of Samples, n	**Correction Factor, C_{SD}**
2	0.7979
3	0.8862
4	0.9213
5	0.9399
6	0.9515
7	0.9594
8	0.9650
9	0.9693
10	0.9726
30	0.9915
50	0.9949

For n > 10, use linear interpolation to compute the correction factor.

If the quality of the as-constructed sublot (as measured by the acceptance test results) of *any* of the AQCs is below the corresponding RQL for concrete strength, air content, or thickness, or above the RQL for smoothness, the department will not pay PRS incentive or disincentive for the sublot with nonconforming material. The actual values will be used to calculate the mean and standard deviation for the lot. If the computed mean falls below the RQL for concrete strength, air content, or thickness, or above the RQL for smoothness, the RQL will be used in determining the composite pay factor. If the computed mean falls above the MQL for concrete strength, air content, or thickness, or below the MQL for smoothness, the MQL will be used in determining the composite pay factor.

E.4 Pay

E.4.1 General

Conforming square yards of concrete pavement will be assessed a pay factor on a lot-by-lot basis.

The department will compute the actual pay for the as-constructed lot using the lot composite pay factor as follows:

$$PAY_{Lot} = \{(BID \times PF_{composite}/100) - BID\} \times AREA_{Lot} \qquad \text{Eq. 4}$$

Where:

PAY_{Lot}	=	\$ (+ or -).
BID	=	Contractor bid price for concrete pay item.
$AREA_{Lot}$	=	Measured actual qualified area of the as-constructed lot, SY.
$PF_{composite}$	=	Composite pay factor (from Eq. 5 or Eq. 6), percent (e.g., 101 percent is expressed as 101.0).

E.4.2 Computation of Performance-Related Composite Pay Factor for 12 1/2-in Concrete Pavement Mainline Lot

The lot composite (overall) pay factor is the product of the individual AQC pay factors and is computed as follows:

$$PF_{composite} = (PF_{smoothness} \times PF_{air} \times PF_{strength} \times PF_{thickness})/1{,}000{,}000 \qquad \text{Eq. 5}$$

Where:

$PF_{composite}$ = Composite (overall) pay factor, percent.
$PF_{strength}$ = Strength pay factor (obtain from Figure 2), percent.
PF_{air} = Air content pay factor (obtain from Figure 3), percent.
$PF_{thickness}$ = Slab thickness pay factor (obtain from Figure 4), percent.
$PF_{smoothness}$ = Initial smoothness pay factor (obtain from Figure 5), percent.

The curves shown in the figures are for visual purposes only. The department will compute actual pay factors using the values in the table and use linear interpolation if necessary.

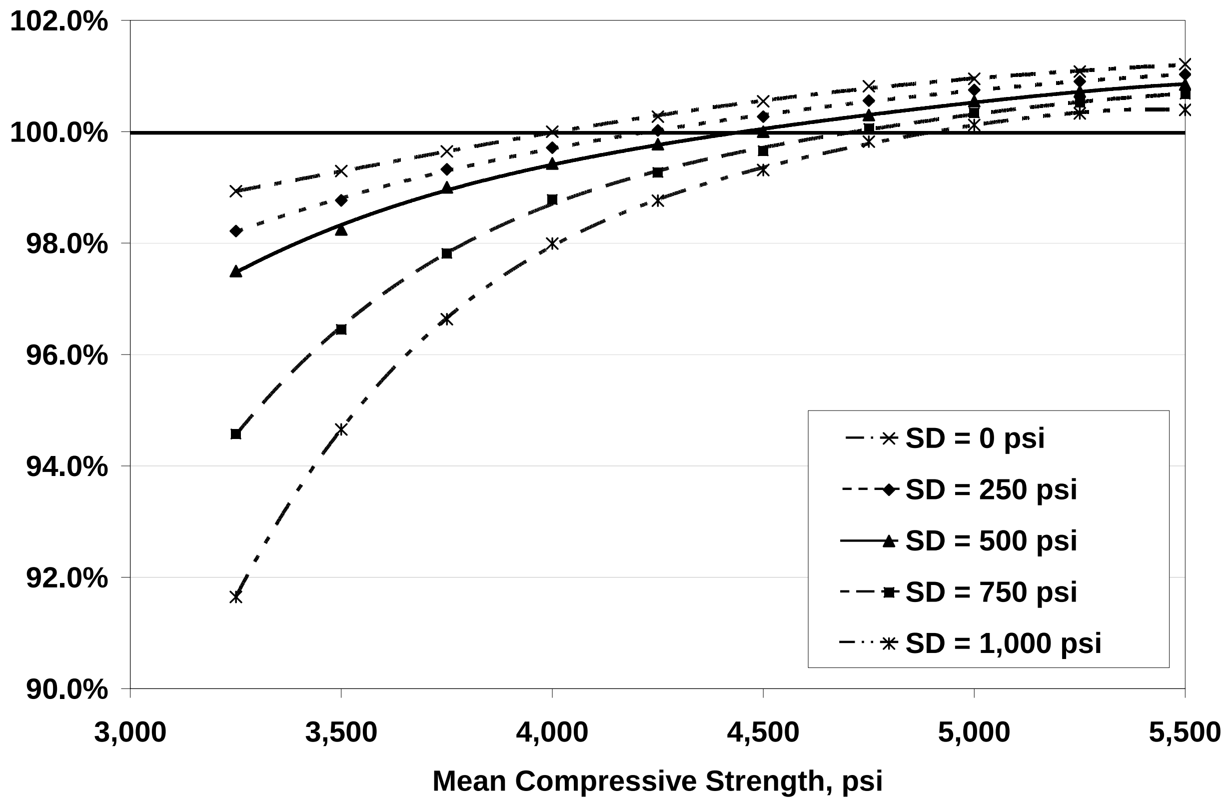


Figure 2

CONCRETE STRENGTH PAY FACTOR CURVE

Mean Compressive Strength, psi	Standard Deviation, psi				
	0	250	500*	750	1,000
3,250	98.93	98.22	97.50	94.57	91.65
3,500	99.29	98.77	98.25	96.45	94.66
3,750	99.65	99.33	99.00	97.82	96.63
4,000	100.00	99.71	99.43	98.78	97.99
4,250	100.27	100.02	99.78	99.27	98.76
4,500*	100.55	100.27	100.00	99.66	99.31
4,750	100.82	100.56	100.30	100.06	99.82
5,000	100.95	100.75	100.55	100.34	100.12
5,250	101.08	100.90	100.72	100.53	100.33
5,500	101.21	101.03	100.85	100.68	100.39

*Targets

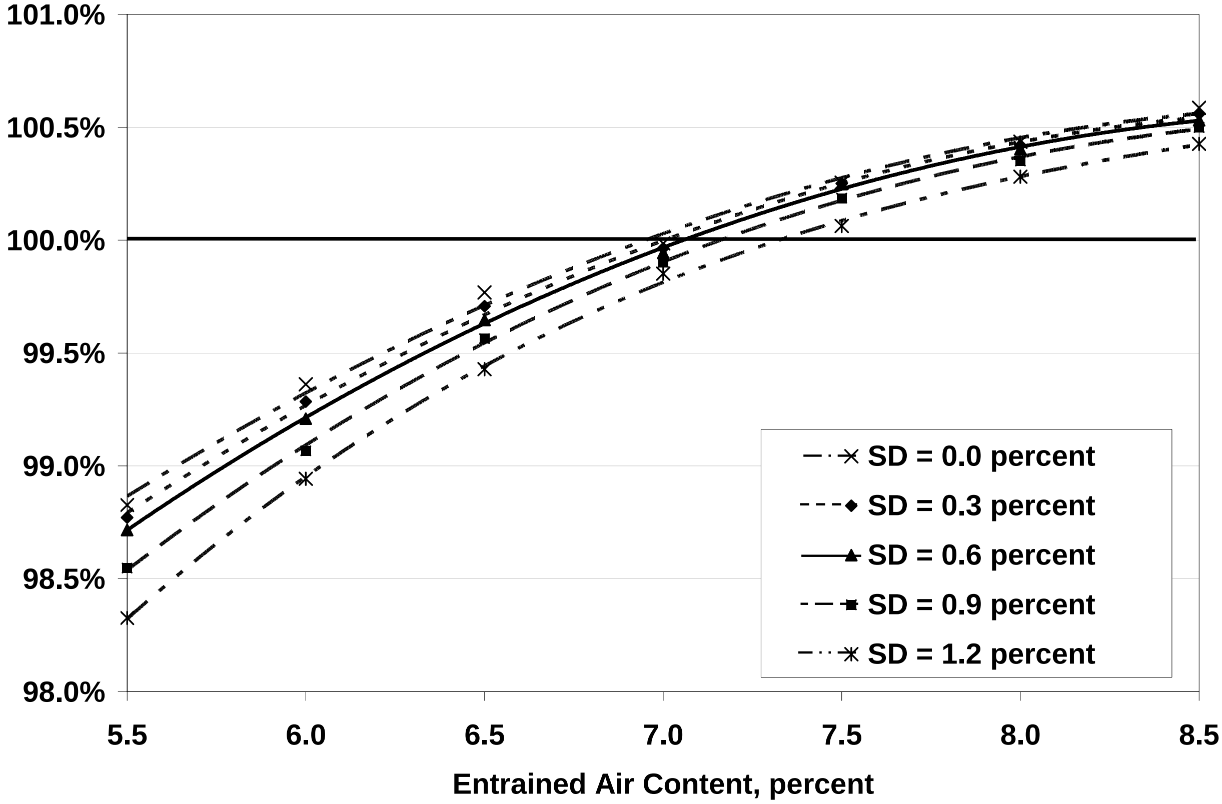


Figure 3

CONCRETE AIR CONTENT PAY FACTOR CURVE

Mean Air Content, %	Standard Deviation, %				
	0.0	0.3	0.6*	0.9	1.2
5.5	98.87	98.79	98.71	98.54	98.34
6.0	99.32	99.27	99.21	99.09	98.97
6.5	99.71	99.67	99.63	99.55	99.47
7.0*	100.06	100.03	100.00	99.93	99.87
7.5	100.28	100.25	100.23	100.18	100.12
8.0	100.45	100.44	100.41	100.37	100.33
8.5	100.56	100.54	100.53	100.49	100.48

*Targets

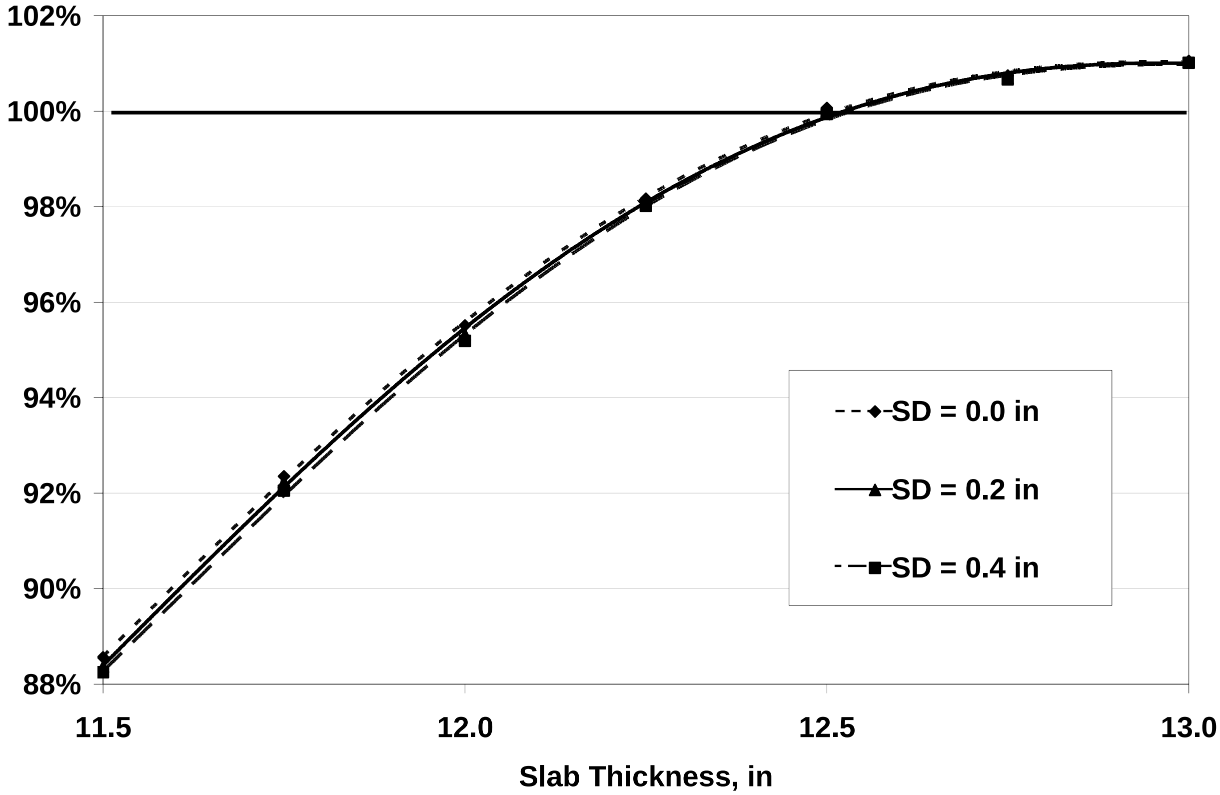


Figure 4

MAINLINE CONCRETE THICKNESS PAY FACTOR CURVE

Mean Thickness, in	Standard Deviation, in		
	0.00	0.20*	0.40
11.50	88.56	88.36	88.25
11.75	92.35	92.23	92.05
12.00	95.51	95.33	95.19
12.25	98.16	98.09	98.02
12.50*	100.06	100.00	99.94
12.75	100.74	100.70	100.66
13.00	101.05	101.03	101.01

*Targets

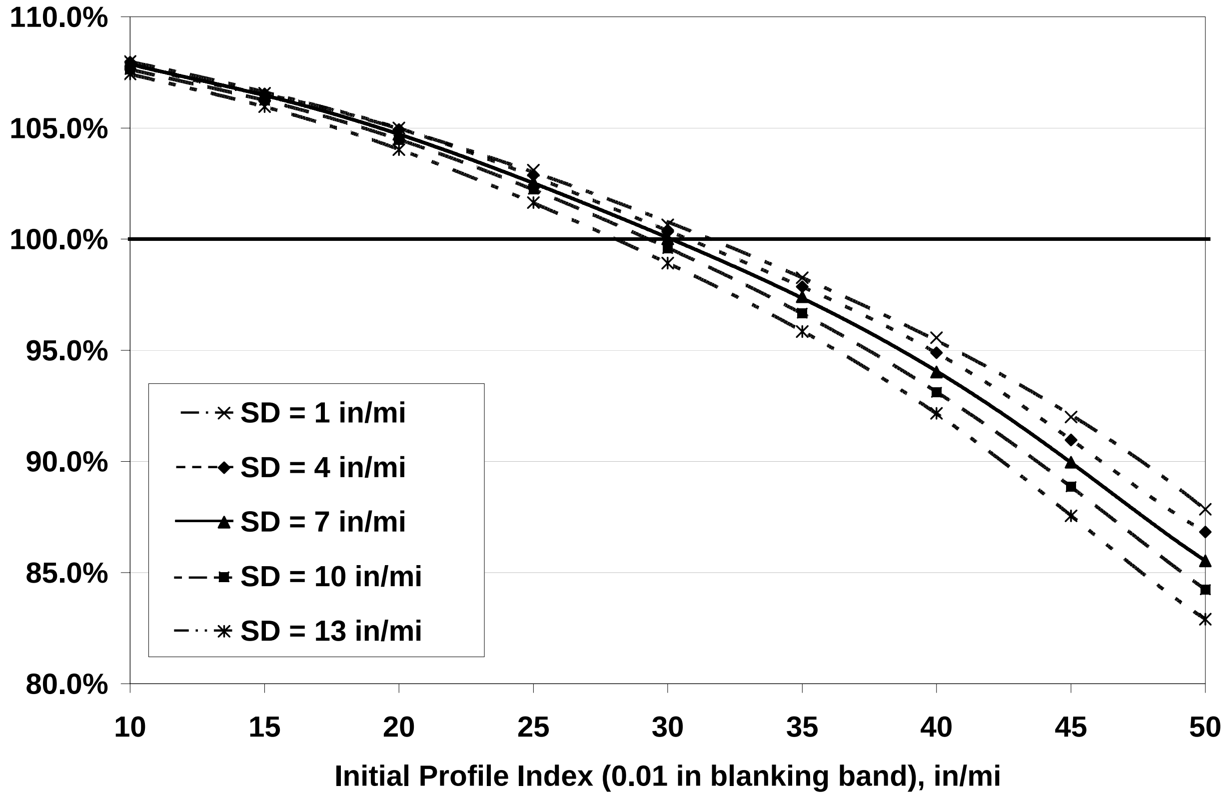


Figure 5

CONCRETE INITIAL SMOOTHNESS PAY FACTOR CURVE

Mean PI, in/mile	Standard Deviation, in/mile				
	1	4	7*	10	13
10	107.99	107.95	107.87	107.63	107.42
15	106.56	106.53	106.47	106.25	105.96
20	105.00	104.93	104.71	104.47	104.02
25	103.10	102.89	102.55	102.24	101.64
30*	100.63	100.33	100.00	99.57	98.92
35	98.25	97.85	97.41	96.66	95.84
40	95.56	94.89	94.02	93.11	92.16
45	91.99	90.97	89.96	88.86	87.55
50	87.85	86.83	85.53	84.23	82.90

*Targets

E.4.3 Computation of Performance-Related Composite Pay Factor for 8-in Concrete Pavement Shoulder Lot

The lot composite (overall) pay factor is the product of the individual AQC pay factors and is computed as follows:

$$PF_{composite} = (PF_{air} \times PF_{strength} \times PF_{thickness})/10{,}000 \qquad \text{Eq. 6}$$

Where:

$PF_{composite}$ = Composite (overall) pay factor, percent.
$PF_{strength}$ = Strength pay factor (obtain from Figure 2), percent.
PF_{air} = Air content pay factor (obtain from Figure 3), percent.
$PF_{thickness}$ = Slab thickness pay factor (obtain from Figure 6), percent.

The curves shown in the figures are for visual purposes only. The department will compute actual pay factors using the values in the table and use linear interpolation if necessary.

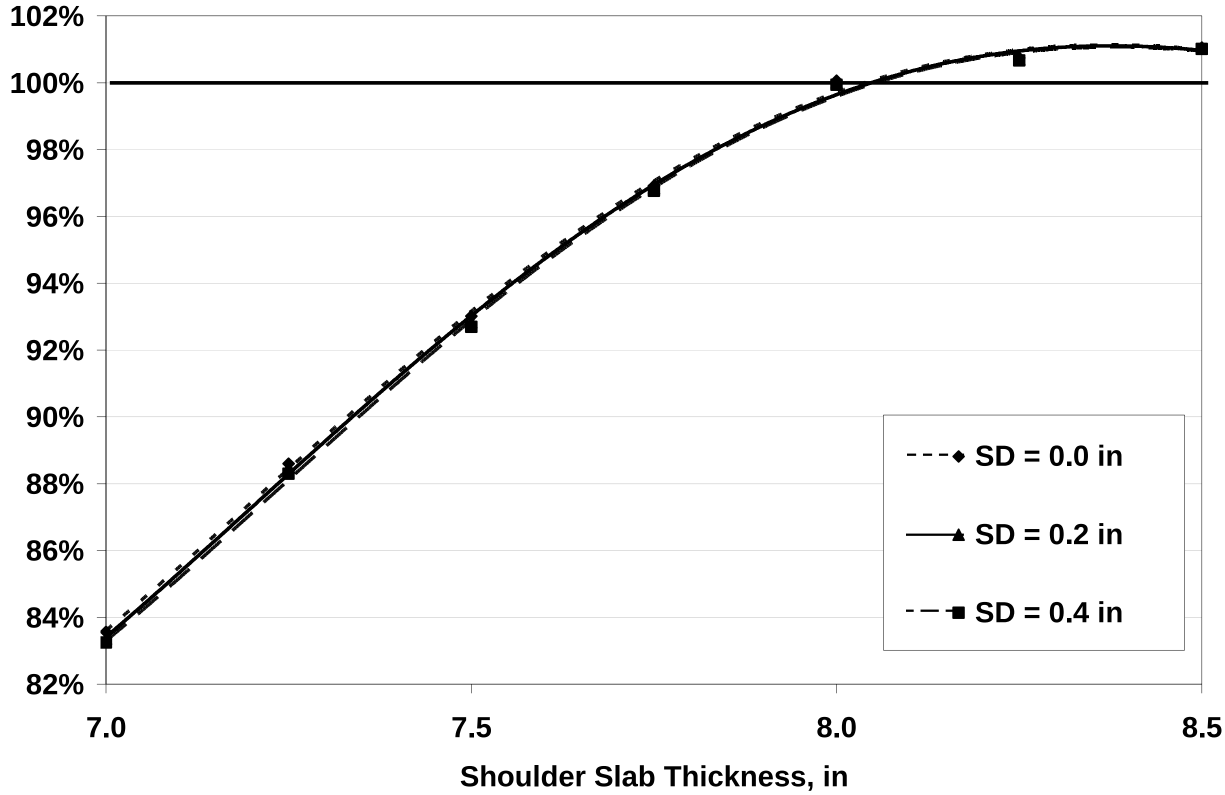


Figure 6

SHOULDER CONCRETE THICKNESS PAY FACTOR CURVE

Mean Thickness, in	Standard Deviation, in		
	0.00	0.20*	0.40
7.00	83.56	83.36	83.25
7.25	88.60	88.48	88.30
7.50	93.01	92.83	92.69
7.75	96.91	96.84	96.77
8.00*	100.06	100.00	99.94
8.25	100.74	100.70	100.66
8.50	101.05	101.03	101.01

*Targets

APPENDIX C: SUMMARY OF ALL DATA IN COMPUTATIONAL SPREADSHEETS FORMAT

LOT INFORMATION

Lot Number	WB1		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	591+54.0	
Lot Length, mi	0.7	<< Formula	End Station	628+50.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 5	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds (Formula >>)	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
	9856.00										

THICKNESS

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in	13.00	12.75	12.75	12.75	12.75	12.75	13.00				
Thickness - Probe 2, in	12.75	13.00	12.75	12.75	12.75	12.25	12.50				
Thickness - Probe 3, in	12.75	13.00	12.75	12.50	12.75	13.00	12.50				
Thickness - Probe 4, in	13.00	13.00	12.75	12.75	12.75	13.00	13.00				
Thickness - Probe 5, in	13.00	12.50	13.00	12.75	12.75	12.50	12.75				
Thickness - Probe 6, in	13.00	12.75	13.00	12.75	12.75	12.50	12.50				
Thickness - Probe 7, in	13.00	12.75	12.75	12.75	12.50	12.50	12.50				
Thickness - Probe 8, in	12.75	12.75	12.75	12.75	12.75	12.50	12.50				
Sublot Thickness, in (Formula >>)	**12.91**	**12.81**	**12.81**	**12.72**	**12.72**	**12.63**	**12.66**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.750	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.18554	<< Formula		

Thickness Pay Factor: 100.703%

STRENGTH

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi	5550	6160	4300	6290	5290	6530	5560				
Strength - Cylinder 2, psi	5840	6720	4120	6260	5220	6540	5700				
Sublot Strength, psi (Formula >>)	**5695**	**6440**	**4210**	**6275**	**5255**	**6535**	**5630**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5720.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	850.59162	<< Formula		

Strength Pay Factor: 100.563%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.2**	**6.5**	**7.1**	**7.3**	**6.5**	**6.5**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.657	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.40751	<< Formula		

Air Content Pay Factor: 99.770%

Smoothness

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi	25.1	18.4	20.6	22.5	25.4	23.8	26.6				
Profile Index - Run 2, in/mi	20.2	16	22.2	19.8	18.9	16.4	19.6				
Profile Index - Run 3, in/mi	18.1	18.4	18.6	15.4	18.2	13.7	18.6				
Profile Index - Run 4, in/mi	25.9	21	19.4	20.4	24.5	18.8	24.7				
Sublot Profile Index, in/mi (Formula >>)	**22.3**	**18.5**	**20.2**	**19.5**	**21.8**	**18.2**	**22.4**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	20.400	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	3.40962	<< Formula		

Profile Index Pay Factor: 104.783%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.70%
PF Strength	100.56%
PF Air Content	99.77%
PF Smoothness	104.78%
PF Composite	**105.87%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$15,382.43**

LOT INFORMATION

Lot Number	WB2		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	554+65.0	
Lot Length, mi	0.7	<< Formula	End Station	591+54.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 3, 4, 5	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	13.25	12.75	12.50	12.75	13.00	12.75				
Thickness - Probe 2, in		12.75	13.25	12.75	12.50	12.75	12.50	12.50				
Thickness - Probe 3, in		12.75	13.25	12.75	12.50	12.75	12.50	12.50				
Thickness - Probe 4, in		13.00	13.25	12.75	12.50	12.75	12.50	12.75				
Thickness - Probe 5, in		12.75	12.75	12.50	12.75	12.50	12.50	12.50				
Thickness - Probe 6, in		12.75	12.50	12.75	12.75	12.50	12.50	12.50				
Thickness - Probe 7, in		12.75	12.50	12.50	12.50	12.25	12.25	12.50				
Thickness - Probe 8, in		12.75	13.00	12.75	12.75	12.50	12.50	12.50				
Sublot Thickness, in	Formula >>	**12.81**	**12.97**	**12.69**	**12.63**	**12.59**	**12.53**	**12.56**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.683	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.23219	<< Formula		

Thickness Pay Factor: 100.505%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5990	4840	6340	6630	5280	5070	5700				
Strength - Cylinder 2, psi		6150	4760	6790	6590	5470	5480	6040				
Sublot Strength, psi	Formula >>	**6070**	**4800**	**6565**	**6610**	**5375**	**5275**	**5870**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5795.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	708.87850	<< Formula		

Strength Pay Factor: 100.708%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.4**	**6.7**	**6.3**	**6.3**	**7.5**	**7.1**	**5.8**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.586	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.59094	<< Formula		

Air Content Pay Factor: 99.695%

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		25.9	36.4	28	31.4	33.7	30.7	35.8				
Profile Index - Run 2, in/mi		23.4	30.8	27.2	29.3	31.2	26.6	29.9				
Profile Index - Run 3, in/mi		23.2	38.2	22.9	27.6	28.6	23.4	21.9				
Profile Index - Run 4, in/mi		28.6	36.2	31.1	28.2	29.1	21	23.4				
Sublot Profile Index, in/m	Formula >>	**25.3**	**35.4**	**27.3**	**29.1**	**30.7**	**25.4**	**27.8**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	28.704	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	4.68763	<< Formula		

Profile Index Pay Factor: 100.918%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.51%
PF Strength	100.71%
PF Air Content	99.69%
PF Smoothness	100.92%
PF Composite	**101.83%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$4,805.01**

LOT INFORMATION

Lot Number	WB3		Project No.	1011-01-88
Bid Price, $/sq yd	26.59		Begin Station	517+69.0
Lot Length, mi	0.7	<< Formula	End Station	554+65.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 4, 10

***Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)**

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	12.75	12.75	12.50	12.50	12.50	12.75				
Thickness - Probe 2, in		12.75	12.50	12.75	12.50	12.50	12.50	12.75				
Thickness - Probe 3, in		12.75	12.75	12.75	12.50	12.75	12.50	12.75				
Thickness - Probe 4, in		13.00	12.75	12.75	12.50	12.75	13.00	12.75				
Thickness - Probe 5, in		12.50	12.50	12.50	12.50	12.50	12.50	12.50				
Thickness - Probe 6, in		13.00	12.50	12.50	12.50	12.75	12.50	12.50				
Thickness - Probe 7, in		13.00	12.50	12.75	12.50	12.50	12.50	13.00				
Thickness - Probe 8, in		12.50	12.50	12.75	12.50	12.50	12.75	13.00				
Sublot Thickness, in	Formula >>	**12.81**	**12.59**	**12.69**	**12.50**	**12.59**	**12.59**	**12.75**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.647	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.17781	<< Formula		
Thickness Pay Factor:	**100.418%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		4410	6260	5010	4890	5000	5740	5730				
Strength - Cylinder 2, psi		3970	5810	5150	4960	5170	5930	5950				
Sublot Strength, psi	Formula >>	**4190**	**6035**	**5080**	**4925**	**5085**	**5835**	**5840**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5284.286	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	683.97984	<< Formula		
Strength Pay Factor:	**100.600%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.1**	**6.8**	**6.9**	**7.4**	**6.7**	**7.0**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.771	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.42431	<< Formula		
Air Content Pay Factor:	**99.851%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		25.6	25	20.7	19.5	25.7	33.1	24.2				
Profile Index - Run 2, in/mi		23.4	21.6	13.6	21.1	23.8	26.7	17.6				
Profile Index - Run 3, in/mi		19.6	19	18.2	14	21.9	30.8	16.3				
Profile Index - Run 4, in/mi		21.4	19.5	17.4	19.5	21.7	29.2	20				
Sublot Profile Index, in/m	Formula >>	**22.5**	**21.3**	**17.5**	**18.5**	**23.3**	**30.0**	**19.5**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	21.789	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	4.69020	<< Formula		
Profile Index Pay Factor:	**104.139%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.42%
PF Strength	100.60%
PF Air Content	99.85%
PF Smoothness	104.14%
PF Composite	**105.05%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$13,222.67**

LOT INFORMATION

Lot Number	WB4		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	479+99.0	
Lot Length, mi	0.7	<< Formula	End Station	517+69.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.43	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 10, 11	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		12.75	12.75	13.00	12.75	12.50	12.75	12.25				
Thickness - Probe 2, in		12.75	12.50	12.75	12.75	12.50	12.50	12.25				
Thickness - Probe 3, in		12.75	12.50	12.75	12.50	12.50	12.50	12.50				
Thickness - Probe 4, in		12.75	12.75	13.00	12.50	13.00	12.50	12.50				
Thickness - Probe 5, in		12.50	13.00	12.75	12.75	12.75	12.50	12.25				
Thickness - Probe 6, in		12.50	13.00	12.75	12.50	12.75	12.75	12.25				
Thickness - Probe 7, in		12.50	12.50	12.75	13.00	12.50	12.75	12.75				
Thickness - Probe 8, in		12.50	13.00	12.75	13.00	13.00	12.50	12.75				
Sublot Thickness, in	Formula >>	**12.63**	**12.75**	**12.81**	**12.72**	**12.69**	**12.59**	**12.44**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.661	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.21116	<< Formula		
Thickness Pay Factor:	**100.447%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5580	4990	5800	5480	5150	4680	5180				
Strength - Cylinder 2, psi		5070	5050	6110	5450	5200	4660	5120				
Sublot Strength, psi	Formula >>	**5325**	**5020**	**5955**	**5465**	**5175**	**4670**	**5150**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5251.429	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	415.57563	<< Formula		
Strength Pay Factor:	**100.782%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.7**	**6.5**	**6.5**	**6.8**	**7.1**	**7.3**	**6.6**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.786	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.32086	<< Formula		
Air Content Pay Factor:	**99.873%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		21.7	33.6	25.1	30	26.3	30.8	29.4				
Profile Index - Run 2, in/mi		20.4	26.4	22.1	23.5	24.3	25.6	24.2				
Profile Index - Run 3, in/mi		13.9	17.9	21.3	26.4	20.1	22.9	19.5				
Profile Index - Run 4, in/mi		22.3	20.3	20.2	23.4	23.2	21.3	28.5				
Sublot Profile Index, in/m	Formula >>	**19.6**	**24.6**	**22.2**	**25.8**	**23.5**	**25.2**	**25.4**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	23.736	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	4.29232	<< Formula		
Profile Index Pay Factor:	**103.376%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.45%
PF Strength	100.78%
PF Air Content	99.87%
PF Smoothness	103.38%
PF Composite	**104.52%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$11,837.99**

LOT INFORMATION

Lot Number	WB5		Project No.	1011-01-88
Bid Price, $/sq yd	26.59		Begin Station	443+03.0
Lot Length, mi	0.7	<< Formula	End Station	479+99.0 << Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 11

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds (Formula >>)	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
	9856.00										

THICKNESS

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in	12.25	12.75	12.75	13.00	12.75	12.75	12.75				
Thickness - Probe 2, in	12.25	12.75	12.75	13.00	13.00	13.00	12.50				
Thickness - Probe 3, in	12.75	13.00	12.75	13.00	13.00	12.75	12.75				
Thickness - Probe 4, in	12.75	12.75	12.75	13.00	13.00	12.50	12.50				
Thickness - Probe 5, in	12.75	12.75	12.50	12.50	12.75	12.75	12.50				
Thickness - Probe 6, in	12.75	12.75	12.50	12.50	12.75	12.75	12.50				
Thickness - Probe 7, in	12.75	12.75	12.75	13.00	12.75	12.75	13.00				
Thickness - Probe 8, in	12.75	12.75	12.50	13.00	12.75	13.00	13.00				
Sublot Thickness, in (Formula >>)	**12.63**	**12.78**	**12.66**	**12.88**	**12.84**	**12.78**	**12.69**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.750	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.19162	<< Formula		

Thickness Pay Factor: 100.702%

STRENGTH

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi	5800	6340	5190	5130	5140	5530	5960				
Strength - Cylinder 2, psi	5700	6190	5100	5030	5010	5320	6160				
Sublot Strength, psi (Formula >>)	**5750**	**6265**	**5145**	**5080**	**5075**	**5425**	**6060**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5542.857	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	510.12268	<< Formula		

Strength Pay Factor: 100.843%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.9**	**6.3**	**6.9**	**7.2**	**6.8**	**6.9**	**6.6**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.800	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.29481	<< Formula		

Air Content Pay Factor: 99.887%

Smoothness

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi	25.4	21.2	17.3	16.4	25.5	25.5	25.9				
Profile Index - Run 2, in/mi	23.5	18.6	17.5	16.6	18.9	21.4	26.8				
Profile Index - Run 3, in/mi	19.5	14.3	15.7	17.2	17.4	18.6	20.4				
Profile Index - Run 4, in/mi	22.2	15.8	15.8	15.8	19	20.9	22.2				
Sublot Profile Index, in/m (Formula >>)	**22.7**	**17.5**	**16.6**	**16.5**	**20.2**	**21.6**	**23.8**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	19.832	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	3.68552	<< Formula		

Profile Index Pay Factor: 104.991%

RESULTS

All Pay Factors Determined? Yes

Max PF Composite 110%
Min PF Composite 80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.70%
PF Strength	100.84%
PF Air Content	99.89%
PF Smoothness	104.99%
PF Composite	**106.50%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$17,029.63**

LOT INFORMATION

Lot Number	WB6		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	408+00.0	
Lot Length, mi	0.7	<< Formula	End Station	443+03.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.33	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9341.00**	<< Formula	Paving Date(s)	April 13	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	893.00				
		9341.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	12.50	12.50	12.50	12.75	12.50	13.00				
Thickness - Probe 2, in		13.00	12.50	12.75	12.50	12.50	12.50	13.00				
Thickness - Probe 3, in		13.00	12.50	12.50	12.50	12.50	12.50	13.00				
Thickness - Probe 4, in		13.00	12.50	12.50	12.75	12.75	12.50	13.00				
Thickness - Probe 5, in		12.50	12.50	12.75	12.75	12.50	12.50	12.75				
Thickness - Probe 6, in		12.50	12.50	12.75	12.75	12.50	12.75	12.75				
Thickness - Probe 7, in		12.50	12.50	12.75	12.75	12.50	12.75	12.75				
Thickness - Probe 8, in		12.50	12.50	12.75	12.75	12.50	12.50	12.75				
Sublot Thickness, in	Formula >>	**12.75**	**12.50**	**12.66**	**12.66**	**12.56**	**12.56**	**12.88**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.652	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9952	
Lot Thickness Std. Dev., in	0.18354	<< Formula

Thickness Pay Factor: 100.429%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5060	5460	5640	5070	6380	6030	5850				
Strength - Cylinder 2, psi		4710	5440	6180	5510	6160	5800	5740				
Sublot Strength, psi	Formula >>	**4885**	**5450**	**5910**	**5290**	**6270**	**5915**	**5795**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5645.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	484.78065	<< Formula

Strength Pay Factor: 100.861%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.3**	**7.2**	**7.2**	**6.5**	**6.7**	**6.5**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.700	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	0.37581	<< Formula

Air Content Pay Factor: 99.805%

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		24.4	16.9	19.4	21.2	21.4	17.1	16.57				
Profile Index - Run 2, in/mi		25	18	22.3	20.7	22.2	16.1	16.52				
Profile Index - Run 3, in/mi		22.6	14.7	15.2	14.8	18.1	19.9	17.84				
Profile Index - Run 4, in/mi		23.9	14.5	22.2	25.9	17.2	17.4	19.96				
Sublot Profile Index, in/m	Formula >>	**24.0**	**16.0**	**19.8**	**20.7**	**19.7**	**17.6**	**17.7**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	19.357	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0

Notes on Lot Profile Index Mean: Lot Profile Index Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9896	
Lot Profile Index Std. Dev., in/mi	3.37499	<< Formula

Profile Index Pay Factor: 105.149%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	893.00				

Total Area	9341.00
PF Thickness	100.43%
PF Strength	100.86%
PF Air Content	99.80%
PF Smoothness	105.15%
PF Composite	**106.30%**
Bid (Lot)	**$248,377.19**
Pay (lot)	**$15,652.09**

LOT INFORMATION

Lot Number	WB7		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	554+65.0	
Lot Length, mi	1.4	<< Formula	End Station	628+50.0	<< Formula
Lot Width, feet	12	<< Formula	Number of Lanes	1	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	9856.00	<< Formula	Paving Date(s)	April 17, 18, 19	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		12.75	12.75	13.00	13.00	12.75	12.75	12.75				
Thickness - Probe 2, in		12.75	12.75	13.00	13.00	12.50	12.75	12.50				
Thickness - Probe 3, in		12.75	12.50	13.00	13.00	12.75	12.75	12.75				
Thickness - Probe 4, in		13.00	12.50	12.75	13.00	13.00	12.50	12.50				
Thickness - Probe 5, in		12.50	12.75	13.00	13.00	12.50	12.50	12.75				
Thickness - Probe 6, in		12.50	12.75	13.00	12.75	12.50	12.50	12.50				
Thickness - Probe 7, in		12.50	13.00	13.00	13.00	12.75	12.75	13.00				
Thickness - Probe 8, in		12.50	13.00	13.00	12.75	12.75	12.50	13.00				
Sublot Thickness, in	Formula >>	12.66	12.75	12.97	12.91	12.69	12.63	12.72				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.759	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.19731	<< Formula		
Thickness Pay Factor:	**100.712%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5540	6130	5270	5070	5230	6100	6310				
Strength - Cylinder 2, psi		5680	6020	5120	5160	5280	5580	6470				
Sublot Strength, psi	Formula >>	5610	6075	5195	5115	5255	5840	6390				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5640.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	506.08811	<< Formula		
Strength Pay Factor:	**100.846%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	6.9	7.2	6.8	7.2	6.6	6.3	6.8				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.829	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.33351	<< Formula		
Air Content Pay Factor:	**99.903%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		22.1	30.6	17.7	25.6	52.8	31.5	37.4				
Profile Index - Run 2, in/mi		22.9	22.4	19.6	29.1	38.9	29	29.5				
Profile Index - Run 3, in/mi		21	28.6	19.6	18.8	48	27.4	27.7				
Profile Index - Run 4, in/mi		18.2	22	18	20.9	25.6	23.5	22.2				
Sublot Profile Index, in/mi	Formula >>	21.1	25.9	18.7	23.6	41.3	27.9	29.2				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	26.807	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	8.75666	<< Formula		
Profile Index Pay Factor:	**101.421%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.71%
PF Strength	100.85%
PF Air Content	99.90%
PF Smoothness	101.42%
PF Composite	**102.91%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$7,620.47**

LOT INFORMATION

Lot Number	WB8		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	479+99.0	
Lot Length, mi	1.4	<< Formula	End Station	554+65.0	<< Formula
Lot Width, feet	12	<< Formula	Number of Lanes	1	
Lot lane-mi	1.41	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 19, 20	

***Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)**

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	12.50	12.50	12.75	12.50	12.75	13.00				
Thickness - Probe 2, in		13.00	12.75	12.50	12.75	13.00	13.00	12.75				
Thickness - Probe 3, in		13.00	12.50	12.75	12.75	12.75	13.00	12.75				
Thickness - Probe 4, in		12.75	12.50	12.50	12.50	12.75	13.00	12.75				
Thickness - Probe 5, in		12.75	12.75	12.75	12.75	12.75	12.75	13.00				
Thickness - Probe 6, in		12.50	12.75	12.50	12.75	12.50	12.50	12.75				
Thickness - Probe 7, in		12.75	12.50	12.75	12.75	12.75	13.00	13.00				
Thickness - Probe 8, in		12.75	12.50	12.50	12.75	13.00	13.00	12.50				
Sublot Thickness, in	Formula >>	**12.81**	**12.59**	**12.59**	**12.72**	**12.75**	**12.88**	**12.81**				

Resulting Samples per lot (n)	**56**	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	**12.737**	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.18191	<< Formula		
Thickness Pay Factor:	**100.666%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5650	5760	5420	5630	5150	5880	5320				
Strength - Cylinder 2, psi		5510	5630	5340	5630	5590	6390	5130				
Sublot Strength, psi	Formula >>	**5580**	**5695**	**5380**	**5630**	**5370**	**6135**	**5225**				

Resulting Samples per lot (n)	**7**	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	**5573.571**	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	310.83274	<< Formula		
Strength Pay Factor:	**100.986%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.3**	**7.0**	**6.7**	**6.5**	**6.7**	**6.5**	**6.2**				

Resulting Samples per lot (n)	**7**	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	**6.557**	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.28134	<< Formula		
Air Content Pay Factor:	**99.714%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		19.9	18.3	23.1	20.8	22.5	16	22.6				
Profile Index - Run 2, in/mi		18.1	16.7	22.7	25	20.5	20.8	21.8				
Profile Index - Run 3, in/mi		14.3	12.6	18.5	16.5	20.1	16.1	17.3				
Profile Index - Run 4, in/mi		15.2	12.2	14.9	22.9	20.3	20.2	21.3				
Sublot Profile Index, in/m	Formula >>	**16.9**	**15.0**	**19.8**	**21.3**	**20.9**	**18.3**	**20.8**				

Resulting Samples per lot (n)	**28**	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	**18.971**	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	3.41204	<< Formula		
Profile Index Pay Factor:	**105.271%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.67%
PF Strength	100.99%
PF Air Content	99.71%
PF Smoothness	105.27%
PF Composite	**106.71%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$17,587.96**

LOT INFORMATION

Lot Number	WB9		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	408+00.0	
Lot Length, mi	1.4	<< Formula	End Station	479+99.0	<< Formula
Lot Width, feet	12	<< Formula	Number of Lanes	1	
Lot lane-mi	1.36	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9598.00**	<< Formula	Paving Date(s)	April 20, 21	

***Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)**

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1150.00				
		9598.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	12.75	12.50	12.50	12.50	12.75	13.00				
Thickness - Probe 2, in		12.50	12.50	12.50	12.50	12.50	12.50	13.00				
Thickness - Probe 3, in		12.75	12.50	12.50	12.50	12.50	12.50	12.75				
Thickness - Probe 4, in		12.50	12.75	12.50	12.50	12.75	12.75	12.50				
Thickness - Probe 5, in		12.75	12.50	12.75	12.50	12.50	12.75	12.50				
Thickness - Probe 6, in		12.50	12.75	12.50	12.50	12.50	12.50	12.75				
Thickness - Probe 7, in		12.50	12.50	12.50	12.50	12.50	12.75					
Thickness - Probe 8, in		12.75	12.50	12.50	12.50	12.50	12.50					
Sublot Thickness, in	Formula >>	**12.66**	**12.59**	**12.56**	**12.50**	**12.53**	**12.63**	**12.75**				

Resulting Samples per lot (n)	54	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.597	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9951			
Lot Thickness Std. Dev., in	0.14977	<< Formula		

Thickness Pay Factor: 100.285%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5670	5740	5260	5330	6030	5810	5810				
Strength - Cylinder 2, psi		5730	5450	5300	4320	5880	5590	5850				
Sublot Strength, psi	Formula >>	**5700**	**5595**	**5280**	**4825**	**5955**	**5700**	**5830**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5555.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	400.94263	<< Formula		

Strength Pay Factor: 100.921%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.3**	**6.6**	**6.4**	**6.3**	**6.3**	**7.1**	**6.6**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.514	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.30346	<< Formula		

Air Content Pay Factor: 99.680%

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		21.7	19.6	24.8	23	16.9	21.9	22.8				
Profile Index - Run 2, in/mi		15.3	22.2	19.2	21.9	21.6	21.2	21.48				
Profile Index - Run 3, in/mi		18.4	17.6	23.6	19.3	13.3	21.1	16.8				
Profile Index - Run 4, in/mi		16.3	20.6	16.7	20	18.2	16.1	18.7				
Sublot Profile Index, in/m	Formula >>	**17.9**	**20.0**	**21.1**	**21.1**	**17.5**	**20.1**	**19.9**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	19.653	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	2.84044	<< Formula		

Profile Index Pay Factor: 105.067%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1150.00				

Total Area	9598.00
PF Thickness	100.29%
PF Strength	100.92%
PF Air Content	99.68%
PF Smoothness	105.07%
PF Composite	**106.00%**
Bid (Lot)	**$255,210.82**
Pay (lot)	**$15,305.43**

LOT INFORMATION

Lot Number	EB1		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	591+54.0	
Lot Length, mi	0.7	<< Formula	End Station	628+50.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	9856.00	<< Formula	Paving Date(s)	May 17, 18	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	12.50	13.25	12.38	12.25	12.50	12.75				
Thickness - Probe 2, in		12.25	13.13	13.25	12.25	12.50	12.63	12.75				
Thickness - Probe 3, in		12.75	13.13	12.50	12.75	12.50	12.63	13.00				
Thickness - Probe 4, in		12.50	13.50	12.38	12.25	12.38	12.38	12.50				
Thickness - Probe 5, in		13.13	12.88	12.75	12.63	12.50	12.75	12.25				
Thickness - Probe 6, in		13.25	12.75	12.63	12.63	12.75	12.75	12.75				
Thickness - Probe 7, in		13.25	12.50	12.50	13.00	12.75	12.25	12.25				
Thickness - Probe 8, in		12.75	13.00	12.75	12.50	13.00	12.63	12.75				
Sublot Thickness, in	Formula >>	**12.86**	**12.92**	**12.75**	**12.55**	**12.58**	**12.57**	**12.63**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.693	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.30946	<< Formula		
Thickness Pay Factor:	**100.517%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5640	5340	5200	3920	4300	4670	5590				
Strength - Cylinder 2, psi		5230	5200	4940	4110	3970	5110	5740				
Sublot Strength, psi	Formula >>	**5435**	**5270**	**5070**	**4015**	**4135**	**4890**	**5665**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	4925.714	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	659.38072	<< Formula		
Strength Pay Factor:	**100.336%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.3**	**6.8**	**7.0**	**7.0**	**7.0**	**6.6**	**6.6**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.757	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.28134	<< Formula		
Air Content Pay Factor:	**99.857%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		22.7	25.4	24.9	22	16.9	20.3	18				
Profile Index - Run 2, in/mi		23.2	24.5	23.1	24	16.3	18.6	17.1				
Profile Index - Run 3, in/mi		21.7	22.8	28.4	22.8	18.4	19.2	20.6				
Profile Index - Run 4, in/mi		24.7	25.1	24	27.1	16.7	20.4	20.4				
Sublot Profile Index, in/m	Formula >>	**23.1**	**24.5**	**25.1**	**24.0**	**17.1**	**19.6**	**19.0**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	21.761	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	3.31130	<< Formula		
Profile Index Pay Factor:	**104.239%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.52%
PF Strength	100.34%
PF Air Content	99.86%
PF Smoothness	104.24%
PF Composite	**104.98%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$13,050.46**

LOT INFORMATION

Lot Number	EB2		Project No.	1011-01-88
Bid Price, $/sq yd	26.59		Begin Station	554+53.0
Lot Length, mi	0.7	<< Formula	End Station	591+54.0 << Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	May 18, 30, 31

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		13.00	13.00	12.50	12.50	12.25	12.25	12.25				
Thickness - Probe 2, in		13.00	12.88	12.50	12.50	12.50	12.38	12.25				
Thickness - Probe 3, in		12.63	12.25	12.25	12.25	12.75	12.25	12.25				
Thickness - Probe 4, in		12.63	12.50	12.25	12.38	12.50	12.50	12.75				
Thickness - Probe 5, in		12.63	13.25	12.50	12.25	12.75	12.38	12.25				
Thickness - Probe 6, in		12.75	12.50	12.38	12.38	12.75	12.38	12.50				
Thickness - Probe 7, in		12.50	12.25	12.38	12.25	13.00	12.50	12.25				
Thickness - Probe 8, in		12.50	12.50	12.25	12.63	12.50	12.75	12.50				
Sublot Thickness, in	Formula >>	**12.71**	**12.64**	**12.38**	**12.39**	**12.63**	**12.42**	**12.38**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.506	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.24422	<< Formula		
Thickness Pay Factor:	**100.002%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5050	5270	4680	4740	4930	5630	5490				
Strength - Cylinder 2, psi		5130	5100	4700	4910	4770	5630	5610				
Sublot Strength, psi	Formula >>	**5090**	**5185**	**4690**	**4825**	**4850**	**5630**	**5550**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5117.143	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	379.38395	<< Formula		
Strength Pay Factor:	**100.722%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.5**	**6.7**	**6.7**	**6.0**	**6.0**	**6.0**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.343	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.34495	<< Formula		
Air Content Pay Factor:	**99.537%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		35.2	38.1	22.2	28	27.4	24.4	22.9				
Profile Index - Run 2, in/mi		19.9	21.8	25.6	25.1	22.3	22.1	15.3				
Profile Index - Run 3, in/mi		19.3	27.9	25.8	24	22.4	23.6	22.4				
Profile Index - Run 4, in/mi		20.5	29.2	33.4	25.4	22.2	25.7	20.8				
Sublot Profile Index, in/m	Formula >>	**23.7**	**29.3**	**26.8**	**25.6**	**23.6**	**24.0**	**20.4**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	24.746	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	4.92064	<< Formula		
Profile Index Pay Factor:	**102.891%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.00%
PF Strength	100.72%
PF Air Content	99.54%
PF Smoothness	102.89%
PF Composite	**103.16%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$8,272.07**

LOT INFORMATION

Lot Number	EB3		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	517+57.0	
Lot Length, mi	0.7	<< Formula	End Station	554+53.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	May 31, June 1	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		12.38	12.25	12.25	12.50	12.38	12.25	12.50				
Thickness - Probe 2, in		12.50	12.50	12.38	12.63	12.50	12.25	12.63				
Thickness - Probe 3, in		12.50	13.00	12.25	12.50	12.63	12.38	12.75				
Thickness - Probe 4, in		12.25	12.50	12.38	12.25	13.00	12.25	12.75				
Thickness - Probe 5, in		12.50	12.25	12.25	12.50	12.38	12.50	12.38				
Thickness - Probe 6, in		12.25	12.25	12.25	12.50	12.50	12.50	12.50				
Thickness - Probe 7, in		12.50	12.75	12.25	12.25	12.25	12.25	12.63				
Thickness - Probe 8, in		12.63	12.38	12.38	12.50	12.63	12.75	12.63				
Sublot Thickness, in	Formula >>	**12.44**	**12.49**	**12.30**	**12.45**	**12.53**	**12.39**	**12.60**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.457	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9952	
Lot Thickness Std. Dev., in	0.18949	<< Formula

Thickness Pay Factor: 99.673%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		4520	5230	4220	4990	4530	4850	5570				
Strength - Cylinder 2, psi		4620	5180	4460	5140	4890	5080	5640				
Sublot Strength, psi	Formula >>	**4570**	**5205**	**4340**	**5065**	**4710**	**4965**	**5605**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	4922.857	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	441.48927	<< Formula

Strength Pay Factor: 100.524%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.9**	**6.3**	**6.5**	**6.4**	**7.0**	**6.5**	**6.0**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.514	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	0.35819	<< Formula

Air Content Pay Factor: 99.673%

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		20.5	15.8	15.7	15.9	24.9	18.1	19.8				
Profile Index - Run 2, in/mi		15.9	16.9	16	17	17.2	21.3	15.5				
Profile Index - Run 3, in/mi		18.5	20.5	14.6	20	23.1	21	16.7				
Profile Index - Run 4, in/mi		17.3	19.9	16.2	20.2	20.2	22.5	16.1				
Sublot Profile Index, in/m	Formula >>	**18.1**	**18.3**	**15.6**	**18.3**	**21.4**	**20.7**	**17.0**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	18.475	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0

Notes on Lot Profile Index Mean: Lot Profile Index Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9896	
Lot Profile Index Std. Dev., in/mi	2.70428	<< Formula

Profile Index Pay Factor: 105.443%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	99.67%
PF Strength	100.52%
PF Air Content	99.67%
PF Smoothness	105.44%

PF Composite 105.30%

Bid (Lot) $262,071.04

Pay (lot) $13,897.77

LOT INFORMATION

Lot Number	EB4		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	479+82.0	
Lot Length, mi	0.7	<< Formula	End Station	517+57.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.43	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	9856.00	<< Formula	Paving Date(s)	June 1	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		12.50	12.50	12.50	12.75	12.38	12.63	12.63				
Thickness - Probe 2, in		12.50	12.50	12.50	12.75	12.38	12.50	12.50				
Thickness - Probe 3, in		12.38	12.50	12.25	12.75	12.50	12.38	12.38				
Thickness - Probe 4, in		12.63	12.50	12.75	12.75	12.50	12.63	12.50				
Thickness - Probe 5, in		12.75	12.75	12.50	12.75	12.50	12.25	12.38				
Thickness - Probe 6, in		12.25	12.50	12.38	12.75	12.63	12.50	12.25				
Thickness - Probe 7, in		12.50	12.50	12.50	12.75	12.75	12.38	12.25				
Thickness - Probe 8, in		12.50	12.75	12.50	12.75	12.63	12.75	12.50				
Sublot Thickness, in	Formula >>	**12.50**	**12.56**	**12.49**	**12.75**	**12.53**	**12.50**	**12.42**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.537	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.15612	<< Formula		
Thickness Pay Factor:	**100.116%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		4750	4840	4320	5330	4640	5220	4700				
Strength - Cylinder 2, psi		4790	4570	3710	5570	4520	5230	4580				
Sublot Strength, psi	Formula >>	**4770**	**4705**	**4015**	**5450**	**4580**	**5225**	**4640**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	4769.286	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	484.55115	<< Formula		
Strength Pay Factor:	**100.335%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.2**	**6.3**	**6.0**	**6.5**	**6.4**	**7.0**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.414	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.32646	<< Formula		
Air Content Pay Factor:	**99.598%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		19.7	19.2	19.8	16.3	19.3	17.7	22.4				
Profile Index - Run 2, in/mi		17.9	20.1	21.8	18.3	19.7	20.3	20.8				
Profile Index - Run 3, in/mi		17.4	21.5	27.8	22.9	21.8	17.2	21.8				
Profile Index - Run 4, in/mi		18.6	20.9	21.4	20.7	18.4	15.1	20				
Sublot Profile Index, in/m	Formula >>	**18.4**	**20.4**	**22.7**	**19.6**	**19.8**	**17.6**	**21.3**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	19.957	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	2.47283	<< Formula		
Profile Index Pay Factor:	**104.979%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.12%
PF Strength	100.34%
PF Air Content	99.60%
PF Smoothness	104.98%
PF Composite	**105.03%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$13,178.97**

LOT INFORMATION

Lot Number	EB5		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	442+86.0	
Lot Length, mi	0.7	<< Formula	End Station	479+82.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	June 2	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds (Formula >>)	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
	9856.00										

THICKNESS

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in	12.38	12.38	12.63	12.50	12.63	12.63	12.75				
Thickness - Probe 2, in	12.63	12.63	12.50	12.63	12.50	12.50	13.00				
Thickness - Probe 3, in	12.63	12.50	12.75	12.38	12.63	12.50	12.63				
Thickness - Probe 4, in	12.63	12.50	12.75	12.75	12.50	12.75	12.50				
Thickness - Probe 5, in	12.50	12.50	12.63	12.63	12.63	12.50	12.50				
Thickness - Probe 6, in	12.38	12.75	12.38	12.63	12.50	12.63	12.50				
Thickness - Probe 7, in	12.25	12.38	12.38	12.75	12.50	12.50	12.75				
Thickness - Probe 8, in	12.75	12.50	12.63	12.75	12.75	12.75	12.75				
Sublot Thickness, in (Formula >>)	**12.52**	**12.52**	**12.58**	**12.63**	**12.58**	**12.60**	**12.67**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.585	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.14179	<< Formula		

Thickness Pay Factor: 100.252%

STRENGTH

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi	4580	5670	4710	5780	4770	5680	5210				
Strength - Cylinder 2, psi	4580	5890	4980	5650	5090	5590	5190				
Sublot Strength, psi (Formula >>)	**4580**	**5780**	**4845**	**5715**	**4930**	**5635**	**5200**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5240.714	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	496.71160	<< Formula		

Strength Pay Factor: 100.716%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.6**	**5.7**	**6.8**	**6.0**	**6.3**	**6.0**	**6.3**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.243	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.39396	<< Formula		

Air Content Pay Factor: 99.449%

Smoothness

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi	15.9	13.6	15.1	11	19.5	17.8	17.4				
Profile Index - Run 2, in/mi	18.2	14.4	12.3	12.7	17.1	17.4	20.5				
Profile Index - Run 3, in/mi	19.2	16.7	13.3	12	19.8	22.5	18.7				
Profile Index - Run 4, in/mi	16.2	15.2	13.4	16	23.3	21.4	17.7				
Sublot Profile Index, in/m (Formula >>)	**17.4**	**15.0**	**13.5**	**12.9**	**19.9**	**19.8**	**18.6**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	16.725	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	3.25698	<< Formula		

Profile Index Pay Factor: 105.989%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.25%
PF Strength	100.72%
PF Air Content	99.45%
PF Smoothness	105.99%
PF Composite	**106.43%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$16,843.74**

LOT INFORMATION

Lot Number	EB6		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	408+00.0	
Lot Length, mi	0.7	<< Formula	End Station	442+86.0	<< Formula
Lot Width, feet	24	<< Formula	Number of Lanes	2	
Lot lane-mi	1.32	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9296.00**	<< Formula	Paving Date(s)	June 2, 3	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	848.00				
		9296.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		12.38	12.38	12.50	12.75	12.50	12.50	12.50				
Thickness - Probe 2, in		12.50	12.75	12.25	12.38	12.50	12.75	12.63				
Thickness - Probe 3, in		12.63	12.50	12.25	12.50	12.25	12.38	12.50				
Thickness - Probe 4, in		12.63	12.63	12.50	12.50	12.38	12.25	12.50				
Thickness - Probe 5, in		12.50	12.50	12.75	12.50	12.50	12.38					
Thickness - Probe 6, in		12.63	12.50	12.63	12.38	12.50	12.38					
Thickness - Probe 7, in		12.50	12.63	12.38	12.75	12.50	12.38					
Thickness - Probe 8, in		12.75	12.50	12.50	12.75	12.38	12.25					
Sublot Thickness, in	Formula >>	**12.57**	**12.55**	**12.47**	**12.56**	**12.44**	**12.41**	**12.53**				

Resulting Samples per lot (n)	**52**	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	**12.502**	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	**Yes**		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	**0**			
Std. Dev. Correction Factor	**0.9950**			
Lot Thickness Std. Dev., in	**0.14259**	<< Formula		

Thickness Pay Factor: 100.022%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		4590	5320	5450	5030	5660	4910	5900				
Strength - Cylinder 2, psi		4600	5450	5420	5190	5740	4890	5650				
Sublot Strength, psi	Formula >>	**4595**	**5385**	**5435**	**5110**	**5700**	**4900**	**5775**				

Resulting Samples per lot (n)	**7**	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	**5271.429**	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	**Yes**		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	**0**			
Std. Dev. Correction Factor	**0.9594**			
Lot Strength Std. Dev., in	**445.98666**	<< Formula		

Strength Pay Factor: 100.770%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**7.0**	**6.5**	**6.0**	**6.3**	**6.1**	**6.8**	**6.4**				

Resulting Samples per lot (n)	**7**	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	**6.443**	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	**Yes**		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	**0**			
Std. Dev. Correction Factor	**0.9594**			
Lot Air Content Std. Dev., %	**0.37512**	<< Formula		

Air Content Pay Factor: 99.614%

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		24.1	18.7	17.2	17.4	25.9	19	22.4				
Profile Index - Run 2, in/mi		20.2	21.2	20.8	15.7	22.4	21.5	24.8				
Profile Index - Run 3, in/mi		22.6	21.7	21.5	17.9	19.8	19.8	22.42				
Profile Index - Run 4, in/mi		22.8	19.6	21.3	21.3	17.8	20.1	21.56				
Sublot Profile Index, in/m	Formula >>	**22.4**	**20.3**	**20.2**	**18.1**	**21.5**	**20.1**	**22.8**				

Resulting Samples per lot (n)	**28**	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	**20.767**	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	**Yes**		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	**0**			
Std. Dev. Correction Factor	**0.9896**			
Lot Profile Index Std. Dev., in/mi	**2.38781**	<< Formula		

Profile Index Pay Factor: 104.666%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	**1408.00**	**1408.00**	**1408.00**	**1408.00**	**1408.00**	**1408.00**	**848.00**				

Total Area	**9296.00**
PF Thickness	**100.02%**
PF Strength	**100.77%**
PF Air Content	**99.61%**
PF Smoothness	**104.67%**
PF Composite	**105.09%**
Bid (Lot)	**$247,180.64**
Pay (lot)	**$12,576.14**

LOT INFORMATION

Lot Number	EB7		Project No.	1011-01-88
Bid Price, $/sq yd	26.59		Begin Station	554+53.0
Lot Length, mi	1.4	<< Formula	End Station	628+50.0
Lot Width, feet	12	<< Formula	Number of Lanes	1
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	9856.00	<< Formula	Paving Date(s)	May 23, 24, June 5

<< Formula

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds (Formula >>)	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
	9856.00										

THICKNESS

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in	12.13	12.50	12.25	12.75	12.50	12.50	13.00				
Thickness - Probe 2, in	12.50	12.75	12.25	12.25	12.75	12.25	12.75				
Thickness - Probe 3, in	12.50	12.75	12.50	12.50	12.75	13.25	12.75				
Thickness - Probe 4, in	13.00	12.75	12.25	12.25	12.75	13.00	12.50				
Thickness - Probe 5, in	12.50	12.25	13.00	12.63	12.38	12.63	13.00				
Thickness - Probe 6, in	12.50	12.75	12.75	12.63	12.38	12.50	12.75				
Thickness - Probe 7, in	12.25	12.38	12.75	12.25	12.25	12.50	12.50				
Thickness - Probe 8, in	12.75	12.75	12.50	12.50	12.25	12.50	12.63				
Sublot Thickness, in (Formula >>)	12.52	12.61	12.53	12.47	12.50	12.64	12.74				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.572	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9952	
Lot Thickness Std. Dev., in	0.24961	<< Formula

Thickness Pay Factor: 100.189%

STRENGTH

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi	5590	4540	4900	5730	4650	4500	5070				
Strength - Cylinder 2, psi	5490	4970	4810	5800	4650	4580	4960				
Sublot Strength, psi (Formula >>)	5540	4755	4855	5765	4650	4540	5015				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5017.143	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	483.32979	<< Formula

Strength Pay Factor: 100.575%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	6.2	7.3	7.0	6.6	6.7	6.7	6.1				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.657	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	0.43751	<< Formula

Air Content Pay Factor: 99.766%

Smoothness

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi	22	34.9	22.7	20.6	46	31.6	27.9				
Profile Index - Run 2, in/mi	28.3	22.5	25.2	34	29.3	32	20.7				
Profile Index - Run 3, in/mi	17.8	27.9	20.2	15.4	40	24.3	22.8				
Profile Index - Run 4, in/mi	28.1	18.4	18.7	21.7	18.8	23.2	13.4				
Sublot Profile Index, in/m (Formula >>)	24.1	25.9	21.7	22.9	33.5	27.8	21.2				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	25.300	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0

Notes on Lot Profile Index Mean: Lot Profile Index Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9896	
Lot Profile Index Std. Dev., in/mi	7.51180	<< Formula

Profile Index Pay Factor: 102.343%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.19%
PF Strength	100.57%
PF Air Content	99.77%
PF Smoothness	102.34%
PF Composite	**102.88%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$7,558.85**

LOT INFORMATION

Lot Number	EB8		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	479+82.0	
Lot Length, mi	1.4	<< Formula	End Station	554+53.0	<< Formula
Lot Width, feet	12	<< Formula	Number of Lanes	1	
Lot lane-mi	1.41	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	9856.00	<< Formula	Paving Date(s)	June 5, 6, 7	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		12.50	12.50	12.75	12.50	12.63	12.75	12.75				
Thickness - Probe 2, in		13.00	12.38	12.50	12.38	12.50	12.75	12.75				
Thickness - Probe 3, in		12.63	12.50	12.63	12.50	12.50	13.00	13.00				
Thickness - Probe 4, in		12.75	12.75	12.63	12.25	12.38	13.00	13.00				
Thickness - Probe 5, in		12.50	12.25	12.50	13.00	12.75	12.50	12.38				
Thickness - Probe 6, in		12.50	12.50	12.75	12.75	12.50	12.63	12.50				
Thickness - Probe 7, in		12.75	12.50	12.50	12.50	12.75	13.00	12.50				
Thickness - Probe 8, in		12.38	12.25	12.25	12.50	13.00	13.00	12.50				
Sublot Thickness, in	Formula >>	**12.63**	**12.45**	**12.56**	**12.55**	**12.63**	**12.83**	**12.67**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.617	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.22017	<< Formula		

Thickness Pay Factor: 100.322%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5010	5050	5580	5230	4910	6160	5490				
Strength - Cylinder 2, psi		5050	4850	5590	4940	4960	5830	5480				
Sublot Strength, psi	Formula >>	**5030**	**4950**	**5585**	**5085**	**4935**	**5995**	**5485**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5295.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	419.77305	<< Formula		

Strength Pay Factor: 100.801%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.2**	**6.7**	**6.0**	**6.7**	**6.7**	**6.0**	**6.0**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.329	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.36957	<< Formula		

Air Content Pay Factor: 99.522%

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		31.3	14.7	24	21.8	28.8	23.7	20.5				
Profile Index - Run 2, in/mi		27.3	18.5	22.9	22.7	28.7	23.7	20.2				
Profile Index - Run 3, in/mi		22.7	15.5	17.1	18.5	21.8	20	19				
Profile Index - Run 4, in/mi		20.3	16.4	14.3	15	19.3	15.5	17.3				
Sublot Profile Index, in/m	Formula >>	**25.4**	**16.3**	**19.6**	**19.5**	**24.7**	**20.7**	**19.3**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	20.768	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	4.56721	<< Formula		

Profile Index Pay Factor: 104.572%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.32%
PF Strength	100.80%
PF Air Content	99.52%
PF Smoothness	104.57%
PF Composite	**105.24%**
Bid (Lot)	**$262,071.04**
Pay (lot)	**$13,742.39**

LOT INFORMATION

Lot Number	EB9		Project No.	1011-01-88	
Bid Price, $/sq yd	26.59		Begin Station	408+00.0	
Lot Length, mi	1.4	<< Formula	End Station	479+82.0	<< Formula
Lot Width, feet	12	<< Formula	Number of Lanes	1	
Lot lane-mi	1.36	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9576.00**	<< Formula	Paving Date(s)	June 7, 8	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1128.00				
		9576.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		12.25	12.50	12.50	12.50	12.63	12.50	12.50				
Thickness - Probe 2, in		12.50	12.50	12.50	12.63	12.50	12.38	12.63				
Thickness - Probe 3, in		12.50	12.63	12.38	12.50	12.50	12.50	12.25				
Thickness - Probe 4, in		12.50	12.63	12.50	12.25	12.75	12.75	12.50				
Thickness - Probe 5, in		12.50	12.50	12.75	12.50	12.63	12.75	12.75				
Thickness - Probe 6, in		12.75	12.38	12.75	12.50	12.63	12.63	12.50				
Thickness - Probe 7, in		12.63	12.38	12.50	12.50	12.75	12.63					
Thickness - Probe 8, in		12.50	12.50	12.75	12.50	12.75	12.63					
Sublot Thickness, in	Formula >>	**12.52**	**12.50**	**12.58**	**12.49**	**12.64**	**12.60**	**12.52**				

Resulting Samples per lot (n)	54	<< Formula	Lot AQL, in	12.5
Lot Thickness Mean, in	12.550	<< Formula	Lot RQL, in	11.5
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	13.0
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9951			
Lot Thickness Std. Dev., in	0.13248	<< Formula		
Thickness Pay Factor:	**100.159%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5970	5530	5600	4930	4800	4870	4540				
Strength - Cylinder 2, psi		5650	5220	5310	4740	4700	4920	4170				
Sublot Strength, psi	Formula >>	**5810**	**5375**	**5455**	**4835**	**4750**	**4895**	**4355**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5067.857	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	519.12131	<< Formula		
Strength Pay Factor:	**100.580%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.5**	**6.5**	**6.4**	**6.5**	**6.5**	**6.4**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.471	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.05086	<< Formula		
Air Content Pay Factor:	**99.681%**			

Smoothness

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Profile Index - Run 1, in/mi		17.1	24.1	26.7	30.9	18.9	21.4	22.9				
Profile Index - Run 2, in/mi		19.8	24.4	22.7	27.4	13.3	26.1	21.69				
Profile Index - Run 3, in/mi		12.2	16.1	21.8	27.7	17.5	18.4	18.2				
Profile Index - Run 4, in/mi		17.2	15.4	22	18	13.7	21.7	18.15				
Sublot Profile Index, in/m	Formula >>	**16.6**	**20.0**	**23.3**	**26.0**	**15.9**	**21.9**	**20.2**				

Resulting Samples per lot (n)	28	<< Formula	Lot AQL, in/mi	30.0
Lot Profile Index Mean, in/mi	20.551	<< Formula	Lot RQL, in/mi	50.0
Lot Profile Index Mean Acceptable?	Yes		Lot MQL, in/mi	10.0
Notes on Lot Profile Index Mean:	Lot Profile Index Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9896			
Lot Profile Index Std. Dev., in/mi	4.73177	<< Formula		
Profile Index Pay Factor:	**104.648%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1128.00				

Total Area	9576.00
PF Thickness	100.16%
PF Strength	100.58%
PF Air Content	99.68%
PF Smoothness	104.65%
PF Composite	**105.09%**
Bid (Lot)	**$254,625.84**
Pay (lot)	**$12,951.26**

LOT INFORMATION

Lot Number	WB10		Project No.	1011-01-88
Bid Price, $/sq yd	20.95		Begin Station	554+65.0
Lot Length, mi	1.4	<< Formula	End Station	628+50.0
Lot Width, feet	12	<< Formula	Number of Lanes	1
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 17, 18, 19

<< Formula

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds (Formula >>)	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
	9856.00										

THICKNESS

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in	8.50	8.25	8.50	8.75	8.00	8.25	8.00				
Thickness - Probe 2, in	9.00	8.25	8.50	9.00	8.25	8.50	8.00				
Thickness - Probe 3, in	8.50	8.00	8.50	9.00	8.25	8.00	8.00				
Thickness - Probe 4, in	9.00	8.00	8.50	9.00	8.25	8.00	8.00				
Thickness - Probe 5, in	8.50	8.25	8.50	8.75	8.00	8.25	8.25				
Thickness - Probe 6, in	8.50	8.00	8.50	8.50	8.25	8.25	8.25				
Thickness - Probe 7, in	8.50	8.50	9.00	8.50	8.25	8.00	8.50				
Thickness - Probe 8, in	8.50	8.50	9.00	8.75	8.25	8.25	8.50				
Sublot Thickness, in (Formula >>)	**8.63**	**8.22**	**8.63**	**8.78**	**8.19**	**8.19**	**8.19**				

Resulting Samples per lot (n)	**56**	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	**8.402**	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	**0**	
Std. Dev. Correction Factor	0.9952	
Lot Thickness Std. Dev., in	**0.31296**	<< Formula

Thickness Pay Factor: 100.885%

STRENGTH

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi	5140	4750	5510	5380	6000	4920	5820				
Strength - Cylinder 2, psi	4930	4920	5550	5550	6090	5020	5440				
Sublot Strength, psi (Formula >>)	**5035**	**4835**	**5530**	**5465**	**6045**	**4970**	**5630**				

Resulting Samples per lot (n)	**7**	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	**5358.571**	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	**0**	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	**449.40428**	<< Formula

Strength Pay Factor: 100.813%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**7.2**	**6.3**	**6.5**	**7.0**	**6.6**	**6.9**	**6.6**				

Resulting Samples per lot (n)	**7**	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	**6.729**	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	**0**	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	**0.32804**	<< Formula

Air Content Pay Factor: 99.831%

RESULTS

All Pay Factors Determined? Yes

Max PF Composite 110%
Min PF Composite 80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.88%
PF Strength	100.81%
PF Air Content	99.83%
PF Composite	**101.53%**
Bid (Lot)	**$206,483.20**
Pay (lot)	**$3,165.56**

LOT INFORMATION

Lot Number	WB11		Project No.	1011-01-88
Bid Price, $/sq yd	20.95		Begin Station	479+99.0
Lot Length, mi	1.4	<< Formula	End Station	554+65.0
Lot Width, feet	12	<< Formula	Number of Lanes	1
Lot lane-mi	1.41	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	April 19, 20

<< Formula

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds (Formula >>)	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
	9856.00										

THICKNESS

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in	8.25	8.25	8.25	8.00	8.00	8.75	8.25				
Thickness - Probe 2, in	9.00	8.25	8.25	8.00	8.50	8.50	8.50				
Thickness - Probe 3, in	8.00	8.25	8.25	8.25	8.25	9.00	8.25				
Thickness - Probe 4, in	8.50	8.25	8.25	8.25	8.00	9.00	8.25				
Thickness - Probe 5, in	8.50	8.25	8.00	8.25	8.25	8.50	8.50				
Thickness - Probe 6, in	8.00	8.00	8.25	8.25	8.25	8.75	8.25				
Thickness - Probe 7, in	8.00	8.25	8.25	8.25	8.75	8.50	8.50				
Thickness - Probe 8, in	8.00	8.25	8.25	8.25	8.50	8.50	8.50				
Sublot Thickness, in (Formula >>)	**8.28**	**8.22**	**8.22**	**8.19**	**8.31**	**8.69**	**8.38**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.326	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.25313	<< Formula		

Thickness Pay Factor: 100.791%

STRENGTH

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi	6310	5550	5500	5850	5930	5200	5130				
Strength - Cylinder 2, psi	6470	5660	5400	5760	5820	5980	4780				
Sublot Strength, psi (Formula >>)	**6390**	**5605**	**5450**	**5805**	**5875**	**5590**	**4955**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5667.143	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	456.09465	<< Formula		

Strength Pay Factor: 100.882%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.4**	**6.7**	**7.1**	**6.5**	**6.4**	**6.5**	**7.0**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.657	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.30003	<< Formula		

Air Content Pay Factor: 99.783%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.79%
PF Strength	100.88%
PF Air Content	99.78%
PF Composite	**101.46%**
Bid (Lot)	**$206,483.20**
Pay (lot)	**$3,013.10**

LOT INFORMATION

Lot Number	WB12		Project No.	1011-01-88
Bid Price, $/sq yd	20.95		Begin Station	408+00.0
Lot Length, mi	1.4	<< Formula	End Station	479+99.0
Lot Width, feet	12	<< Formula	Number of Lanes	1
Lot lane-mi	1.36	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	9598.00	<< Formula	Paving Date(s)	April 20, 21

<< Formula

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds (Formula >>)	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1150.00				
	9598.00										

THICKNESS

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in	8.50	8.25	8.00	8.50	8.25	8.50	8.25				
Thickness - Probe 2, in	8.50	8.25	8.25	8.50	8.50	8.00	8.50				
Thickness - Probe 3, in	8.00	8.00	8.00	8.50	8.25	8.25	8.00				
Thickness - Probe 4, in	8.75	8.25	8.00	8.50	8.00	8.00	8.00				
Thickness - Probe 5, in	8.25	8.50	8.00	8.50	8.50	8.25	8.25				
Thickness - Probe 6, in	8.25	8.50	8.00	8.50	8.00	8.25	8.25				
Thickness - Probe 7, in	8.25	8.00	8.75	8.25	8.25	8.00					
Thickness - Probe 8, in	8.75	8.00	8.50	8.50	8.00	8.25					
Sublot Thickness, in (Formula >>)	8.41	8.22	8.19	8.47	8.22	8.19	8.21				

Resulting Samples per lot (n)	54	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.273	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9951			
Lot Thickness Std. Dev., in	0.23031	<< Formula		
Thickness Pay Factor:	**100.725%**			

STRENGTH

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi	5740	6080	6130	5940	5860	6340	6380				
Strength - Cylinder 2, psi	5500	6040	6200	5830	6020	6070	6430				
Sublot Strength, psi (Formula >>)	5620	6060	6165	5885	5940	6205	6405				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	6040.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	264.68177	<< Formula		
Strength Pay Factor:	**101.019%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	6.5	6.8	6.0	6.6	6.5	6.3	6.0				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.386	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.31517	<< Formula		
Air Content Pay Factor:	**99.576%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1150.00				

Total Area	9598.00
PF Thickness	100.72%
PF Strength	101.02%
PF Air Content	99.58%
PF Composite	**101.32%**
Bid (Lot)	**$201,078.10**
Pay (lot)	**$2,655.21**

LOT INFORMATION

Lot Number	WB13		Project No.	1011-01-88	
Bid Price, $/sq yd	20.95		Begin Station	554+65.0	
Lot Length, mi	1.4	<< Formula	End Station	628+50.0	<< Formula
Lot Width, feet	10	<< Formula	Number of Lanes	1	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**6751.00**	<< Formula	Paving Date(s)	April 12, 14	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1173.00	871.00	1173.00	594.00	594.00	1173.00	1173.00				
		6751.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.00	8.00	8.00	8.00	8.25	8.50	8.50				
Thickness - Probe 2, in		8.00	8.00	9.00	8.25	8.25	8.25	8.75				
Thickness - Probe 3, in		8.25	8.88	8.50	8.25	8.25	8.25	8.25				
Thickness - Probe 4, in		8.00	10.00	8.50	8.50	8.25	8.50	8.00				
Thickness - Probe 5, in		8.00		8.00			8.00	8.50				
Thickness - Probe 6, in		8.50		9.00			8.25	8.50				
Thickness - Probe 7, in		8.25		8.00			8.25	8.25				
Thickness - Probe 8, in		8.25		8.50			8.25	8.25				
Sublot Thickness, in	Formula >>	**8.16**	**8.72**	**8.44**	**8.25**	**8.25**	**8.28**	**8.38**				

Resulting Samples per lot (n)	44	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.338	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9939	
Lot Thickness Std. Dev., in	0.37166	<< Formula

Thickness Pay Factor: 100.788%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		4930	5190	5020	5950			5420				
Strength - Cylinder 2, psi		5130	4950	5070	5740			5200				
Sublot Strength, psi	Formula >>	**5030**	**5070**	**5045**	**5845**			**5310**				

Resulting Samples per lot (n)	5	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5260.000	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9399	
Lot Strength Std. Dev., in	368.54146	<< Formula

Strength Pay Factor: 100.820%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**7.0**	**7.3**	**7.2**	**6.9**			**7.3**				

Resulting Samples per lot (n)	5	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	7.140	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9399	
Lot Air Content Std. Dev., %	0.19327	<< Formula

Air Content Pay Factor: 100.102%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1173.00	871.00	1173.00	594.00	594.00	1173.00	1173.00				

Total Area	6751.00
PF Thickness	100.79%
PF Strength	100.82%
PF Air Content	100.10%
PF Composite	**101.72%**
Bid (Lot)	**$141,433.45**
Pay (lot)	**$2,430.33**

LOT INFORMATION

Lot Number	WB14		Project No.	1011-01-88
Bid Price, $/sq yd	20.95		Begin Station	479+99.0
Lot Length, mi	1.4	<< Formula	End Station	554+65.0
Lot Width, feet	10	<< Formula	Number of Lanes	1
Lot lane-mi	1.41	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**8211.00**	<< Formula	Paving Date(s)	April 14, 18

<< Formula

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00				
		8211.00										

THICKNESS

Thickness - Probe 1, in		8.00	8.25	8.50	8.25	8.25	8.25	8.25				
Thickness - Probe 2, in		8.00	8.50	8.50	8.25	8.50	8.50	8.50				
Thickness - Probe 3, in		8.00	8.00	8.25	8.00	8.50	8.00	8.50				
Thickness - Probe 4, in		8.75	9.00	8.50	8.00	8.50	8.00	8.75				
Thickness - Probe 5, in		8.25	8.00	8.25	8.50	8.25	8.25	8.00				
Thickness - Probe 6, in		8.25	8.75	8.25	8.75	8.00	8.25	9.00				
Thickness - Probe 7, in		8.50	8.50	8.50	8.75	8.00	8.00	8.00				
Thickness - Probe 8, in		8.50	8.25	8.25	9.00	8.00	8.00	8.75				
Sublot Thickness, in	Formula >>	**8.28**	**8.41**	**8.38**	**8.44**	**8.25**	**8.16**	**8.47**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.339	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.29308	<< Formula		

Thickness Pay Factor: 100.803%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5660	5630	5120	6120	4970	5950	5170				
Strength - Cylinder 2, psi		5870	5620	5230	6170	5150	5910	5020				
Sublot Strength, psi	Formula >>	**5765**	**5625**	**5175**	**6145**	**5060**	**5930**	**5095**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5542.143	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is greater than MQL - Use MQL for Lot Strength Mean			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	453.85601	<< Formula		

Strength Pay Factor: 100.883%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.1**	**6.6**	**6.3**	**6.8**	**6.4**	**6.7**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.486	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.25123	<< Formula		

Air Content Pay Factor: 99.665%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00				

Total Area	8211.00
PF Thickness	100.80%
PF Strength	100.88%
PF Air Content	99.67%
PF Composite	**101.35%**
Bid (Lot)	**$172,020.45**
Pay (lot)	**$2,326.28**

LOT INFORMATION

Lot Number	WB15		Project No.	1011-01-88	
Bid Price, $/sq yd	20.95		Begin Station	408+00.0	
Lot Length, mi	1.4	<< Formula	End Station	479+99.0	<< Formula
Lot Width, feet	10	<< Formula	Number of Lanes	1	
Lot lane-mi	1.36	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**7999.00**	<< Formula	Paving Date(s)	April 18	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	961.00				
		7999.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.25	8.25	8.00	8.25	8.00	9.00	8.25				
Thickness - Probe 2, in		8.25	8.25	8.25	8.50	8.00	8.75	8.25				
Thickness - Probe 3, in		8.00	8.25	8.00	8.25	8.50	8.25	8.00				
Thickness - Probe 4, in		8.00	8.25	8.00	8.25	8.25	8.50	8.00				
Thickness - Probe 5, in		8.00	8.25	8.75	8.50	8.00	8.25	8.50				
Thickness - Probe 6, in		8.50	8.50	8.50	8.25	8.25	8.50	8.25				
Thickness - Probe 7, in		8.25	8.50	8.25	8.25	8.25	8.50					
Thickness - Probe 8, in		8.50	8.50	8.50	8.75	8.25	8.25					
Sublot Thickness, in	Formula >>	**8.22**	**8.34**	**8.28**	**8.38**	**8.19**	**8.50**	**8.21**				

Resulting Samples per lot (n)	54	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.306	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9951	
Lot Thickness Std. Dev., in	0.22717	<< Formula

Thickness Pay Factor: 100.769%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5170	4470	5190	4490	5490	4910	5670				
Strength - Cylinder 2, psi		5020	4380	5080	4790	5460	4830	5930				
Sublot Strength, psi	Formula >>	**5095**	**4425**	**5135**	**4640**	**5475**	**4870**	**5800**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5062.857	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	493.01075	<< Formula

Strength Pay Factor: 100.598%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.7**	**6.8**	**6.7**	**7.4**	**6.5**	**6.9**	**6.9**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.843	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	0.29393	<< Formula

Air Content Pay Factor: 99.918%

RESULTS

All Pay Factors Determined? Yes

Max PF Composite 110%
Min PF Composite 80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	961.00				

Total Area	7999.00
PF Thickness	100.77%
PF Strength	100.60%
PF Air Content	99.92%
PF Composite	**101.29%**
Bid (Lot)	**$167,579.05**
Pay (lot)	**$2,157.90**

LOT INFORMATION

Lot Number	EB10		Project No.	1011-01-88	
Bid Price, $/sq yd	20.95		Begin Station	554+53.0	
Lot Length, mi	1.4	<< Formula	End Station	628+50.0	<< Formula
Lot Width, feet	12	<< Formula	Number of Lanes	1	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	May 23, 24, June 5	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.25	8.50	7.75	8.50	8.25	8.25	8.25				
Thickness - Probe 2, in		8.13	8.75	8.25	8.13	8.50	8.25	8.00				
Thickness - Probe 3, in		8.75	8.75	8.50	8.00	8.25	9.00	8.50				
Thickness - Probe 4, in		8.13	8.75	8.50	8.25	8.50	8.50	8.38				
Thickness - Probe 5, in		8.50	8.25	8.50	8.50	8.00	8.25	8.50				
Thickness - Probe 6, in		8.25	8.50	8.50	8.25	8.13	8.25	8.50				
Thickness - Probe 7, in		8.25	8.50	8.00	8.25	8.25	8.13	8.50				
Thickness - Probe 8, in		8.25	8.25	8.13	8.25	8.25	8.13	8.25				
Sublot Thickness, in	Formula >>	**8.31**	**8.53**	**8.27**	**8.27**	**8.27**	**8.35**	**8.36**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.336	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.22806	<< Formula		
Thickness Pay Factor:	**100.808%**			

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		4730	4950	4760	5050	4720	5380	5360				
Strength - Cylinder 2, psi		4950	5100	5090	5210	4680	5120	5090				
Sublot Strength, psi	Formula >>	**4840**	**5025**	**4925**	**5130**	**4700**	**5250**	**5225**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5013.571	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	213.01138	<< Formula		
Strength Pay Factor:	**100.788%**			

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**7.0**	**6.9**	**6.4**	**7.0**	**6.5**	**6.3**	**6.7**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.686	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.30346	<< Formula		
Air Content Pay Factor:	**99.803%**			

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.81%
PF Strength	100.79%
PF Air Content	99.80%
PF Composite	**101.40%**
Bid (Lot)	**$206,483.20**
Pay (lot)	**$2,895.59**

LOT INFORMATION

Lot Number	EB11		Project No.	1011-01-88
Bid Price, $/sq yd	20.95		Begin Station	479+82.0
Lot Length, mi	1.4	<< Formula	End Station	554+53.0
Lot Width, feet	12	<< Formula	Number of Lanes	1
Lot lane-mi	1.41	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**9856.00**	<< Formula	Paving Date(s)	June 5, 6, 7

<< Formula

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				
		9856.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.00	8.50	8.75	8.25	8.25	8.25	8.25				
Thickness - Probe 2, in		8.13	8.75	8.00	8.50	8.13	8.25	8.25				
Thickness - Probe 3, in		8.25	8.50	8.25	8.13	8.50	7.88	8.13				
Thickness - Probe 4, in		8.13	8.75	8.13	8.50	8.00	8.00	8.25				
Thickness - Probe 5, in		8.25	8.00	8.13	8.25	8.00	8.50	8.00				
Thickness - Probe 6, in		8.38	8.13	8.00	8.50	8.13	8.75	8.13				
Thickness - Probe 7, in		8.50	8.25	8.00	8.13	8.00	8.00	8.50				
Thickness - Probe 8, in		8.50	8.25	8.25	8.00	8.25	8.00	8.25				
Sublot Thickness, in	Formula >>	**8.27**	**8.39**	**8.19**	**8.28**	**8.16**	**8.20**	**8.22**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.244	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9952	
Lot Thickness Std. Dev., in	0.22461	<< Formula

Thickness Pay Factor: 100.680%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5470	5680	5410	4840	4820	5670	5290				
Strength - Cylinder 2, psi		5440	5330	5290	4980	5140	5890	5200				
Sublot Strength, psi	Formula >>	**5455**	**5505**	**5350**	**4910**	**4980**	**5780**	**5245**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5317.857	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	316.79237	<< Formula

Strength Pay Factor: 100.887%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.1**	**6.2**	**6.9**	**6.6**	**6.7**	**5.7**	**6.3**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.357	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	0.42492	<< Formula

Air Content Pay Factor: 99.537%

RESULTS

All Pay Factors Determined? Yes

Max PF Composite 110%
Min PF Composite 80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00				

Total Area	9856.00
PF Thickness	100.68%
PF Strength	100.89%
PF Air Content	99.54%
PF Composite	**101.10%**
Bid (Lot)	**$206,483.20**
Pay (lot)	**$2,275.73**

LOT INFORMATION

Lot Number	EB12		Project No.	1011-01-88
Bid Price, $/sq yd	20.95		Begin Station	408+00.0
Lot Length, mi	1.4	<< Formula	End Station	479+82.0
Lot Width, feet	12	<< Formula	Number of Lanes	1
Lot lane-mi	1.36	<< Formula	Number of Sublots*	7
Resulting Lot Area, sq yds	**9576.00**	<< Formula	Paving Date(s)	June 7, 8

<< Formula

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1128.00				
		9576.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.13	8.50	8.50	8.13	8.13	8.50	8.13				
Thickness - Probe 2, in		7.88	8.13	8.25	8.00	7.88	8.00	8.25				
Thickness - Probe 3, in		8.13	8.25	8.50	8.50	8.25	8.25	8.50				
Thickness - Probe 4, in		8.13	8.25	8.50	8.00	8.00	8.13	8.25				
Thickness - Probe 5, in		8.13	8.13	9.00	7.88	8.50	8.13	8.00				
Thickness - Probe 6, in		8.25	8.13	9.00	8.25	7.88	8.00	8.00				
Thickness - Probe 7, in		8.13	8.25	8.00	7.75	8.75	8.25					
Thickness - Probe 8, in		8.00	8.50	8.13	7.75	8.75	8.50					
Sublot Thickness, in	Formula >>	**8.10**	**8.27**	**8.49**	**8.03**	**8.27**	**8.22**	**8.19**				

Resulting Samples per lot (n)	**54**	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	**8.224**	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9951	
Lot Thickness Std. Dev., in	0.27694	<< Formula

Thickness Pay Factor: 100.611%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5430	5930	5340	5280	4980	5050	4550				
Strength - Cylinder 2, psi		5410	5670	5030	5490	5360	4870	4440				
Sublot Strength, psi	Formula >>	**5420**	**5800**	**5185**	**5385**	**5170**	**4960**	**4495**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5202.143	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	425.17187	<< Formula

Strength Pay Factor: 100.742%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.0**	**6.5**	**6.3**	**6.2**	**6.6**	**6.4**	**6.4**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.343	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	0.20722	<< Formula

Air Content Pay Factor: 99.558%

RESULTS

All Pay Factors Determined? Yes

Max PF Composite 110%
Min PF Composite 80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1408.00	1408.00	1408.00	1408.00	1408.00	1408.00	1128.00				

Total Area	9576.00
PF Thickness	100.61%
PF Strength	100.74%
PF Air Content	99.56%
PF Composite	**100.91%**
Bid (Lot)	**$200,617.20**
Pay (lot)	**$1,824.28**

LOT INFORMATION

Lot Number	EB13		Project No.	1011-01-88	
Bid Price, $/sq yd	20.95		Begin Station	554+53.0	
Lot Length, mi	1.4	<< Formula	End Station	628+50.0	<< Formula
Lot Width, feet	10	<< Formula	Number of Lanes	1	
Lot lane-mi	1.40	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**6801.00**	<< Formula	Paving Date(s)	May 22, June 8, 9	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	565.00	565.00	1173.00	1173.00	979.00	1173.00	1173.00				
		6801.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.75	10.00	8.00	8.25	8.63	8.25	8.63				
Thickness - Probe 2, in		8.75	8.75	8.25	8.50	8.50	8.25	8.63				
Thickness - Probe 3, in		9.00	8.13	8.13	8.25	8.50	8.00	8.25				
Thickness - Probe 4, in		8.75	8.13	8.25	8.25	8.63	8.38	8.25				
Thickness - Probe 5, in				8.25	8.13	8.50	8.25	8.50				
Thickness - Probe 6, in				8.50	8.13	8.50	8.38	8.50				
Thickness - Probe 7, in				8.50	8.13		8.50	8.50				
Thickness - Probe 8, in				8.38	8.00		8.63	8.25				
Sublot Thickness, in	Formula >>	**8.81**	**8.75**	**8.28**	**8.21**	**8.54**	**8.33**	**8.44**				

Resulting Samples per lot (n)	46	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.425	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9942			
Lot Thickness Std. Dev., in	0.33337	<< Formula		

Thickness Pay Factor: 100.914%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5720	5250	4400	4360	4970	6010	5100				
Strength - Cylinder 2, psi		5620	4920	4280	4260	5310	5680	5250				
Sublot Strength, psi	Formula >>	**5670**	**5085**	**4340**	**4310**	**5140**	**5845**	**5175**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5080.714	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	614.65424	<< Formula		

Strength Pay Factor: 100.512%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.3**	**5.5**	**6.3**	**7.3**	**6.5**	**6.9**	**6.5**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.471	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.58256	<< Formula		

Air Content Pay Factor: 99.608%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	565.00	565.00	1173.00	1173.00	979.00	1173.00	1173.00				

Total Area	6801.00
PF Thickness	100.91%
PF Strength	100.51%
PF Air Content	99.61%
PF Composite	**101.03%**
Bid (Lot)	**$142,480.95**
Pay (lot)	**$1,472.20**

LOT INFORMATION

Lot Number	EB14		Project No.	1011-01-88	
Bid Price, $/sq yd	20.95		Begin Station	479+82.0	
Lot Length, mi	1.4	<< Formula	End Station	554+53.0	<< Formula
Lot Width, feet	10	<< Formula	Number of Lanes	1	
Lot lane-mi	1.41	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**8211.00**	<< Formula	Paving Date(s)	June 9	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00				
		8211.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.63	8.25	8.25	8.25	8.75	8.25	8.00				
Thickness - Probe 2, in		8.38	8.25	8.50	8.50	8.50	8.25	8.25				
Thickness - Probe 3, in		8.25	8.25	8.25	8.38	8.63	8.25	8.00				
Thickness - Probe 4, in		8.25	8.25	8.25	8.50	8.50	8.50	8.25				
Thickness - Probe 5, in		8.00	8.25	8.75	8.50	8.13	8.25	8.13				
Thickness - Probe 6, in		8.25	8.13	8.38	8.38	8.13	8.50	8.50				
Thickness - Probe 7, in		8.25	8.38	8.25	8.50	8.13	8.25	8.00				
Thickness - Probe 8, in		8.25	8.50	8.50	8.25	8.25	8.25	8.38				
Sublot Thickness, in	Formula >>	**8.28**	**8.28**	**8.39**	**8.41**	**8.38**	**8.31**	**8.19**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.320	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5

Notes on Lot Thickness Mean: Lot Thickness Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9952	
Lot Thickness Std. Dev., in	0.17588	<< Formula

Thickness Pay Factor: 100.797%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5330	4970	5310	6080	5450	5790	5420				
Strength - Cylinder 2, psi		5440	4810	4980	5990	5740	5860	5820				
Sublot Strength, psi	Formula >>	**5385**	**4890**	**5145**	**6035**	**5595**	**5825**	**5620**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5499.286	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500

Notes on Lot Strength Mean: Lot Strength Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Strength Std. Dev., in	409.61498	<< Formula

Strength Pay Factor: 100.915%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.7**	**6.5**	**6.9**	**7.0**	**6.0**	**6.3**	**7.1**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.643	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5

Notes on Lot Air Content Mean: Lot Air Content Mean is between RQL and MQL

Number of Non-Conforming Sublots:	0	
Std. Dev. Correction Factor	0.9594	
Lot Air Content Std. Dev., %	0.41631	<< Formula

Air Content Pay Factor: 99.758%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00				

Total Area	8211.00
PF Thickness	100.80%
PF Strength	100.91%
PF Air Content	99.76%
PF Composite	**101.47%**
Bid (Lot)	**$172,020.45**
Pay (lot)	**$2,534.41**

LOT INFORMATION

Lot Number	EB15		Project No.	1011-01-88	
Bid Price, $/sq yd	20.95		Begin Station	408+00.0	
Lot Length, mi	1.4	<< Formula	End Station	479+82.0	<< Formula
Lot Width, feet	10	<< Formula	Number of Lanes	1	
Lot lane-mi	1.36	<< Formula	Number of Sublots*	7	
Resulting Lot Area, sq yds	**7980.00**	<< Formula	Paving Date(s)	June 9, 10	

*Minimum Number of Sublots = 4, Maximum Number of Sublots = 8, except in special cases (e.g. last day paving or when possibility of lot having less than 4 sublots)

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Area, sq yds	Formula >>	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	942.00				
		7980.00										

THICKNESS

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Thickness - Probe 1, in		8.00	8.75	8.50	8.13	8.50	8.25	8.25				
Thickness - Probe 2, in		8.13	8.75	8.50	8.50	8.38	8.13	8.63				
Thickness - Probe 3, in		8.00	8.50	8.38	8.25	8.38	8.00	8.00				
Thickness - Probe 4, in		8.25	8.50	8.50	8.38	8.50	8.25	8.13				
Thickness - Probe 5, in		8.00	8.63	8.13	8.63	8.00	8.13	8.25				
Thickness - Probe 6, in		8.25	8.38	8.50	8.63	8.00	8.25	8.00				
Thickness - Probe 7, in		8.25	8.50	8.38	8.63	8.50	8.50	8.00				
Thickness - Probe 8, in		8.50	8.25	8.50	8.63	8.00	8.00	8.50				
Sublot Thickness, in	Formula >>	**8.17**	**8.53**	**8.42**	**8.47**	**8.28**	**8.19**	**8.22**				

Resulting Samples per lot (n)	56	<< Formula	Lot AQL, in	8.0
Lot Thickness Mean, in	8.328	<< Formula	Lot RQL, in	7.0
Lot Thickness Mean Acceptable?	Yes		Lot MQL, in	8.5
Notes on Lot Thickness Mean:	Lot Thickness Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9952			
Lot Thickness Std. Dev., in	0.22846	<< Formula		

Thickness Pay Factor: 100.797%

STRENGTH

		Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Strength - Cylinder 1, psi		5160	5490	4540	6000	5780	5290	4890				
Strength - Cylinder 2, psi		5150	5470	4960	5780	5470	5260	4970				
Sublot Strength, psi	Formula >>	**5155**	**5480**	**4750**	**5890**	**5625**	**5275**	**4930**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, psi	4,500
Lot Strength Mean, in	5300.714	<< Formula	Lot RQL, psi	3,250
Lot Strength Mean Acceptable?	Yes		Lot MQL, psi	5,500
Notes on Lot Strength Mean:	Lot Strength Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Strength Std. Dev., in	414.13216	<< Formula		

Strength Pay Factor: 100.808%

AIR CONTENT

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Sublot Air Content, %	**6.5**	**6.7**	**7.1**	**6.0**	**6.3**	**6.7**	**6.3**				

Resulting Samples per lot (n)	7	<< Formula	Lot AQL, %	7.0
Lot Air Content Mean, in	6.514	<< Formula	Lot RQL, %	5.5
Lot Air Content Mean Acceptable?	Yes		Lot MQL, %	8.5
Notes on Lot Air Content Mean:	Lot Air Content Mean is between RQL and MQL			
Number of Non-Conforming Sublots:	0			
Std. Dev. Correction Factor	0.9594			
Lot Air Content Std. Dev., %	0.37305	<< Formula		

Air Content Pay Factor: 99.671%

RESULTS

All Pay Factors Determined?	Yes	Max PF Composite	110%
		Min PF Composite	80%

	Sublot 1	Sublot 2	Sublot 3	Sublot 4	Sublot 5	Sublot 6	Sublot 7	Sublot 8	Sublot 9	Sublot 10	Sublot 11
Rejected?											
Area Not Considered for PRS, sq yds											
Area Considered for PRS, sq yds	1173.00	1173.00	1173.00	1173.00	1173.00	1173.00	942.00				

Total Area	7980.00
PF Thickness	100.80%
PF Strength	100.81%
PF Air Content	99.67%
PF Composite	**101.28%**
Bid (Lot)	**$167,181.00**
Pay (lot)	**$2,135.63**