# THIN ASPHALT OVERLAYS IN DIVISION VI

Final Report June 1996

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A	pproximate	Conversion	ons to SI U	nits	Approximate Conversions from SI Units						
Symbol	When you know	Multiply by	To Find	Symbol	Symbol	When you know	Multiply by	To Find	Symbo		
		LENGTH					LENGTH				
in	inches	25.40	millimeters	ntn	mm	millimeters	0.0394	inches	in		
ft	feet	0.3048	meters	m	m	meters	3.281	feet	ft		
yd	yards	0.9144	meters	m	m	meters	1.094	yards	yd		
mi	miles	1.609	kilometers	km	km	kilometers	0.6214	miles	mi		
		AREA					AREA				
in²	square inches	645.2	square millimeters	m	TIM2	square millimeters	0.00155	square inches	in²		
ft <sup>2</sup>	square feet	0.0929	square meters	m²	m²	square meters	10.764	square feet	ft <sup>2</sup>		
уď	square yards	0.8361	square meters	m²	m²	square meters	1.196	square yards	уď		
ac	acres	0.4047	hectares	ha	ha	hectares	2.471	acres	ac		
m²	square miles	2.590	square kilometers	km²	km²	square kilometers	0.3861	square miles	m²		
		VOLUME					VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL	mL	milliliters	0.0338	fluid ounces	fl oz		
gal	gallons	3.785	liters	L	L	liters	0.2642	gallons	gal		
ft <sup>3</sup>	cubic feet	0.0283	cubic meters	m³	m³	cubic meters	35.315	cubic feet	ft <sup>3</sup>		
yd <sup>3</sup>	cubic yards	0.7645	cubic meters	m³	m³	cubic meters	1.308	cubic yards	yd <sup>3</sup>		
		MASS					MASS				
oz	ounces	28.35	grams	g	g	grams	0.0353	ounces	oz		
lb	pounds	0.4536	kilograms	kg	kg	kilograms	2.205	pounds	lb		
T	short tons	0.907	megagrams	Mg	Mg	megagrams	1.1023	short tons	T		
	(2000 lb)							(2000 lb)			
TEMPERATURE (exact)						TEMF	PERATURE (e	xact)			
2F	degrees	(°F-32) / 1.8	degrees	20	∞	degrees	9/5+32	degrees	2F		
	Fahrenheit		Celsius			Celsius		Fahrenheit			
	FORCE an	d PRESSURE	or STRESS			FORCE and	d PRESSURE o	or STRESS			
lbf	poundforce	4.448	Newtons	N	N	Newtons	0.2248	poundforce	lbf		
lbf/in²	poundforce	6.895	kilopascals	kPa	kPa	kilopascals	0.1450	poundforce	lbf/in-		

# THIN ASPHALT OVERLAYS IN DIVISION VI

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#### **EXECUTIVE SUMMARY**

At seven sites in northwestern Oklahoma's Field Division VI, thin overlays (13mm and 19mm) of dense graded Type D mix (ODOT 708.04(b) Table 3A, 1988) were used to correct rutting and corrugating and to provide a uniform cross section slope of the roadway. Intended as an alternative to chip seals, their purpose was to increase skid resistance, seal poor bituminous surfaces, and improve the ride on roads with an ADT count of 2,000 or lower.

After four years of evaluation, the major distresses observed were cracking and corrugating. The final condition survey rated five sites as poor, one site as average, and one site as good.

An alternative treatment to thin overlays is micro-surfacing. (Chip sealing does not satisfactorily correct rutting and corrugating.) Cost analysis reveals that thin overlays are about 50 percent more expensive than micro-surfacing even though both require similar maintenance and have comparable design lives (9). However, the cost of transporting the aggregate used in a micro-surfacing slurry must be considered when contemplating treatment selection.

Another option is alternating thin overlays and chip seals. If rutting and corrugating are corrected with a thin overlay and have not recurred by the time another treatment is necessary, a chip seal will sufficiently address other common distresses, i.e., cracking and raveling. The next treatment would be another thin overlay followed by another chip seal and so on until such time as a full replacement is deemed necessary. Of course, periodic crack sealing is still necessary for maximizing the life cycles of both treatments.

Successive layers of either chip seals or thin overlays are not recommended. Each fails to correct those distresses which are addressed by the other. Successive layers of micro-surface slurry seals, however, have performed very well on SH 3 in Canadian County with an ADT count of 6000 and on US 77 in Oklahoma County with an ADT count of 60,000.

The performance of the seven thin overlays evaluated was slightly better than that of the previous chip seal applications. The determining factor in this difference was resistance to rutting. Cracking and corrugating continue to present problems for both treatments.

## **INTRODUCTION**

At seven sites in northwestern Oklahoma (Field Division VI) thin overlays of dense graded Type D mix (ODOT 708.04 (b) Table 3A-1988) were used to correct rutting and corrugating and to provide a uniform cross section slope of the roadway. Their purpose was to increase skid resistance, seal poor bituminous surfaces, and improve transverse evenness (1,2). Overlays of 13mm (0.5in) and 19mm (0.75in) were placed with paving machines and compacted with pneumatic or steel-wheel rollers.

Sites 1, 2, and 3 were overlaid prior to 1991 and were evaluated by visual condition surveys. Prior to the construction of Sites 4 through 7 in the summer of 1992, Benkelman beam deflections and roadway condition data were collected. Subsequent readings were collected annually for comparative analysis.

#### **BACKGROUND**

Division VI, in northwestern Oklahoma, has typically treated failing pavements with a chip seal over a leveling course of soil asphalt. These standard maintenance overlays are intended as a "quick fix" and not a long term cure.

Division personnel believe that a thin overlay of 13 mm (½ in) or 19 mm (3/4 in) dense graded Type D mix may be a cost efficient substitute for the chip seal procedure on roadways with an ADT count below 2,000.

#### **DESCRIPTION OF SITE LOCATIONS**

SITE 1.Ellis County. US 60 extending 10.9 km (6.8 mi) east from Texas border.

SITE 2.Major County. SH 58 extending 9.3 km (5.8 mi) south from US 60.

SITE 3. Woods County. US 281 extending 9.6 km (6.0 mi) east from SH 14.

SITE 4.Alfalfa County. SH 8 extending 10.0 km (6.2 mi) south from US 64.

SITE 5.Beaver County. US 64 extending 9.6 km (6.0 mi) east from a point 12.4 km (7.7 mi) west of the Forgan city limits.

SITE 6.Major County. US 281 extending 8.6 km (5.4 mi) south from US 412.

SITE 7. Woodward County. SH 34 extending 9.3 km (5.8 mi) north from the Dewey County line. See the Site Location Map in Figure 1.

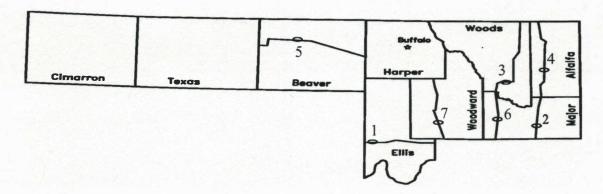


Figure 1. THIN OVERLAY LOCATIONS

# **MATERIALS**

The sites were overlaid with the typical Type D mix design described in Table 1. The asphalt content was targeted at 6.3 percent and asphalt emulsion SS-1 was used as a tack coat. A 4oz/yd² non-woven Polypropylene reinforcement fabric was used at Site 7.

Table 1. TYPE D MIX DESIGN

SIEVE		JMF				
OPENING	MINE CHAT	SCREENINGS	SAND	COMBINED AGGREGATE	JOB FORMULA	TOLERANCES
% INCH	100	100	-	100	100	0
No. 4	81	97	-	93	93	+/- 7
No. 10	50	64	100	69	69	+/- 4
No. 40	24	100	-	100	100	0
No. 80	14	16	26	18	18	+/- 4
No. 200	10.0	13.6	2.0	9.7	9.7	+/- 2
% ASPHAL	T CEMENT	Γ (AC20)			6.3	+/- 0.4
MIX TEMPI	ERATURE	@ DISCHARGE F	ROM MIX	ER	305°F	+/- 20

#### **CONSTRUCTION**

Construction of the overlays consisted of three basic steps: 1) tack with emulsion, 2) lay down of the mix, 3) compaction (3). See Appendix A for construction photos.

A distributor truck applied an SS-1 diluted emulsion (50% water to 50% emulsified asphalt) tack coat directly to the old surface at the rate of 0.23 L/m² (0.05 gal/yd²). An AC-20 tack coat was used with the fabric membrane (4) at the rate of 1.04 L/m² (0.23 gal/yd²). The full width fabric was placed by mechanical means and seated with a pneumatic roller.

The Type D mix was dumped directly into the lay down machine hopper from a 13 to 18 Mg (6 to 8 ton) single axle dump truck. The mix was placed by the self-propelled lay down machine and leveled with a screed in 3.6 to 4.2m (12 to 14 ft) wide layers. The compacted density of the mix measured 57.7 kg/m²/25mm (106.2 lbs/yd²/in), making the yield weights 43.3kg/m²/19mm (79.7lbs/yd²/0.75in) and 28.8kg/m²/13mm (53.1lbs/yd²/0.5in).

Compaction was achieved with self-propelled pneumatic and static steel wheel rollers. No density requirement was specified. As the mat cooled, two to three passes were made in a rolling pattern established by the weight of the roller, the thickness of the mat, and the condition at the site.

#### FIELD INVESTIGATION

Preconstruction observation and testing of the four projects overlaid in 1992 began in the fall of 1991. These sites were located in Alfalfa, Beaver, Major, and Woodward counties. Researchers collected crack mapping data and conducted flexible pavement condition surveys. A field investigation of the seven sites began one year after completion of the last overlay in 1992. Testing included:

- A one time verification of the material composition of the roadway.
- ► An annual collection of traffic data.
- Crack mapping of selected sections.
- ► Flexible pavement condition surveys.
- ► Rut measurements.
- ▶ Benkelman beam deflections.
- Skid data.

Each project was cored to verify material composition and thickness of the layers. The results from each site are illustrated on pages six through nine.

Typical Section 1 consisted of a 13 to 19 mm (½ to 3/4 in) Type D surface over several successive layers of soil asphalt and chip seal. The thickness ranged from 152 to 254 mm (6 to 10 inches). Typical Section One is representative of the roadway composition at Sites 1, 2, 4 and 6. See Figure 2 for a graphical depiction of Typical Section 1.



Figure 2. TYPICAL SECTION 1.

Typical Section 2 had a 13 mm (½ inch) Type D surface over three layers of soil asphalt and chip seal measuring 76 mm (3 in). The base course was a dense graded black base mix. Typical Section 2 (Figure 3) is representative of the roadway composition at Site 3.

TYPE 'D'

SOIL
ASPHALT

CHIP SEALS

BLACK
BASE

Figure 3. TYPICAL SECTION 2.

The third typical section consisted of a 13 mm (½ in) Type D surface over a fabric membrane and 292 mm (11 ½ in) of successive soil asphalt and chip seal layers. Typical Section 3 (Figure 4) represents the roadway composition at Site 7

TYPE 'D' FABRIC

SOIL ASPHALT & CHIP SEALS



Figure 4. TYPICAL SECTION 3.

Typical Section 4 had a 19 mm (3/4 in) Type D surface over a fabric membrane. Beneath the fabric was 83 mm (3 1/4 in) of a dense graded Type C mix, 51 mm (2 in) of Type B, and 51 mm (2 in) of layered soil asphalt and chip seals. The base course was a dense graded black base mix measuring 38 mm (1 ½ in). Typical Section 4 (Figure 5) represents the roadway composition at Site 5.



Figure 5. TYPICAL SECTION 4.

Traffic data was collected in the winter of 1991/92. Table 2 gives a complete vehicle class count from each project.

Table 2. THIN OVERLAY TRAFFIC STUDIES

COUNTY/HIGHWAY	CAR	CARS BUSES		PICKUPS		TRUCK SEMIS		TRAILERS		TOTALS	
	TOTAL	%	TOTAL	%	TOTAL	%	TOTAL	%	TOTAL	%	
ELLIS / US 64	238	36	0	0	256	38	141	21	30	5	665
MAJOR / SH 58	777	39	5	1	1088	54	124	6	0	0	1994
WOODS / US 281	405	45	0	0	375	42	112	13	0	0	892
ALFALFA / SH 8	776	43	5	1	84	4	786	44	158	8	1809
BEAVER / US 64	175	32	0		265		105		6		551
MAJOR / US 281	139	23	24		228		205		4		600
WOODWARD / SH 34	561	46	7		41		544		66		1219

Preconstruction crack map surveys were conducted at Sites 4, 5, 6, and 7 in the summer of 1991. Three 30.4 m (100 ft) sections were selected at each site.

That same summer, condition rating surveys for flexible pavements were performed on all seven projects. The surveys recorded the amount of cracking, bleeding, corrugating, raveling, base failures, rutting, and patching. Ratings were taken at 0.3 km (0.2 mi) intervals and an average was determined for each site. Rating averages ranged from "superior" on the one year old project to "poor" on the project yet to be overlaid. See Appendix B for Condition Survey results.

Only Site 6 displayed measurable rutting. Wheel path rutting measured 13 to 25 mm (0.5 to 1.0 in) over ten percent of the site. Another fifty percent exhibited rutting of 13 mm (0.5 in) or less. The measurements were taken in July 1991, prior to the thin overlay construction.

Benkelman beam and skid data were collected following completion of the overlays. The beam data was used to determine structural integrity and skid data helped analyze the effect the small aggregate in the Type D mix had on the surface texture.

## FINAL INVESTIGATION

A four year study of the seven sites was completed in 1995. Final testing was concluded on Sites 1 and 3 in 1994 and on Sites 2, 4, 5, 6, and 7 in 1995.

#### TRAFFIC DATA

ADT counts from the seven sites showed no appreciable change from 1991 to 1995. (Figure 6.)

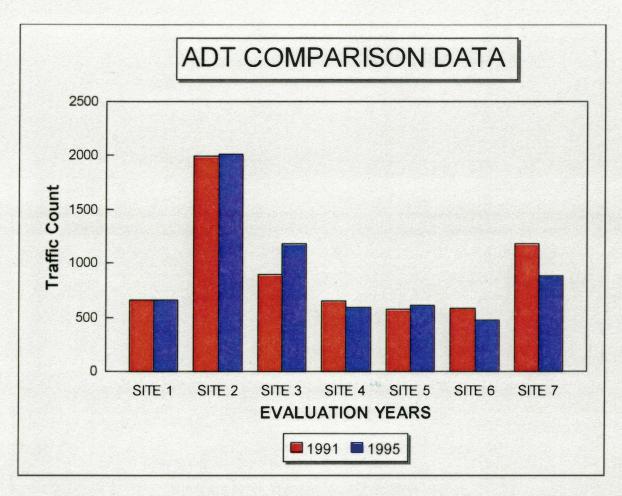


Figure 6. ADT COUNTS, 1991 VS 1995.

#### CRACK MAPPING

In the fall of 1990, original crack maps were diagrammed for Sites 4, 5, 6, and 7 revealing a combined total of 4,781 linear feet of cracking on the four sites. A 1995 survey of the same four sites revealed 6,113 linear feet of cracking, an increase of 1332 feet or 28 percent. At sites 4 and 6, 100 percent of the original cracks had reflected through the overlay. Both sites also displayed new cracks but Site 6 was substantially worse, exhibiting more than twice the number of cracks documented in the original survey. Reflection cracking was also prevalent at Sites 5 and 7 where 89 to 98 percent of the original cracks had reflected to the surface.

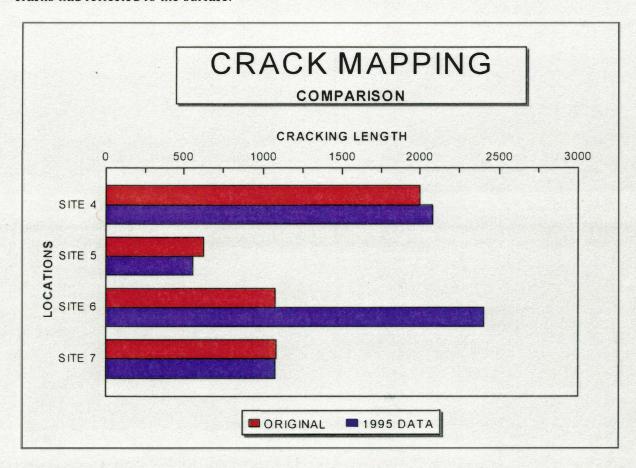


Figure 7. CRACK MAPPING COMPARISON.

#### **CONDITION SURVEY**

The "distress survey" is a technique widely used to evaluate and monitor pavement performance over time. It provides information needed to characterize pavement surface conditions and the causes of deterioration. (5) The final ratings distribution from distress surveys of the seven sites was:

GOOD - 1 site

AVERAGE - 1 site

POOR - 5 sites

Cracking was the primary distress encountered, followed by corrugating. Other distresses included base failures, patching, bleeding, shoving, raveling, and rutting, the least of these being rutting. Rut depth averages ranged from 0.00 inches, in the north bound lane at Site 7, to a mere 0.14 inches in the west bound lane at Site 4. Results from the final distress survey appear in Table 3. Percentages are given as part of the total area of the extent rated.

Table 3. DISTRESS SURVEY RESULTS

LOCATION	RATING	CRACKS	CORRUGATING	RAVELING	RUTTING	OTHER
SITE 1	POOR	20%	15%	12%	2%	0%
SITE 2	POOR	10%	28%	0%	5%	15%
SITE 3	AVERAGE	20%	1%	0%	3%	1%
SITE 4	POOR	19%	0%	19%	5%	2%
SITE 5	POOR	12%	20%	0%	8%	10%
SITE 6	POOR	20%	24%	0%	0%	2%
SITE 7	GOOD	10%	2%	5%	0%	0%

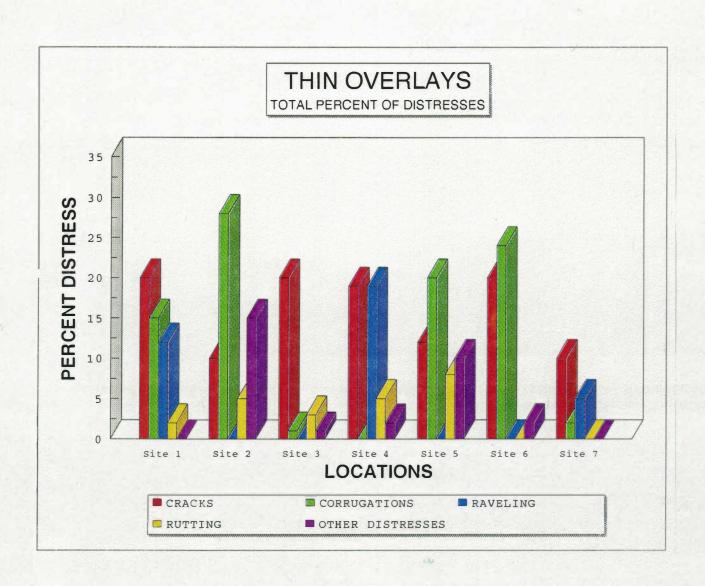


Figure 8. PERCENTAGE OF DISTRESSES FROM EACH SITE.

#### **BENKELMAN BEAM DEFLECTIONS**

On average, deflection readings were low. Site 5 had the greatest number of localized weak points. Readings indicated that forty percent of the west bound lane and thirty-seven percent of the east bound lane required the equivalent of a 25 mm (1 inch) overlay. The other six sites each had an AC equivalent requirement of less than 13 mm (0.5 inch).

#### SKID TEST DATA

Skid test results are calculated as the product of a mechanical test wherein a skid trailer tire interfaces with the road surface providing an approximate value which is converted into a coefficient of friction.

(6) Because of the uncertainty of direct correlation between skid test results and actual resistance, the test is used only for comparative analysis of results from a common site over time.

Skid data was collected on this project in order to evaluate the effect of the small aggregate in the Type D mix on surface resistance. Figure 9 shows the highest, lowest, and average readings from each site.

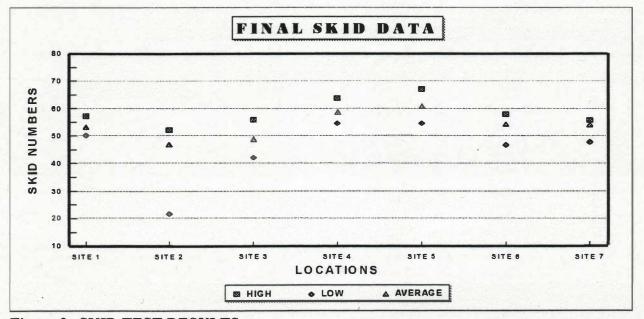


Figure 9. SKID TEST RESULTS.

# **COST COMPARISON**

Two competing treatments for the correction of rutting and corrugating are thin overlays and microsurfacing. Micro-surfacing typically costs about \$0.98 to \$1.45 per m² (\$0.85 to \$1.25 per yd²). In western Oklahoma, the cost would be toward the high end of this range because of the distance from an available aggregate source.

The cost of a Type D thin overlay on this project was about \$1.39 per m<sup>2</sup> (\$1.20 per yd<sup>2</sup>) for 13mm (½ in) and \$1.74 per m<sup>2</sup> (\$1.50 per yd<sup>2</sup>) for 19mm (¾ in). Compared to the projected cost of microsurfacing, thin overlays were about 30% more expensive.

#### CONCLUSION

Thin overlays were placed on the uneven surfaces of rutted and corrugated asphalt pavements. They were constructed with the same degree of success as any average asphalt dense graded mix overlay (7). There were no density requirements but the contractors were careful in achieving compaction and avoided the development of cracks during construction.

Cracks appeared six months after construction on 50 percent of the four newly constructed sites and were the dominate distress found on the three sites constructed before 1992. Crack sealing maintenance at three sites slowed deterioration of the soil asphalt bases where water can cause swelling and pot holing.

The Type D surfaces had no problem meeting the department standard for skid resistance over the four year evaluation period. Skid testing on each site, except Site 4, consistently returned good average values. (8) Skid data was not available for Site 4.

Overall, the thin overlay construction was able to address the existing problems. The uneven surfaces were leveled and elimination of the bleeding chip seals was accomplished. The fine aggregate created no problems with skid resistance and the ride was markedly improved at all sites. The only significant problem encountered was the early and abundant cracking. Cracking should be addressed early on with fog seals or other crack sealants in order to optimize the success of this procedure.

At the end of the four year evaluation period, each site was given a final rating in each category of distress. The results are depicted in Figure 10.

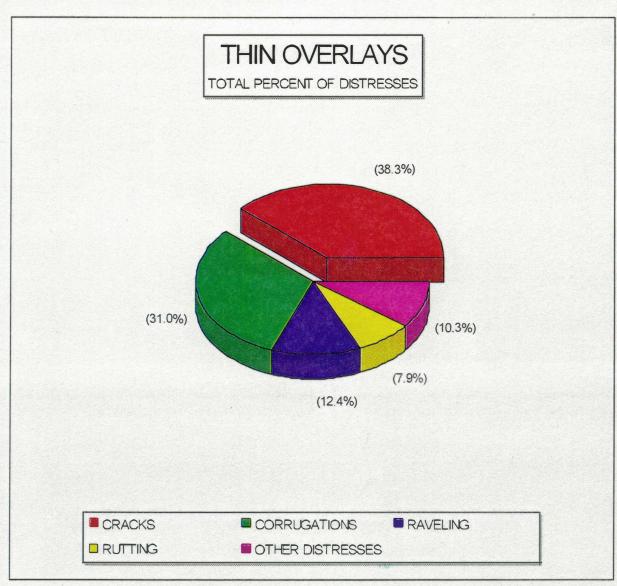


Figure 10. PROPORTION OF DISTRESSES.

## **RECOMMENDATIONS**

An alternative treatment to thin overlays is micro-surfacing. (Chip sealing does not satisfactorily correct rutting and corrugating.) Cost analysis reveals that thin overlays are about 50 percent more expensive than micro-surfacing even though both require similar maintenance and have comparable design lives (9). However, the cost of transporting the aggregate used in a micro-surfacing slurry must be considered when contemplating treatment selection.

Another option is alternating thin overlays and chip seals. If rutting and corrugating are corrected with a thin overlay and have not recurred by the time another treatment is necessary, a chip seal will sufficiently address other common distresses, i.e., cracking and raveling. The next treatment would be another thin overlay followed by another chip seal and so on until such time as a full replacement is deemed necessary. Of course, periodic crack sealing is still necessary for maximizing the life cycles of both treatments.

Treating with multiple chip seals (chip seal over chip seal) or thin overlays (thin overlay over thin overlay) is not recommended. However, multiple micro-surfacing treatments are an acceptable alternative.

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# **APPENDICES**

Appendix A is a group of photographs showing the thin overlay construction operation. The equipment shown is from several of the projects. Appendix B contains test results from various Sites.

# APPENDIX A CONSTRUCTION PHOTOS



PHOTO 1. SPREADING TACK COAT ON EXISTING SURFACE



PHOTO 2. PLACING A FABRIC MEMBRANE. (SITE 6 ONLY)



PHOTO 3. LAYDOWN AT SITE 6.



PHOTO 4. LAYDOWN OF A THIN OVERLAY TYPE D MIX.



PHOTO 5. COMPACTING WITH PNEUMATIC ROLLER.

## APPENDIX B

SELECTED CONDITION SURVEY RESULTS

DATE June 1, 1994

LOCATION <u>5H-58</u> Major Co.

LENGTH <u>5.8</u>

CONDITION RATING FOR FLEXIBLE PAVEMENTS PROJECT NUMBER 2285

CONTROL SECTION

SURVEYED BY Wilson Greyer

						-75	l	EGE	ND	F0	R F	RAT	IN	G (	CLA												
Conditio	n Rating		Cra	cki	ng		Dis	tor	rti	on		Ra	ve	lir	ng	Si Ri	urf	hn	ess		Fai	as lu	e re			otal Si of Rat	irface Are ing Interv
		1	-2-:	3-4			1-	2-3	3-4			1-	2-3	3-4		1-	-2-	3 - 4	4	1	-2-	3-	4				
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4. 79-65 5. 64-50	%= Good   %= Avg.   %= Poor   ess= Fail   %	Longitudinal	Transverse	ck	Alligator	Cracking	Ble	unter, breeding	Shoving	Corrugating	stortion	ır	Intermediate	or	Raveling	oth	Rough	Jh.	Surface Rough	w	ere	e Failure	13 BIF	to 40, nch	or Greeter	14= 30%         	6 or more
Interval	Rating(%)	Lon	Transv	Block	A11	Crac	Minor	Major	Shov	Cori	Dist	Minor	Inte	Major	Rave	Smooth	Mod.	Rough	Surf	Mode	Severe	Base	0.0	9.0	1.0	Patch FT 2	Comments
0.0	66		1	V		2			V	1	3															12x50 6x25 61100	A STATE OF THE STA
6.2.	62		4		1	1		V	1	1	1															ex20'830 ex20 ex20 ex100	Falch oxo, Crak
0.4	62		4		Ц	1			1	1	2							1						-		6x50,6x2)	spor pedas
0,6	60	W	4			1		-	1	V	3												-			XX 300	
0.3	60	W	7.	1		1				1	2												-	-		6x 100 6x 5≥0	
1,0	66		1			1			1	1	2													-	/	6x 100,6x50 . Bx 200	5 po+ Tatche
1.2.	62	V	1			1				1	1												~			ex2s,	
1,4	58	d	1	1		2				V	1						1		2				,			6x 30,	Parcessed Trusk
1.6	55		1		1	2			-	-	2						1		2				~	1		6x6, (xb 6x10,6x10 6x166	Deproved/ soot
1.8	55		1		1	2			V	0	2						-		2				J	4		81 60 19 631 8	Berro Trac
2.0	55		7		U	2				0	1						V		2.					-		6x200,6x3 6x50,6x25	"
2.2	60		7-	-	0	1				V	1												1			6112 16 52 6112 16 52	
2.4	60	1	V	1		1				V	1												/	1	/	6×150,610	
2.6	60		1	V		1				U	1															6x100	
2.8	62		1	V		2				V	5												1			6x 560	
7.	60	1	1	1,	1	4		1	T	0	3															6+26,64200	

DATE June 1, 1994 LOCATION SH-58 Major Co. LENGTH S.Z.

CONDITION RATING FOR FLEXIBLE PAVEMENTS PROJECT NUMBER 2285

CONTROL SECTION

SURVEYED BY Wilson Brewel

		770	91-20			Janes Co	ALC: YE	7.2	LE(	GEN	ND.	FOR	RF	AT	INC	G C	LAS	SSE	S		Page 1								
Condition	n Rating		Cr	rac	kir	ng		Di	sto	ort	io	n		Ra	ve	in	g	SL RC	irf oug	ace	ess	F	Bai	lur	e			[otal Su (of Rati	rface Area ng Interva
ı			1-2	2-3	-4			1	-2-	-3-	-4			1-	2-3	3-4		1-	2-	3-4	4	1-	2-3	3-4					
2. 97-909	%= Excel. %= Sup.		Cı	rac	kʻir	ng		Di	st	ort	tio	n		Ra	ve	lin	g	Su	urf	ac	e ess		ise ilui		Ru De		h	2= 5%	than 5% to 15% to 30%
4. 79-655 5. 64-505	%= Good	tudinal	sverse	ЭШ	7	igator	ting	Ble	. Bleeding	Bleeding	ing	Corrugating	Distortion		Intermediate		ing	:h	Rough	1	ice Rough	ate	9.	Failure					or more
Rating Interval (Mi.)	Condition Rating(%)	Longi	Transver	Random	Block	Allic	Cracking	Minor	Inter	Major	Shoving	Corri	Dist	Mino	Inter	Major	Raveling	Smooth	Mod.	Rough	Surface	Moderate	Severe	Base				Patch FT 2	Comments
3.2	500		-			V	2					d	2															EXSO EXST,	11 Stot Packes
3,4	59		-			~	1					1	2									Ц	+	4	4	1		Cx 150,6 x30	ever truns.
3,6	48		~			/	2					4	2	Ц					-		7		1	4	4	4		6, 52, 6×20	"
3,8	45		V			0	4				1	4	3										+	4	-	-	/	(× 200	Stot Auches
4,0	45	L	-0			V	2					4	3											4	4	4		6×50, 6×100	
4.2	40	-	r			V	21					4	3						/		2			4				6x100,	Paries his
4,4	58		V	1		-	2				1	V	2											1				6X20,6X162	
4,6	53		V	1		4	1					1	2											1				6x50,6x50	
4.8	60		V			1	1			-		V	1												1	1		6130,650	
5.0	40		V	1			1					1	1						V		2				N			6121,60 6131,60	
5.2	62		V	1								~	Z												i	/		12425, GAL	
KILEA.	- 56																							1					
		-										(5.2)						1		1				1			100		

DATE June 8, 194 LOCATION US- 64 Beaver Co LENGTH 6.8

CONDITION RATING FOR FLEXIBLE PAVEMENTS CONTROL SECTION 1

SURVEYED BY W. Son Freuer

		20.00			
		LEGEND FOR I	RATING CLASSES	Page	United Sumfaces Associ
Condition Rating	Cracking	Distortion	Raveling Surface Roughnes	s Failure	Total Surface Area (of Rating Interval
	1-2-3-4	1-2-3-4	1-2-3-4	1-2-3-4	
1. 100-98%= Excel. 2. 97-90%= Sup.	Cracking	Distortion	Raveling Surface Roughnes	Base Rut sFailure Depth	1=less than 5% 12= 5% to 15% 3= 15% to 30%
3. 89-80%= Good 4. 79-65%= Avg. 5. 64-50%= Poor 6. 50%-Less= Fail. Rating Condition Interval Rating(%	Longitudinal Transverse Random Block Alligator	Minor Bleeding Inter. Bleeding Major Bleeding Shoving Corrugating	Minor Intermediate Major Raveling Smooth Mod, Rough Rough	Surrace koudn Moderate Severe Base Failure	14= 30% or more  Patch FT Comments
n c					9x25 PX12 that moting 9x10 12x25 road roak)
3 DIZ 75	1 2				1# 70, 9x10
7 0.4 60	Ve 2		1 1 2		1 × 20
7 6.6 58	14 2	2 3			
0.3 72	1 2	1 2		41116	
1.0 72	10 1	2 102	1 4	2	
1.2 72	0 2	1 /03	1 7 2		
1.4 75	- 144   12	- 1 1 2			
1,6 75		2 2			
1.3 72		2 1 1 2	. 2	1111	
2.0 72		2 /2	1		
2.2 65	11/11/1	11/1/2	1 1 1 1 1		
2.4 65	VV	2			
2,6 65	41 -	4 1/3		1111/	
2.8 65			<del>4   -   -   -   -   -   -   -   -   -   </del>		
50 65	///	0       1   2		11111	

DATE June 8, 1994

LOCATION 18-64 Blaver Co

LENGTH 6.8

CONDITION RATING FOR FLEXIBLE PAVEMENTS PROJECT NUMBER ZZSS

CONTROL SECTION

SURVEYED BY Wilson Brown

							1.0		LE	GEI	ND	FO	RI	RAT	IN	G (	CLA	SSI	S										
Condition	n Rating		C	rac	kiı	ng		D.	ist	or	tic	on		Ra	ve	lir	ng	Si Ri	urf	ac	ess		a	as	e re			otal Si of Rati	rface Area
			1-:	2-3	-4				l-2	-3	-4 <b>-</b> -			1-	2-	3-4	4	1.	-2-	3-	4	1.	-2-	-3-	4				
2. 97-90 3. 89-80 4. 79-65 5. 64-50	%= Excel. %= Sup. %= Good %= Avg. %= Poor ess= Fail	tudinal		rac			ng	eeding	Bleeding	Bleeding		ting	tion		Intermediate			Ro	ough	hn	Rough	Fa		ailure	0 4	1.0.00	the for de	2= 5% 3= 15%	than 5% to 15% to 30% or more
Rating Interval (Mi.)	Condition Rating(%)	Longit	in	Random	Block	Alligator	Cracking	Minor	Inter.	Major	Shoving	Corruc	-	Minor	Intern	Major	Raveling	Smooth	Mod . I	gh	Sur face	Moderate	Severe	Base F	1 4	L	10	Patch FT 2	Comments
3.2	7.3	V	v				1					· V	2	-					_		2				C	1	1	1 1/12 2:12	
3.4	55	-	V				1				~	7	3	-							3				-	r		5x 12,2xb	
3,6	52	~	_				2				L	-	-3	Ŀ							3				-	1	1	212 212 2	
3.8	52		-	1			2				-	0	3						V		3				-	1	-	2-5×15	
4,6	52		V				2					V	3						٠.		3				_	1	L	15450	
4,2	73		V	1			1					~	2						L		3				0	1	L	2x12(8)	
4.4	73		V	1			1					V	2	L					V		3				V	1	L		
4,6	55		4	1			1					1	3						~		3					L		DY 20 210(3)	
4.8	72	1	V	1			2					-	2	1					V		4				v	fe	1		
5,0	72		L	1			7					L	12	L					U		3				4	1		12/20	6
5.4	75		V	1			2					v	14	L				L	~		2				L	1	1	2	
5.4	75	V	1				2					~	2	1				L	Y		2	L			1	1	-		
5,6	76		V	1			1					1	12	1					V		1	L							
5.0	76	v	1.	1			1					-	2	L				L	1	,	1					1	1		
(.0	76	1	V				2					v	1	1					-		1				1	1			
6. 2	00	T	V	1			1					V	11	1					V	1	1				0	1	-		

DATE June 8, 1994

LOCATION US-64 Beaver Co

LENGTH 6.8

CONDITION RATING FOR FLEXIBLE PAVEMENTS CONTROL SECTION

SURVEYED BY Wilson Stewer

		LEGEND FOR F	RATING CLA		
ondition Rating	Cracking	Distortion	Raveling	Surface pase Roughness Failure	Total Surface Ar of Rating Inter
100-98%= Excel.	1-2-3-4		1-2-3-4	1-2-3-4 1-2-3-4 Surface Base Rut	l=less than 5%
97-90%= Sup.	Cracking	Distortion	Raveling	Roughness ailure Dept	- ' \=   \\ ' \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
89-80%= Good 79-65%= Avg. 64-50%= Poor 50%-Less= Fail 1 Rating Condition Rating(%)	Longitudinal Transverse Random Block Alligator Cracking		Minor Intermediate Major Raveling		14= 30% or more
6.4 73		42		1 2 1	
6.6 72	V 2	7		7 7 7	
6,3 65	1 2	1 72		12111	
68					
					+ +

LOCATION <u>115-60 Ellis</u> Co. LENGTH <u>6.8</u>

CONDITION RATING FOR FLEXIBLE PAVEMENTS CONTROL SECTION

SURVEYED BY Wilson Brower

LEGEND FOR RATING CLASSES Surface Roughness Failure Total Surface Are Lof Rating Interv Condition Rating Cracking Distortion Raveling 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1=less than 5% Rut Base 1. 100-98%= Excel. Surface Cracking Distortion Raveling 2= 5% to 15% 3= 15% to 30% RoughnessFailure Depth 2. 97-90%= Sup. 89-80%= Good ter 14= 30% or more Minor Bleeding Inter. Bleeding Major Bleeding 4. 79-65%= Avg. Surface Rough to 0.5 i Intermediate 5. 64-50% = Poor Longitudina 6. 50%-Less= Fail Corrugating lod, Rough Distortion Alligator Cracking *loderate* Raveling Smooth Rough Major Rating Condition Patch 0 Interval (Mi.) Rating(%) Comment: 3 69 31.5 0.0 64 0,2 64 60 0.6 0.8 60 60 12×10 72 2×50 121150 60 52 11.6 3 1.3 60 2.0 50 2,2 62 2,4 2,6 62 62 2.8

DATE June 8,1994

LOCATION US-64 Ellis Co. LENGTH 6.8

CONDITION RATING FOR FLEXIBLE PAVEMENTS

PROJECT NUMBER 2285 SURVEYED BY Wilson Freuer

	L.			LE	GEND	FOR I	RATING CLA	SSES		
Condition	n Rating	Crac	king	Dist	torti	on	Raveling	Surface Roughness	Base Failure	otal Surface Are
	·	1-2-3	3-4 <b></b>	1-2	2-3-4		1-2-3-4	1-2-3-4	1-2-3-4	
2. 97-909	%= Excel. %= Sup.	Crac	king	Dist	torti	on	Raveling	Surface Roughnes	Base Rut Failure Depth	1=less than 5% 2= 5% to 15% 3= 15% to 30%
4. 79-65 5. 64-50 6. 50%-L	%= Good   %= Avg.   %= Poor   ess= Fail   %	Longitudinal Transverse Random	Block Alligator Cracking	Minor Bleeding Inter, Bleeding	1 9 2	Corrugating	Minor Intermediate Major Raveling	1 1 21 1	Moderate Severe Base Failure 0.1 to 0.5 in	4= 30% or more
Interval (Mi.)	62	7 1 5	E & 0	Σ	M	U1	Σ F E 3		3 Se Mo	d TT Commette
3,4	60	1	13		V	1	1.12			10×10
3,6.	53	1	14		-	11	0/2			6x 2I
3 3.8	62	U	1/3		1	1/2	111		144	
54,0	40	1	13		1	4	1/1/2			
7 4.2	35	1	114		1	14	4 1/2		114	
9 4.4	35	1	14		l	4	14			
4.6	52	1	13			13	142	+		
4.8	60	1	13			12	192			
5,0	60	V	V3			12	1/1/2			
5,2,	60		13			1/2	1/1/2			
5.4	52	11	1/13			1/3	, 102		1 1	
5,6	58	1	1/13			1/2	1/1/2			
5.8	53		1/3			1/3	14			
6,0	72		10/2			1/2	1 12			
	100	111	11,10	11		1.1	11/1/2			1

DATE J	une 8, 19	44	
	05-60	_	Co.
LENGTH _	6.8		

CONDITION RATING FOR FLEXIBLE PAVEMENTS CONTROL SECTION

SURVEYED BY Whom Brower

			LEGEN	D FOR I	RATING CLA	SSES		
Condition Rating	Crac	king	Distort		Raveling	Surface Roughness	Base Failure	otal Surface Are: (of Rating Interv
	1-2-3	-4	1-2-3-	4	1-2-3-4	1-2-3-4	1-2-3-4	
1. 100-98%= Excel. 2. 97-90%= Sup. 3. 89-80%= Good	Crac	king	Distort	ion	Raveling	Surface Roughness	Base Rut Failure Depth	1=less than 5% 2= 5% to 15% 3= 15% to 30%
4. 79-65%= Avg. 5. 64-50%= Poor 6. 50%-Less= Fail	udi	Block Alligator Cracking	Minor Bleeding Inter. Bleeding Major Bleeding	Shoving Corrugating Distortion	Minor Intermediate Major Raveling	th Rough h ace Rough	rate re Faj to to	4= 30% or more
Rating Condition Interval Rating(%	Longit Transv Random	Block Allig Crack	Minor Inter. Major	Shov Corr Dist		Smooth Mod, Rou Rough	Moder Sevel Base 0.1 0.5	Patch FT Comments
6.4 82	I V	1/2		11	1. 11			24/300
6.6 60		1/3		02	1 1			
POOR 59	- Aver	sac.						
- + -								
				++				
				-				
				1.				

Date: 6-29-94

Location: 5H-9 Alfalfa Co,

Length: 5.3 mile

condition rating Project Number: ZZ85

FOR Control Section:

FLEXIBLE PAVEMENTS Surveyed By: Wilson & Anfonetha

1,2

								I	EG	EN	D .	FO	R F	CAS	rin	iG (	CLA	ss	ES												
CONDITION	N RATING		CR	AC	CKI	N	3	DI	ST	OR	TI	ON	RA	VE	ELI	NG	1	URI		e ess		F.	BA	SE							E AREA
			1	-2	!-3	- 4		1	-2	-3	-4		1	-2	2-3	-4	1	-2	-3-	-4		1	-2-	3-	4						
<ol> <li>97-90</li> <li>89-80</li> </ol>	= EXCEL. = SUPER. = GOOD = AVER.		CR	AC	KI	NO	,	DI	ST	OR	TIC	ON	RA	VE	LI	NG		URI			1	AS:			RU		1 2 3	-	5%	S TH TO	
	= POOR	tudinal	erse			tor	Cracking	Bleeding	Bleeding	preening	ating	tion		ediate		ng		ely Rough		Rough	te		Failure	0.5 inch	0	rea	1				MORE
RATING INTERVAL (MI.)	CONDITION RATING (%)	Longit	Transverse	Random	Block	Alliqator	Cracki	Minor	Major 1	1 5	Corrug	Distortion	Minor	Intermedi	Major	Raveling	Smooth	Moderately	Rough	Surface	Moderate	Severe	Base Fz	1-	.5	1.0 or		ATCH TT <sup>2</sup>		COM	MENTS
0.0	16	V	L		-		3						V	/		1															
0.2	88	V	1		4		1						-			1															
0.4	74	~	1				3						V	/		1								v		_					
0.6	85		0		1		2						4	/		1								V							
0.8	05	L	1		V		2						4	/		i															
1.0	68	V	4		1		3						4	/		1					V		J	L							
1.2	74	-	1		1		3						4	1		1															
1.4	74	4	9		v	1	3						1			1						,									
1.6	60	4	4		1		3						1			1					V		1								
1,8	74	V	4		4		3						4			1							9								
2,0	88	4	1				2						1			2									1						
2.2	74	4	1	1	4		3						4	/		1								V							
2.4	88	4	4	1	1		2						4			1 -															
2,6	75	4	2		V		3						1	1		1											2x	2			
2.5	76	4	4	1	4	1	2	1	1			1	4			1															
3,0	88	U	4	1	1	-	2					!	1			1															

Date: 6-29-94 CONDITION RATING Project Number: 2285

Location: 54-8 #14414 FOR Control Section:

Length: 5.8 m/t FLEXIBLE PAVEMENTS Surveyed By: W. Long Haffonet

LEGEND FOR RATING CLASSES SURFACE BASE TOTAL SURFACE AREA CONDITION RATING OF RATING INTERVAL CRACKING DISTORTION RAVELING ROUGHNESS FAILURE 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1. 100-98% = EXCEL. 2. 97-90% = SUPER. SURFACE BASE RUT 1 = LESS THAN 5% 3. 89-80% = GOOD CRACKING | DISTORTION | RAVELING | ROUGHNESS | FAILURE | DEPTH 2 = 5% TO 15% 4. 79-65% = AVER. 3 = 15% TO 30% Block
Alligator
Cracking
Minor Bleeding
Inter. Bleeding 4 = 30% OR MORE 5. 64-50% = POOR Major Bleeding Shoving Corrugating Distortion Base Failure 0.1 to 0.5 inch Moderately Rough greater 6. 50%-LESS= FAIL Surface Rough Intermediate Longitudina 1.0 Transverse Raveling Moderate to Random Smooth RATING CONDITION Minor Major Rough INTERVAL RATING PATCH 2 0 FT2 (MI.) (8) COMMENTS 2×6 3.2 3.4 3,6 1 3,8 88 300 X12 1 2 4.0 100 X24 4. 2 4.4 vory lotito 4,6 12:60 4,9 96 1.0 273 5,2 2

Date: Sept. 12, 1994	CONDITION RATING	Project Number: 2285
Location: 54-31 woodward	FOR	Control Section:
Length: 5.4	FLEXIBLE PAVEMENTS	Surveyed By: Wilson Frewer

							LE	GE	ND	FC	OR I	RAT	CIN	G	CLA	881	s											
CONDITION	n RATING	C	RAG	CK1	ING	; 1	DIS	TO	RTI	ON	R	AVI	CLI	NG		URI					BAS		2		1		URFACE A	
			1-2	2-3	3-4		1-	-2-	3-4	1		1-2	2-3	-4	1	-2-	-3-	4		1-	2-3	3-4	1					
2. 97-909 3. 89-809		CI	RA(	CKI	ING	1	DIS	TO	RTI	ON	RA	AVE	LII	NG		URF			B/	ASE			RU		2 -	5	SS THAN	
4. 79-65% 5. 64-50% 6. 50%-LES	SS= FAIL	Longitudinal	טפדט		tor	ring	Bleeding		d	ating	CTO!!	nediate		ng		cely Rough		e Rough	te		ailur	0.5	1.0	grea	4 =		TO 30%	
RATING INTERVAL (MI.)	CONDITION RATING (%)	Longit	Random	Block	Alligator	Cracki	Inter.	Major	Shoving	Distortion	Minor	Intermedi	Major	Raveling	Smooth	Moderately	Rough	Surface	Moderate	Severe	Base F	0.1 to	0.5 to	1.0 or	PATC:		COMMEN	TS
3,2.		V	1			L																						
3,4		2	1			1																			•			
316		1	1			1																						
5,3		V	1			1/2	1			1																		
4,0		K	F			1				1																		
4.2		W	1			)																						
4,4		K	P		T	1																						
4,6		4.	/					/																				
4,3	9	4				10	7			1																		
5,0	97	W			1																							
5.2	89	W				1	4			1																		
5,4	39	V	/			1 2	1			1														7				
5,6		4				1				ľ													,	-	BX50	9		
5,8	39					l	M			1																		
																			9									

Date: <u>Sept. 12</u> , Location: <u>SH-34</u>	19	7	1	,	- /	1	r		CC	ONE	IT	ION	I R	TAS	INC	3			F	roj	ec	t	Nun	nbe	r:	_2	28	3
Length:	000	KOL	<i>9</i> 1 4	<u> </u>		(	0,	I	LE	XI	BL	E	PAV	EM	ENT	rs			S	urv	ey	ed	Ву	71		W.	l'en	; Steve
		4					LE	GEN	מ	FO	R	RAI	IN	G	CLF	188	ES											
CONDITION RATING		CR	AC	KI	NG	D	IS	TOF	RTI	ON	R	AVE	LI	NG		BUR					BA.		E		1			VRFACE AR
		1	-2	-3	-4		1-:	2-3	1-4			1-2	-3	-4	1	2	-3-	4		1-	2-:	3-4	4					
1. 100-98% = EXCEL. 2. 97-90% = SUPER. 3. 89-80% = GOOD 4. 79-65% = AVER.		CR	AC	KI	NG	D	Ist	TOR	TI	ON	RI	VE	LI	NG	1	URI				ase Ilu		I	RU		1 2 3	-	5%	8 THAN 5 TO 15% TO 30%
5. 64-50% = POOR 6. 50%-LESS= FAIL	tudinal	erse			igator	Minor Bleeding	Bleeding	Major Bleeding	deting	stortion		Intermediate		bu		ely Rough		e Rough	te		ailure	0.5 inch		rea	4			OR MORE
RATING CONDITION INTERVAL RATING (%)	Longitudin	Transv	Random	Block	Alliga	Minor	Inter.	Major	Corruga	Distortion	Minor	Interm	Major	Raveling	Smooth	Moderately	Rough	Surface	Moderate	Severe	Base Failure	0.1 to	0.5 to	1.0 or		atch ft²		COMMENT
0.0	1	V	4		2	-																						
0.2	4	4	1	1	2	2		7			v			1														
0.4	4	1	1	V	12	,																						
0,6	4	1			41																							
2.3	4	1	1	1	1																							
-, j	4	1		A	2	V	1			1		1		1														
1.3.	Vi	1	1		1						V			1														
_3, <del>\</del>	1	4	1	4	1								1															
5	V	1		1	2	Ш	1	4				1		1														
ं डे	4	4	1	1	2	V	1			1		/																
2.0	N	1	1		1						V			1														
2.2	4	1	1		1	Ц		1				,																
2.4	1	y	1	1	1	14	1			1	V		1	1														
2.6	or	1		1	2							1		1														
70	1/	1	1	·V	A	11	1		1		. 1	1	1	1					1			1	1				1	

3.0

Date:	September 12,1994	CONDITION RATING	Project Number: 2285
Location:	US-281 Mior	FOR	Control Section:
Length:	671	FLEXIBLE PAVEMENTS	Surveyed By: William & Steve

								I	LEG	EN	D I	FO	R	RA'	TIN	G	CLA	ss	ES									
CONDITIO	n RATING		CF	VA.C	CKI	IN	3	נם	ST	OR	TIC	NC	R	AVI	ZLI	NG	1	UR		CE Ess		FF	BA				1	SURFACE AREA
			1	2	2-3	3-4	4	1	2	-3	-4			1-2	2–3	-4	1	2	-3-	-4		1-	2-:	3-4	4			
<ol> <li>97-90</li> <li>89-80</li> </ol>	* = EXCEL. * = SUPER. * = GOOD * = AVER.		CR	LAC	CKI	INC	3	DI	ST	'OR'	ric	ON	RI	AVE	LI	NG		UR		e es		ase Ilu		I	RU		2 = 5	SS THAN 5% TO 15%
5. 64-50	= POOR SS= FAIL	udinal	erse	7		tor	nq	Minor Bleeding	Bleeding	Bleeding	ating	tion		ediate		nd		Moderately Rough		Rough	te		Failure	0.5 inch	1.0 inch	greater	4 = 30	OR MORE
RATING INTERVAL (MI.)	CONDITION RATING (%)	Longitudinal	Transverse	Random	Block	Alliqator	Cracki	Minor	1	Shoving	Corrugating	Distor	Minor	Intermediate	Major	Raveling	Smooth	Moderat	Rough	Surface	Moderate	Severe	ase	0.1 to	0.5 to	1.0 or	PATCH FT <sup>2</sup>	COMMENTS
0.3		V	1	/	V	1	3	1	1	V		1																Bi Law III
0.7		i	U		V		2			4	/	-																
6.4		l	-		V	è	2			1		,																
0.0		2	V	/	6	1	1			*		****	4															
03		V	V	/			2			1		1																
1.0		~	-	/			2	-		v		!										•	-				12 X 21 14 X 20	
15		-	1	/			1			2		!					1				1							96
14			4	/		~	-			v	1:	į																
1.0		_	1	1		1	2			V	17	-															2 x 200	
1.3			2	,					T	1		-															8 x 250 2 x 2 50	
2,0		1					or street of			12	П	1.5																
22		-					4	T	T	8		13																
		;					•			+							1											
-		2	Ų.									7															Bx 30	
		1	1				= 1	1		:		1					1				1							
•			H				-	-	+	-	1	+	-		-	-	-	-	-	-	-	-	-	-	-	-		

Date:	September 12, 1994
Location:	15-231 Meror

CONDITION RATING Project Number: 2285

		_				-	_						RA														
CONDITIO	N RATING		CR	AC	KI	NG		DI	STC	ORT	IOI	N R	LAV	ELI	NG		URI					BA		E		1	URFACE AREA
			1	-2	2-3	-4		1-	-2-	-3-	4		1-	2-3	-4	1	2-	-3-	-4		1-	-2-:	3-4	4			
2. 97-90 3. 89-80	- EXCEL. - SUPER. - GOOD - AVER.		CR	AC	KI	NG		DIS	STC	RT	IOI	R	AV	ELI	NG		URI		E SS		ASE ILU		I	RU		2 = 5	SS THAN 5% % TO 15% % TO 30%
	= POOR SS= FAIL	udinal	erse			tor	Wings plant	Bleeding	Bleeding		ating	CTOIL	o+cibo	ed ta ce	ng		ely Rough		Rough	te		Failure	0.5 inch	1.0 inch	greater		OR MORE
RATING INTERVAL (MI.)	CONDITION RATING (%)	Longit	Transverse	Random	-	Alligator	Cracki	Inter.	1	Shoving	Corrugating	Minor	Thtormodiato	Major	Raveling	Smooth	Moderately	Rough	Surface	Moderate	Severe	ase	0.1 to	0.5 to	1.0 or	PATCH FT <sup>2</sup>	COMMENTS
3.2		V	0		1		2			1	1																
30		v	V		V	7	5				1																
2.3		v			1		3			V	1																
ે ક		1	-		V		3				1																
4.5		ı	2	1	1	7	,				T																
ن. <sub>ک</sub>		2	E							V																	
4.5		-	4		4	1	7			4	1									1							
V 200		2	1		2		1			:	1																
4.3		5		-	1	1	2			V	1																×
5.0		:-	25		·		-			٥																	
₹		3-	400		6	1																					
X.		2			2	4				-	1																
		4			¥						1																
7.3			1		6,510	1			-		1																
7			1	T	6	1				2	1																
2.2		V						П	T	7	-												1		1		

ate:	April 13,1 SH-58 M	79	5		-					co	ND	IT	ION	R	AT:	ING											285
	5.12 5.2								F	LE	ΧI		FOI E I		EMI	ENI	:s					v <b>e</b> y				wls	son Brewt
								LEG	EN	ID D	FO	R :	RAT	CIN	G	CLA	ssi	ES				75					
CONDITIO	N RATING		CRA	C	KIN	īG	D	ısı	OF	RTI	ON	R	AVE	ELI	NG	1	URI				F	BA					SURFACE AREA ING INTERVAL
			1-	-2-	-3-	4		1-2	-3	3-4			1-2	2-3	-4	1	-2-	-3-	4		1.	-2-	3-4	1			
97-90 8. 89-80	<pre>% = EXCEL. % = SUPER. % = GOOD % = AVER.</pre>		CRA	CI	KIN	īG	D	IST	OF	RTI	ON	R	AVE	ELI:	NG		URI		-		ASI	I	1	RU		2 =	ESS THAN 5% 5% TO 15% 5% TO 30%
	% = POOR	UDINAL	RESE		MDP	NG	BLEEDING	BLEEDING	BLEEDING	ATING	LION		EDIATE		NG		ROUGH		SURFACE ROUGH	TE		BASE FAILURE	0.2 INCH	0.4 INCH	GREA	1	ON OR MORE
RATING INTERVAL (MI.)	CONDITION RATING (%)	LONGITUDINAL	TRANSVERSE	KANDOM	BLOCK	CRACKING			MAJOK CHOTA		DISTORTION	MINOR	INTERMEDIATE	MAJOR	RAVELING	SMOOTH	MOD. R	ROUGH	SURFAC	MODERATE	SEVERE	BASE F	0.1 or	0.3 or		PATCH FT <sup>2</sup>	COMMENTS
2,2	48	D	W		c	13		d		V	3													v		••	
3.4	50		4	1	1	1		٠ ,	1	K	13	_												V	,		
3,6	48	V		1	V	2		V	1	-	13													V	/		
3.3	40	L	4	9	1	1/		V		V	3													V		1,	
4.0	48		1	V	V	13		V	1	V	3				•									V	1	1	
42	40 .	4	4	4	V	2		1	1	/ 0	14											<i>y</i> .		V		/	
4,4	38		1	1	V	1/		/	1	y	1/1	1									V	1		-	/	1	
4.6	45	1	4	4	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	2			1	V V	-													4	1	, , ,	
4.8	45		V	4	1	2		1	7	-	7			/						,				V	1		
5,6	42		V	4	L	12		01	1		3	-	V		1				·					V	/	/	
5,2	60		V	+	1	1		1	4	-	2														-		
POOR	52		+	+	+	-			+	-	-	-															
				+	+	-			+	+	+																•
				-	+				+	-	-																
			+	+	+				+	+	+	-															

Date:	MAY	16,	1995	
Location:			Woodword Co	

CONDITION RATING Project Number: 2285

Control Section:

		2011	000101 560010	
Length:		FLEXIBLE PAVEMENTS	Surveyed By:	Wilson

						1	LEGI	END	FC	DR I	RAI	INC	GC	LA	SSE	S												
CONDITIO	N RATING	C	RAG	CKI	NG	מם	STO	ORT	ION	R	AVE	LIN	NG		URF					BA		2		1			RFACE G INT	
			1-2	2-3	-4		2-	-3-	4		1-2	-3-	-4	1	-2-	-3-	4		1-	2-3	3-4	4						
<ol> <li>97-90</li> <li>89-80</li> </ol>	% = EXCEL. % = SUPER. % = GOOD	C	RAG	CKI	NG	DI	STO	ORT	ION	R	AVE	LIN	1G		URF UGH		-	BA	ASE		I	RU		1 2		5%	S THA	5%
5. 64-50	% = AVER. % = POOR SS= FAIL	udinal	בראם		tor	Bleeding	Bleeding	g	ating	- TOIT	ediate		ng		ely Rough		e Rough			Failure	0.5 inch	1.0 inch	greater	3 4			TO 3 OR M	
RATING INTERVAL (MI.)	CONDITION RATING (%)	Longitudinal	Random	0	Cracking	Minor	Major	Shoving	Corrugating	Minor	Intermediate	Major	Raveling	Smooth	Moderately	Rough	Surface	Moderate	Severe	Base F		0.5 to	1.0 or		ATCH		COMM	ents
0.0	82	1	X	V	2					V	V		1															
64	73 -	1	1	1	3					V	1		1													1		
0.4	69	1	7.	1	3	1				V	1	1	1															
0.6	82		K						1	V	1		1															
6.9	82.	W	1		12				1	V	1		1														1	
1.6	83	4	1	V	2	V			1	V	1		1											,				
1,2	85,	9	K	1	11					1	1		1	1				-	1						u.			
1.4	95	10	1	V	1	П																						
1.6	70.	7.	1	V	3					1	1																	
1.8	70	1.	7	0	2	,				1	1		1															
2.0	82	W.	K	V	2					V			1															
2.9	58	1	1		1					V			(															
2.4	85	V.	1	1	7	-				-																		
ما ال	73	V.	1	V	3					1	1		1															
2.8	85	8	Y	1	2					U	10		1															
3.0	87.	VI	1	П	2	П				1																		

Date:	May 16,	19	9_	5		-				C	CON	DII	CIC	ON	RAI	CII	1G				F	roj	ec	t i	Nun	nbe	rı	_ 2,	285
Location:	54-34	W	100	d	w	210	1	1					FC	OR							C	cont	ro	1 :	Sec	ti	on	1	,
Length:				8		-				FI	EX	IBI	E	PA	VEM	Γ	ITS	3			S	urv	ey	ed	Ву			f1/./s	on Brewd
								LE	EGE	IND	F	OR	RA	TI	NG	CI	AS	SSE	s						-				
CONDITIO	N RATING		CI	RAG	CKI	ING		DIS	BTC	RT	IO	N R	AV	EL:	ING	F			'AC	_		FA	BAS				1		BURFACE AR
				1-2	2-3	3-4		1-	-2-	-3-	4		1-	2-:	3-4		1-	2-	3-	4		1-	2-3	3-4	1				
2. 97-90 3. 89-80	<ul><li>EXCEL.</li><li>SUPER.</li><li>GOOD</li><li>AVER.</li></ul>		CI	RAC	ZK I	NG		DIS	то	RT	IOI	N R	AV	EL	ING	1			AC		100	ase Ilu	- 1		RU		1	2 = 5	SS THAN 5
5. 64-50 6. 50%-LE	POOR	udinal	erse			tor	Cracking Minor Blocking	Bleeding	Major Bleeding		ating	LTON	1 2 2 2 2	edlate	שני	54		Moderately Rough		Surface Rough	ce		Base Failure	0.5 inch	1.0 inch	rea	1		e OR MORE
RATING INTERVAL (MI.)	CONDITION RATING (%)	Longit	Transverse	Random	Block	Alligator	Cracki	Inter.	Major	Shoving	Corrugating	Minor	Tato	Major	Raveling	Cmooth	DIIIOOCIII	Moderate	Rough	Surface	Moderate	Severe	Base Fa	0.1 to	0.5 to	1.0 or		ATCH FT <sup>2</sup>	COMMENTS
3.2	83	V	1	1	1		2				1	ı	Y		1			1											
3,4	81	v	V	1			2																						A LE
2.6	85	-	1	1	1		2																						
3.8	88.	V	1	/			11					11	1		1														IF UT
4.0	85	V	10	/			2					V	1		1			1											
4.2	83	1	0		1		4					V	1		1	_													
4,4	83.	ı	L		V		2	Ш			-	V	1		1			1	1					1					
4.6	83.	L	0	/	4	4	2				1	-		1	1		_	1	1					1					
4, 3	87.	L	1	-		1	110		1	1	11	0	1		1			1	1		1	1		4					
5.4	94;	-	V	1		1	1	1	-	1	1	1		-			-	-	1	-	1	-		1					
5.2	85	ı	N	1		-	11	/	4	-	1		-	+			+	1	1	-	-	-		4					
(,#	85	1	1				11/		1		11	_						1	1		-			1					
5.4	83	V						1,	1	-	N.			-				1	1	1	1	1			1		44	150	
5.8	76	L		1		1	1				1	1															-/	.70	

Good

1.2

ates	May 16, 1995
	11.1-4 10, 11/3
	, ,

CONDITION RATING Project Number: 2235

Location: 1/3.64 Beauer (o, FOR Control Section:

Length: FLEXIBLE PAVEMENTS Surveyed By: Wilson Brewer Location: U.S. 64 Beaver Co, FOR

		T	_	-	-	-		-		T					V- 17					-	A STATE OF			1	Carlo
CONDITIO	N RATING	(	CRA	ACK:	.IN	G	DI	<b>5 T</b> O	RTIC	NI	RAV	VELI	ING	1	URF					BAS				1	URFACE AREA
122.00			1-	-2-:	3-4	4	1-	-2-3	3-4		1-	-2-3	-4	1	-2-	-3-	4		1-	-2-3	3-4	4			
<ol> <li>97-90</li> <li>89-80</li> </ol>	<ul><li>EXCEL.</li><li>SUPER.</li><li>GOOD</li><li>AVER.</li></ul>		CRA	ACK:	INC	G	DI	3 TOI	RTIO	NI	RAV	/ELI	NG		URF			1	ASE			RU	1	2 = 59	
5. 64-50	% = POOR SS= FAIL	udinal	erse		tor	Cracking	Bleeding	Major Bleeding	ating	cion		ediate	nd		ely Rough		Surface Rough	ce		ailur	0.5 inch	1.0	rea	4 = 309	TO 30%
RATING INTERVAL (MI.)	CONDITION RATING (%)	Longitudina	1	Random	Alligator	Cracki	Minor I	Major	Shoving	Distor	Minor	Intermediate Major	Raveling	Smooth	Moderately	Rough	Surface	Moderate	Severe	se	ועו	2	0	PATCH FT <sup>2</sup>	COMMENTS
3,2	63.	1	1	1	2				10	2											-				
3,4	39		4		2				1	3	1								1	1	V	V	14	1242,124)	
3,6	35	1	W.		3				4	-									1	1	L	N	1	(25)-2x12	
3,3	45	ck	1		2				y	3							/	1	7	1	1	N		(10)2x12	
4,8	64	de	Y		2				VI							V	1				V			(6)2×17 20×12(5)	
4.2	64	de	7		2				K	2						1					V	1	I	(10) 10x12	
4,4	65.	1 1			2				V	2								ľ			V			(18) 6×12	
4.6	(5)	1	V		2				10	2											V	1.		12450 96×12	
4,8	65 .	d.	1		2				A	2											1	/	4	10,50(2)	
5.0	68	4	V	1	3				0	2					1		2								
5.2		W.	7		2				1																
5.4	72	4	1		2				9																
5,6	72	1.	1		2				_	2															
5.3	72	4	4		2																	/			
6,5	1-	ч.	1		2			1	Jy!												1				
6.2		W	V	1	1				14	1														(A) 2x4	

1. I

Date: May 16,1995 CONDITION RATING
Location: US-64 Beaver Co FOR
Length: 6.8 FLEXIBLE PAVEMENTS

Control Section: 1

Project Number: 2285

FLEXIBLE PAVEMENTS

surveyed By: Wilson Brewer

		_		_			L	EGE	ND FC	R	RAT	rin	G	CLA	SSE	S										
CONDITION RATING			CRA	ACI	KII	1G	DI	STO	RTION	R	AVE	ELI	NG		URE				FF	BA		S		TOTAL SURFACE AREA OF RATING INTERVAL		
			1-	-2-	-3-	-4	1.	-2-	3-4		1-2-3-4			1-2-3-4					1-	2-	3-4					
1. 100-98% = EXCEL. 2. 97-90% = SUPER. 3. 89-80% = GOOD 4. 79-65% = AVER. 5. 64-50% = POOR 6. 50%-LESS= FAIL		C	CRACKING					DISTORTION				RAVELING			URF	BASE			RUT			1 2 3	= LES			
		tudinal	erse			tor	Bleeding	Bleeding	ating		Intermediate		ng		ely Rough		e Rough	te		Failure	0.5 inch	1.0 inch	grea			OR MORE
RATING INTERVAL (MI.)	CONDITION RATING	Longit	Transverse	Kandom	9	Cracking	Minor	Major	Shoving Corrugating Distortion	Minor	Interm	Major	Raveling	Smooth	Moderately	Rough	Surface	Moderate	Severe	Base F	0.1 to	0.5 to	1.0 or		TCH	COMMENTS
0,0	67.		4	1		1			15	1					V	· .	2							12	X1,056	
0.2	75	1	X			1			1						4	/	2							12)	11,656	
0.4	52	1	1			3			1/3						1		2				1	1		1210	25	
0.6	50	d	1			3.			13						4	-	3									
0.8	50.		4			2			12						4		2	1		1						
1.0	50.	1	1			2			1/2						1		2	1		1		1				
1.2	45	V	4			2			13						1		2	1		1	1	-		10x =	20	
1.4	50	1	1			2			12									1		1	V	1		,		
1.6	65	4	Y			3			1/2												V	0				
1.3	65	4	1	1		3			1/2												1	0				
2.6	50.	1	4			3.			1.3												4	7				
2.2	50	1	1			3			13												1	0				
2.4	45.	4	1			3			13									1		1	1	4	/			
2,6	65.	4	X			2			1/2												4	1	/			
2.3	50	4	d			2			13												1	1				
3.0	48	N	4		T	8			13							1		1		1	1	1				

Date:	1.5-64 L	1995 Beavel		FOR BLE PAVEM		Control	Section	2235 on: 1 W.K., Brewel
			LEGEND FO	R RATING	CLASSES			
CONDITION	RATING	CRACKING	DISTORTION	RAVELING	SURFACE ROUGENESS	BAS FAILU		TOTAL SURFACE AREA OF RATING INTERVAL
1 100 000	- 7407	1-2-3-4	1-2-3-4	1-2-3-4	1-2-3-4	1-2-3	3-4	
1. 100-986 2. 97-906 3. 89-806 4. 79-658	= SUPER. = GOOD	CRACKING	DISTORTION	RAVELING	SURFACE ROUGENESS	BASE FAILURE	RUT DEPTH	1 = LESS THAN 5% 2 = 5% TO 15% 3 = 15% TO 30%

INTERMEDIATE

MINOR

RAVELING

MAJOR

SMOOTH

INTER. BLEEDING

MAJOR BLEEDING

SHOVING

CORRUGATING

7

2

2

CRACKING MINOR BLEEDING

2

2

ALLIGATOR

BLOCK

I ONGITUDINAL TRANSVERSE RANDOM

L

U

4 = 30% OR MORE

COMMENTS

0.1 or 0.2 INCH 0.3 or 0.4 INCH

BASE FAILURE

SURFACE ROUGH

MODERATE

SEVERE

MOD. ROUGH

ROUGH

0.5 or GREATER

PATCH FT<sup>2</sup>

64-50% = POOR

CONDITION

(8)

RATING

6. 50%-LESS= FAIL

RATING

INTERVAL

(MI.)

6.4

POOR

ate:	June 7	1995
ocation:	US-281	Major

ength: 6,0

CONDITION RATING

FOR

Project Number: 2285

Surveyed By: Stacy & Wilson

FLEXIBLE PAVEMENTS

								LI	EGE	ND	FO	R	RAT	rin	G (	CLA	SSI	S											
CONDITION	N RATING		CRACKING						STO	RTI	ON	R	AVI	ELI	NG	100	URI				FI	BA		C		TOTAL SURFACE AREA OF RATING INTERVAL			
1. 100-98% = EXCEL. 2. 97-90% = SUPER. 3. 89-80% = GOOD 4. 79-65% = AVER. 5. 64-50% = POOR 6. 50%-LESS= FAIL			1-2-3-4					1-2-3-4					1-2-3-4			SURFACE				1-2-3-4									
		CRACKING					1													BASE FAILURE			RUT			2 = 5	ss THU	15%	
		DINAL	RSE			OR	NG	BLEEDING	BLEEDING	SHOVING	TON		DIATE		16		ROUGH		SURFACE ROUGH	TE	d (E)	FAILURE	0.2 INCH	0.4 INCH	GREATER	3 = 15% TO 30% 4 = 30% OR MORE			
RATING INTERVAL (MI.)	CONDITION RATING (%)	LONGITUDINAL	TRANSVERSE	RANDOM	BLOCK	ALLIGATOR	CRACKING			SHOVING	DISTORTION	MINOR	INTERMEDIATE	MAJOR	RAVELING	SMOOTH	MOD. RC	ROUGH	SURFACE	MODERATE	SEVERE	BASE FI	0.1 or	0.3 or	0.5 or	PATCH FT <sup>2</sup>	COM	ænts	
0.0	57	t.	4	1	1	1	4 4	1		,	1																		
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Date:	June 7,1995
Location:	US-281 Major

CONDITION RATING Project Number: 2285

Control Section:

Length: 6.2

FLEXIBLE PAVEMENTS

FOR

Surveyed By: Stacy i Wilson

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CONDITIO	N RATING		CR	LA C	CK:	IN	G	D:	ısı	TOF	RTI	(0)	IR	LAV	EL:	ING		SUR		ce Ess		F	BA		3			URFACE AREA NG INTERVAL	
			1-2-3-4						1-2-3-4						1-2-3-4				-3	-4	1-2-3-4								
1. 100-98% = EXCEL. 2. 97-90% = SUPER. 3. 89-80% = GOOD 4. 79-65% = AVER.			CRACKING					DISTORTION					R	RAVELING				SURFACE ROUGHNESS				BASE FAILURE			RU		1 = LESS THAN 5% 2 = 5% TO 15% 3 = 15% TO 30%		
5. 64-50	64-50% = POOR 50%-LESS= FAIL		TRANSVERSE			LTOR	NG	BLEEDING	BLEEDING	BLEEDING	CORREGATING	TTON.	TOTAL	TNTERMEDIATE		NG		ROUGH		E ROUGH	VTE		FAILURE	c 0.2 INCH	0.	GREATER		OR MORE	
RATING INTERVAL (MI.)	CONDITION RATING (%)	LONGIT	TRANSV	RANDOM	BLOCK	ALLIGATOR	CRACKING	MINOR	INTER.	MAJOR	CORREGA	DISTORTON	MINOR	TNTERN	MAJOR	RAVELING	SMOOTH	MOD. I	H	SURFACE	MODERATE	SEVERE	BASE I	0.1 or	0.3 or	0.5 or	PATCH FT <sup>2</sup>	COMMENTS	
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6.26-95 ite: ocation: SH-8 Alfelte Co

CONDITION RATING

Project Number: 2285

FOR

Control Section:

ength: 5,8 m./es FLEXIBLE PAVEMENTS Surveyed By: Steve & W./so,

LEGEND FOR RATING CLASSES SURFACE BASE TOTAL SURFACE AREA FAILURE OF RATING INTERVAL CONDITION RATING CRACKING DISTORTION RAVELING ROUGHNESS 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1. 100-98% = EXCEL. SURFACE BASE RUT 1 = LESS THAN 5% 2. 97-90% = SUPER. 2 - 5% TO 15% CRACKING | DISTORTION | RAVELING | ROUGHNESS | FAILURE DEPTH 3. 89-80% = GOOD 3 = 15% TO 30% 4. 79-65% = AVER. 0.25INCH 0.4 INCH 4 = 30% OR MORE 5. 64-50 = POOR CRACKING
MINOR BLEEDING
INTER. BLEEDING
MAJOR BLEEDING
SHOVING GREATER 6. 50%-LESS= FAIL SURFACE ROUGH BASE FAILURE INTERMEDIATE LONGITUDINAL TRANSVERSE CORRUGATING ROUGH ALLIGATOR RAVELING MODERATE or SMOOTH RANDOM RATING CONDITION MOD. MAJOR ROUGH PATCH INTERVAL RATING 3 2 FT2 COMMENTS (MI.) (8) 6×200 0.0 57 3×50 62150 310 0,2 BX50 6×100 104100 6.4 81300 8x50. 68 Orto 6x 660 6150 90 6x 100 6×150 1,0 4425 12,500 2 1.6 1,8 2.0 50 2.4 50 2.6 48 214 48 2.3 30

6-26-95 ate: ocation: 54-8 Alfalfa Co ength: 5.8 m.les

64 pool

Total

CONDITION RATING

FOR

Project Number: 2285

Control Section:

FLEXIBLE PAVEMENTS Surveyed By: Stere : Wilson LEGEND FOR RATING CLASSES TOTAL SURFACE AREA SURFACE BASE CONDITION RATING DISTORTION RAVELING ROUGHNESS FAILURE OF RATING INTERVAL CRACKING 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1-2-3-4 1. 100-98% = EXCEL. 2. 97-90% = SUPER. SURFACE BASE RUT 1 = LESS THAN 5% CRACKING | DISTORTION | RAVELING | ROUGHNESS | FAILURE | DEPTH 2 = 5% TO 15% 3. 89-80% = GOOD 3 = 15% TO 30% 4. 79-65% = AVER. 0.4 INCH GREATER 5. 64-50 = POOR CRACKING
MINOR BLEEDING
INTER. BLEEDING
MAJOR BLEEDING
SHOVING
CORRUGATING
RISTORTION 4 = 30% OR MORE 6. 50%-LESS= FAIL ROUGH LONGITUDINAL TRANSVERSE RANDOM BASE FAILURE INTERMEDIATE MOD. ROUGH MODERATE RAVELING SURFACE or SEVERE SMOOTH CONDITION RATING MAJOR ROUGH PATCH INTERVAL RATING 2 3 FT2 COMMENTS (MI.) (8) 50 3.2 3.4 3,6 54 3,8 50 12750 4,0 52 244 200 80 4.2 80 4.4 63 4,6 4.8 5.0 92 90 5.2 5.4 5,6 80 80 9× 50 5.8 2150