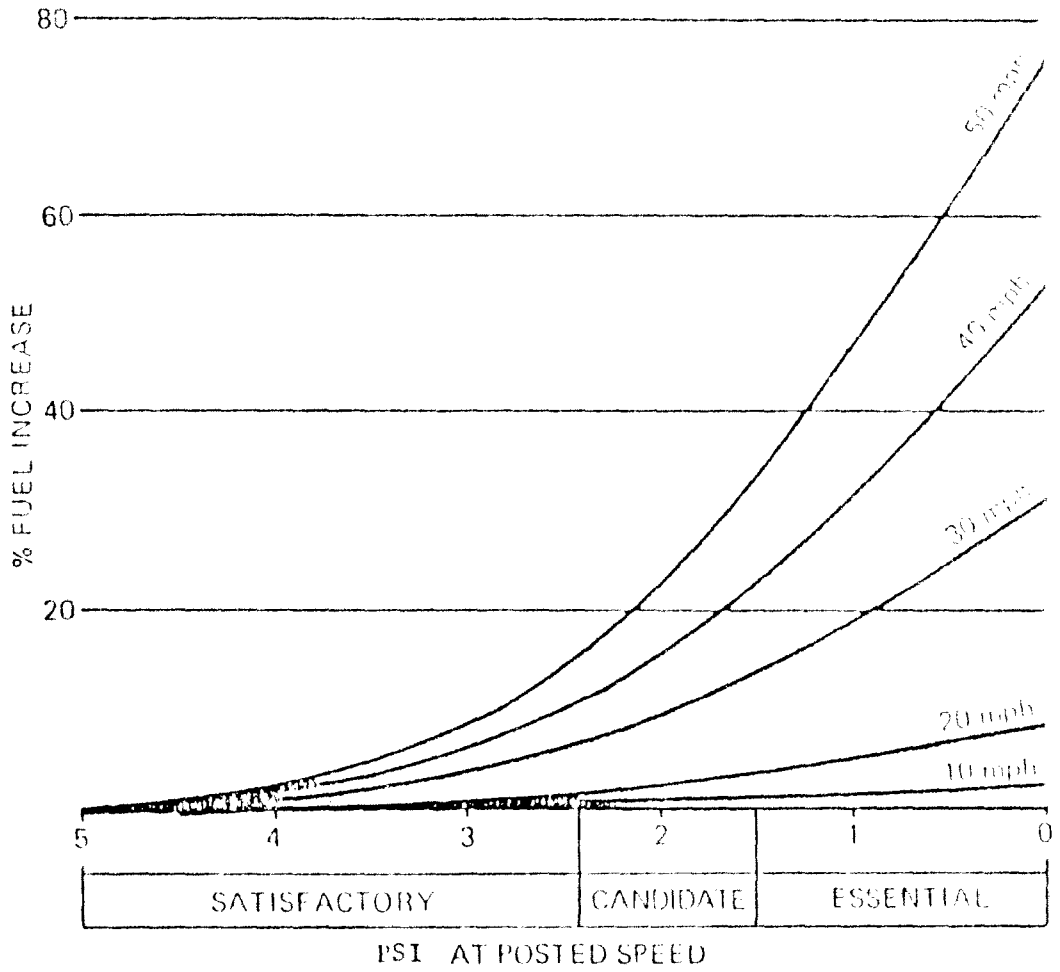
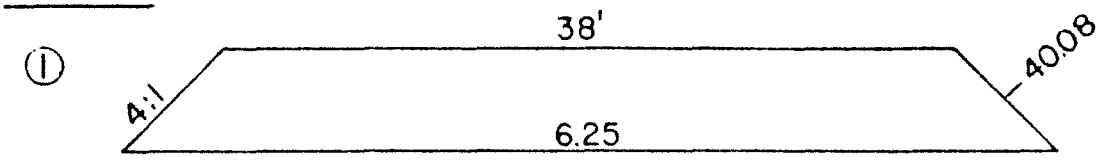
Approximate relationship of posted-speed PSI to increased fuel consumption at various running speeds.

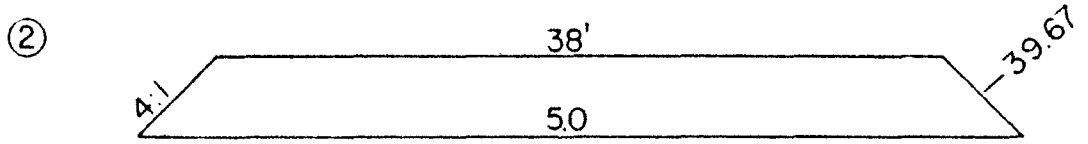


Typical

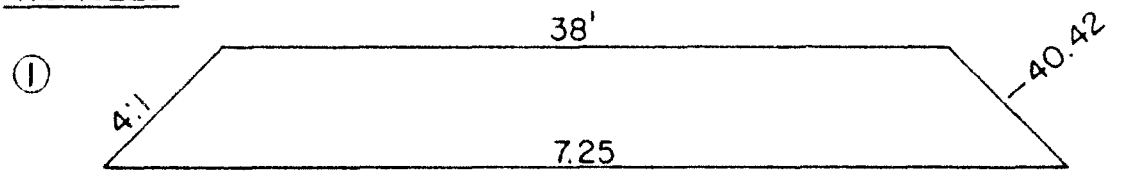
MANDERFIELD INTERCHANGE TO SULPHURDALE INTERCHANGE

EXISTING

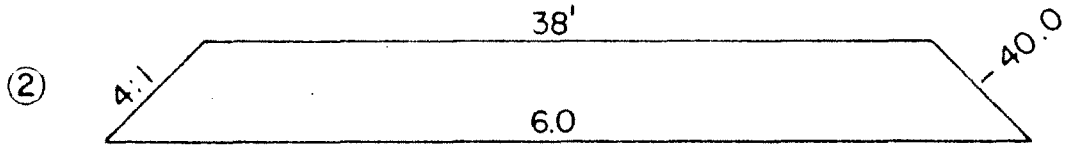




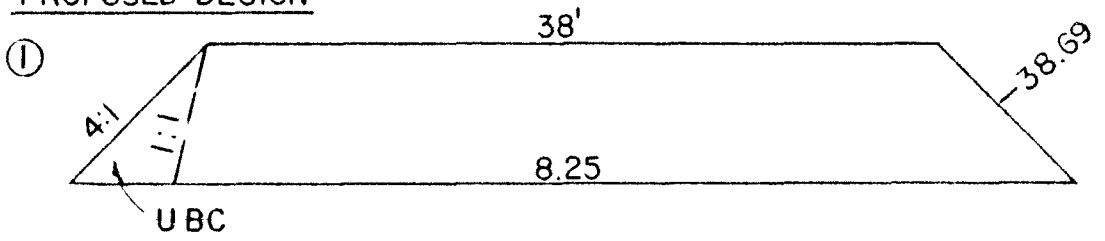
RECYCLED

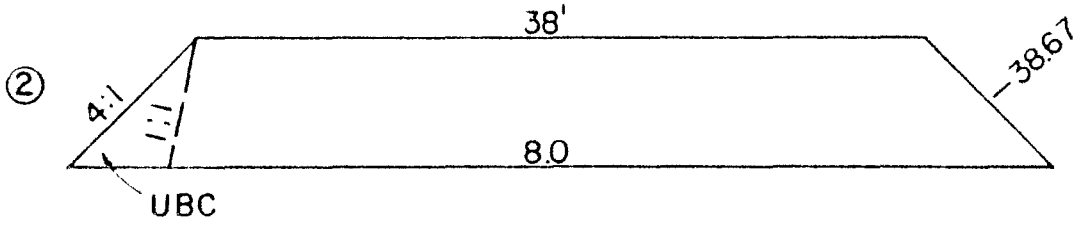


* includes 1" of underline subbase



PROPOSED DESIGN





Design 1 = 4.8 miles

Design 2 = 4.0 miles

total 8.8 miles

Existing

(1) $\frac{6.25 \times 40.08 \times 5280 \times 136.7}{12 \times 2000} = 7533$ T/M

(2) $\frac{5.0 \times 40.08 \times 5280 \times 136.7}{12 \times 2000} = 6027$ T/M

Recycled

(1) $\frac{7.25 \times 40.42 \times 5280 \times 136.7}{12 \times 2000} = 8813$ T/M

(2) $\frac{6.0 \times 40.0 \times 5280 \times 136.7}{12 \times 2000} = 7218$ T/M

Design

(1) $\frac{8.25 \times 38.69 \times 5280 \times 140}{12 \times 2000} = 9831$ T/M

(2) $\frac{8.0 \times 38.67 \times 5280 \times 140}{12 \times 2000} = 9528$ T/M

9831 - 8813 = 1018 T/M more

9528 - 7218 = 2310 T/M more

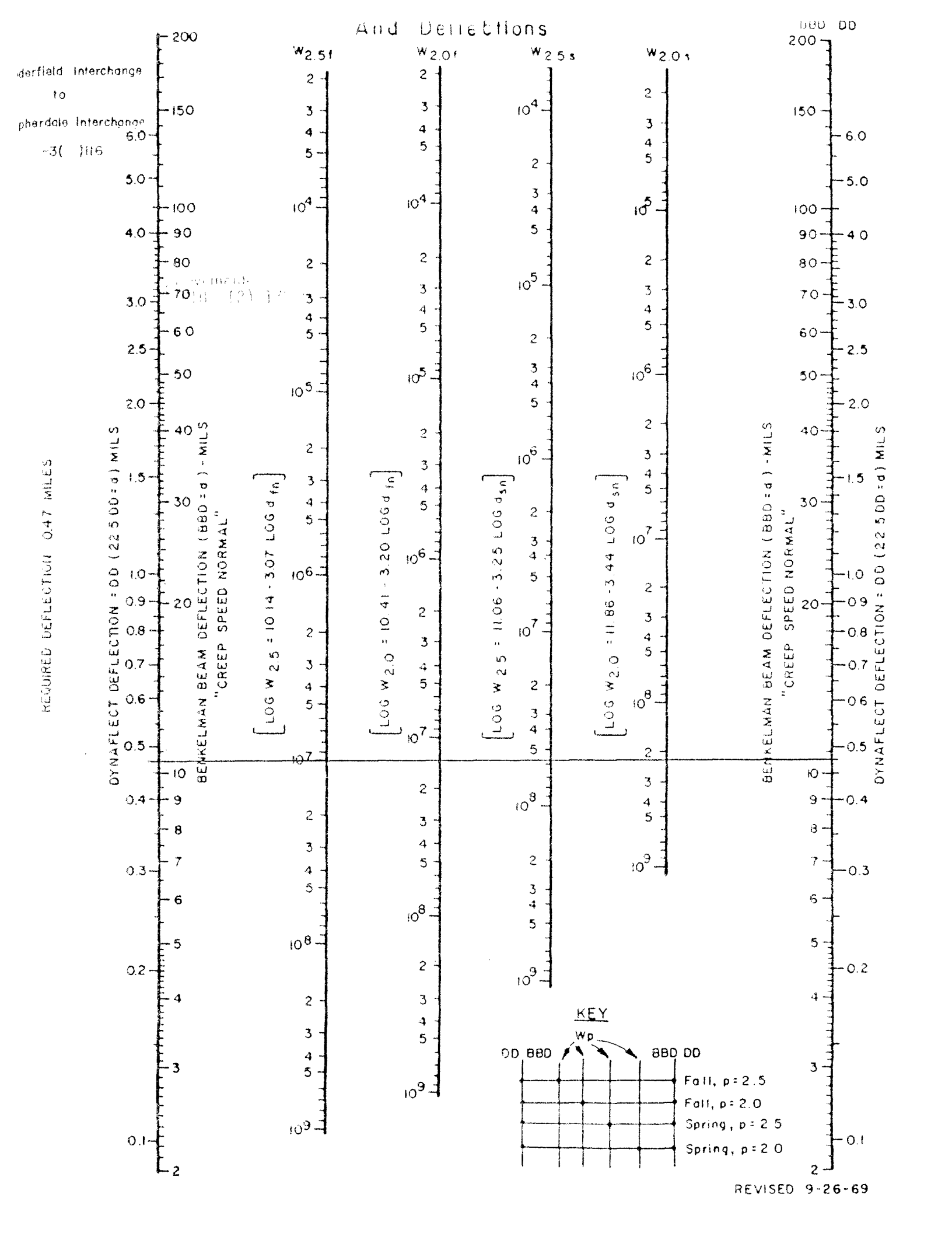
9831 x 4.8 = 47,189
9528 x 4.0 = 38,112
85,301 x 2 - 170,602 Total Tons

Recycled 8813 x 4.8+ 7218 x 4.0 = $71,174_T$

1

$\frac{85,301 - 71,174}{9528} = 1.48$ miles short of enough BSC

1.48x 2 = 2.96 total miles short


And Deflections
derfield Interchange
to
pherdale Interchange
-3( )116
REQUIRED DEFLECTION 0.47 MILES
DYNAFLECT DEFLECTION = DD (22.5 DD = d) MILS
BENKELMAN BEAM DEFLECTION (BBD = d) - MILS
"CREEP SPEED NORMAL"
[LOG W 2.5 = 10.14 - 3.07 LOG d fn]
W2.5f
[LOG W 2.0 = 10.41 - 3.20 LOG d fn]
W2.0f
[LOG W 2.5 = 11.06 - 3.25 LOG d sn]
W2.5s
[LOG W 2.0 = 11.86 - 3.44 LOG d sn]
W2.0s
BBD DD
KEY
Wp
OD BBD
BBD DD
Fall, p = 2.5
Fall, p = 2.0
Spring, p = 2.5
Spring, p = 2.0
REVISED 9-26-69

UTAH DEPARTMENT OF TRANSPORTATION
Materials and Tests Division

EVALUATION OF ASPHALT OVERLAYS

Project: I-15, Manderfield to Pine Creek

Length:

FLEXIBLE PAVEMENT

Terminal Serviceability Index	=2.5
Traffic Analysis Period	=20 yrs.
Regional Factor	=2.5
Existing Pavement	=
(1) 3/4 PMS 6.0 CTB (2) 1/2 PMS 3.0 G.B	=
2.5 BSC 3.0 G.B 1 1/2 BSC 3.0 G.B	=
3.0 BSC 6.0 CTB	=

LOAD DISTRIBUTION FACTOR (LDF)

Trucks	=1.995
Trucks	=0.01595
Passenger Cars	=0.0002
Present Average Daily Traffic (1975)	=4035
Design Year Average Daily Traffic (1988)	=7609
Traffic Increase	=5.0

DYNAFLECT DATA 8/3,2/77

Time	=
Pavement Surface Temperature	=
5 Day Mean Air - Temperature	=71°F SB, 73°F NB
	=
Pavement Surface Temperature Correction	=
Deflection Adjustment Factor	=
Test Section (one mile increments)	=9 test section in each lane

Test Section	Mean DMD	S.D.	Temp Corr.	Corr. DMD	Corr. SN	Overlay Reg.
1 SB	.769	.201	.825	.965	2.1	5.25
2 SB	.832	.245	.800	1.050	2.55	6.5
3 SB	.814	.434	.800	1.346	3.4	8.5
4 SB	.767	.173	.775	.863	1.8	4.5
5 SB	.956	.256	.750	1.101	2.75	7.0
6 SB	.929	.188	.750	.979	2.35	6.0
7 SB	1.129	.487	.735	1.546	3.8	9.5
8 SB	1.167	.202	.725	1.139	2.75	7.0
9 SB	1.367	.324	.725	1.461	3.6	9.0
1 NB	1.351	.378	.750	1.580	3.8	9.5
2 NB	1.119	.318	.750	1.316	3.3	8.25
3 NB	.942	.332	.725	1.164	2.9	7.25
4 NB	1.115	.370	.850	1.577	3.95	10.0
5 NB	.749	.311	.875	1.200	2.95	7.5
6 NB	.667	.167	.875	.876	1.8	4.5
7 NB	1.019	.377	.850	1.507	3.8	9.5
8 NB	.851	.180	.850	1.029	2.35	6.0
9 NB	1.049	.351	.825	1.450	3.60	9.0

$\bar{x} = \frac{\text{Spreadability}}{7.0+\ 1.7\ 8+} .9$

8.0+ 1.8 8 ± 1

LANE	TEST NO.	SPREADABILITY	CORRECTED DEFLECTION	MEASURED EXISTING SN	REQUIRED SN	OVERLAY REQUIRED	ADDITIONAL THICKNESS IF RECYCLED
SB	1	56	.028	2.6	5.4	7.0	3
SB	2	54	.030	2.4		7.5	
SB	3	52	.038	2.0		8.5	
SB	4	52	.025	2.3	5.4	7.5	3
SB	5	56	.031	2.4	5.7	8.25	1.8
SB	6	51	.028	2.1		9.00	
SB	7	51	.044	1.9		9.50	
SB	8	56	.033	2.4		7.50	
SB	9	52	.042	1.9	5.7	9.50	1.8
NB	1	53	.045	1.9	5.7	9.50	1.8
NB	2	67	.038	3.2		6.25	
NB	3	61	.033	2.8		7.25	
NB	4	57	.045	2.3		8.50	
NB	5	50	.034	2.0	5.7	9.25	1.8
NB	6	50	.025	2.2	5.4	8.0	3.0
NB	7	54	.043	2.1		8.25	
NB	8	51	.029	2.1		8.25	
NB	9	51	.041	1.9	5.4	8.75	3.0

Use 2.0" for 1.8

Form R-274
Revised 1-74

UTAH DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH SECTION

EVALUATION OF STRUCTURAL REQUIREMENTS

Project: Manderfield to Pine Creek
Designed: I-15

FLEXIBLE PAVEMENT

Terminal Serviceability Index	= 2.5	
Traffic Analysis Period	= 20 yr.	
Regional Factor	= 2.5	
Dynamic CBR		
of Untreated Base	= 70 70	
of Granular Borrow	=	
of Predominant Subgrade Soil	= 4.0 & 5.5	
Load Distribution Factor (LDF)		
Heavy Trucks	= 1.995	
Light Trucks	= .01595	$4034(1+.05)^{13} = 7609$
Passenger Cars	= 0.002	$H_T = 21$
Present Average Daily Traffic(1975)	= 4035	$L_T = 14$
Heavy Trucks	=	Pc= 65
Light Trucks	=	
Passenger Cars	=	
Mean Design Year ADT(1988)	= 7609	
Heavy Trucks	= 1598	
Light Trucks	= 1065	
Passenger Cars	= 4946	

Assume 50 % of Vehicles use the heaviest traveled lane
Design 18^{k}'s =
Required Structural Number (SN) =

(1598x 1.995)+(.01595x 1065)+(.002x 4946) .5 = 1603

CBR 4.0 = 5.7 SN CBR 70 - 3.35
CBR 5.5 = 5.4 SN
1603 x 20 x 365 = 1.17×10^7 = .47 Required Deflection

Manderfield
Wildcat Existing Surface

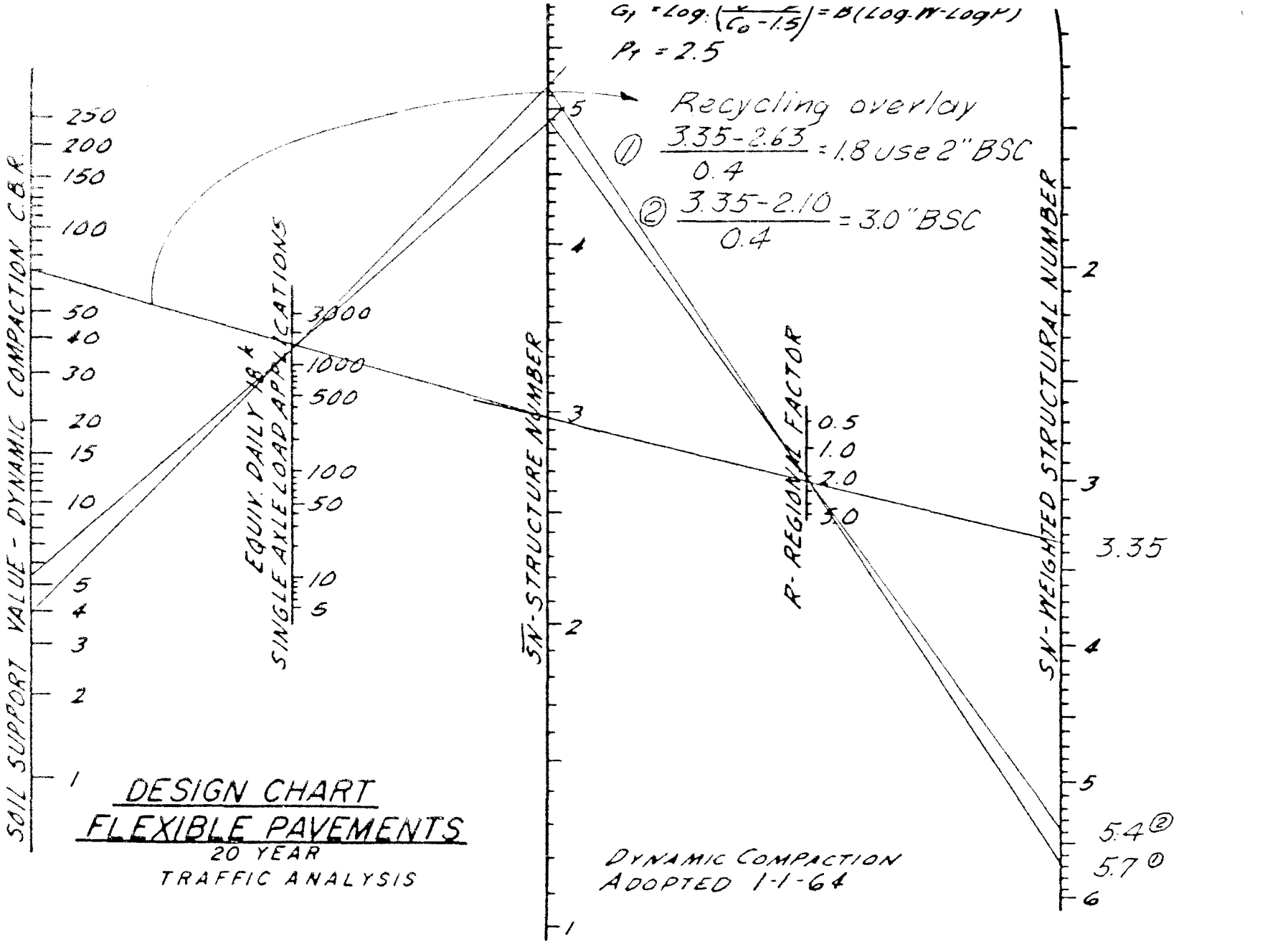
3/4" PMS
2.5 BSC
3.0 BSC x .42 = 2.63
6.0CTB x .12 = 0.72
3.06.B x .08 = 0.24
3.59

2"UTBC f/levling 0.20
3.79

Wildcat to
Sulphurdale Existing Surface

1/2" PMS
1 1/2" BSC
3.0 BSC x .42 = 2.10
6.0CTB x .12 = 0.72
3.06.B x .08 = 0.24
3.02

2"UTBC f/leveling 0.20
3.26



REVISED 4-9-64
REVISED 2-27-64

Removal, Crushing & Stockpiling

$\frac{38 \times 5280}{9}$ = 22,293 sq. yd./m x.90 x 8.8 =$176,565

PMS $\frac{1 \times 38 \times 5280 \times 130}{12 \times 2000}$ = 1087T/M x6.00x 8.8 =$57,394

AC-10 or 20

1087 x .065 = 70.7 T/M x80.00 x 8.8 =$49,773

Recycled BSC

$\frac{8.25 \times 38.69 \times 5280 \times 140}{12 \times 2000}$ = 983 T/M x 6.00 x 4.8 =$283,133

$\frac{8.00 \times 38.67 \times 5280 \times 140}{12 \times 2000}$ = 9528 T/M x6.00 x 4.0 =$228,672

AC-10

9831+9528x.005 = 96.8T/M x 80.00 x 8.8 =$68,141

Softening Agent

9831 + 9528 x .0075 =145.2 T/M x 120.00x 8.8=$153.331

Plus 4 Aggregate

9831 + 9528-96.8x 0.15 =2889 T/M x 3.00 x 8.8 =$76,270

Tack Coat

$\frac{2 \times 38.7 \times 5280 \times .06}{9 \times 237}$ = 15.3T/M x 120.00 x 8.8 =$16,157

Prime Coat

$\frac{39.4 \times 5280 \times .30}{9 \times 249}$ = 27.9T/M x120.00 x 8.8 =$29,462

UBC $\frac{2 \times 39.6 \times 5280 \times 135}{12 \times 2000}$ = 2352 +

(Wedge 815 T/M) . = 3167 t/M x3.00 x 8.8 =$83,609

Conventional Mix

BSC 9545 T/M x 5.00 x 1.48 = $70,633

AC-10 9545x .06 = 573T/M x80.00 x1.48 = $67,843

Subtotal $1,3609,989.00

Total $ 2,721,978.00

Conventional Mix

PMS

$\frac{1 \times 38 \times 5280 \times 130}{12 \times 2000}$ = 1087 T/Mx 6.00 =$6522.00

AC - 10 or 20

1087x .065 = 70.7 T/M x 80.00 =$5656.00

SBL

$\frac{7 \times 41.5 \times 5280 \times 140}{12 \times 2000}$ = 8947 T/Mx 5.00 =$44,735.00

NBL

$\frac{8 \times 42 \times 5280 \times 140}{12 \times 2000}$ = 10,349 T/Mx 5.00 =$51,745.00

AC-10

8947x .06 = 536.8 T/Mx 80.00 =$42,944.00

10349x .06 = 620.9 T/Mx 80.00 =$49.672.00

Tack SS-1

$\frac{34 \times 5280 \times .08}{9 \times 236}$ = 16.7 T/M x 120.00 =$2,004.00

$203,278.00

8.8x 2 =$3,577,693.00

Lump Sum (Widening Slopes, Guardrail Pipe and etc.) =$250,000.00

Total $3,827,693.00

Plus No. 4 Rock

Percent Passing

1"	100
3/4	80±6
1/2	33±6
3/8	11±5
4	1±3

RECYCLING AGENT SPECIFICATIONS

Viscosity, SSF/100°F	500–2500
SSF/140°F	80–160
SSU/210°F	90–105
Specific Gravity 60°F	1.000–1.040
Pounds/Gallon	8.33 - 8.66
Flash Point, c.o.c, °F	390 minimum
Volatility, 22 Hrs./225°F %W	1.0 Maximum
Mixed Aniline Pt., °F	75–100
Viscosity–Gravity Constant	0.9500
Refractive Index/20°C	1.57–1.63
Rostler Analysis	
Asphaltenes	Less than 1%
Nitrogen	15 minimum
$A_1 + A_2$	67 min.
Paraffins	15 maximum

Form R-257
(Revised 4-2-69)

UTAH DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH SECTION
BASE AND SURFACE AGGREGATE

PROJECT NAME Wildcat to Pine Creek PROJECT NO IR-15-3(6)121

LABORATORY NO 78-7-AB-173 SAMPLED 19

IDENTIFICATION MARKS REC'D AT LAB 19

SUBMITTED BY REPORTED 4-17 19 78

PROSPECT LOCATION, PIT, STATION 100% Material from Stockpile left By RRS on I-15 to Shingle Creek, Stockpile Near Sulphurdale Interchange

TEST FOR Marshall Design & Immersion Compression

		SPECS
LIQUID LIMIT		
PLASTIC INDEX		
TOTAL ABSORPTION	%	
SWELL PASSING NO 10	"	
ABRASION, L A MACHINE	%	
FRACTURED FACE COUNT	%	
SOUNDNESS LOSS + NO 4	%	
LOSS - NO 4	%	
WEIGHTED LOSS	%	
-200 BY DRY SCREENING	%	

GRADE AND SOURCE OF BITUMEN | PERCENT & TYPE OF ADDITIVE USED BY WT | PERCENT STRIPPING

REMARKS 6.25% AC-10

SCREEN ANALYSIS

BEFORE CRUSHING

SIEVE SIZE	PERCENT RETAINED	PERCENT PASSING
3"		
2"		
1"		
3/8"		
#4		
- #4		

AFTER CRUSHING TO ___ MAX SIZE OR NATURAL GRADING

			SPECS
2"			
1 1/2"			
1"			
3/4"		100.0	
1/2"		77.3	
3/8"		65.1	
#4		50.8	
#8 #10		37.9	
#16		25.3	
#30 #40		16.7	
#200		7.4	
- #200			

NOTE (*) INDICATES SAMPLE DOES NOT MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS
( ) GRADING FOR BASE
( ) GRADING FOR SURFACING
( ) OTHER

GEOLOGIC TYPE OF MATERIAL

___ PRELIMINARY
___ CONTROL
___ RECORD - PROGRESS
___ RECORD - FINAL

B-3

MATERIALS ENGINEER

BITUMINOUS MIXTURES USING MARSHALL APPARATUS AASHTO T-245

Project Number: IR-15-2(82)121

Project Name: Willard to Pole Line

Lab No. 10-1110-11

Date Sampled

Date Reported 4-17-78

Spec No.	AC %	Bulk Density: Wt. in Air (Dry)	Wt. in Air (SSD)	Wt. in Water	Volume c.c.	Bulk Sp. Gr.	Weight Lbs./Cu. Ft. or Vol.	Maximum Density: Wt. of Pyc. Filled w/H_2O	Wt. of Mix in Air	Wt. of Pyc. + Mix + H_2O	Vol. of Voidless Mix	Max. Density	Voids: Total Voids in Mix %	In. Min. Agg. V.M.A.	V.M.A. Filled %	Stability: Dial Read.	Meas. Stab.	Corr. Factor	Corr. Stab.	Flow 0.01"
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
					C-D	B/E	62.4F				(H+I)-J	I/K	$\left(\frac{L-F}{L}\right)100$	$M+\left(\frac{F \times A}{G_{AC}}\right)$	$\frac{(N-M)100}{N}$					
1	5.5	1221.8	1221.7	689.8	531.9	2.30		6162	2091	7374	879	2.379				340	5159	0.96	4953	14
2	"	1218.6	1218.9	684.5	534.4	2.28		6171	2099	7391	879	2.388				338	5129	0.96	4924	23
3	"	1227.6	1229.4	692.7	535.7	2.29										326	4947	0.96	4749	23
Avg.	5.5					2.29	142.9					2.38	3.8	16.0	76.2				4875	20
4	6.0	1225.2	1227.5	687.2	540.3	2.27										242	3672	0.93	3415	25
5	"	1232.4	1234.5	689.3	545.2	2.26										253	3839	0.93	3570	22
6	"	1227.8	1228.4	681.8	547.1	2.24										277	4203	0.89	3741	19
Avg.	6.0					2.26	141.0					2.37	4.6	17.8	74.2				3575	22
7	6.5	1237.5	1237.9	697.3	540.6	2.29										255	3869	0.93	3598	23
8	"	1233.8	1235.5	687.8	547.7	2.25										225	3414	0.89	3038	24
9	"	1236.9	1237.1	698.6	538.5	2.30										263	3991	0.93	3712	23
Avg.	6.5					2.28	142.3					2.35	3.0	17.4	82.7				3449	23
Avg.																				

Lime _____ No Lime _____

Tested By Steven E. Niedenhauser

Immersion Compression

Spec. No.	1	2	3	% Dry Standard
Dry P.S.I.	299	317	315	
0% Lime P.S.I.	165	154	138	49
1% Lime P.S.I.	274	248	247	85
Bituminous Additive	2	241	210	71

212

Recommendations:

6.25 % A.C.

L % Lime

L % Bit Add.

Asphalt Data

Supplier	Phillips Oil
Grade	AC-10
Sp. Gr. = G_{AC}	1.028
Mixing Temp.	285°F
Min. Comp. Temp.	

Aggregate Data

Source:	100% Material from Stockpile left near Sulphurdale Interchange.
Type	
Comb. Sp. Gr.	

Materials Engineer

Form R-252
(Revised 4-21-69)

UTAH DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH SECTION
BASE AND SURFACE AGGREGATE

PROJECT NAME Wildcat to Pine Creek PROJECT NO IR-15-3(8)121

LABORATORY NO _____ SAMPLED _____ 19 _____

IDENTIFICATION MARKS 100% Recycle REC'D AT LAB _____ 19 _____

SUBMITTED BY _____ REPORTED 4-17 19 78

PROSPECT LOCATION, PIT, STATION _____

TEST FOR Marshall Design & Immersion Compression

		SPECS
LIQUID LIMIT		
PLASTIC INDEX		
TOTAL ABSORPTION	%	
SWELL PASSING NO 10		
ABRASION, L. A. MACHINE	%	
FRACTURED FACE COUNT	%	
SOUNDNESS: LOSS + NO 4	%	
LOSS - NO 4	%	
WEIGHTED LOSS	%	
#200 BY DRY SCREENING	%	

SCREEN ANALYSIS

BEFORE CRUSHING

SIEVE SIZE	PERCENT RETAINED	PERCENT PASSING
3"		
2"		
1"		
3/8"		
#4		
- #4		

GRADE AND SOURCE OF BITUMEN	PERCENT & TYPE OF ADDITIVE USED BY WT	PERCENT STRIPPING

AFTER CRUSHING TO _____ MAX. SIZE OR NATURAL GRADING

			SPECS
2"			
1 1/2"			
1"		100.0	
3/4"		98.2	
1/2"		90.2	
3/8"		82.0	
#4		57.9	
#8 #10		42.3	
#16		33.0	
#50 #40		18.3	
#200		11.2	
- #200			

REMARKS _____

NOTE: (*) INDICATES SAMPLE DOES NOT MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
( ) GRADING FOR BASE.
( ) GRADING FOR SURFACING
( ) OTHER

GEOLOGIC TYPE OF MATERIAL

_____

_____ PRELIMINARY
_____ CONTROL
_____ RECORD - PROGRESS
_____ RECORD - FINAL

B-20

MATERIALS ENGINEER

Project Number AR-16-3(8) 121

Project Name Wilbert to Pine Creek

MARSHALL APPARATUS
AASHTO T-245

Date Sampled

Date Reported 4-17-78

Spec No.	AC %	Bulk Density: Wt. in Air (Dry)	Wt. in Air (SSD)	Wt. in Water	Volume c.c.	Bulk Sp. Gr.	Weight Lbs./ Cu. Ft. or Vol.	Maximum Density: Wt. of Pyc. Filled w/H_2O	Wt. of Mix in Air	Wt. of Pyc. + Mix + H_2O	Vol. of Voidless Mix	Max. Density	Voids: Total Voids In Mix %	In. Min. Agg. V.M.A.	V.M.A. Filled %	Stability: Dial Read.	Meas. Stab.	Corr. Factor	Corr. Stab.	Flow 0.01"
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
					C-D	B/E	62.4F				(H+I)-J	I/K	$\left(\frac{L-F}{L}\right)100$	$M+\frac{FxA}{G_{AC}}$	$\frac{(N-M)100}{N}$					
	No Additives																			
1	6.1	1170.8	1176.8	631.5	545.3	2.15		6161	2023	7329	855	2.366				363	3704	0.94	3482	15
2	"	1169.7	1175.9	635.4	540.5	2.16		6162	1998	7310	850	2.350				414	4210	0.94	3957	21
Avg.	6.1					2.16	134.8					2.36	8.5	21.7	60.8				3720	18
		1.25% Softening Agent						6161	2049	7325	885	2.315								
3	6.1	1168.5	1181.2	654.1	527.1	2.24										289	2974	0.96	2855	19
4	"	1187.7	1188.3	662.2	526.1	2.26										314	3222	0.96	3093	16
Avg.	6.1					2.25	140.4					2.31	2.6	16.3	84.0				2974	18
5	6.1	1076.8	1077.2	601.4	475.8	2.26		6162	2017	7302	877	2.299				201	3050	1.14	3477	22
6	"	1081.1	1081.5	600.8	480.7	2.25										248	3763	1.14	4290	21
7	"	1070.2	1070.7	593.7	477.0	2.24										199	3020	1.14	3443	20
Avg.	6.1	0.5% AC-10+0.75% S.A.				2.25	140.4					2.30	2.2	15.5	85.8				3737	21
8	6.1	1178.0	1178.7	656.3	522.1	2.25		6162	1997	7306	853	2.341				192	2913	1.00	2913	20
9	"	1181.4	1182.1	657.8	524.3	2.25										262	3976	0.96	3817	22
10	"	1179.3	1180.8	654.1	526.7	2.24										275	4173	0.96	4006	23
Avg.	6.1	0.75% S.A.				2.25	140.4					2.34	3.8	17.5	78.3				3579	22

Lime _____ No Lime _____

Tested By Steve E. Nordhaus

Immersion Compression

Spec. No.	1	2	3	% Dry Standard
Dry P.S.I.	625	527	632	
0% Lime P.S.I.	372	321	388	60
1% Lime P.S.I.				
Bituminous Additive		496	511	87

537

Recommendations:

0.5AC+0.75SA % A.C.

_____ % Lime

1/4 % Bit. Add.

PAVE Bond

Asphalt Data

Supplier	Phillips Oil
Grade	AC-10 + Softening Agent
Sp. Gr. = G_{AC}	1.034
Mixing Temp.	
Min. Comp. Temp.	

Aggregate Data

Source:	100% Recycle
Type	
Comb. Sp. Gr.	

Materials Engineer

Form 6-252
(Revised 4-21-69)

UTAH DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH SECTION
BASE AND SURFACE AGGREGATE

PROJECT NAME Wildcat to Pine Creek PROJECT NO IR-15-3(8)161

LABORATORY NO _____ SAMPLED _____ IN _____

IDENTIFICATION MARKS 80% Recycle 20% New Material REC'D AT LAB _____ IN _____

SUBMITTED BY _____ REPORTED 4-17 IN 78

PROSPECT LOCATION, PIT, STATION _____

TEST FOR Marshall Design & Immersion Compress

	SPEC.	
LIQUID LIMIT		
PLASTIC INDEX		
TOTAL ABSORPTION	%	
SWELL PASSING NO 10		
ABRASION, L A MACHINE	%	
FRACTURED FACE COUNT	%	
SOUNDNESS LOSS + NO 4	%	
LOSS - NO 4	%	
WEIGHTED LOSS	%	
200 BY DRY SCREENING	%	

GRADE AND SOURCE OF BITUMEN | PERCENT & TYPE OF ADDITIVE USED BY WT | PERCENT STRIPPING

REMARKS 4.5% AC-10 + 0.8% Softening Agent

SCREEN ANALYSIS

BEFORE CRUSHING

SIEVE SIZE	PERCENT RETAINED	PERCENT PASSING
3"		
2"		
1½"		
1"		
¾"		
½"		
⅜"		
#4		

AFTER CRUSHING OR NATURAL GRADING MAX SIZE

2"		
1½"		100.0
1"		86.1
¾"		76.6
½"		57.9
⅜"		47.7
#4		36.2
#8 #10		18.1
#16		8.8
#30 #40		
#50		
#200		

NOTE: (*) INDICATES SAMPLE DOES NOT MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
( ) GRADING FOR BASE.
( ) GRADING FOR SURFACING
( ) OTHER.

GEOLOGIC TYPE OF MATERIAL

_____ PRELIMINARY
_____ CONTROL
_____ RECORD PROPERTIES
_____ RECORD FINAL

Project Number [illegible]

Project Name Willcox to Pine Creek

MARSHALL APPARATUS
AASHTO T-245

Date Sampled

Date Reported 7-17-78

Spec No.	AC %	Bulk Density						Maximum Density					Voids			Stability				Flow 0.01"
		Wt. in Air (Dry)	Wt. in Air (SSD)	Wt. in Water	Volume c.c.	Bulk Sp. Gr.	Weight Lbs./ Cu. Ft. or Vol.	Wt. of Pyc. Filled w/H_2O	Wt. of Mix in Air	Wt. of Pyc. + Mix + H_2O	Vol. of Voidless Mix	Max. Density	Total Voids in Mix %	In. Min. Agg. V.M.A.	V.M.A. Filled %	Dial Read.	Meas. Stab.	Corr. Factor	Corr. Stab.	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
					C-D	$\frac{B}{E}$	62.4F				(H+I)-J	$\frac{I}{K}$	$\left(\frac{L-F}{L}\right)100$	$M+\left(\frac{FxA}{G_{AC}}\right)$	$\frac{(N-M)100}{N}$					
1	6.6	1191.8	1192.1	660.1	532.0	2.24		6162	2048	7311	899	2.278				218	3308	0.96	3176	27
2	"	1192.5	1192.7	662.3	530.4	2.25		6162	2047	7313	896	2.284				177	2686	0.96	2578	28
3	"	1192.0	1192.2	662.1	530.1	2.25										217	3293	0.96	3161	28
Avg.	6.6					2.25	140.4					2.28	1.3	15.7	91.7				2972	28
4	6.3	1179.5	1180.1	654.1	526.0	2.24										167	2534	0.96	2433	23
5	"	1188.6	1188.9	661.4	527.5	2.25										164	2488	0.96	2388	25
6	"	1189.8	1190.0	662.7	527.3	2.26										179	2716	0.96	2607	30
Avg.	6.3					2.25	140.4					2.28	1.3	15.0	91.4				2476	26
7	6.3	1181.3	1181.7	657.1	524.6	2.25										153	2322	0.96	2229	21
8	"	1197.5	1197.8	668.2	529.6	2.26										179	2716	0.96	2607	30
9	"	1193.4	1193.7	657.0	536.7	2.22										133	2018	0.93	1877	28
Avg.	6.3					2.24	139.8					2.28	1.8	15.4	88.3				2238	26
Avg.																				

Lime _____ No Lime _____

Tested By Steven E. Whitehouse

Immersion Compression

Spec. No.	1	2	3	% Dry Standard
Dry P.S.I.	640	630	485	
0% Lime P.S.I.	313	353	343	57
1% Lime P.S.I.	543	468	533	88
Bituminous Additive	9	372	423	69

418

Recommendations:

1.5%AC+0.85% A.C.

1 % Lime

1 %Bit. Add.

Asphalt Data

Supplier	Phillips Oil
Grade	AC-10 + Softening Agent
Sp. Gr. = G_{AC}	1.034
Mixing Temp.	
Min. Comp. Temp.	

Aggregate Data

Source: 80% Recycle 20% New Material

Type	
Comb. Sp. Gr.	

Materials Engineer

Form R-257
(Revised 4-21-69)

UTAH DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH SECTION
BASE AND SURFACE AGGREGATE

PROJECT NAME Wildcat to Pine Creek PROJECT NO. IR-15-3(8)121

LABORATORY NO. _____ SAMPLED _____ 19 _____

IDENTIFICATION MARKS 70% Recycle 30% New Material REC'D AT LAB _____ 19 _____

SUBMITTED BY _____ REPORTED 4-17 19 78

PROSPECT LOCATION, PIT, STATION _____

TEST FOR Marshall Design & Immersion Compression

		SPECS
LIQUID LIMIT		
PLASTIC INDEX		
TOTAL ABSORPTION	%	
SWELL PASSING NO 10	"	
ABRASION, L A MACHINE	%	
FRACTURED FACE COUNT	%	
SOUNDNESS: LOSS + NO. 4	%	
LOSS - NO. 4	%	
WEIGHTED LOSS	%	
-200 BY DRY SCREENING	%	

GRADE AND SOURCE OF BITUMEN	PERCENT & TYPE OF ADDITIVE USED BY WT	PERCENT STRIPPING	SPECS

REMARKS 2.0% AC-10 + 0.8% Softening Agent

SCREEN ANALYSIS

BEFORE CRUSHING

SIEVE SIZE	PERCENT RETAINED	PERCENT PASSING
3"		
2"		
1"		
3/8"		
#4		
- #4		

AFTER CRUSHING TO _____ MAX. SIZE: OR NATURAL GRADING

			SPECS
2"			
1 1/2"			
1"			
3/4"		100.0	
1/2"		83.1	
3/8"		71.2	
#4		48.0	
#8 #10		34.8	
#16		26.2	
#50 #40		14.3	
#200		7.9	
- #200			

NOTE. (*) INDICATES SAMPLE DOES NOT MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
( ) GRADING FOR BASE.
( ) GRADING FOR SURFACING
( ) OTHER

GEOLOGIC TYPE OF MATERIAL

_____

_____ PRELIMINARY
_____ CONTROL
_____ RECORD - PROGRESS
_____ RECORD - FINAL

_____
MATERIALS ENGINEER

Project Number IR-15-3(82)121

Project Name Willist to Pine Creek

BITUMINOUS MIXTURES USING MARSHALL APPARATUS AASHTO T-245

Lab No. _____

Date Sampled _____

Date Reported 4-17-78

Spec No	AC %	Bulk Density: Wt. in Air (Dry)	Wt. in Air (SSD)	Wt. in Water	Volume c.c.	Bulk Sp. Gr.	Weight Lbs./Cu. Ft. or Vol.	Maximum Density: Wt. of Pyc. Filled w/H_2O	Wt. of Mix in Air	Wt. of Pyc. + Mix + H_2O	Vol. of Voidless Mix	Max. Density	Voids: Total Voids in Mix %	In. Min. Agg. V.M.A.	V.M.A. Filled %	Stability: Dial Read.	Meas. Stab.	Corr. Factor	Corr. Stab.	Flow 0.01"
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
					C-D	B/E	62.4F				(H+I)-J	I/K	$\left(\frac{L-F}{L}\right)100$	$M+\left(\frac{F \times A}{G_{AC}}\right)$	$\frac{(N-M)100}{N}$					
1	5.8	1188.9	1189.4	664.7	524.7	2.27		6162	2066	7329	899	2.298				185	2807	0.96	2695	20
2	"	1197.8	1199.6	664.2	535.4	2.24		6171	2056	7333	894	2.300				189	2868	0.96	2753	29
3	"	1195.5	1196.2	659.8	536.4	2.23										181	2746	0.93	2554	23
Avg.	5.8					2.25	140.4					2.30	2.2	14.8	85.1				2667	24
4	5.8	1200.3	1200.4	673.0	527.4	2.28		6162	2052	7332	882	2.326				168	2549	0.96	2447	29
5	"	1201.8	1201.9	673.0	528.9	2.27		6162	2057	7319	880	2.315				170	2580	0.96	2477	26
6	"	1202.4	1202.4	671.3	531.1	2.26										139	2109	0.96	2025	26
Avg.	5.8					2.27	141.6					2.32	2.2	14.9	85.2				2316	27
7	5.8	1201.7	1204.6	675.0	529.6	2.27										162	2458	0.96	2360	25
8	"	1200.8	1201.1	673.9	527.2	2.28										169	2564	0.96	2461	27
9	"	1200.2	1200.9	669.1	531.8	2.26										158	2397	0.96	2301	25
Avg.	5.8					2.27	141.6					2.30	1.4	14.1	90.1				2374	26
Avg.																				

Lime _____ No Lime _____

Tested By Steven E. Richardson

Immersion Compression

Spec No	1	2	3	% Dry Standard
Dry P.S.I.	781	563	487	
0% Lime P.S.I.	275	294	327	49
1% Lime P.S.I.	286	294	342	50
Bituminous Additive	253	320	220	43

Recommendations:

2.0 % A.C.

_____ % Lime

_____ % Bit. Add.

Asphalt Data

Supplier	Phillips Oil
Grade	AC-10 + Softening Agent
Sp. Gr. = G_{AC}	
Mixing Temp.	
Min. Comp. Temp.	

Aggregate Data

Source: 70% Recycle 30% New material

Type	
Comb. Sp. Gr.	

Materials Engineer

Form K-252
(Revised 4-21-69)

UTAH DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH SECTION
BASE AND SURFACE AGGREGATE

PROJECT NAME Wildcat to Pine Creek PROJECT NO. IR-15-3(6) 121

LABORATORY NO. _____ SAMPLED _____ 19 _____

IDENTIFICATION MARKS 60% Recycle 40% New Material REC'D AT LAB _____ 19 _____

SUBMITTED BY _____ REPORTED 4-17 19 78

PROSPECT LOCATION, PIT, STATION _____

TEST FOR Marshall Design & Immersion Compression

		SPECS
LIQUID LIMIT		
PLASTIC INDEX		
TOTAL ABSORPTION	%	
SWELL PASSING NO 10	"	
ABRASION, L. A. MACHINE	%	
FRACTURED FACE COUNT	%	
SOUNDNESS LOSS + NO. 4	%	
LOSS - NO. 4	%	
WEIGHTED LOSS	%	
-200 BY DRY SCREENING	%	

GRADE AND SOURCE OF BITUMEN | PERCENT & TYPE OF ADDITIVE USED BY WT. | PERCENT STRIPPING

SCREEN ANALYSIS

BEFORE CRUSHING

SIEVE SIZE	PERCENT RETAINED	PERCENT PASSING
3"		
2"		
1"		
3/8"		
#4		
- #4		

AFTER CRUSHING TO _____ MAX SIZE OR NATURAL GRADING

			SPECS
2"			
1 1/2"			
1"			
3/4"		100.0	
1/2"		81.3	
3/8"		69.4	
#4		49.0	
#8 #10		35.0	
#16		26.7	
#50 #40		14.7	
#200		7.7	
- #200			

REMARKS 2.3% AC-10 + 0.7% Softening Agent

NOTE: (*) INDICATES SAMPLE DOES NOT MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
( ) GRADING FOR BASE.
( ) GRADING FOR SURFACING
( ) OTHER

GEOLOGIC TYPE OF MATERIAL

_____ PRELIMINARY
_____ CONTROL
_____ RECORD - PROGRESS
_____ RECORD - FINAL

_____
MATERIALS ENGINEER

BITUMINOUS MIXTURES USING MARSHALL APPARATUS AASHTO T-245

Project Number IR-15-3(5)121

Project Name Willcat to Pine Creek

Lab No. _____

Date Sampled _____

Date Reported 4-17-78

Spec No.	AC %	Bulk Density: Wt. in Air (Dry)	Bulk Density: Wt. in Air (SSD)	Bulk Density: Wt. in Water	Bulk Density: Volume c.c.	Bulk Density: Bulk Sp. Gr.	Bulk Density: Weight Lbs./Cu. Ft. or Vol.	Maximum Density: Wt. of Pyc. Filled w/ H_2O	Maximum Density: Wt. of Mix in Air	Maximum Density: Wt. of Pyc. + Mix + H_2O	Maximum Density: Vol. of Voidless Mix	Maximum Density: Max. Density	Voids: Total Voids in Mix %	Voids: In. Min. Agg. V.M.A.	Voids: V.M.A. Filled %	Stability: Dial Read.	Stability: Meas. Stab.	Stability: Corr. Factor	Stability: Corr. Stab.	Flow 0.01"
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
					C-D	B/E	62.4F				(H+I)-J	I/K	$\left(\frac{L-F}{L}\right)100$	$M+\frac{F \times A}{G_{AC}}$	$\frac{(N-M)100}{N}$					
1	5.5	1198.6	1199.7	668.6	531.1	2.26		6162	2057	7330	889	2.314				207	3141	0.96	3015	23
2	"	1202.1	1202.6	668.4	534.2	2.25		6133	2052	7297	888	2.311				207	3141	0.96	3015	21
3	"	1203.4	1203.9	667.6	536.3	2.24										204	3095	0.93	2878	18
Avg	5.5					2.25	140.4					2.31	2.6	14.6	82.2				2969	21
4	5.5	1202.0	1202.3	674.8	527.5	2.28										170	2580	0.96	2477	21
5	"	1199.9	1200.5	673.3	527.2	2.28										167	2534	0.96	2433	22
6	"	1202.8	1203.7	675.2	528.5	2.28										190	2883	0.96	2768	21
Avg	5.5					2.28	142.3					2.31	1.3	13.4	90.3				2559	21
Avg.																				
Avg																				

Lime _____ No Lime _____

Tested By Steven E. Wiedenhaupt

Immersion Compression

Spec No	1	2	3	% Dry Standard
Dry P.S.I.	473	490	473	
0% Lime P.S.I.	266	243	240	52
1% Lime P.S.I.	301	374	318	69
Bituminous Additive	282	366	326	68

Recommendations:

2 % AC-10 + 0.75% A % A.C.

1 % Lime

1 % Bit. Add.

Asphalt Data

Supplier	Phillips Oil
Grade	AC-10 + Softening Agent
Sp. Gr. = G_{AC}	1.034
Mixing Temp.	
Min. Comp. Temp.	

Aggregate Data

Source:	60% Recycle 40% New Material
Type	
Comb. Sp. Gr.	

Materials Engineer

Form R-257
(Revised 4-21-69)

UTAH DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH SECTION
BASE AND SURFACE AGGREGATE

PROJECT NAME Wildcat to Pine Creek PROJECT NO. IR-15-3(8)121

LABORATORY NO. _____ SAMPLED _____ 19 _____

IDENTIFICATION MARKS 50% Recycle 50% New Material REC'D AT LAB _____ 19 _____

SUBMITTED BY _____ REPORTED 4-17 19 78

PROSPECT LOCATION, PIT, STATION _____

TEST FOR Marshall Design & Immersion Compression

		SPECS
LIQUID LIMIT		
PLASTIC INDEX		
TOTAL ABSORPTION	%	
SWELL PASSING NO 10	"	
ABRASION, L.A. MACHINE	%	
FRACTURED FACE COUNT	%	
SOUNDNESS: LOSS + NO. 4	%	
LOSS - NO. 4	%	
WEIGHTED LOSS	%	
-200 BY DRY SCREENING	%	

GRADE AND SOURCE OF BITUMEN	PERCENT & TYPE OF ADDITIVE USED BY WT.	PERCENT STRIPPING	SPECS

REMARKS 2.5% AC-10 + 0.6% Softening Agent

SCREEN ANALYSIS

BEFORE CRUSHING

SIEVE SIZE	PERCENT RETAINED	PERCENT PASSING
3"		
2"		
1"		
3/8"		
#4		
- #4		

AFTER CRUSHING TO _____ MAX. SIZE: OR NATURAL GRADING

			SPECS
2"			
1 1/2"			
1"			
3/4"		100.0	
1/2"		78.0	
3/8"		67.2	
#4		50.5	
#8 #10		37.2	
#16		29.0	
#50 #40		15.9	
#200		8.2	
- #200			

NOTE: (*) INDICATES SAMPLE DOES NOT MEET REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
( ) GRADING FOR BASE.
( ) GRADING FOR SURFACING
( ) OTHER

GEOLOGIC TYPE OF MATERIAL

_____

_____ PRELIMINARY
_____ CONTROL
_____ RECORD - PROGRESS
_____ RECORD - FINAL

_____
MATERIALS ENGINEER

BITUMINOUS MIXTURES USING MARSHALL APPARATUS AASHTO T-245

Project Number IR-15-3(8)121

Project Name Wildcat to Pine Creek

Lab No. _____

Date Sampled _____

Date Reported 4-17-78

Spec No.	AC %	Bulk Density						Maximum Density					Voids			Stability				Flow 0.01"
		Wt. in Air (Dry)	Wt. in Air (SSD)	Wt. in Water	Volume c.c.	Bulk Sp. Gr.	Weight Lbs./ Cu. Ft. or Vol.	Wt. of Pyc. Filled w/ H_2O	Wt. of Mix in Air	Wt. of Pyc. + Mix + H_2O	Vol. of Voidless Mix	Max. Density	Total Voids In Mix %	In. Min. Agg. V.M.A.	V.M.A. Filled %	Dial Read.	Meas. Stab.	Corr. Factor	Corr. Stab.	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
					C-D	$\frac{B}{E}$	62.4F				(H+I)-J	$\frac{I}{K}$	$\left(\frac{L-F}{L}\right)100$	$M+\left(\frac{FxA}{G_{AC}}\right)$	$\frac{(N-M)100}{N}$					
1	5.2	1208.0	1208.9	672.2	536.7	2.25		6162	2064	7339	887	2.327				173	2625	0.93	2441	19
2	"	1208.1	1209.4	675.2	534.2	2.26										157	2382	0.96	2287	19
3	"	1211.2	1211.7	678.9	532.8	2.27										185	2807	0.96	2695	20
Avg.	5.2					2.26	141.0					2.33	3.0	14.4	79.2				2474	19
4	5.2	1202.9	1204.4	673.6	530.8	2.27		6162	2070	7346	886	2.336				183	2777	0.96	2666	22
5	"	1202.2	1202.8	674.6	528.2	2.28										176	2671	0.96	2564	18
6	"	1207.1	1207.5	679.7	527.8	2.29										220	3338	0.96	3204	26
Avg.	5.2					2.28	142.3					2.34	2.6	14.1	81.6				2811	22
Avg.																				
Avg.																				

Lime _____ No Lime _____

Tested By Steven E. Niederhauser

Immersion Compression

Spec. No.	1	2	3	% Dry Standard
Dry P.S.I.	465	418	489	
0% Lime P.S.I.	220	224	173	45
1% Lime P.S.I.	266	302	302	63
Bituminous Additive	293	256	223	56

Recommendations:

2.5 AC + 0.5 SA % A.C.

1+ % Lime

1+ % Bit. Add.

Asphalt Data

Supplier	Phillips Oil
Grade	AC-10 + Softening Agent
Sp. Gr. = G_{AC}	1.034
Mixing Temp.	
Min. Comp. Temp.	

Aggregate Data

Source: 50% Recycle 50% New Material	
Type	
Comb. Sp. Gr.	

Materials Engineer

APPENDIX C

CONSTRUCTION TESTING

WILDCAT TO PINE CREEK I-IR-15-3(18)121
Southbound Lanes Construction Data 1979
0% Recycled 100% New Material

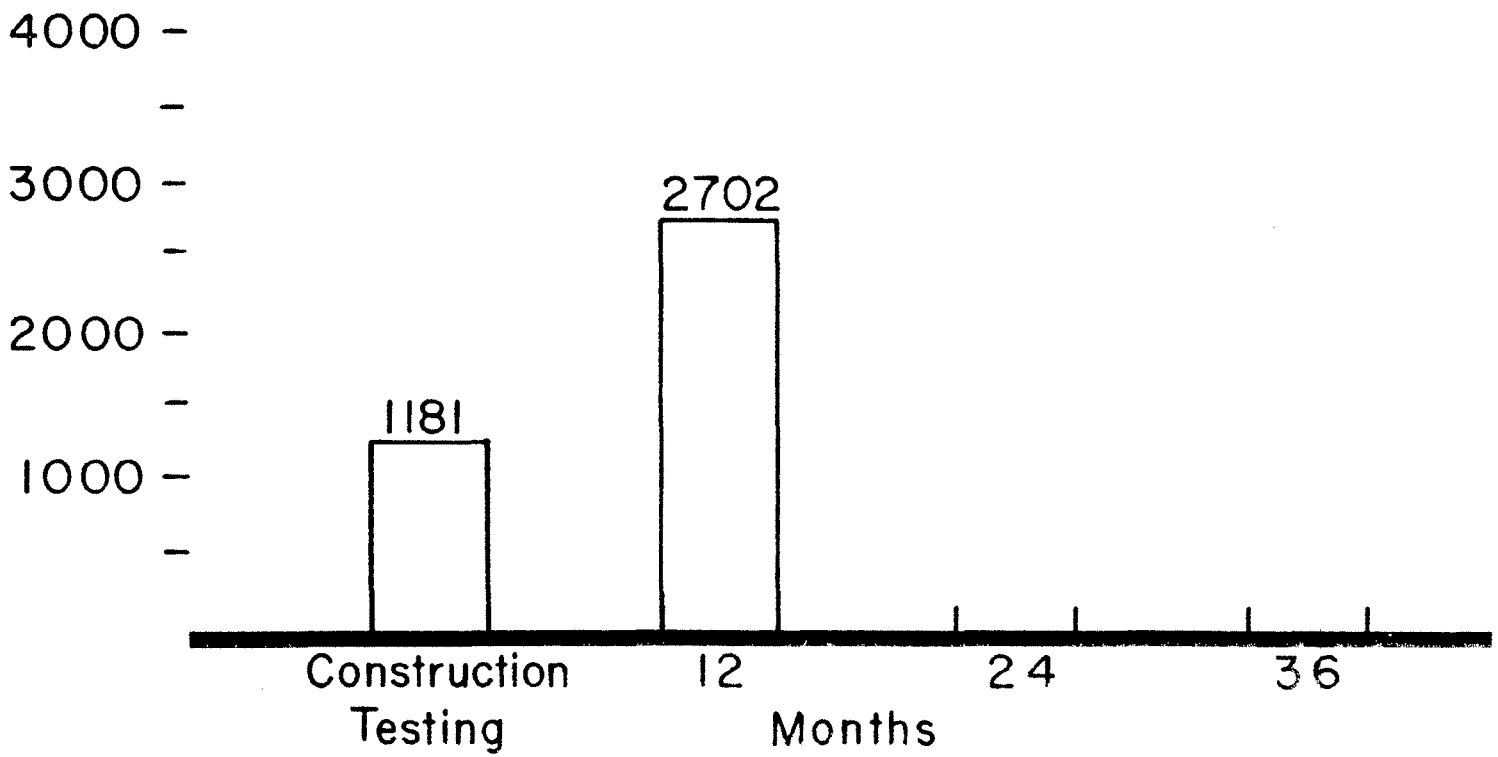
Sample No.	Viscosity At 140°F	Viscosity At 275°F	Penetration	Ductility At 39.2°F	Percent Air Voids	Stability	Flow	Percent Asphalt Cement	Density
14	1099	288	115	92	4.4	3150	23	5.37	93%
23	1006	237	109	77	4.4	3055	19	6.10	94%
42	1391	291	106	100+	6.3	2930	18	5.35	93%
43	1227	300	112	100+	4.2	3120	20	6.77	93%
$\bar{X}$	1181	279	110	92	4.8	3066	20	5.90	93%
	3/4	1/2	3/8	#4	# 8	#16	# 50	#200	
14	100	87.6	71.5	48.4	35.3	26.5	15.3	8.6	
23	100	91.4	79.7	56.6	41.3	30.0	16.9	9.5	
42	100	90.1	79.2	60.7	44.6	32.0	18.0	10.1	
43	100	93.5	82.1	62.1	44.1	31.2	17.3	9.6	
$\bar{X}$	100	90.7	78.1	56.9	41.3	29.9	16.9	9.4	

WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

VISCOSITY AT 140°F

0% Recycled 100% New Material

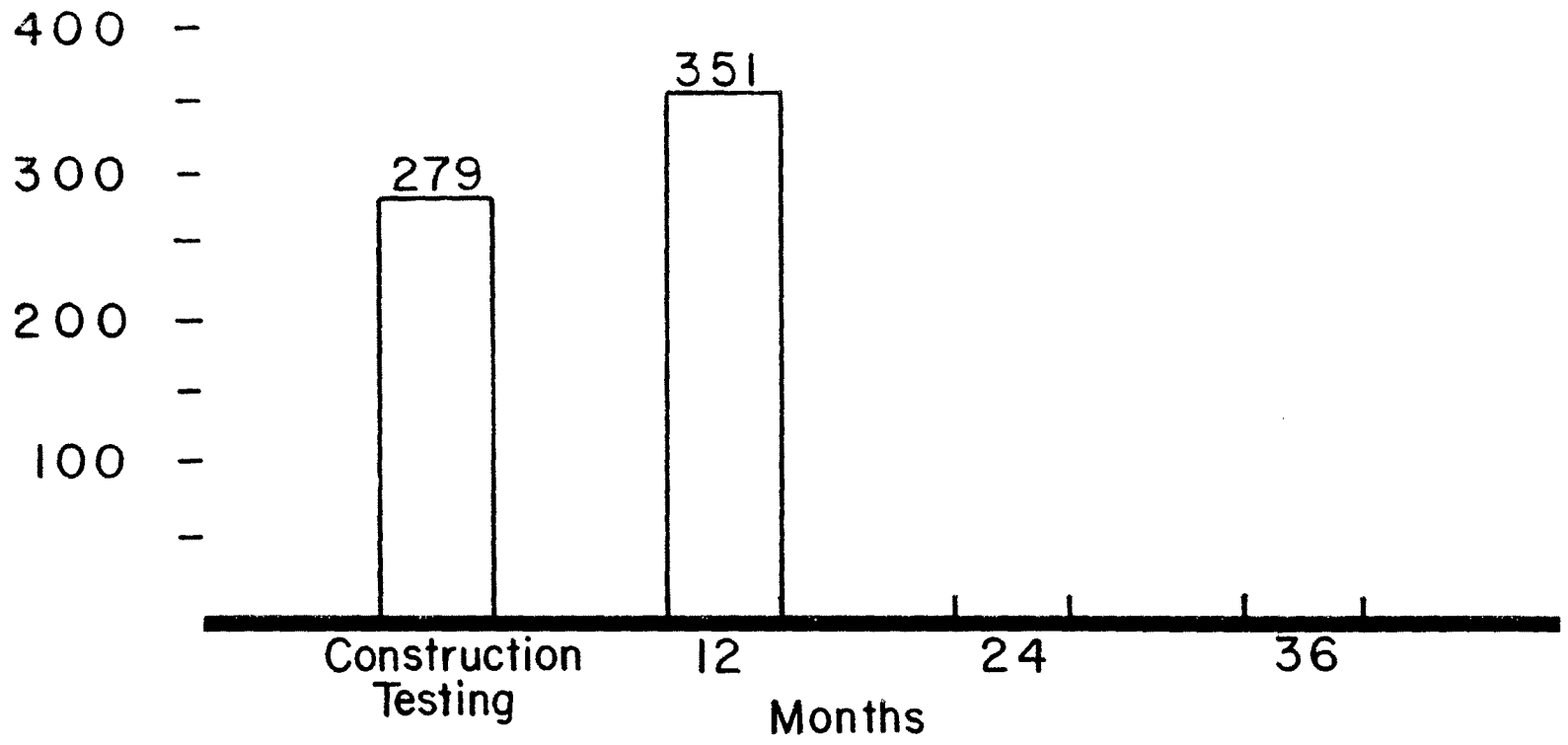


WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

VISCOSITY AT 275°F

0% Recycled 100% New Material

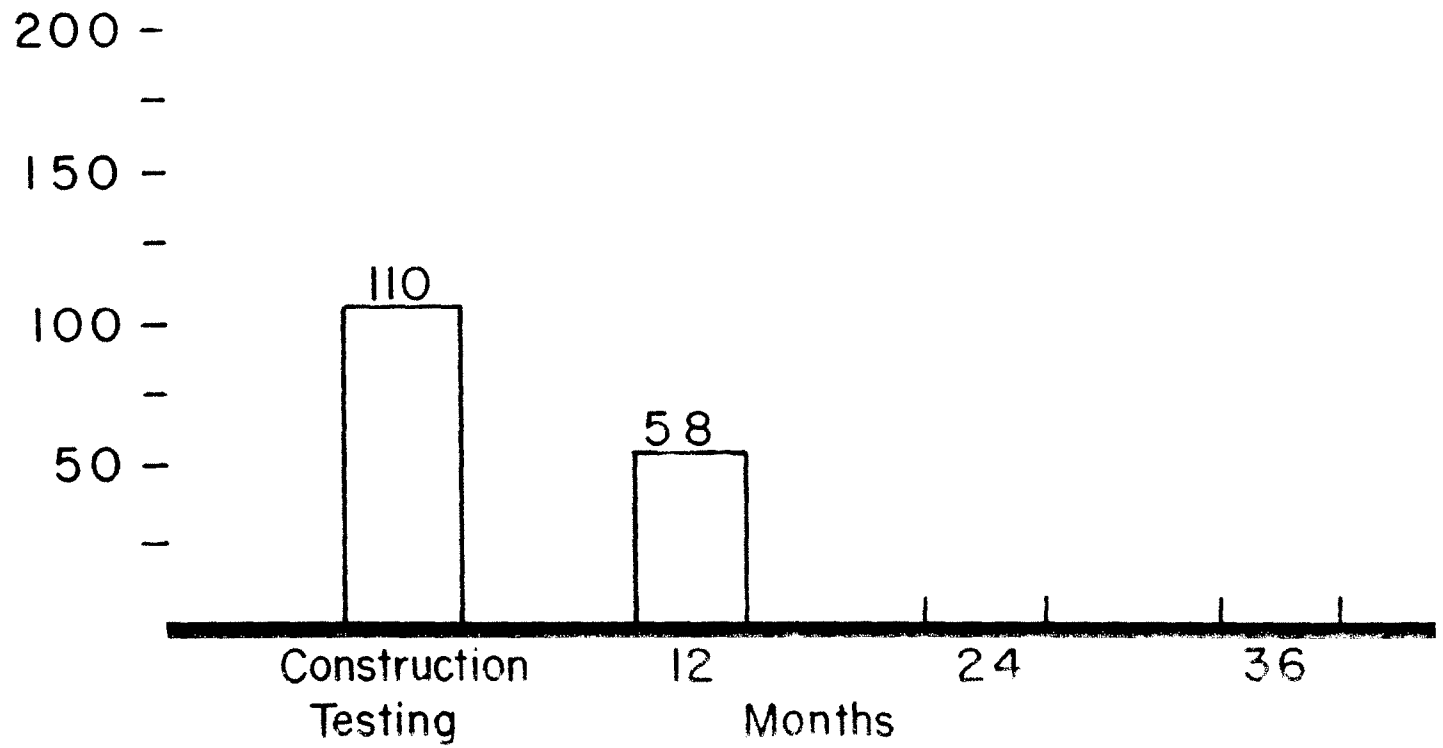


WILCAT TO PINE CREEK I-IR-15-3(18)121

Southbound LANE

PENETRATION

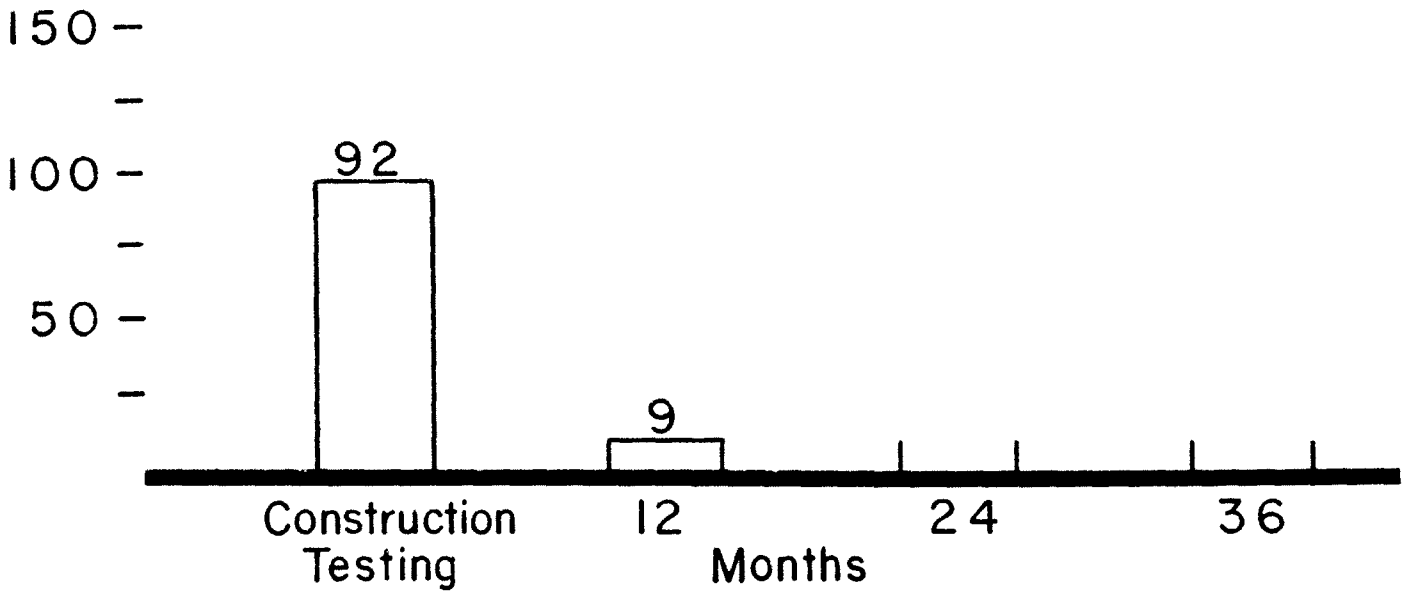
0% Recycled 100% New Material



Southbound Lane

DUCTILITY AT 39.2°F

0% Recycled 100% New Material



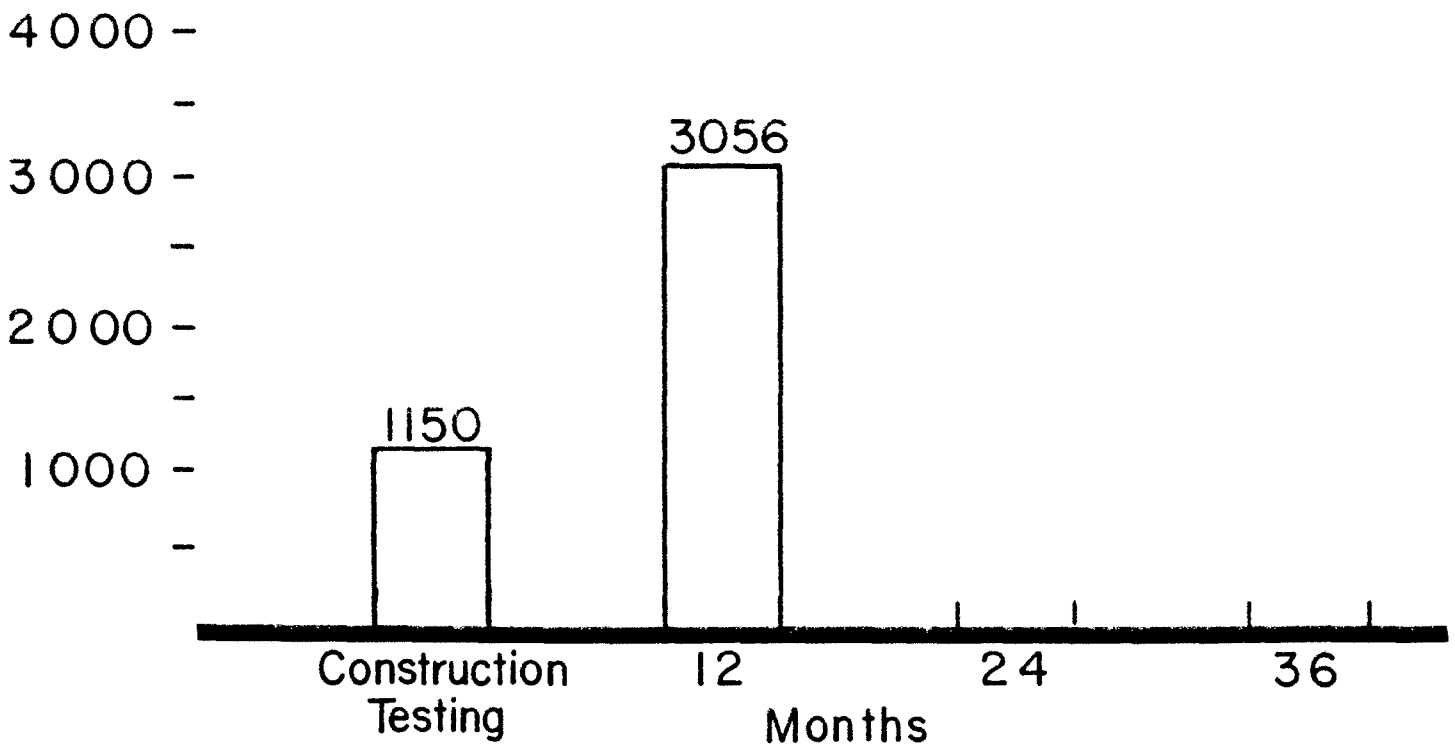
WILDCAT TO PINE CREEK I-IR-15-3(18)121
Southbound Lanes Construction Data 1979
80% Recycled 20% New Material

Sample No.	Viscosity At 140°F	Viscosity At 275°F	Penetration	Ductility At 39.2°F	Percent Air Voids	Stability	Flow	Percent Asphalt Cement	Density
5	1230	273	82	24	3.0	3293	19	5.75	92%
6	973	237	94	20	4.3	3648	21	5.59	92%
11	1450	270	68	10	3.4	3660	21	5.58	92%
18	1296	255	88	43	4.3	3334	22	6.33	95%
37	891	234	102	27	2.5	2874	20	5.93	94%
38	1062	243	80	14	2.9	3975	16	4.89	94%
$\bar{X}$	1150	252	86	23	3.4	3464	20	5.54	93%
	3/4	1/2	3/8	# 4	# 8	#16	#50	#200	
5	100	90.3	79.3	55.0	41.7	32.5	19.6	11.4	
6	100	87.6	77.1	54.9	41.5	31.9	20.6	12.3	
11	100	84.3	72.0	51.1	39.1	30.6	17.7	9.9	
18	100	89.1	77.7	52.8	38.8	29.4	16.2	8.4	
37	100	92.1	82.9	57.4	42.0	32.4	19.5	11.5	
38	100	88.5	77.7	55.1	41.6	32.5	19.3	10.9	
$\bar{X}$	100	88.6	77.8	54.4	40.8	31.5	18.8	10.7	

Southbound Lanes

VISCOSITY AT 140°F

80% Recycled 20% New Material

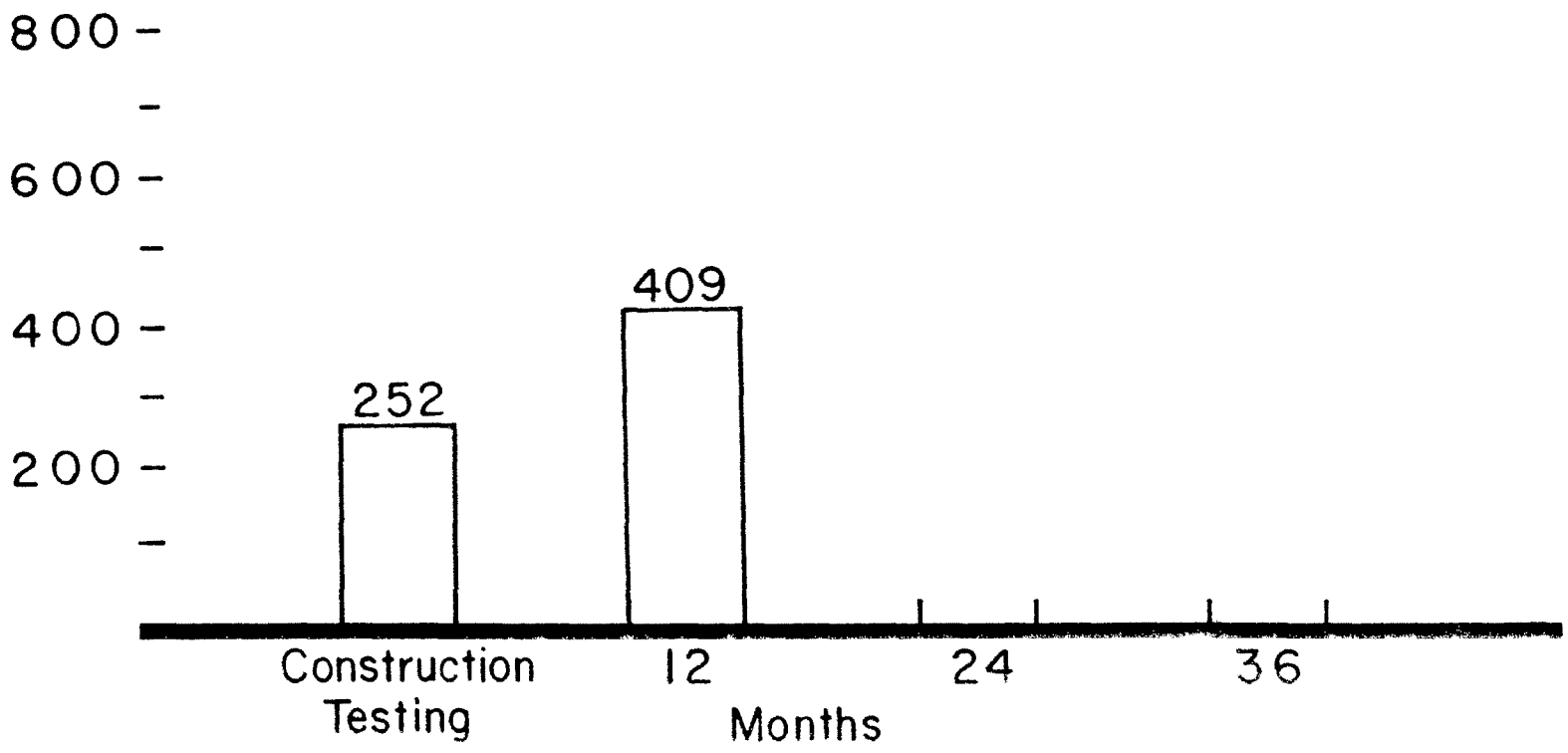


WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

VISCOSITY AT 275°F

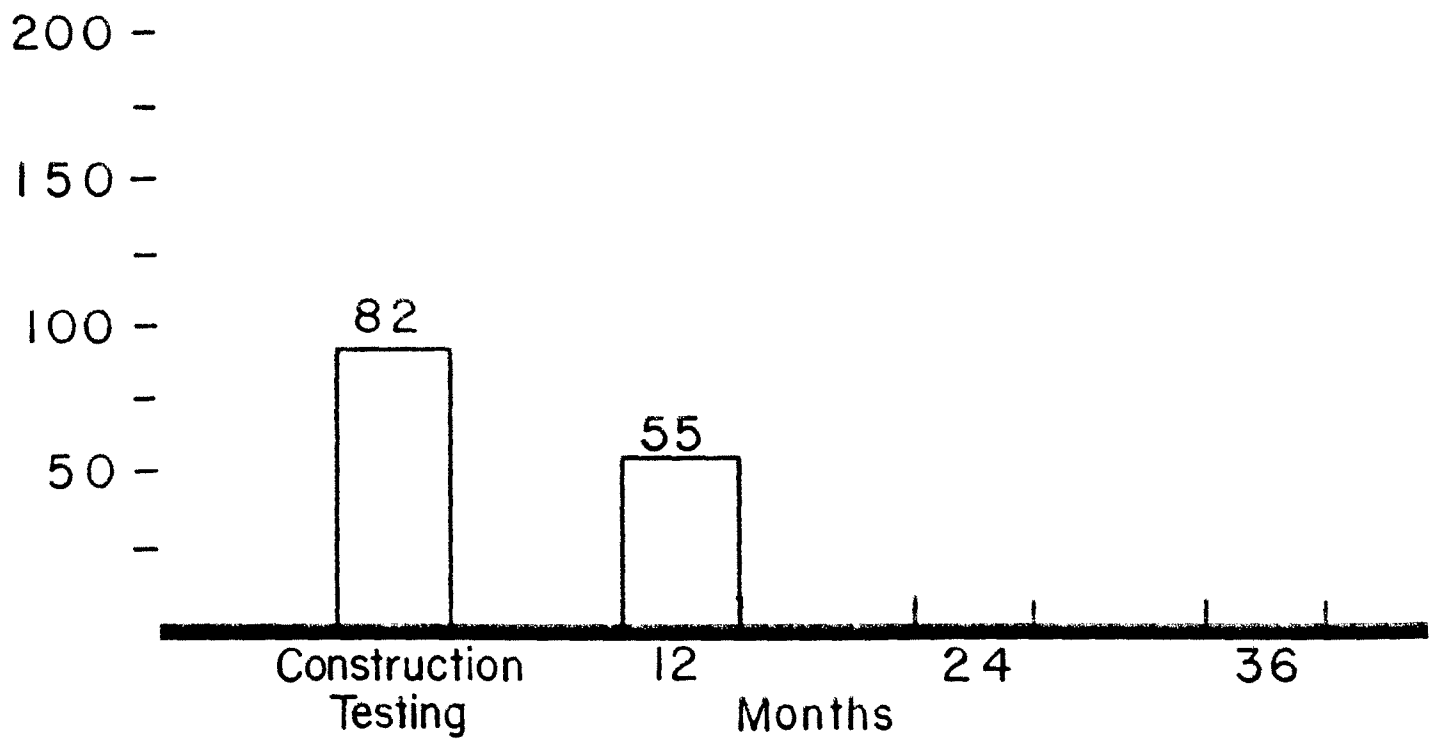
80% Recycled 20% New Material



Southbound Lanes

PENETRATION

80% Recycled 20% New Material

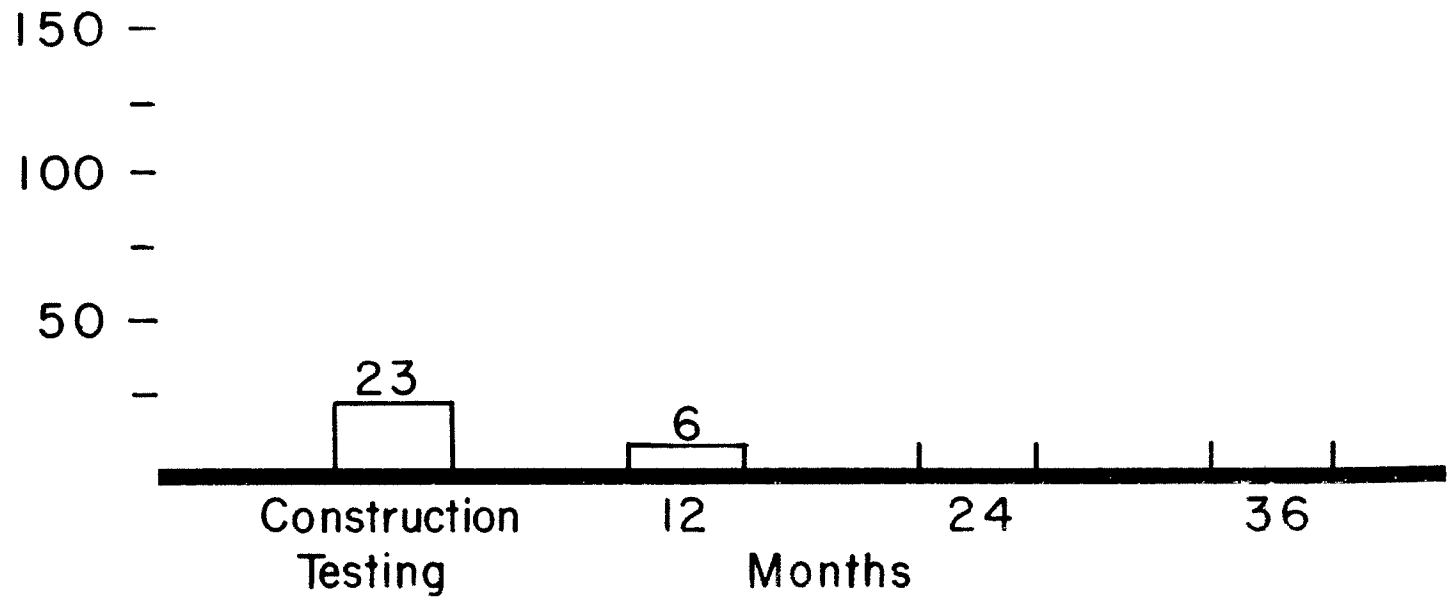


WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

DUCTILITY AT 39.2°F

80% Recycled 20% New Material



WILDCAT TO PINE CREEK I-IR-15-3(18) 121
Southbound Lanes Construction Data 1979
70% Recycled 30% New Material

ple	Viscosity At 140°F	Viscosity At 275°F	Penetration	Ductility At 39.2°F	Percent Air Voids	Stability	Flow	Percent Asphalt Cement	Density
	1010	225	114	65	2.6	3466	21	5.75	94%
	981	219	119	100+	2.2	3431	20	5.08	94%
	1096	240	94	29	2.6	3223	23	6.10	94%
	1290	258	82	21	2.2	3522	22	5.94	95%
	1081	213	94	67	3.1	2888	19	6.14	94%
	1025	228	92	48	—	—	—	6.33	95%
	1120	252	90	49	—	—	—	6.05	95%
	1058	249	115	97	2.6	2761	22	6.39	94%
	936	232	122	100+	—	—	—	6.70	94%
	1227	252	100	36	-	-	—	5.48	94%
	1014	234	123	100+	—	—	—	6.33	94%
	999	225	114	100+	-	-	—	6.01	95%
	830	210	122	37	2.6	3881	14	5.60	94%
	942	234	100	23	2.4	3517	18	6.35	94%
	1043	234	106	62	2.5	3336	20	5.99	94%

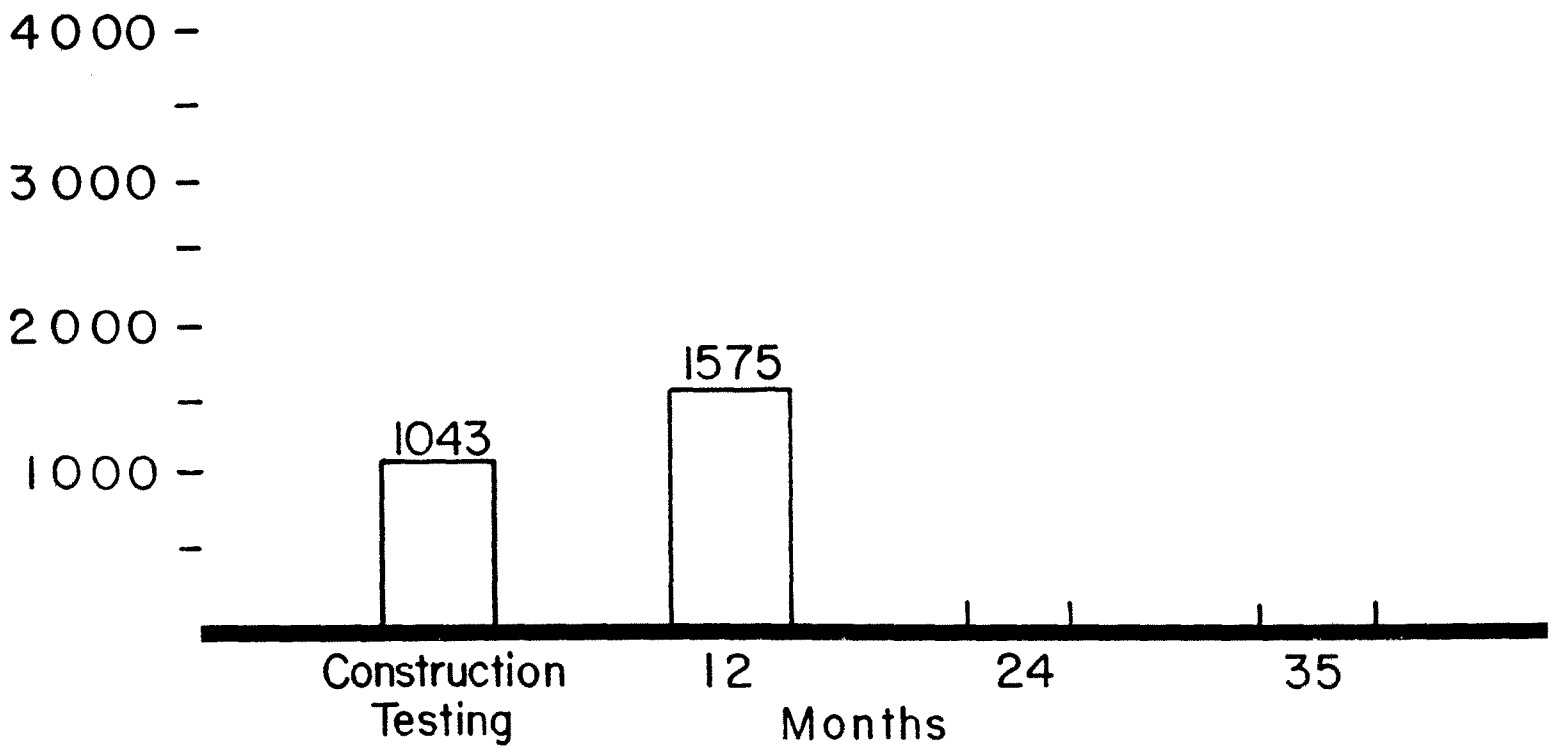
	3/4	1/2	3/8	# 4	# 8	#16	#50	#200	
	100	92.0	80.0	54.0	39.3	31.0	18.6	10.7	
	100	92.5	80.1	54.7	38.9	28.9	15.4	7.2	
	100	90.0	77.6	53.9	40.3	30.9	18.5	11.2	
	100	93.8	84.9	65.7	49.4	36.3	19.2	9.9	
	100	84.5	69.0	44.1	32.8	25.8	15.9	8.9	
	100	90.8	80.2	57.5	43.7	33.5	19.4	10.7	
	100	90.3	78.1	53.6	40.3	30.7	18.6	11.4	
	100	90.6	80.5	56.6	42.5	32.4	18.0	9.4	
	100	90.0	78.1	54.0	40.4	30.3	16.6	8.9	
	100	84.5	72.3	47.8	35.3	27.3	16.0	8.0	
	100	91.9	82.2	56.3	41.7	32.3	19.7	11.2	
	100	88.0	75.7	50.7	37.2	28.9	17.6	10.2	
	100	87.7	80.1	60.6	46.0	35.1	19.5	10.7	
	100	90.4	80.8	57.5	43.2	33.2	19.0	10.5	
	100	89.8	78.5	54.8	40.8	31.2	18.0	9.9	

WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

VISCOSITY AT 140°F

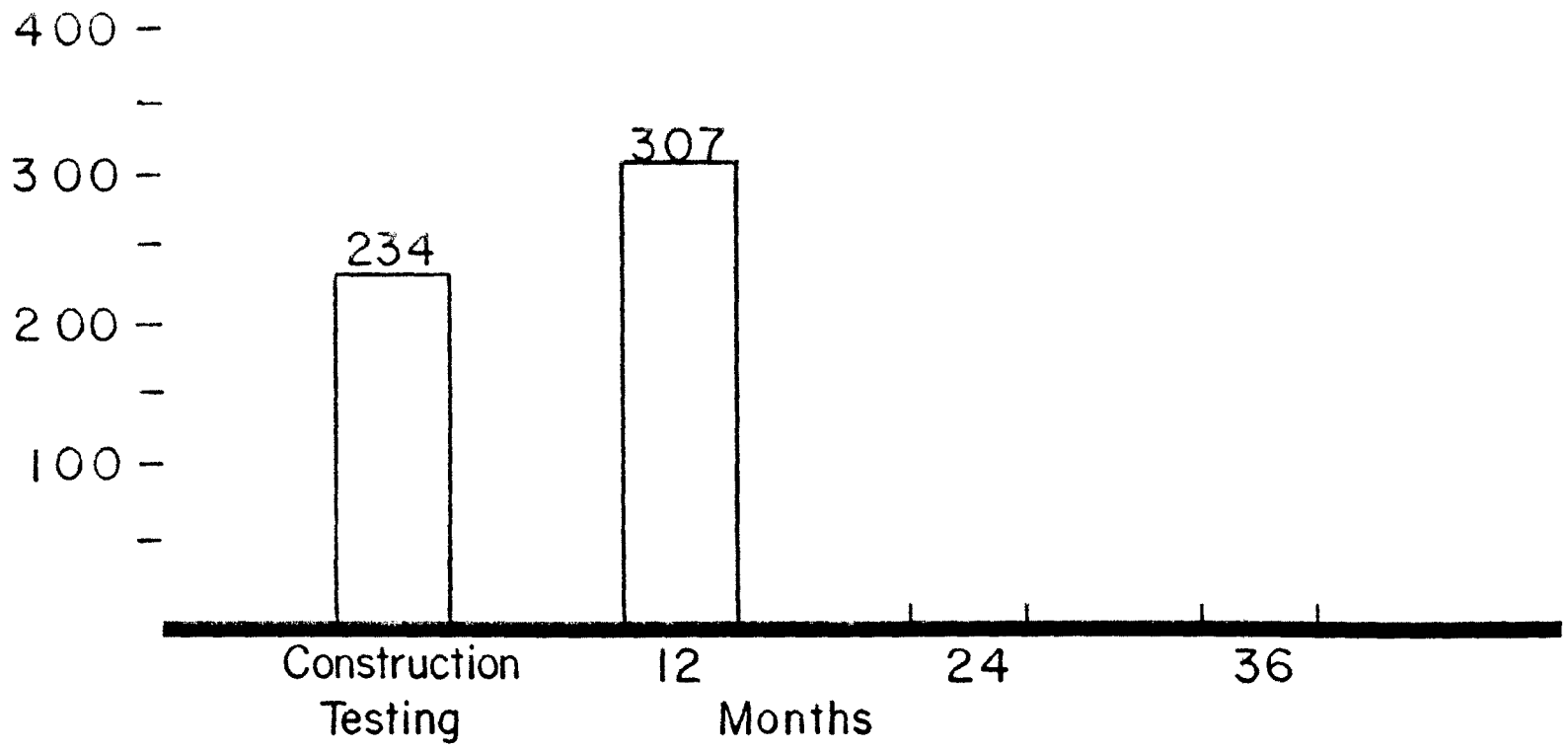
70% Recycled 30% New Material



Southbound Lanes

VISCOSITY AT 275°F

70% Recycled 30% New Material

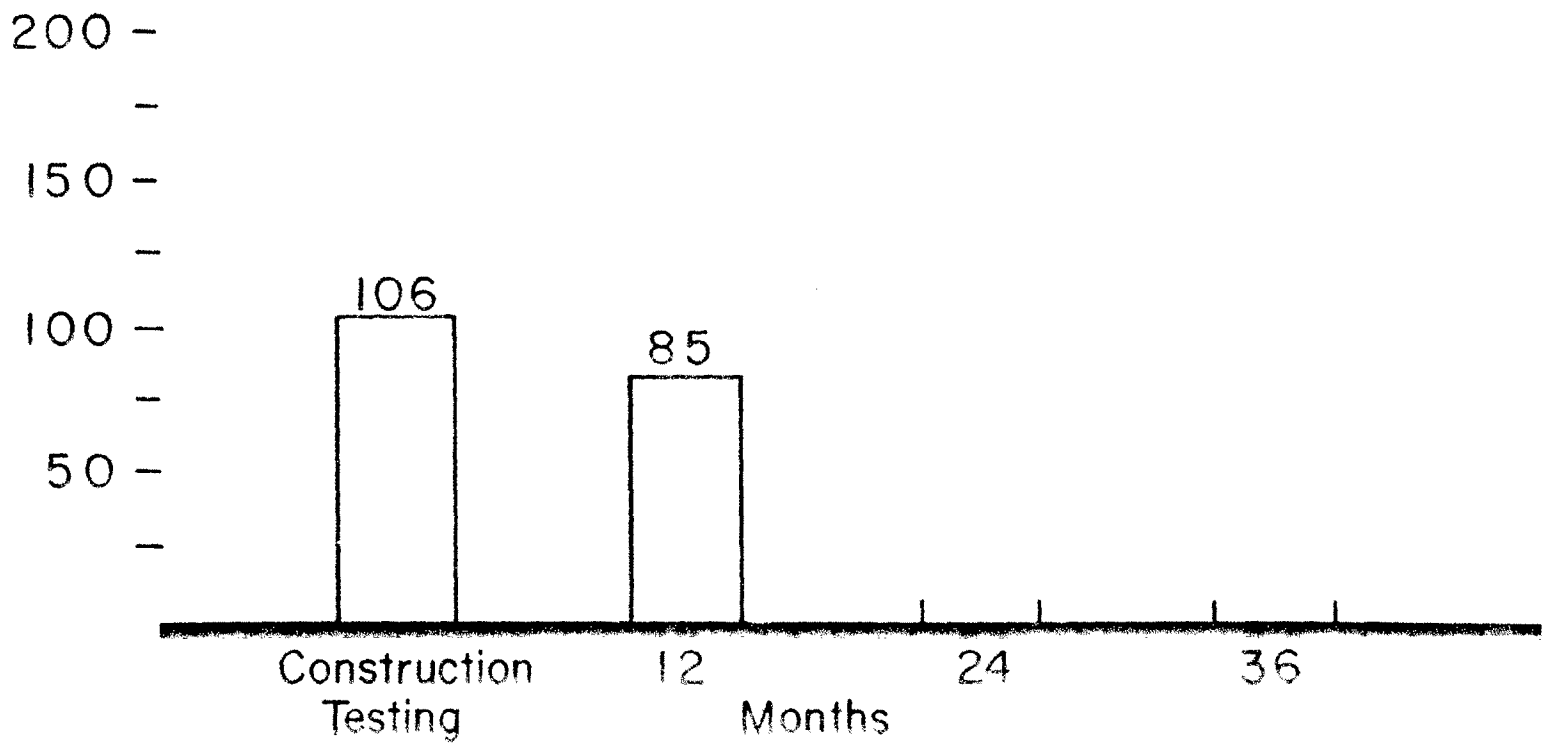


WILDCAT TO PINE CREEK 1-IR-15-3(18)121

Southbound Lanes

PENETRATION

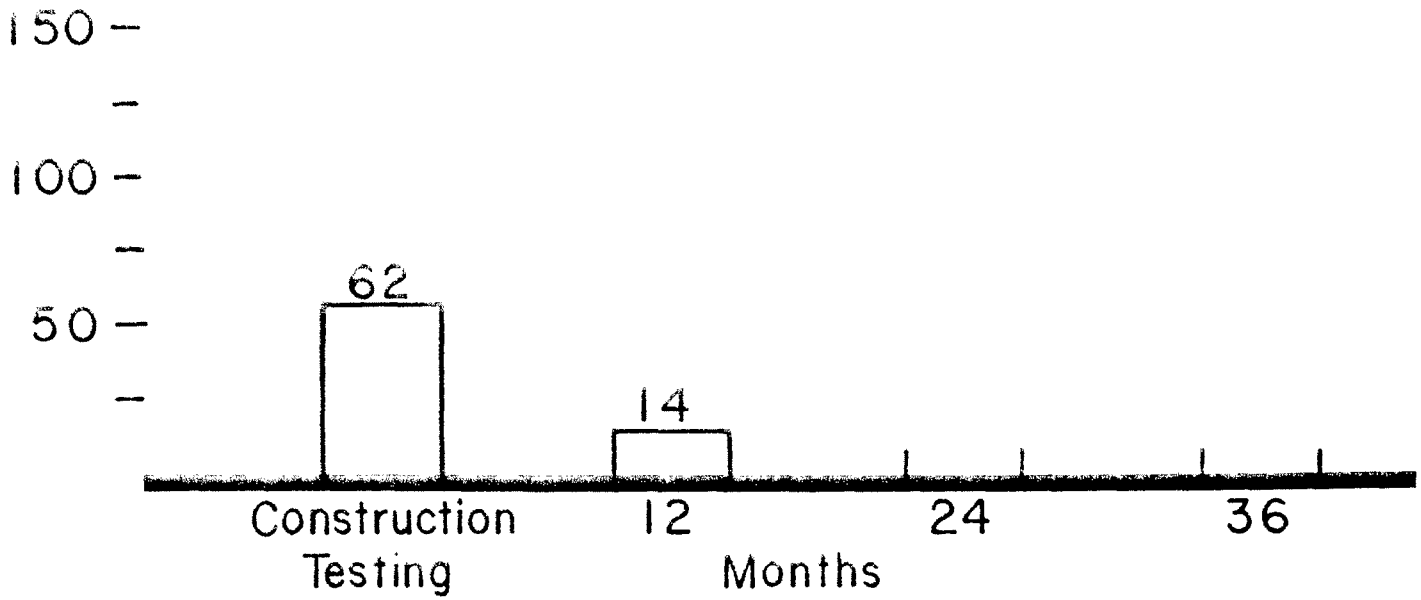
70% Recycled 30% New Material



Southbound Lanes

DUCTILITY AT 39.2°F

70% Recycled 30% New Material



WILDCAT TO PINE CREEK I-IR-15-3(18)121
Southbound Lanes Construction Data 1979
60% Recycled 40% New Material

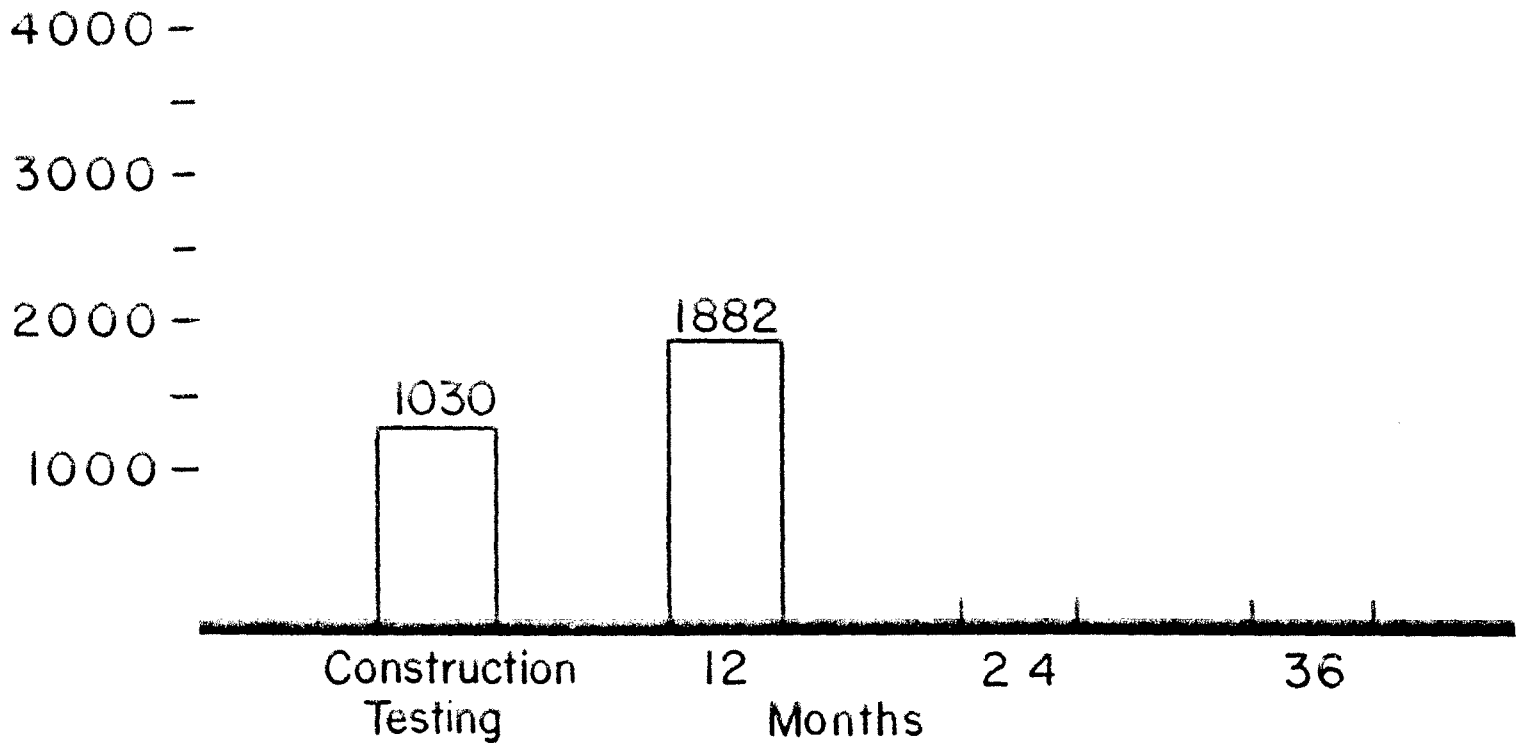
Sample No.	Viscosity At 140°F	Viscosity At 275°F	Penetration	Ductility At 39.2°F	Percent Air Voids	Stability	Flow	Percent Asphalt Cement	Density
7	809	228	104	43	4.3	3322	20	4.86	92%
8	1013	243	86	23	3.9	3734	21	5.89	92%
15	1049	228	105	75	3.0	3332	23	5.69	93%
19	1105	240	94	43	4.3	3751	19	5.24	95%
20	984	231	100	46	3.9	3636	16	4.57	95%
39	1144	256	107	100+	3.3	3309	19	6.23	94%
40	967	243	120	100+	3.8	3314	16	5.91	93%
44	1150	261	100	47	3.2	3456	20	6.10	93%
45	1237	246	99	10	3.6	3193	18	5.39	93%
46	900	219	121	100+	3.1	3284	18	5.36	94%
47	916	225	117	90	2.4	3041	22	5.57	94%
48	1059	246	90	47	3.7	3214	19	5.45	93%
49	1052	237	89	38	4.4	3556	19	5.19	93%
$\bar{X}$	1030	239	102	63	3.6	3395	19	5.50	93%

	3/4	1/2	3/8	# 4	# 8	# 16	# 50	#200	
7	100	87.9	77.4	53.0	41.7	32.6	20.5	12.8	
8	100	87.5	76.3	53.7	40.2	30.6	17.1	9.5	
15	100	88.0	75.8	51.8	38.7	29.9	17.8	5.3	
19	100	90.6	77.8	51.9	38.9	29.8	17.7	10.6	
20	100	87.4	76.3	52.5	39.3	30.3	18.0	10.6	
39	100	92.4	83.0	58.9	43.8	33.5	19.2	10.7	
40	100	87.9	78.6	56.6	41.3	31.0	18.0	10.1	
44	100	91.4	79.5	54.5	40.8	31.3	17.7	9.2	
45	100	89.3	80.9	60.9	46.6	35.4	20.4	11.8	
46	100	90.7	80.6	56.8	42.3	32.1	17.8	9.7	
47	100	85.9	73.3	49.9	37.7	29.4	17.3	9.9	
48	100	90.6	84.0	64.0	48.0	35.8	19.8	10.9	
49	100	91.3	81.8	60.9	46.3	34.7	19.0	10.5	
$\bar{X}$	100	89.3	78.9	52.1	42.0	32.0	18.5	10.1	

Southbound Lane

VISCOSITY AT 140°F

60% Recycled 40% New Material

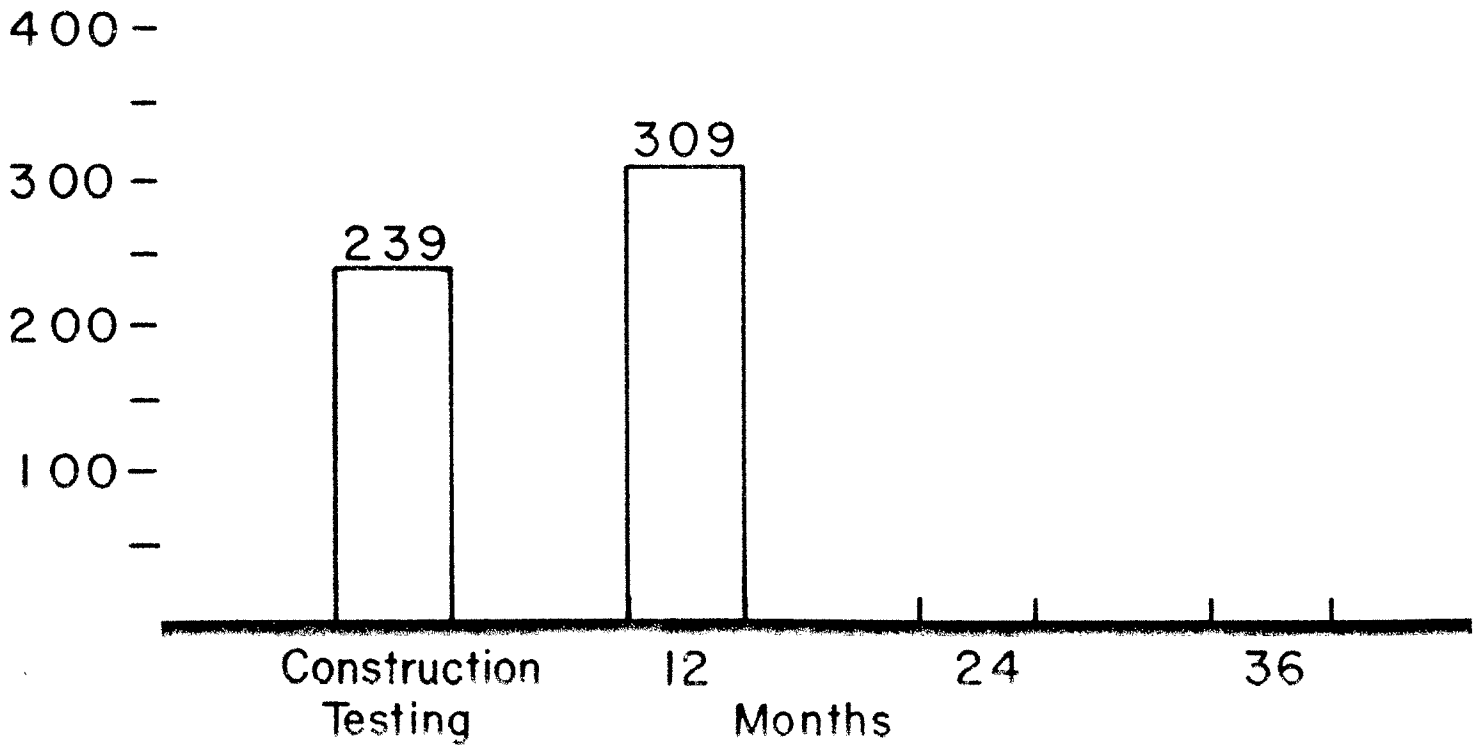


WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

VISCOSITY AT 275°F

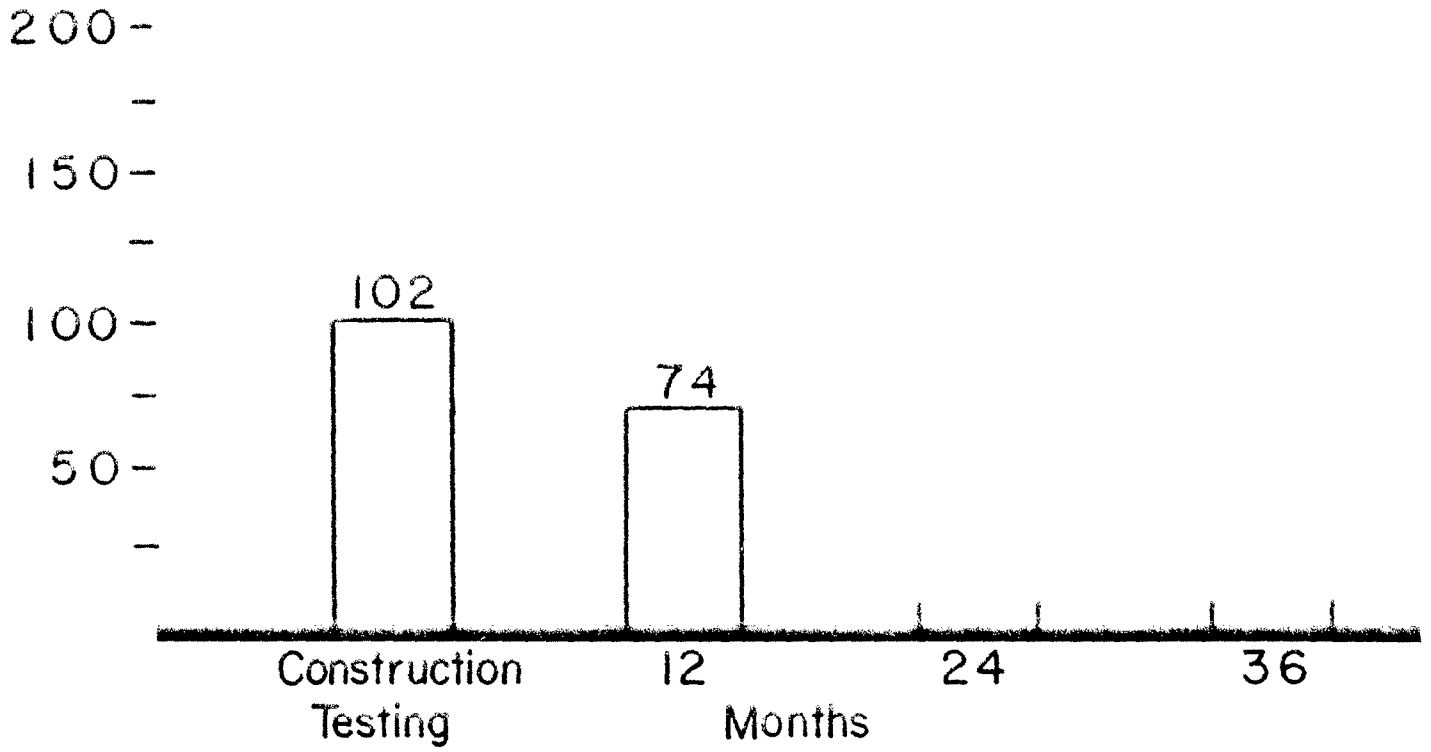
60% Recycled 40° New Material



Southbound Lanes

PENETRATION

60% Recycled 40% New Material

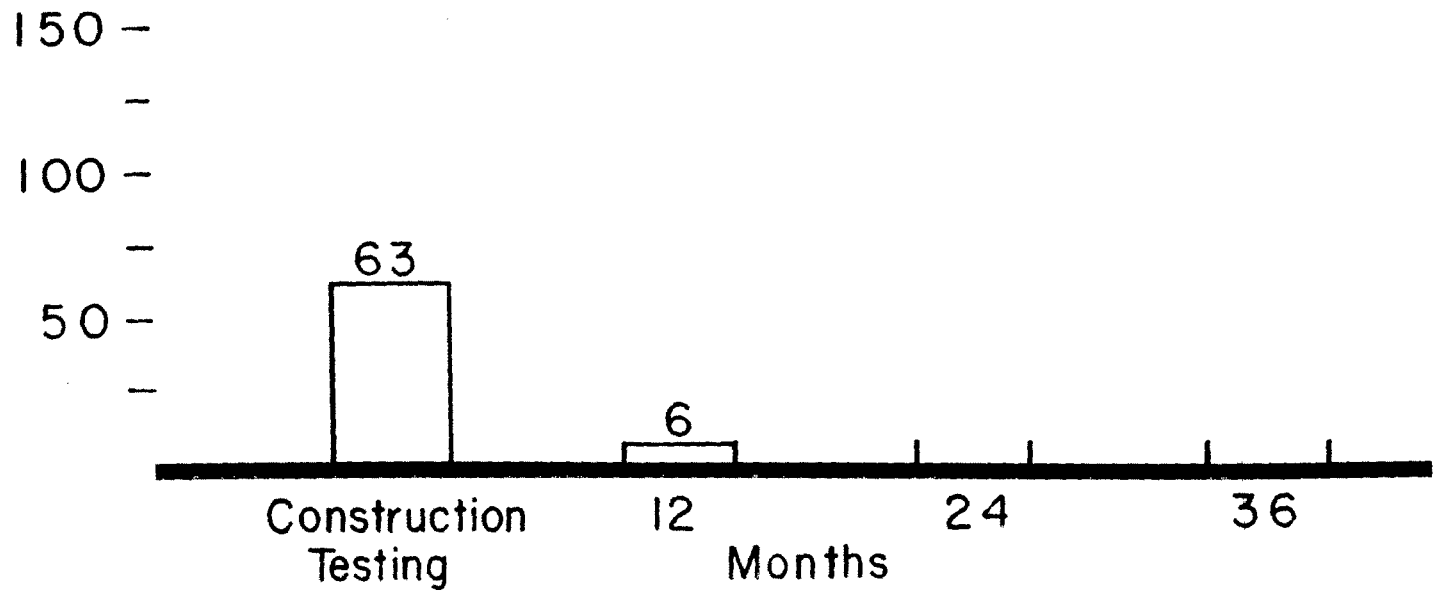


WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

DUCTILITY AT 39.2°F

60 % Recycled 40 % New Material



WILDCAT TO PINE CREEK I-IR-15-3(18)121
Southbound Lanes Construction Data 1979
50% Recycled 50% New Material

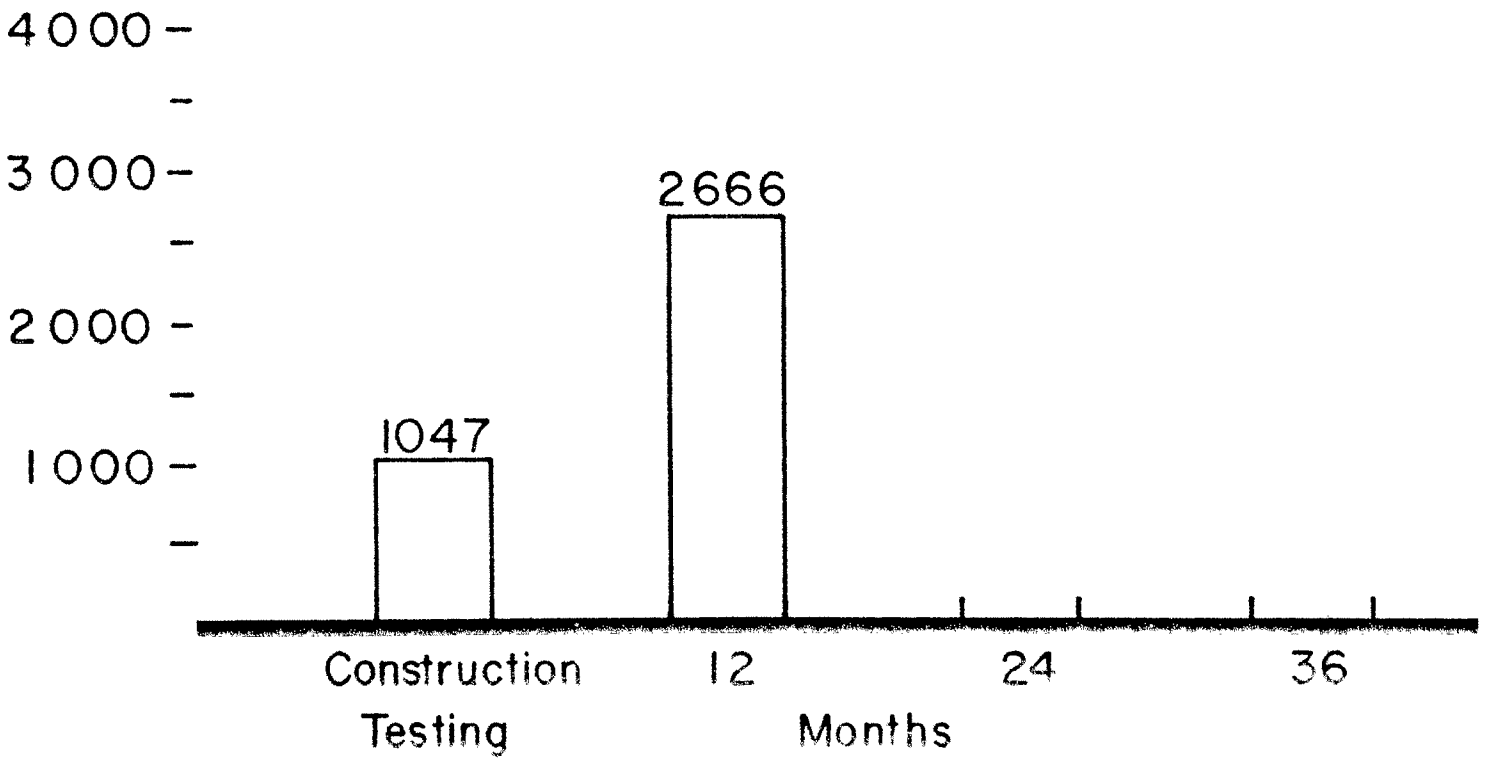
ample No.	Viscosity At 140°F	Viscosity At 275°F	Penetration	Ductility At 39.2°F	Percent Air Voids	Stability	Flow	Percent Asphalt Cement	Density
12	1162	249	95	33	3.5	3432	19	5.68	93%
13	1154	249	103	45	3.9	3843	20	5.03	93%
21	966	213	135	100+	5.6	3034	19	5.22	94%
22	986	261	104	62	5.2	3496	24	5.74	94%
41	967	237	104	45	3.1	3113	17	5.87	93%
$\bar{X}$	1047	242	108	57	4.3	3384	20	5.51	93%
	3/4	1/2	3/8	# 4	# 8	# 16	# 50	# 200	
12	100	86.2	74.5	49.8	35.5	25.7	12.2	4.5	
13	100	93.8	84.7	61.1	44.8	33.3	18.9	10.8	
21	100	88.8	79.0	55.5	41.4	32.0	20.8	14.5	
22	100	88.5	77.7	53.7	39.7	30.1	17.8	8.1	
41	100	91.8	85.2	63.9	47.9	35.5	19.9	11.0	
X	100	89.8	80.2	56.8	41.9	31.3	17.9	9.8	

WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

VISCOSITY AT 140° F

50% Recycled 50% New Materials

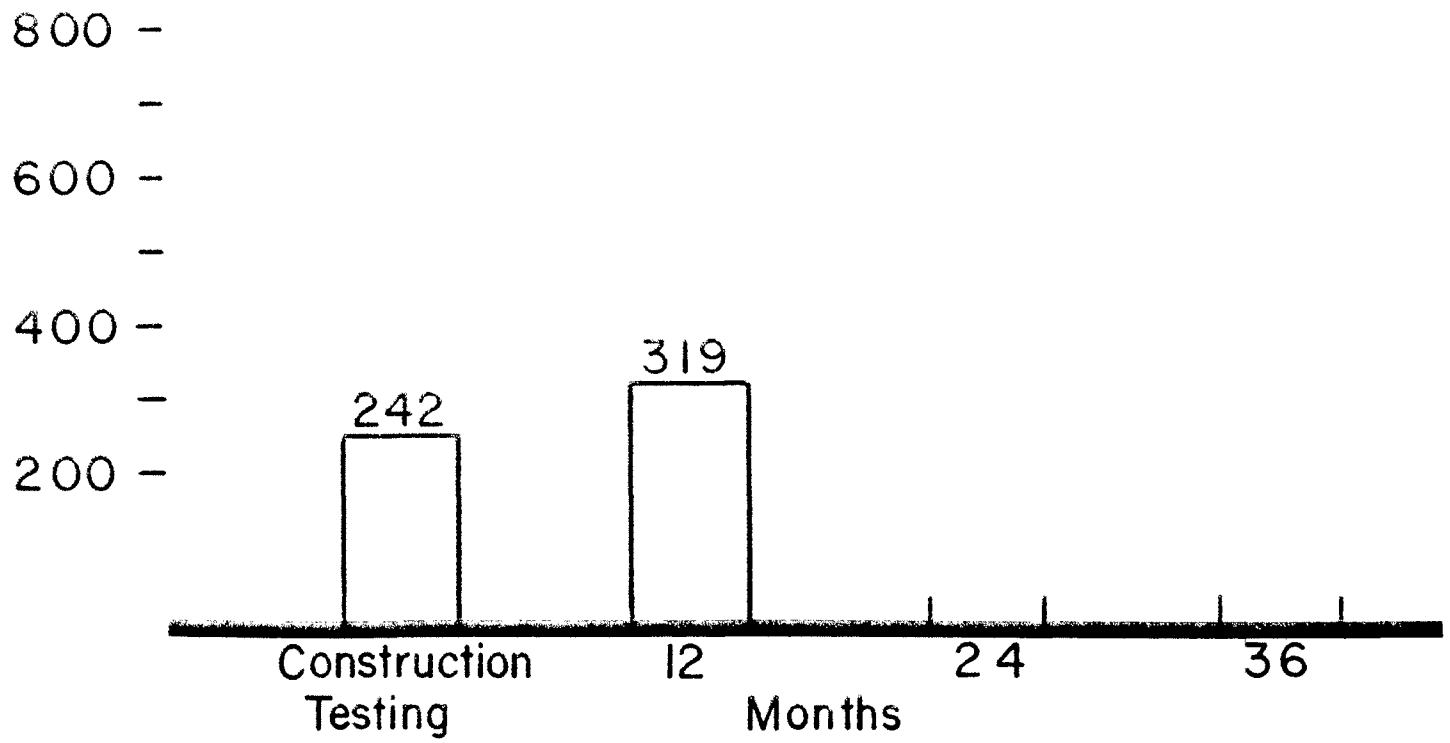


WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

VISCOSITY AT 275°F

50% Recycled 50% New Material

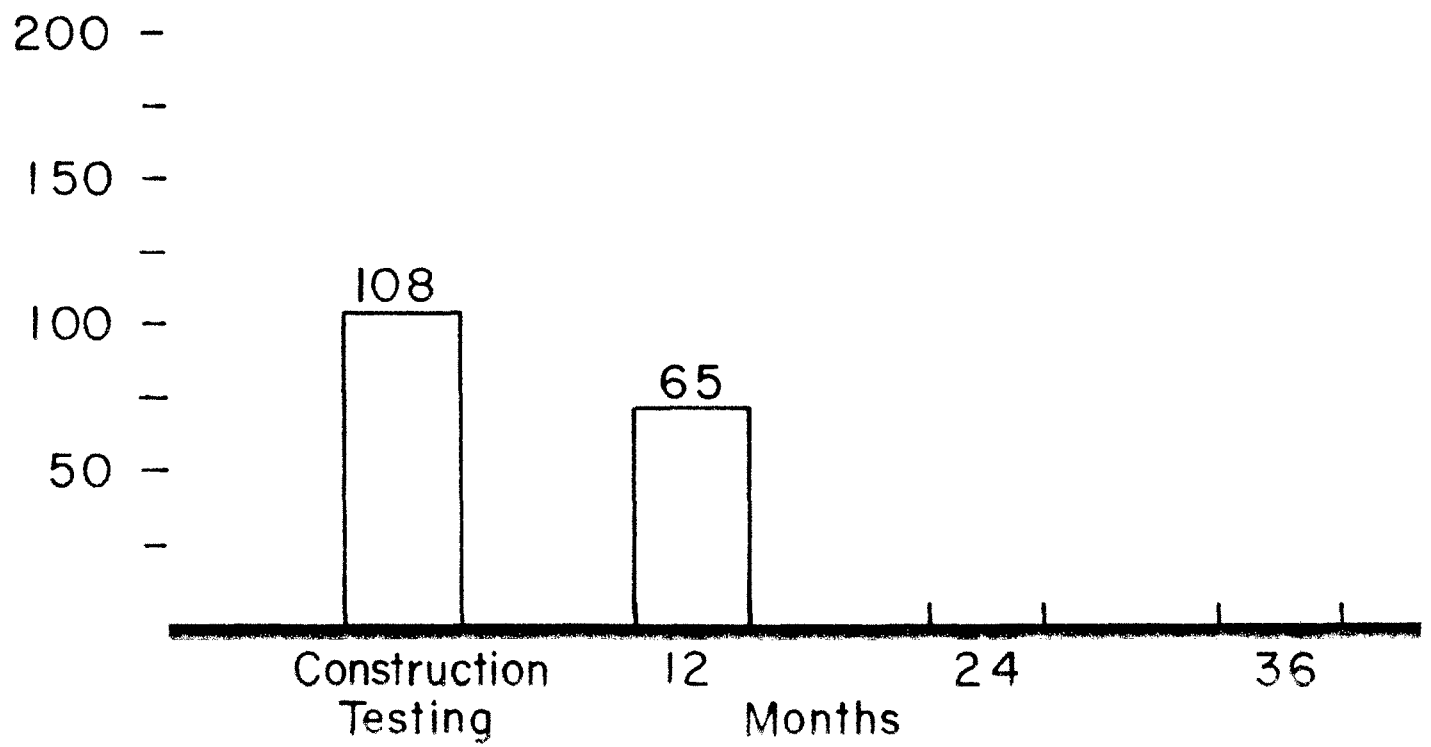


WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

PENETRATION

50% Recycled 50% New Material



WILDCAT TO PINE CREEK I-IR-15-3(18)121

Southbound Lanes

DUCTILITY AT 39.2 °F

50% Recycled 50% New Material