Evaluation of HMA Modified with Recycled Asphalt Shingles (RAS) Mixtures

Prepared By

William R. Vavrik
Applied Research Associates, Inc.

Steven Gillen
Illinois State Toll Highway Authority

Debra Haugen
Debra S. Haugen, LLC

Jay Behnke
Fred Garrott
S.T.A.T.E. Testing, LLC

Samuel H. Carpenter
University of Illinois

Illinois State Toll Highway Authority

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APPENDIX A. MIX DESIGN AND QC/QA DATA

DATE: June 8 2009

Bituminous Mixture Design

Design Number : ---------> ISTHARAS01

SEQ NO:

Lab preparing the design ? (PP,PL,IL,etc) IL

Producer Name & Number --> 4066-07 Rock Road

Material Code Number ----> 19512R BIT CONC BC N50 REC 3% VOIDS

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size		042CM11	031CM16	037FM01		CAT2 Coarse	CAT2 Fine	RAS	10125
Source (PROD #)		52402-15	52400-26	52400-26		4066-07	4066-07		5627-13
(NAME)		Rock Road	Rock Road	Rock Road		Rock Road	Rock Road	2nd Season	BP Amoco
(LOC)		Indergand	Townline Pit	Townline Pit		Townline Pit	Townline Pit	Dane County	Bartlett
						3.3	6.0	23.7	<--%AC in RAP
Total Mix Blend	0.0	30.0	20.0	10.0	0.0	20.0	15.0	5.0	
Total Agg. Blend	0.0	31.2	20.8	10.4	0.0	19.5	14.2	3.9	

100.0 <-Mix Total 100.0

100.0 <-Agg Total

Agg No. / Sieve Size	#1	#1	#2	#3	#4	#6	#6	#6	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100	100	100
3/4"(19.0mm)	100.0	89.0	100.0	100.0	100.0	100.0	100.0	100.0	96.6	82-100	97		
1/2" (12.5mm)	100.0	44.0	100.0	100.0	100.0	100.0	100.0	99.9	82.5	50-85	83		
3/8" (9.5mm)	100.0	21.0	98.0	100.0	100.0	93.0	100.0	99.6	73.5		74		
No.4 (4.75mm)	100.0	2.0	29.0	97.0	100.0	35.0	94.0	96.4	40.7	24-50	41	36	46
No.8 (2.36mm)	100.0	2.0	2.0	83.0	100.0	20.0	70.0	92.3	27.1	20-36	27	22	32
No.16 (1.18mm)	100.0	2.0	2.0	69.0	100.0	16.0	52.0	74.0	21.6	10-25	22		
No.30 (600µm)	100.0	2.0	2.0	51.0	100.0	13.0	39.0	51.8	16.4		16	12	20
No.50 (300µm)	100.0	2.0	2.0	17.0	100.0	9.0	23.0	43.5	9.5	4-12	10		
No.100 (150µm)	100.0	2.0	2.0	2.0	100.0	7.0	15.0	33.8	6.0	3-9	6		
No.200(75µm)	100.0	1.8	1.6	0.6	100.0	5.0	10.9	24.0	4.4	3-6	4.4	2.9	5.9

Bulk Sp Gr	1.000	2.617	2.667	2.613	1.000	2.660	2.660	2.185	2.622
Apparent Sp Gr	1.000	2.792	2.801	2.690	1.000	2.733	2.733	2.229	2.737
Absorption, %	0.00	2.40	1.80	1.10	0.00	1.00	1.00	0.90	1.61
									1.025

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295

Dust/AC Ratio	0.90

DATA for N-initial 6

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	4.0	2.166	2.546	14.9	20.7	27.9	5.78	2.74	1.32	2.713
MIX 2	4.5	2.188	2.527	13.4	20.3	34.0	6.90	3.23	1.33	2.714
MIX 3	5.0	2.208	2.506	11.9	20.0	40.5	8.10	3.76	1.31	2.713
MIX 4	5.5	2.216	2.485	10.8	20.1	46.3	9.31	4.31	1.26	2.709

DATA for N-desig 50

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	4.0	2.378	2.546	6.6	12.9	49.1	6.35	2.74	2.713	1.32
MIX 2	4.5	2.394	2.527	5.3	12.8	59.0	7.55	3.23	2.714	1.33
MIX 3	5.0	2.430	2.506	3.0	12.0	74.6	8.91	3.76	2.713	1.31
MIX 4	5.5	2.439	2.485	1.9	12.1	84.6	10.25	4.31	2.709	1.26

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	50	5.0	2.429	2.505	3.0	12.0	75.0	2.712	2.622	0.88

REMARKS:

Tested by :

Reviewed by :

Final Approval :

RS01 Mix design

HMA Plant Test Summary

RS01 QC Data

ASSIGNMENT INFORMATION								
Inspector #	90000000	Date	07/30/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19512R	Quantity			I-08-5543		1314.4
Resp. Loc.	90 - ILTollway	Lab	PP	Dist Mix #	90BITRS01				
Type Insp	PRO	Lab Name							
Mix Name	BITUMINOUS CONCRETE BINDER COURSE,N50,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type	CF	Washed	1	Lot	001-01			Sub Lot	01		Sub Lot	02
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%		% PASS	AJMF		% PASS	AJMF
MIX %	40.0	0.0	0.0	9.5	19.0	28.5	0.0	5.0	1.5	100.0	100.0	1.5	100.0	100.0
AGG %	39.4	0.0	0.0	9.5	19.0	30.3	0.0		1	100.0	100.0	1	100.0	100.0
AC% in RAP	39.4								3/4	99.0	97.0	3/4	99.0	97.0
Remarks 1									1/2	89.0	83.0	1/2	89.0	83.0
Sub Lot	02	Type	CF	Washed	1	Lot	001-01		3/8	79.0	74.0	3/8	79.0	74.0
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%	#4	44.0	41.0	#4	44.0	41.0
MIX %	40.0	0.0	0.0	9.5	19.0	28.5	0.0	5.0	#8	29.0	27.0	#8	29.0	27.0
AGG %	39.4	0.0	0.0	9.5	19.0	30.3	0.0		#16	22.0	22.0	#16	22.0	22.0
AC% in RAP	39.4								#30	17.0	16.0	#30	17.0	16.0
Remarks 2									#50	10.0	10.0	#50	10.0	10.0
	Producer	Material							#100	7.0	6.0	#100	7.0	6.0
Asphalt	5627-13	10125	% AC						#200	5.0	4.4	#200	5.0	4.4
Additive			5.0						AC			AC		

		Sub Lot	01		Sub Lot	02	Sub Lot	01	Sub Lot	02	
		Type			Type		Type		Type		
		Wash	yes		Wash	yes	AC%		AC%		
	Corr.	% PASS	AJMF		Corr.	% PASS	AJMF	Target AC	5.0	Target AC	5.0
1.5	0.0		100.0	1.5	0.0		100.0				
1	0.0		100.0	1	0.0		100.0	Remark 1			
3/4	0.0		97.0	3/4	0.0		97.0	Remark 2			
1/2	0.0		83.0	1/2	0.0		83.0				
3/8	0.0		74.0	3/8	0.0		74.0	Sub Lot	01		
#4	0.0		41.0	#4	0.0		41.0	Gyratory Results			
#8	0.0		27.0	#8	0.0		27.0	Nd	Gmb	Gmm	Voids	FVMA
#16	0.0		22.0	#16	0.0		22.0	50	2.411	2.478	2.8	
#30	0.0		16.0	#30	0.0		16.0					
#50	0.0		10.0	#50	0.0		10.0	Sub Lot	02		
#100	0.0		6.0	#100	0.0		6.0	Gyratory Results			
#200	0.0		4.4	#200	0.0		4.4	Nd	Gmb	Gmm	Voids	FVMA
AC				AC				50	2.425	2.481	2.3	
Remarks 1												
Remarks 2							Tested By:		QC Manager			

12-05-2011:09-07-52

HMA Plant Test Summary

RS01 QA Data

ASSIGNMENT INFORMATION									
Inspector #	90000000	Date	07/30/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19602R	Quantity			I-08-5543		0.0
Resp. Loc.	90 - ILTollway	Lab	IL	Dist Mix #	90BITRS01				
Type Insp	IND	Lab Name							
Mix Name	BITUMINOUS BASE,N50,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type		Washed		Lot		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%
MIX %								
AGG %								
AC% in RAP								
Remarks 1								
Sub Lot		Type		Washed		Lot		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%
MIX %								
AGG %								
AC% in RAP								
Remarks 2								
	Producer	Material						
Asphalt	5627-13	10125	% AC					
Additive			5.0					

	Sub Lot	01
	Type	
	Wash	no

	Corr.	% PASS	AJMF
1.5	0.0		100.0
1	0.0		100.0
3/4	0.0		97.0
1/2	0.0		83.0
3/8	0.0		74.0
#4	0.0		41.0
#8	0.0		27.0
#16	0.0		22.0
#30	0.0		16.0
#50	0.0		10.0
#100	0.0		6.0
#200	0.0		4.4
AC			

Remarks 1	
Remarks 2	

	Sub Lot	
	Type	
	Wash	

	Corr.	% PASS	AJMF
1.5	0.0		100.0
1	0.0		100.0
3/4	0.0		97.0
1/2	0.0		83.0
3/8	0.0		74.0
#4	0.0		41.0
#8	0.0		27.0
#16	0.0		22.0
#30	0.0		16.0
#50	0.0		10.0
#100	0.0		6.0
#200	0.0		4.4
AC			

Sub Lot	01
Type	
AC%	
Target AC	5.0

Remark 1	
Remark 2	

Sub Lot	01
Gyratory Results	

Nd	Gmb	Gmm	Voids	FVMA
50	2.423	2.489	2.7	

Sub Lot	
Gyratory Results	

Nd	Gmb	Gmm	Voids	FVMA

Tested By:		QC Manager	

Sub Lot	01	Type		Wash	no

Sub Lot		Type		Wash	

Sub Lot	01	Type		AC%		Target AC	5.0

Sub Lot		Type		AC%		Target AC	5.0

Sub Lot	01
% PASS	
AJMF	
1.5	
1	
3/4	
1/2	
3/8	
#4	
#8	
#16	
#30	
#50	
#100	
#200	
AC	

Sub Lot	
% PASS	
AJMF	
1.5	
1	
3/4	
1/2	
3/8	
#4	
#8	
#16	
#30	
#50	
#100	
#200	
AC	

DATE: June 16 2009

Bituminous Mixture Design

Design Number : ---------> ISTHARAS02

SEQ NO:

Lab preparing the design ? (PP,PL,IL,etc) IL

Producer Name & Number --> 4066-07 Rock Road

Material Code Number ----> 19602R BIT BSE CSE REC

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	042CM11		031CM16	037FM01		CAT2 Coarse	CAT2 Fine	RAS	10125
Source (PROD #)	52402-15		52400-26	52400-26		4066-07	4066-07		5627-13
(NAME)	Rock Road		Rock Road	Rock Road		Rock Road	Rock Road	2nd Season	BP Amoco
(LOC)	Indergand		Townline Pit	Townline Pit		Townline Pit	Townline Pit	Dane County	Bartlett
						3.3	6.0	23.7	<--%AC in RAP
Total Mix Blend	28.0	0.0	19.0	13.0	0.0	18.0	17.0	5.0	
Total Agg. Blend	29.0	0.0	19.7	13.5	0.0	17.6	16.2	3.9	

100.0 <-Mix Total 100.0

100.0 <-Agg Total

Agg No. / Sieve Size	#1	#1	#2	#3	#4	#6	#6	#6	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100	100	100
3/4"(19.0mm)	89.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.8	82-100	97		
1/2" (12.5mm)	44.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	83.7	50-85	84		
3/8" (9.5mm)	21.0	100.0	98.0	100.0	100.0	93.0	100.0	99.6	75.4		75		
No.4 (4.75mm)	2.0	100.0	29.0	97.0	100.0	35.0	94.0	96.4	44.6	24-50	45	40	50
No.8 (2.36mm)	2.0	100.0	2.0	83.0	100.0	20.0	70.0	92.3	30.7	20-36	31	26	36
No.16 (1.18mm)	2.0	100.0	2.0	69.0	100.0	16.0	52.0	74.0	24.4	10-25	24		
No.30 (600µm)	2.0	100.0	2.0	51.0	100.0	13.0	39.0	51.8	18.5		19	15	23
No.50 (300µm)	2.0	100.0	2.0	17.0	100.0	9.0	23.0	43.5	10.3	4-12	10		
No.100 (150µm)	2.0	100.0	2.0	2.0	100.0	7.0	15.0	33.8	6.2	3-9	6		
No.200(75µm)	1.8	100.0	1.6	0.6	100.0	5.0	10.9	24.0	4.5	3-6	4.5	3.0	6.0
Bulk Sp Gr	2.617	1.000	2.667	2.613	1.000	2.660	2.660	2.185	2.620				
Apparent Sp Gr	2.792	1.010	2.801	2.690	1.000	2.733	2.733	2.229	2.733				
Absorption, %	2.40	1.00	1.80	1.10	0.00	1.00	1.00	0.90	1.57				
									1.025				

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295

Dust/AC Ratio	0.90

DATA for N-initial 6

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	4.0	2.217	2.540	12.7	18.8	32.2	6.06	2.80	1.25	2.707
MIX 2	4.5	2.241	2.522	11.1	18.3	39.3	7.20	3.29	1.26	2.708
MIX 3	5.0	2.251	2.497	9.8	18.4	46.5	8.55	3.89	1.16	2.701
MIX 4	5.5	2.271	2.477	8.3	18.1	54.0	9.76	4.41	1.16	2.700

DATA for N-desig 50

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	4.0	2.418	2.540	4.8	11.4	57.9	6.61	2.80	2.707	1.25
MIX 2	4.5	2.441	2.522	3.2	11.0	71.0	7.84	3.29	2.708	1.26
MIX 3	5.0	2.455	2.497	1.7	11.0	84.8	9.33	3.89	2.701	1.16
MIX 4	5.5	2.463	2.477	0.6	11.2	94.6	10.59	4.41	2.700	1.16

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	50	4.9	2.453	2.503	2.0	11.0	81.8	2.704	2.620	0.91

REMARKS:

Tested by :

Reviewed by :

Final Approval :

RS02 Mix design

HMA Plant Test Summary

RS02 QC Data

ASSIGNMENT INFORMATION								
Inspector #	90000000	Date	07/29/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19602R	Quantity			I-08-5543		1295.9
Resp. Loc.	90 - ILTollway	Lab	PP	Dist Mix #	90BITRS02				
Type Insp	PRO	Lab Name							
Mix Name	BITUMINOUS,N50,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type	CF	Washed	1	Lot	001-01			Sub Lot	01		Sub Lot	
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%		% PASS	AJMF		% PASS	AJMF
MIX %	40.0	0.0	0.0	12.4	18.1	26.6	0.0	4.9	1.5	100.0	100.0	1.5		
AGG %	39.5	0.0	0.0	12.4	18.1	28.2	0.0		1	100.0	100.0	1		
AC% in RAP	39.5								3/4	97.0	97.0	3/4		
Remarks 1									1/2	84.0	84.0	1/2		
Sub Lot		Type		Washed		Lot			3/8	76.0	75.0	3/8		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%	#4	44.0	45.0	#4		
MIX %									#8	31.0	31.0	#8		
AGG %									#16	25.0	24.0	#16		
AC% in RAP									#30	19.0	19.0	#30		
Remarks 2									#50	10.0	10.0	#50		
	Producer	Material							#100	6.0	6.0	#100		
Asphalt	5627-13	10125	% AC						#200	4.6	4.5	#200		
Additive			4.9						AC			AC		

		Sub Lot	01		Sub Lot		Sub Lot	01	Sub Lot		
		Type			Type		Type		Type		
		Wash	yes		Wash		AC%		AC%		
	Corr.	% PASS	AJMF		Corr.	% PASS	AJMF	Target AC	4.9	Target AC	4.9
1.5	0.0		100.0	1.5	0.0		100.0				
1	0.0		100.0	1	0.0		100.0	Remark 1			
3/4	0.0		97.0	3/4	0.0		97.0	Remark 2			
1/2	0.0		84.0	1/2	0.0		84.0				
3/8	0.0		75.0	3/8	0.0		75.0	Sub Lot	01		
#4	0.0		45.0	#4	0.0		45.0	Gyratory Results			
#8	0.0		31.0	#8	0.0		31.0	Nd	Gmb	Gmm	Voids	FVMA
#16	0.0		24.0	#16	0.0		24.0	50	2.441	2.495	2.2	
#30	0.0		19.0	#30	0.0		19.0					
#50	0.0		10.0	#50	0.0		10.0	Sub Lot				
#100	0.0		6.0	#100	0.0		6.0	Gyratory Results				
#200	0.0		4.5	#200	0.0		4.5	Nd	Gmb	Gmm	Voids	FVMA
AC				AC								
Remarks 1		No correction factor for AC										
Remarks 2								Tested By:		QC Manager		

12-05-2011:09-17-46

HMA Plant Test Summary

RS02 QA Data

ASSIGNMENT INFORMATION

Inspector #	90000000	Date	07/30/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19602R	Quantity			I-08-5543		0.0
Resp. Loc.	90 - ILTollway	Lab	IL	Dist Mix #	90BITRS01				
Type Insp	IND	Lab Name							
Mix Name	BITUMINOUS BASE,N50,RECYCLED			Plant Type	Drum				

Sub Lot	01	Type		Washed		Lot		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%
MIX %								
AGG %								
AC% in RAP								
Remarks 1								
Sub Lot		Type		Washed		Lot		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%
MIX %								
AGG %								
AC% in RAP								
Remarks 2								
	Producer	Material						
Asphalt	5627-13	10125	% AC					
Additive			5.0					

	Sub Lot	01
	Type	
	Wash	no

	Corr.	% PASS	AJMF
1.5	0.0		100.0
1	0.0		100.0
3/4	0.0		97.0
1/2	0.0		83.0
3/8	0.0		74.0
#4	0.0		41.0
#8	0.0		27.0
#16	0.0		22.0
#30	0.0		16.0
#50	0.0		10.0
#100	0.0		6.0
#200	0.0		4.4
AC			

	Sub Lot	
	Type	
	Wash	

	Corr.	% PASS	AJMF
1.5	0.0		100.0
1	0.0		100.0
3/4	0.0		97.0
1/2	0.0		83.0
3/8	0.0		74.0
#4	0.0		41.0
#8	0.0		27.0
#16	0.0		22.0
#30	0.0		16.0
#50	0.0		10.0
#100	0.0		6.0
#200	0.0		4.4
AC			

Sub Lot	01	Sub Lot	
Type		Type	
AC%		AC%	
Target AC	5.0	Target AC	5.0

Remark 1				
Remark 2				
Sub Lot	01			
Gyratory Results				
Nd	Gmb	Gmm	Voids	FVMA
30	2.423	2.489	2.7	
Sub Lot				
Gyratory Results				
Nd	Gmb	Gmm	Voids	FVMA
Tested By:		QC Manager		

Sub Lot	01	Sub Lot	
Type		Type	
AC%		AC%	
Target AC	5.0	Target AC	5.0

Remark 1			
Remark 2			
Sub Lot	01		
Gyratory Results			
Nd	Gmb	Gmm	Voids	FVMA
30	2.423	2.489	2.7	
Sub Lot			
Gyratory Results			
Nd	Gmb	Gmm	Voids	FVMA
Tested By:		QC Manager		

DATE: June 26 2009

SEQ NO:

Bituminous Mixture Design

Design Number : --------->	90BITRAS03
Lab preparing the design ? (PP,PL,IL,etc)	IL

Producer Name & Number -->	4066-07	Rock Road
Material Code Number ---->	19602R	BIT BSE CSE REC

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	042CM11		031CM16	037FM01		CAT2 Coarse	CAT2 Fine	RAS	10125
Source (PROD #)	52402-15		52400-26	52400-26		4066-07	4066-07		5627-13
(NAME)	Rock Road		Rock Road	Rock Road		Rock Road	Rock Road	2nd Season	BP Amoco
(LOC)	Indergand		Townline Pit	Townline Pit		Townline Pit	Townline Pit	Dane County	Bartlett
						3.3	6.0	23.7	<--%AC in RAP
Total Mix Blend	26.5	0.0	15.0	8.5	0.0	22.0	23.0	5.0	
Total Agg. Blend	27.8	0.0	15.8	8.9	0.0	21.6	22.0	3.9	

100.0 <-Mix Total 100.0

100.0 <-Agg Total

Agg No. / Sieve Size	#1	#1	#2	#3	#4	#6	#6	#6	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100	100	100
3/4"(19.0mm)	89.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.9	82-100	97		
1/2" (12.5mm)	44.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	84.4	50-85	84		
3/8" (9.5mm)	21.0	100.0	98.0	100.0	100.0	93.0	100.0	99.6	76.2		76		
No.4 (4.75mm)	2.0	100.0	29.0	97.0	100.0	35.0	94.0	96.4	45.8	24-50	46	41	51
No.8 (2.36mm)	2.0	100.0	2.0	83.0	100.0	20.0	70.0	92.3	31.6	20-36	32	27	37
No.16 (1.18mm)	2.0	100.0	2.0	69.0	100.0	16.0	52.0	74.0	24.8	10-25	25		
No.30 (600µm)	2.0	100.0	2.0	51.0	100.0	13.0	39.0	51.8	18.8		19	15	23
No.50 (300µm)	2.0	100.0	2.0	17.0	100.0	9.0	23.0	43.5	11.1	4-12	11		
No.100 (150µm)	2.0	100.0	2.0	2.0	100.0	7.0	15.0	33.8	7.2	3-9	7		
No.200(75µm)	1.8	100.0	1.6	0.6	100.0	5.0	10.9	24.0	5.2	3-6	5.2	3.7	6.7

Bulk Sp Gr	2.617	1.000	2.667	2.613	1.000	2.660	2.660	2.185	2.623
Apparent Sp Gr	2.793	1.010	2.802	2.691	1.000	2.733	2.733	2.229	2.732
Absorption, %	2.40	1.00	1.80	1.10	0.00	1.00	1.00	0.90	1.52
									1.025

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295

Dust/AC Ratio	1.00

DATA for N-initial 6

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	4.0	2.234	2.550	12.4	18.2	32.0	5.84	2.68	1.38	2.719
MIX 2	4.5	2.233	2.527	11.6	18.7	37.8	7.07	3.24	1.32	2.714
MIX 3	5.0	2.300	2.508	8.3	16.7	50.3	8.41	3.75	1.32	2.715
MIX 4	5.5	2.276	2.488	8.5	18.0	52.7	9.49	4.27	1.30	2.713

DATA for N-desig 50

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	4.0	2.421	2.550	5.1	11.4	55.5	6.33	2.68	2.719	1.38
MIX 2	4.5	2.442	2.527	3.4	11.1	69.7	7.73	3.24	2.714	1.32
MIX 3	5.0	2.458	2.508	2.0	11.0	81.9	8.99	3.75	2.715	1.32
MIX 4	5.5	2.465	2.488	0.9	11.2	91.6	10.27	4.27	2.713	1.30

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	50	5.0	2.458	2.508	2.0	11.0	81.8	2.715	2.623	0.92

REMARKS: NEW A.C. = 1.7%

Tested by :

Reviewed by :

Final Approval :

RS03 Mix Design

HMA Plant Test Summary

RS03 QC Data

ASSIGNMENT INFORMATION									
Inspector #	90000000	Date	07/29/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19602R	Quantity			I-08-5543		864.2
Resp. Loc.	90 - ILTollway	Lab	PP	Dist Mix #	90BITRS03				
Type Insp	PRO	Lab Name							
Mix Name	BITUMINOUS,N50,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type	CF	Washed	1	Lot	001-01			Sub Lot	01		Sub Lot	
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%		% PASS	AJMF		% PASS	AJMF
MIX %	50.0	0.0	0.0	8.1	14.3	25.2	0.0	5.0	1.5	100.0	100.0	1.5		
AGG %	49.5	0.0	0.0	8.1	14.3	26.7	0.0		1	100.0	100.0	1		
AC% in RAP	49.5								3/4	98.0	97.0	3/4		
Remarks 1									1/2	85.0	84.0	1/2		
Sub Lot		Type		Washed		Lot			3/8	77.0	76.0	3/8		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%	#4	46.0	46.0	#4		
MIX %									#8	32.0	32.0	#8		
AGG %									#16	25.0	25.0	#16		
AC% in RAP									#30	19.0	19.0	#30		
Remarks 2									#50	11.0	11.0	#50		
	Producer	Material							#100	7.0	7.0	#100		
Asphalt	5627-13	10125	% AC						#200	5.3	5.2	#200		
Additive			5.0						AC			AC		

		Sub Lot	01		Sub Lot		Sub Lot	01	Sub Lot	
		Type			Type		Type		Type	
		Wash	yes		Wash		AC%		AC%	
	Corr.	% PASS	AJMF		Corr.	% PASS	AJMF	Target AC	5.0	Target AC	5.0
1.5	0.0		100.0	1.5	0.0		100.0				
1	0.0		100.0	1	0.0		100.0	Remark 1			
3/4	0.0		97.0	3/4	0.0		97.0	Remark 2			
1/2	0.0		84.0	1/2	0.0		84.0				
3/8	0.0		76.0	3/8	0.0		76.0	Sub Lot	01		
#4	0.0		46.0	#4	0.0		46.0	Gyratory Results			
#8	0.0		32.0	#8	0.0		32.0	Nd	Gmb	Gmm	Voids	FVMA
#16	0.0		25.0	#16	0.0		25.0	50	2.449	2.503	2.2	
#30	0.0		19.0	#30	0.0		19.0					
#50	0.0		11.0	#50	0.0		11.0	Sub Lot			
#100	0.0		7.0	#100	0.0		7.0	Gyratory Results			
#200	0.0		5.2	#200	0.0		5.2	Nd	Gmb	Gmm	Voids	FVMA
AC				AC								
Remarks 1		No correction factor for AC										
Remarks 2								Tested By:		QC Manager		

12-05-2011:09-19-15

HMA Plant Test Summary

RS03 QA Data

ASSIGNMENT INFORMATION									
Inspector #		Date	07/29/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19602R	Quantity			I-08-5543		0.0
Resp. Loc.	90 - ILTollway	Lab	IL	Dist Mix #	90BITRS03				
Type Insp	IND	Lab Name							
Mix Name	BITUMINOUS BASE,N50,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type		Washed		Lot				Sub Lot	01		Sub Lot	
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%		% PASS	AJMF		% PASS	AJMF
MIX %									1.5			1.5		
AGG %									1			1		
AC% in RAP									3/4			3/4		
Remarks 1									1/2			1/2		
Sub Lot		Type		Washed		Lot			3/8			3/8		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%	#4			#4		
MIX %									#8			#8		
AGG %									#16			#16		
AC% in RAP									#30			#30		
Remarks 2									#50			#50		
	Producer	Material							#100			#100		
Asphalt	5627-13	10125	% AC						#200			#200		
Additive			5.0						AC			AC		

		Sub Lot	01		Sub Lot		Sub Lot	01	Sub Lot		
		Type			Type		Type		Type		
		Wash	no		Wash		AC%		AC%		
	Corr.	% PASS	AJMF		Corr.	% PASS	AJMF	Target AC	5.0	Target AC	5.0
1.5	0.0		100.0	1.5	0.0		100.0				
1	0.0		100.0	1	0.0		100.0	Remark 1			
3/4	0.0		97.0	3/4	0.0		97.0	Remark 2			
1/2	0.0		84.0	1/2	0.0		84.0				
3/8	0.0		76.0	3/8	0.0		76.0	Sub Lot	01		
#4	0.0		46.0	#4	0.0		46.0	Gyratory Results			
#8	0.0		32.0	#8	0.0		32.0	Nd	Gmb	Gmm	Voids	FVMA
#16	0.0		25.0	#16	0.0		25.0	50	2.441	2.511	2.8	
#30	0.0		19.0	#30	0.0		19.0					
#50	0.0		11.0	#50	0.0		11.0	Sub Lot				
#100	0.0		7.0	#100	0.0		7.0	Gyratory Results				
#200	0.0		5.2	#200	0.0		5.2	Nd	Gmb	Gmm	Voids	FVMA
AC				AC								
Remarks 1												
Remarks 2								Tested By:		QC Manager		

DATE: July 15 2009

SEQ NO:

Bituminous Mixture Design

Design Number : ---------> 90BITRAS04

Lab preparing the design ? (PP,PL,IL,etc) IL

Producer Name & Number --> 4066-07 Rock Road

Material Code Number ----> 19602R BIT BSE CSE REC

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	042CM11	2	031CM16	037FM01	5	CAT 2 Coarse	CAT 2 Fine	RAS	10125
Source (PROD #)	52402-15		52400-26	52400-26		4066-07	4066-07		5627-13
(NAME)	Rock Road		Rock Road	Rock Road		Rock Road	Rock Road	2nd Season	BP Amoco
(LOC)	Indergand		Townline Pit	Townline Pit		Townline Pit	Townline Pit	Dane County	Bartlett
						3.3	6.0	23.7	<--%AC in RAP
Total Mix Blend	28.0	0.0	25.0	17.0	0.0	13.0	12.0	5.0	
Total Agg. Blend	29.0	0.0	25.8	17.5	0.0	12.6	11.3	3.8	

100.0 <-Mix Total 100.0

100.0 <-Agg Total

Agg No. / Sieve Size	#1	#1	#2	#3	#4	#6	#6	#6	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100	100	100
3/4"(19.0mm)	89.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.8	82-100	97		
1/2" (12.5mm)	44.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	83.7	50-85	84		
3/8" (9.5mm)	21.0	100.0	98.0	100.0	100.0	93.0	100.0	99.6	75.6		76		
No.4 (4.75mm)	2.0	100.0	29.0	97.0	100.0	35.0	94.0	96.4	43.7	24-50	44	39	49
No.8 (2.36mm)	2.0	100.0	2.0	83.0	100.0	20.0	70.0	92.3	29.6	20-36	30	25	35
No.16 (1.18mm)	2.0	100.0	2.0	69.0	100.0	16.0	52.0	74.0	23.9	10-25	24		
No.30 (600µm)	2.0	100.0	2.0	51.0	100.0	13.0	39.0	51.8	18.0		18	14	22
No.50 (300µm)	2.0	100.0	2.0	17.0	100.0	9.0	23.0	43.5	9.5	4-12	9		
No.100 (150µm)	2.0	100.0	2.0	2.0	100.0	7.0	15.0	33.8	5.3	3-9	5		
No.200(75µm)	1.8	100.0	1.6	0.6	100.0	5.0	10.9	24.0	3.8	3-6	3.8	2.3	5.3
Bulk Sp Gr	2.617	1.000	2.667	2.613	1.000	2.660	2.660	2.185	2.619				
Apparent Sp Gr	2.792	1.000	2.801	2.690	1.000	2.733	2.733	2.229	2.736				
Absorption, %	2.40	0.00	1.80	1.10	0.00	1.00	1.00	0.90	1.63				
									1.025				

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295

Dust/AC Ratio	0.70

DATA for N-initial 6

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	4.5	2.199	2.527	13.0	19.8	34.5	6.84	3.19	1.38	2.715
MIX 2	5.0	2.239	2.507	10.7	18.8	43.0	8.09	3.70	1.37	2.714
MIX 3	5.5	2.257	2.487	9.3	18.6	50.1	9.31	4.23	1.35	2.713
MIX 4	6.0	2.267	2.474	8.4	18.7	55.1	10.27	4.64	1.44	2.720

DATA for N-desig 50

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	4.5	2.380	2.527	5.8	13.2	55.9	7.40	3.19	2.715	1.38
MIX 2	5.0	2.430	2.507	3.1	11.9	73.9	8.78	3.70	2.714	1.37
MIX 3	5.5	2.452	2.487	1.4	11.5	87.6	10.11	4.23	2.713	1.35
MIX 4	6.0	2.465	2.474	0.4	11.6	96.7	11.16	4.64	2.720	1.44

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	50	5.3	2.447	2.497	2.0	11.5	82.6	2.715	2.619	0.86

REMARKS: NEW A.C. = 3.0%

Tested by :

Reviewed by :

Final Approval :

RS04 Mix design

HMA Plant Test Summary

RS04 QC Data

ASSIGNMENT INFORMATION								
Inspector #	90000000	Date	07/29/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19602R	Quantity			I-08-5543		1253.0
Resp. Loc.	90 - ILTollway	Lab	PP	Dist Mix #	90BITRS04				
Type Insp	PRO	Lab Name							
Mix Name	BITUMINOUS,N50,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type	CF	Washed	1	Lot	001-01			Sub Lot	01		Sub Lot	02
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%		% PASS	AJMF		% PASS	AJMF
MIX %	30.0	0.0	0.0	16.1	23.7	26.5	0.0	5.3	1.5	100.0	100.0	1.5	100.0	100.0
AGG %	29.5	0.0	0.0	16.1	23.7	28.2	0.0		1	100.0	100.0	1	100.0	100.0
AC% in RAP	29.5								3/4	97.0	97.0	3/4	97.0	97.0
Remarks 1									1/2	84.0	84.0	1/2	84.0	84.0
Sub Lot	02	Type	CF	Washed	1	Lot	001-01		3/8	76.0	76.0	3/8	76.0	76.0
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%	#4	43.0	44.0	#4	43.0	44.0
MIX %	30.0	0.0	0.0	16.1	23.7	26.5	0.0	5.3	#8	30.0	30.0	#8	30.0	30.0
AGG %	29.5	0.0	0.0	16.1	23.7	28.2	0.0		#16	25.0	24.0	#16	25.0	24.0
AC% in RAP	29.5								#30	18.0	18.0	#30	18.0	18.0
Remarks 2									#50	9.0	10.0	#50	9.0	10.0
	Producer	Material							#100	5.0	5.0	#100	5.0	5.0
Asphalt	5627-13	10125	% AC						#200	3.9	3.8	#200	3.9	3.8
Additive			5.3						AC			AC		

	Sub Lot	01		Sub Lot	02	Sub Lot	01	Sub Lot	02	
	Type			Type		Type		Type		
	Wash	yes		Wash	yes	AC%		AC%		

	Corr.	% PASS	AJMF		Corr.	% PASS	AJMF	Target AC	5.3	Target AC	5.3	
1.5	0.0		100.0	1.5	0.0		100.0					
1	0.0		100.0	1	0.0		100.0	Remark 1				
3/4	0.0		97.0	3/4	0.0		97.0	Remark 2				
1/2	0.0		84.0	1/2	0.0		84.0					
3/8	0.0		76.0	3/8	0.0		76.0	Sub Lot	01			
#4	0.0		44.0	#4	0.0		44.0	Gyratory Results				
#8	0.0		30.0	#8	0.0		30.0	Nd	Gmb	Gmm	Voids	FVMA
#16	0.0		24.0	#16	0.0		24.0	50	2.446	2.487	1.7	
#30	0.0		18.0	#30	0.0		18.0					
#50	0.0		10.0	#50	0.0		10.0	Sub Lot	02			
#100	0.0		5.0	#100	0.0		5.0	Gyratory Results				
#200	0.0		3.8	#200	0.0		3.8	Nd	Gmb	Gmm	Voids	FVMA
AC				AC				50	2.438	2.478	1.7	
Remarks 1												
Remarks 2								Tested By:		QC Manager		

12-05-2011:09-22-04

HMA Plant Test Summary

RS04 QA Data

ASSIGNMENT INFORMATION									
Inspector #		Date	07/29/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19602R	Quantity			I-08-5543		0.0
Resp. Loc.	90 - ILTollway	Lab	IL	Dist Mix #	90BITRS04				
Type Insp	IND	Lab Name							
Mix Name	BITUMINOUS BASE,N50,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type		Washed		Lot		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%
MIX %								
AGG %								
AC% in RAP								
Remarks 1								
Sub Lot		Type		Washed		Lot		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%
MIX %								
AGG %								
AC% in RAP								
Remarks 2								
	Producer	Material						
Asphalt	5627-13	10125	% AC					
Additive			5.3					

	Sub Lot	01		Sub Lot		Sub Lot	01	Sub Lot	
	Type			Type		Type		Type	
	Wash	no		Wash		AC%		AC%	
Corr.	% PASS	AJMF		Corr.	% PASS	AJMF	Target AC	5.3	Target AC	5.3
1.5	0.0		100.0	1.5	0.0		100.0			
1	0.0		100.0	1	0.0		100.0	Remark 1		
3/4	0.0		97.0	3/4	0.0		97.0	Remark 2		
1/2	0.0		84.0	1/2	0.0		84.0			
3/8	0.0		76.0	3/8	0.0		76.0	Sub Lot	01	
#4	0.0		44.0	#4	0.0		44.0	Gyratory Results		
#8	0.0		30.0	#8	0.0		30.0	Nd	Gmb	Gmm	Voids	FVMA
#16	0.0		24.0	#16	0.0		24.0	50	2.448	2.482	1.4	
#30	0.0		18.0	#30	0.0		18.0			
#50	0.0		9.0	#50	0.0		9.0	Sub Lot		
#100	0.0		5.0	#100	0.0		5.0	Gyratory Results		
#200	0.0		3.8	#200	0.0		3.8	Nd	Gmb	Gmm	Voids	FVMA
AC				AC								
Remarks 1												
Remarks 2								Tested By:		QC Manager		

12-05-2011:09-23-48

DATE: July 21 2009

Bituminous Mixture Design

Design Number : ---------> 90BITRS05

SEQ NO:

Lab preparing the design ? (PP,PL,IL,etc) IL

Producer Name & Number -->	4066-07	Rock Road
Material Code Number ---->	19524R	BIT CONC SC N70 D REC

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	1	2	031CM16	039FM20	004MF01	CAT 2 Coarse	CAT 2 Fine	RAS	10125
Source (PROD #)			52400-26	52400-26	52202-08	4066-07	4066-07		5627-13
(NAME)			Rock Road	Rock Road	Linwood	Rock Road	Rock Road	2nd Season	BP Amoco
(LOC)			Townline Pit	Townline Pit	Linwood	Townline Pit	Townline Pit	Dane County	Bartlett
						3.3	6.0	23.7	<--%AC in RAP
Total Mix Blend	0.0	0.0	45.5	29.0	0.5	8.0	12.0	5.0	
Total Agg. Blend	0.0	0.0	46.7	29.8	0.5	7.8	11.3	3.8	

100.0 <-Mix Total 100.0

100.0 <-Agg Total

Agg No. / Sieve Size	#1	#1	#2	#3	#4	#6	#6	#6	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100		
3/4"(19.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100		
1/2" (12.5mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100	100		
3/8" (9.5mm)	100.0	100.0	98.0	100.0	100.0	93.0	100.0	99.6	98.5	90-100	99		
No.4 (4.75mm)	100.0	100.0	29.0	98.0	100.0	35.0	94.0	96.4	60.3	28-65	60	55	65
No.8 (2.36mm)	100.0	100.0	2.0	66.0	100.0	20.0	70.0	92.3	34.1	28-48	34	29	39
No.16 (1.18mm)	100.0	100.0	2.0	36.0	100.0	16.0	52.0	74.0	22.1	10-32	22		
No.30 (600µm)	100.0	100.0	2.0	21.0	100.0	13.0	39.0	51.8	15.1		15	11	19
No.50 (300µm)	100.0	100.0	2.0	12.0	100.0	9.0	23.0	43.5	10.0	4-15	10		
No.100 (150µm)	100.0	100.0	2.0	7.0	92.0	7.0	15.0	33.8	7.0	3-10	7		
No.200(75µm)	100.0	100.0	1.6	5.0	78.0	5.0	10.9	24.0	5.2	4-6	5.2	3.7	6.7

Bulk Sp Gr	1.000	1.000	2.667	2.678	2.750	2.660	2.660	2.185	2.646
Apparent Sp Gr	1.000	1.000	2.801	2.790	2.828	2.733	2.733	2.234	2.758
Absorption, %	0.00	0.00	1.80	1.50	1.00	1.00	1.00	1.00	1.52
									1.025

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295

Dust/AC Ratio	0.90

DATA for N-initial 7

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	5.0	2.128	2.531	15.9	23.6	32.6	7.70	3.71	1.36	2.743
MIX 2	5.5	2.129	2.513	15.3	24.0	36.3	8.71	4.19	1.38	2.744
MIX 3	6.0	2.162	2.495	13.3	23.2	42.6	9.87	4.68	1.40	2.746
MIX 4	6.5	2.165	2.473	12.5	23.5	47.0	11.04	5.23	1.36	2.743

DATA for N-desig 70

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	5.0	2.356	2.531	6.9	15.4	55.3	8.53	3.71	2.743	1.36
MIX 2	5.5	2.369	2.513	5.7	15.4	62.8	9.69	4.19	2.744	1.38
MIX 3	6.0	2.404	2.495	3.6	14.6	75.1	10.98	4.68	2.746	1.40
MIX 4	6.5	2.413	2.473	2.4	14.8	83.4	12.31	5.23	2.743	1.36

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	70	5.9	2.397	2.497	4.0	14.8	72.9	2.744	2.646	0.94

REMARKS: NEW AC = 3.7%

Tested by : _____

Reviewed by : _____ Final Approval : _____

RS05 Mix Design

HMA Plant Test Summary

RS05 QC Data

ASSIGNMENT INFORMATION									
Inspector #	900000000	Date	08/11/2009	Sequence #	001		Contract / Section No.	Job No.	Quantity
Bit Mix Plant	4066-07	Mix Code	19525R	Quantity			I-08-5543		1390.3
Resp. Loc.	90 -ILTollway	Lab	PP	Dist Mix #	90BITRS05				
Type Insp	PRO	Lab Name							
Mix Name	BITUMINOUS CONCRETE SURFACE COURSE,N70,RECYCLED				Plant Type	Drum			

Sub Lot	01	Type	CF	Washed	1	Lot	001-01			Sub Lot	01		Sub Lot	02
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%		% PASS	AJMF		% PASS	AJMF
MIX %	25.0	43.5	27.8	0.0	0.0	0.0	0.0	5.9	1.5	100.0	100.0	1.5		
AGG %	24.2	43.5	27.8	0.0	0.0	0.0	0.0		1	100.0	100.0	1		
AC% in RAP	24.2								3/4	100.0	100.0	3/4		
Remarks 1									1/2	100.0	100.0	1/2		
Sub Lot	02	Type		Washed		Lot			3/8	99.0	99.0	3/8		
	RAP	BIN5	BIN4	BIN3	BIN2	BIN1	MF	NEW AC%	#4	60.0	60.0	#4		
MIX %									#8	38.0	34.0	#8		
AGG %									#16	26.0	22.0	#16		
AC% in RAP									#30	17.0	15.0	#30		
Remarks 2									#50	11.0	10.0	#50		
	Producer	Material							#100	7.0	7.0	#100		
Asphalt	5627-13	10125	% AC						#200	4.6	5.2	#200		
Additive			5.9						AC			AC		

		Sub Lot	01		Sub Lot	02	Sub Lot	01	Sub Lot	02	
		Type	I		Type		Type	I	Type		
		Wash	yes		Wash	no	AC%	6.0	AC%		
	Corr.	% PASS	AJMF		Corr.	% PASS	AJMF	Target AC	5.9	Target AC	5.9
1.5	0.0	100.0	100.0	1.5	0.0		100.0				
1	0.0	100.0	100.0	1	0.0		100.0	Remark 1			
3/4	0.0	100.0	100.0	3/4	0.0		100.0	Remark 2			
1/2	0.0	100.0	100.0	1/2	0.0		100.0				
3/8	0.0	99.0	99.0	3/8	0.0		99.0	Sub Lot	01		
#4	0.0	64.0	60.0	#4	0.0		60.0	Gyratory Results			
#8	0.0	35.0	34.0	#8	0.0		34.0	Nd	Gmb	Gmm	Voids	FVMA
#16	0.0	24.0	22.0	#16	0.0		22.0	70	2.402	2.481	3.2	14.7
#30	0.0	17.0	15.0	#30	0.0		15.0					
#50	0.0	12.0	10.0	#50	0.0		10.0	Sub Lot	02		
#100	0.0	8.0	7.0	#100	0.0		7.0	Gyratory Results			
#200	0.0	5.7	5.2	#200	0.0		5.2	Nd	Gmb	Gmm	Voids	FVMA
AC	0.0	6.0	5.9	AC				70	2.406	2.484	3.2	
Remarks 1												
Remarks 2								Tested By:		QC Manager		

12-05-2011:09-24-58

S.T.A.T.E. TESTING L.L.C.
570 ROCK ROAD UNIT K
EAST DUNDEE, IL. 60118

MI308 Report Form
Extraction/Marshall Ignition Oven/Gyratory Test

4581
TEST ID NUMBER

County	
Section	
Route	
District	
Contract No.	
Job No.	
Project	
City	

Insp No.
Type Test
Prod No. 4066-06
Mat Code 19524R
Desc 20%Frap /5%Shingles
Sample FR
Date Rec 081109
Auth By

Date Sampled 081109 Sequence No.
Orig. Indent. Total Samp.
Producer Name ROCK ROAD CO.-JANESVILLE
Material Name BITCONC SC N70 D REC
Spec. Title Art Eff Date
Copy Y Resp Loc 91 Lab Code IL Lab Name S.T.A.T.E. TESTING
Start Date 081209 Comp Date 081409 **Results** COMP
Assign Y Mix Formula: Change No Change

Contract No.	Job No.	Contract No.	Job No.

Type Can Be: I, IA, R, N, H, NH, X See manual for which one to use. Oven is GL (Gilson), BT (Thermolyne), TX (Troxler), ST (Soil Test)

TRANS 308
TSEQ: 1 TYPE R OVEN Dry Time 6hr Washed Y District Mix No. **90BITRS05**
ACCUM N EDIT QA TEST/AVG: LOT #

SIEVES	Indiv. Weight	% PASS	Corr. Factor	ADJ % Pass	AJMF	+/- TOL	SPEC RANGE
1 1/2"							
1"							
3/4"							
1/2"	0.0	100.0		100	100		
3/8"	20.9	98.5		99	99		
#4	566.9	59.1		59	60	+/-5	55-65
#8	348.9	34.8		35	34	+/-5	29-39
#16	164.0	23.4		23	22		
#30	94.7	16.8		17	15	+/-4	11-19
#50	71.8	11.8		12	10		
#100	43.6	8.8		9	7		
#200	32.2	6.5		6.5	5.2	+/-1.5	3.7-6.7
Pan Agg	93.7						
Total Agg	1436.7						
BIT	92.9	% AC 6.07		6.1	5.9	+/-0.3	5.6-6.2

Extraction	
P,NF,S	1538.5
Pan & NF	8.9
Sample	1529.6
P,UF,Agg	1445.6
Pan & NF	8.9
Agg Wt	1436.7
Pan & UF	11.4
Pan & NF	8.9
Dust in UF	2.5
Sample	1529.6
Aggregate	1436.7
Bitumen	92.9

Ignition Oven	
Tray, Samp.	
Tray	
Sample	
Wt. Loss	
Agg Wt	
% Loss	
% Calib. Fact	
% Temp Comp	
% Moist	
Corr % AC	
Total Dry Samp	1436.7
Wash Wt	1349.8
Dust in Pan	86.9

Stability must be shown in newtons (pounds x 4.44822) Round to nearest Newton

CAL FAC		% Moist		STAB		BLOW		FLOW		TSR				
Corr Ni:		Gmb:		Nd:	70	Gmb:	2.423	Nip:		Gmb:		N4%		M:
C Factor		Gb:		Gmm:	2.491	Voids:	2.7	Fld Vma:		G/M:	G	TG	SA	

Remarks 6.8g in pan

Inspector S.T.A.T.E. TESTING L.L.C. (Printed Name) Agency Phone/Fax: 847-836-6002

Tested By: G.REED (Printed Name) / (Signature) Agency S.T.A.T.E. TESTING

MI308 REV 3/98

RS05 QA

DATE: August 22 2009

SEQ NO:

Bituminous Mixture Design

Design Number : --------->	ISTHARAS05
Lab preparing the design ? (PP,PL,IL,etc)	IL

Producer Name & Number -->	4066-07	Rock Road
Material Code Number ---->	18436R	SMA SURFACE w/ FRAP CAT 1 SLAG & RAS

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	032CM14	032CM13			004MF01	Cat 1 Fine Slag		RAS	10131
Source (PROD #)	52402-14	52402-14			52202-08	4066-07			1757-05
(NAME)	RME	RME			Linwood	Rock Road		2nd Season	Seneca
(LOC)	Athens Pit	Athens Pit			Linwood	Townline Pit		Dane County	Lemont
						6.2	0.0	23.7	<--%AC in RAP
Total Mix Blend	58.0	17.5	0.0	0.0	4.5	15.0	0.0	5.0	
Total Agg. Blend	59.5	18.0	0.0	0.0	4.6	14.1	0.0	3.8	

100.0 <-Mix Total 100.0

100.0 <-Agg Total

Agg No. / Sieve Size	#1	#1	#2	#3	#4	#6	#6	#6	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100	100	100
3/4"(19.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100		
1/2" (12.5mm)	85.0	97.0	100.0	100.0	100.0	100.0	100.0	99.9	90.5	82-100	91		
3/8" (9.5mm)	50.0	73.0	100.0	100.0	100.0	100.0	100.0	99.6	65.4	65max	65		
No.4 (4.75mm)	4.0	20.0	100.0	100.0	100.0	94.1	100.0	96.4	27.5	20-30	28	23	33
No.8 (2.36mm)	3.0	4.0	100.0	100.0	100.0	62.1	100.0	92.3	19.4	16-24	19	14	24
No.16 (1.18mm)	2.0	3.0	100.0	100.0	100.0	41.8	100.0	74.0	15.1		15		
No.30 (600µm)	2.0	3.0	100.0	100.0	100.0	29.7	100.0	51.8	12.5	12-16	13	9	17
No.50 (300µm)	2.0	3.0	100.0	100.0	100.0	21.1	100.0	43.5	11.0	10-15	11		
No.100 (150µm)	2.0	3.0	100.0	100.0	98.0	14.7	100.0	33.8	9.6		10		
No.200(75µm)	2.0	2.5	100.0	100.0	90.0	10.1	100.0	24.0	8.1	8-10	8.1	6.6	9.6
Bulk Sp Gr	2.890	2.840	1.000	1.000	2.750	2.880	1.000	2.185	2.838				
Apparent Sp Gr	2.924	2.881	1.010	1.010	2.828	2.965	1.010	2.229	2.883				
Absorption, %	0.40	0.50	1.00	1.00	1.00	1.00	1.00	0.90	0.55				
									1.038				

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 2 HOURS @ 305

Dust/AC Ratio	1.40

DATA for N-initial

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	5.0	2.188	2.617	16.4	26.8	38.8	10.39	4.93	0.08	2.844
MIX 2	5.5	2.193	2.593	15.4	27.0	42.8	11.54	5.46	0.04	2.841
MIX 3	6.0	2.227	2.574	13.5	26.2	48.6	12.75	5.94	0.06	2.843
MIX 4	6.5	2.226	2.558	13.0	26.7	51.4	13.69	6.38	0.12	2.848

DATA for N-desig 80

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	5.0	2.461	2.617	6.0	17.6	66.2	11.68	4.93	2.844	0.08
MIX 2	5.5	2.477	2.593	4.5	17.5	74.4	13.03	5.46	2.841	0.04
MIX 3	6.0	2.492	2.574	3.2	17.5	81.7	14.26	5.94	2.843	0.06
MIX 4	6.5	2.500	2.558	2.3	17.6	87.2	15.38	6.38	2.848	0.12

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	80	5.8	2.493	2.583	3.5	17.3	79.7	2.844	2.838	0.93

REMARKS: DRAINDOWN @ 330 F = 0.0% DRAINDOWN @ 355 F = 0.3% NEW AC = 3.7%

Tested by :

Reviewed by :

Final Approval :

RS06 Mix design

S.T.A.T.E. TESTING, L.L.C.
570 Rock Road, Unit K
East Dundee, IL 60118
Tele: 847-836-6002
Fax: 847-836-6342

MI308 Report Form
Extraction/Marshall Ignition Oven/Gyratory Test

4715
TEST ID NUMBER

County	
Section	
Route	
District	
Contract No.	I-05-5447
Job No.	
Project	I-90
City	

Insp No. 910000000 | Date Sampled 100809 | Sequence No. SPLIT
Type Test IND | Orig. Indent. | Total Samp. 1
Prod No. 4066-07 | Producer Name Rock Road Janesville,WI
Mat Code 18436R | Material Name SMA SURF. w/ FRAP & RAS
Desc | Spec. Title | Art | Eff Date
Sample FR TK | **Copy** Y | Resp Loc 91 | Lab Code IL | Lab Name S.T.A.T.E. Testing
Date Rec 100809 | Start Date 100809 | Comp Date 102009 | **Results** COMP
Auth By | **Assign** Y | Mix Formula: Change | No Change

Contract No.	Job No.	Contract No.	Job No.
I-05-5447			

Type Can Be: I, IA, R, N, H, NH, X See manual for which one to use. Oven is GL (Gilson), BT (Thermolyne), TX (Troxler), ST (Soil Test)

TRANS 308
TSEQ: 1 | TYPE R | OVEN | Dry Time 6 Hrs. | Washed Y | District Mix No. 90BITRS06
ACCUM N | EDIT | QA Y | TEST/AVG: T | LOT # 001

SIEVES	Indiv. Weight	% PASS	Corr. Factor	ADJ % Pass	AJMF	+/- TOL	SPEC RANGE
37.5							
25							
19	0.0	100.0		**100**	**100**		
12.5	144.3	90.5		**90**	**91**		
9.5	346.1	67.6		**68**	**65**		
4.75	579.0	29.4		**29**	**28**		
2.36	123.7	21.2		**21**	**19**		
1.18	62.8	17.1		**17**	**15**		
0.6	41.0	14.4		**14**	**13**		
0.3	31.4	12.3		**12**	**11**		
0.15	23.7	10.7		**11**	**10**		
0.075	29.3	8.8		**8.8**	**8.1**		
Pan Agg	133.0						
Total Agg	1514.3						
BIT	94.5	% AC 5.87		**5.9**	**5.8**		

Extraction		Ignition Oven	
P,NF,S	1617.9	Tray, Samp.	
Pan & NF	9.1	Tray	
Sample	1608.8	Sample	
		Wt. Loss	
P,UF,Agg	1523.4	Agg Wt	
Pan & NF	9.1		
Agg Wt	1514.3	% Loss	
		% Calib. Fact	
Pan & UF	12.8	% Temp Comp	
Pan & NF	9.1	% Moist	
Dust in UF	3.7	Corr % AC	
Sample	1608.8	Total Dry Samp	
Aggregate	1514.3	Wash Wt	
Bitumen	94.5	Dust in Pan	

Stability must be shown in newtons (pounds x 4.44822) Round to nearest Newton

CAL FAC		% Moist		STAB		BLOW		FLOW		TSR				
Corr Ni:		Gmb:		Nd:	**80**	Gmb:	**2.515**	Nip:		Gmb:		N4%		M:
C Factor		Gb:		Gmm:	**2.605**	Voids:	**3.5**	Fld Vma:	**16.6**	G/M:	**G**	TG	**SA**	

Remarks

Inspector Matt Galloy (Printed Name) Agency S.T.A.T.E. Testing Phone/Fax: (847) 836-6002

Tested By: Matt Galloy (Printed Name) / Matt Galloy (Signature) Agency S.T.A.T.E. Testing

RS06 QA

MI308 REV 3/98

TEST MIX SHINGLE TEST RESULTS

PROJECT	5543												
LOCATION	#5543 6" SHOULDERS												
APPROXIMATE STA#	763+00 - 655+00												
TOTAL DAILY TONNAGE													
MIX DESIGN NUMBER	90BITS04				90BITS02			90BITS03			90BITS01		
RESEARCH MIX TYPE	25% FRAP/5% RAS BIT BASE				35% FRAP/5% RAS BIT BASE			45% FRAP/5% RAS BIT BASE			35% FRAP/5% RAS N50 BCS		
VOLUMETRIC PROPERTIES	TARGET	000-01	001-01	001-02	TARGET	000-01	001-01	TARGET	000-01	001-01	TARGET	000-01	001-01
DATE		7/28/09	7/29/09	7/29/09		7/28/09	7/29/09		7/28/09	7/29/09		7/28/09	7/30/09
Gmm	2.497	2.490	2.487	2.478	2.503	2.503	2.495	2.508	2.505	2.503	2.505	2.486	
Gmb	2.447	2.405	2.446	2.438	2.448	2.446	2.441	2.458	2.451	2.449	2.429	2.427	
Va	2.0	3.4	1.6	1.6	2.0	2.3	2.2	2.0	2.2	2.2	3.0	2.4	

ROCK ROAD CO's
QC Results
RS01-04

DATE: 19-Feb-09

SEQ NO:

Bituminous Mixture Design

Design Number : --------> 32BITI0128

Lab preparing the design ? (PP,PL,IL,etc) PP

Producer Name & Number --> 4066-07 ROCK ROAD COMPANIES, INC. - JANESVILLE / BELOIT

Material Code Number ----> 19512R BIT CONC BINDER CSE REC N50 19.0mm

90BIT0914

BIT CONC BINDER CRSE REC N50 19.0mm

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	042CM11	032CM16	031CM16	039FM20	004MF01	Cat2 Fine	Cat2 Coarse		PG58-22
Source (PROD #)	52402-15	52402-15	52400-26	52400-026	52202-08	4066-07	4066-07		5627-13
(NAME)	Rock Road	Rock Road	Rock Road	Rock Road	Linwood	Rock Road	Rock Road		BP Amoco
(LOC)	Indergand	Indergand	Townline Pit	Townline Pit	Linwood	Townline Pit	Townline Pit		Bartlett, IL
						6.0	3.3	0.0	<--%AC in RAP
Total Mix Blend	26.5	8.0	12.5	12.0	1.0	25.0	15.0	0.0	
Total Agg. Blend	27.2	8.3	12.9	12.3	1.0	23.7	14.6	0.0	

100.0 <-Agg Total

Agg No. / Sieve Size	#1	#1	#2	#3	#4	#6	#6	#6	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100		
3/4"(19.0mm)	89.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.0	82-100	97		
1/2" (12.5mm)	44.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	84.8	50-85	85		
3/8" (9.5mm)	21.0	99.0	98.0	100.0	100.0	100.0	93.0	100.0	77.1		77		
No.4 (4.75mm)	2.0	25.0	29.0	100.0	100.0	94.0	35.0	0.0	47.0	24-50	47	42	52
No.8 (2.36mm)	2.0	3.0	2.0	77.0	100.0	70.0	20.0	0.0	31.0	20-36	31	26	36
No.16 (1.18mm)	2.0	3.0	2.0	45.0	100.0	52.0	16.0	0.0	22.3	10-25	22		
No.30 (600µm)	2.0	3.0	2.0	29.0	100.0	39.0	13.0	0.0	16.8		17	13	21
No.50 (300µm)	2.0	3.0	2.0	17.0	100.0	23.0	9.0	0.0	10.9	4-12	11		
No.100 (150µm)	2.0	3.0	2.0	8.0	92.0	15.0	7.0	0.0	7.5	3-9	8		
No.200(75µm)	1.8	2.5	1.6	4.2	78.0	10.9	5.0	0.0	5.5	3-6	5.5	4.0	7.0
Bulk Sp Gr	2.617	2.596	2.667	2.664	2.750	2.660	2.660	1.000	2.645				
Apparent Sp Gr	2.805	2.776	2.802	2.759	2.750	2.733	2.733	1.000	2.768				
Absorption, %	2.40	3.00	1.8	1.30	1.00	1.00	1.00	0.00	1.69				
									1.031				

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295 F

Dust/AC Ratio 1.00

DATA for N-initial 6

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	4.5	2.165	2.535	14.6	21.8	33.2	7.25	3.45	1.10	2.722
MIX 2	5.0	2.179	2.514	13.3	21.7	38.7	8.41	3.98	1.07	2.720
MIX 3	5.5	2.188	2.496	12.3	21.8	43.4	9.49	4.47	1.09	2.721
MIX 4	6.0	2.192	2.477	11.5	22.1	48.0	10.59	4.98	1.08	2.721

DATA for N-desig 50

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	4.5	2.398	2.535	5.4	13.4	59.9	8.02	3.45	2.722	1.10
MIX 2	5.0	2.416	2.514	3.9	13.2	70.6	9.33	3.98	2.720	1.07
MIX 3	5.5	2.423	2.496	2.9	13.4	78.2	10.51	4.47	2.721	1.09
MIX 4	6.0	2.432	2.477	1.8	13.6	86.7	11.75	4.98	2.721	1.08

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	50	5.5	2.421	2.496	3.0	13.5	77.8	2.721	2.645	0.86

REMARKS:

MIX DESIGN CONTROL BINDER MIX 90BIT0914

Bituminous Mixture Design

DATE: 19-Feb-09

Design Number : ---------> 32BIT0127

SEQ NO:

Lab preparing the design ? (PP,PLJL,etc) PP

90BIT0907

Producer Name & Number --> 4066-07 ROCK ROAD COMPANIES, INC. - JANESVILLE / BELOIT

Material Code Number ----> 19602R HMA Base Course 19.0mm, N50

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	042CM11	032CM16	031CM16	037FM01	004MF01	Cat2 Fine	Cat2 Coarse		PG58-28
Source (PROD #)	52402-15	52402-15	52400-26	52400-026	5Z202-08	4066-07	4066-07		5627-13
(NAME)	Rock Road	Rock Road	Rock Road	Rock Road	Linwood	Rock Road	Rock Road		BP Amoco
(LOC)	Indergand	Indergand	Townline Pit	Townline Pit	Linwood	Townline Pit	Townline Pit		Bartlett, IL
						6.0	3.0	0.0	<--%AC in RAP
Total Mix Blend	26.0	7.0	8.0	8.0	1.0	27.0	23.0	0.0	100.0 <-Mix Total 100.0
Total Agg. Blend	26.9	7.3	8.3	8.3	1.0	25.7	22.5	0.0	100.0 <-Agg Total

Agg No.	#1	#1	#2	#3	#4	#5	#6	#8	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
Sieve Size													
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100		
3/4"(19.0mm)	89.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.0	82-100	97		
1/2" (12.5mm)	44.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	84.9	50-85	85		
3/8" (9.5mm)	21.0	99.0	98.0	100.0	100.0	100.0	93.0	100.0	76.9		77		
No.4 (4.75mm)	2.0	25.0	29.0	97.0	100.0	94.0	36.0	0.0	46.6	24-50	46	41	51
No.8 (2.36mm)	2.0	3.0	2.0	83.0	100.0	70.0	20.0	0.0	31.3	20-36	31	26	36
No.16 (1.18mm)	2.0	3.0	2.0	69.0	100.0	52.0	16.0	0.0	24.6	16-26	26		
No.30 (600µm)	2.0	3.0	2.0	51.0	100.0	39.0	13.0	0.0	19.1		19	15	23
No.50 (300µm)	2.0	3.0	2.0	17.0	100.0	23.0	9.0	0.0	11.3	4-12	11		
No.100 (150µm)	2.0	3.0	2.0	2.0	92.0	15.0	7.0	0.0	7.4	3-9	7		
No.200(75µm)	1.8	2.5	1.6	0.0	78.0	10.9	5.0	0.0	5.6	3-6	5.6	4.1	7.1

Bulk Sp Gr	2.617	2.595	2.667	2.613	2.750	2.650	2.660	1.000	2.641
Apparent Sp Gr	2.805	2.778	2.802	2.688	2.750	2.733	2.733	1.000	2.757
Absorption, %	2.40	3.00	1.80	1.10	1.00	1.00	1.00	0.00	1.60
									1.031

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295

Dust/AC Ratio 1.10

DATA for N-initis 6

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	4.5	2.243	2.529	11.3	18.9	40.1	7.59	3.49	1.06	2.715
MIX 2	5.0	2.241	2.509	10.7	19.4	44.9	8.70	4.00	1.05	2.714
MIX 3	5.5	2.241	2.492	10.1	19.8	49.1	9.73	4.48	1.08	2.716
MIX 4	6.0	2.259	2.472	8.2	19.3	57.3	11.04	5.02	1.05	2.714

DATA for N-desir 50

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	4.5	2.441	2.529	3.5	11.7	70.3	8.25	3.49	2.715	1.06
MIX 2	5.0	2.456	2.509	2.1	11.6	81.9	9.53	4.00	2.714	1.05
MIX 3	5.5	2.465	2.492	1.1	11.8	90.9	10.71	4.48	2.716	1.08
MIX 4	6.0	2.466	2.472	0.2	12.2	98.1	12.00	5.02	2.714	1.05

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: ---->	50	5.0	2.460	2.510	2.0	11.5	82.7	2.715	2.641	0.84

REMARKS:

Tested by : Brent Miller

Reviewed by : _____

Final Approval : _____

MIX DESIGN CONTROL BASE COURSE MIX 90BIT0907

Bituminous Mixture Design

DATE: 25-Apr-08

Design Number : → 32BITM09

SEQ NO:

Lab preparing the design ? (PP,PL,IL,etc) PP

Producer Name & Number → 4066-07 ROCK ROAD COMPANIES, INC. - JANESVILLE / BELOIT

Material Code Number → 19524R HMA N70 Surface CSE REC 9.5mm

90BIT0823

Agg No.	#1	#2	#3	#4	#5	RAP #1	RAP #2	RAP #3	ASPHALT
Size	831CM16		039FM20		004MFD1	Cat2 Fine	Cat2 Coarse		PG58-22
Source (PROD #)	52400-26		52400-026		52202-08	4066-08	4066-07		5627-13
(NAME)	Rock Road		Rock Road		Linwood	RR / Terrell	Rock Road		BP Amoco
(LOC)	Townline Pit		Townline Pit		Linwood	Irene Quarry	Townline Pit		Bartlett, IL
Total Mix Blend	39.0	0.0	35.0	0.0	1.0	6.4	3.8	0.0	<--%AC in RAP
Total Agg. Blend	39.7	0.0	35.6	0.0	1.0	17.0	8.0	0.0	
						16.0	7.7	0.0	

100.0 <-Mix Total 100.0

100.0 <-Agg Total

Agg No. Sieve Size	#1	#1	#2	#3	#4	#5	#5	#5	Aggregate Blend	Mixture Composition Specification	FORMULA	FORMULA RANGE Min	FORMULA RANGE Max
1" (25.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100		
3/4"(19.0mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100		
1/2" (12.5mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100		
3/8" (9.5mm)	97.0	100.0	100.0	100.0	100.0	100.0	98.8	100.0	98.7	90-100	99		
No.4 (4.76mm)	23.0	100.0	98.0	100.0	100.0	98.1	58.2	0.0	64.6	28-65	65	50	70
No.8 (2.36mm)	3.0	100.0	56.0	100.0	100.0	67.4	20.4	0.0	38.1	20-48	38	33	43
No.16 (1.18mm)	2.0	100.0	36.0	100.0	100.0	45.6	16.3	0.0	23.2	10-32	23		
No.30 (600µm)	2.0	100.0	21.0	100.0	100.0	32.6	12.9	0.0	16.5		15	11	19
No.50 (300µm)	2.0	100.0	12.0	100.0	100.0	21.3	9.0	0.0	10.2	4-15	10		
No.100 (150µm)	2.0	100.0	7.0	100.0	92.0	14.9	6.7	0.0	7.1	3-10	7		
No.200(75µm)	1.5	100.0	4.0	100.0	78.0	10.8	5.0	0.0	4.9	4-6	4.9	3.4	6.4
Bulk Sp Gr	2.673	1.000	2.678	1.000	2.750	2.660	2.660	1.000	2.672				
Apparent Sp Gr	2.786	1.000	2.782	1.000	2.750	2.733	2.733	1.000	2.775				
Absorption, %	1.65	1.00	1.52	1.00	1.00	1.80	1.00	0.00	1.44				
									1.031				

SUMMARY OF SUPERPAVE GYRATORY DESIGN DATA

MIXTURE AGED 1 HOURS @ 295

Dust/AC Ratio 0.80

MIX DESIGN CONTROLSURFACE MIX N70 90BIT0823

DATA for N-initial 7

	AC, %MIX	(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Pba	Gse
MIX 1	5.0	2.122	2.539	16.4	24.6	33.2	8.15	3.96	1.09	2.750
MIX 2	5.5	2.138	2.519	15.1	24.4	38.0	9.27	4.47	1.09	2.750
MIX 3	6.0	2.138	2.500	14.5	24.8	41.5	10.33	4.98	1.09	2.750
MIX 4	6.5	2.146	2.481	13.8	24.9	45.7	11.40	5.48	1.09	2.750

DATA for N-design 70

		(Gmb)	(Gmm)	(Pa)	VMA	VFA	Vbe	Pbe	Gse	Pba
MIX 1	5.0	2.388	2.539	5.9	15.1	60.8	9.18	3.96	2.750	1.09
MIX 2	5.5	2.407	2.519	4.4	14.9	70.2	10.44	4.47	2.750	1.09
MIX 3	6.0	2.413	2.500	3.5	15.1	77.1	11.66	4.98	2.750	1.09
MIX 4	6.5	2.420	2.481	2.5	15.3	83.8	12.86	5.48	2.750	1.09

	NUMBER OF GYRATIONS	%AC	Gmb	Gmm	%VOIDS (Pa) Target	VMA	VFA	Gse	Gsb	TSR
OPTIMUM DESIGN DATA @Ndes: →	70	5.7	2.411	2.511	4.0	14.9	73.2	2.750	2.672	0.87

REMARKS:

Tested by : Brett Nehl

Reviewed by :

Final Approval :

2nd SEASON recycling

TRANSMITTAL

TO: Brett Williams

608-635-365-8146

DATE: 3/13/09

TIME:

PHONE: 608-235-0398

FAX:

OF PAGES: 2

FROM: BRIAN Mullen

RE:

CC:

MESSAGE: Results

2nd Season Recycling, LLC - PO Box 620856, Middleton, WI 53562
Phone: 608/848-4400; Fax: 608/848-1378

Rock Road Co. ,Inc.

Deposit Ident.: Verona, WI
Producer: *2nd Season Recycling*
Start Date: 03/20/09
Finish Date:
Material: Shingles RAS

Project: VARIOUS IDOT
Contract #: *VARIOUS IDOT*
Spec: IDOT
RR Mat.Code: Shingles RAS

		AC	3/4	1/2	3/8	No.4	No.8	No.16	No.30	No.50	No.100	No.200
Current Running Ave.	Ave.	23.9	100	100	99	96	92	75	55	47	37	26.2
2nd Season Recycling	Targets	23.3	100	100	100	98	95	75	51	43		25.2

	Date	Test Type	Test ID	% AC	3/4	1/2	3/8	No.4	No.8	No.16	No.30	No.50	No.100	No.200
1	03/20/09		001-01	24.6	100.0	99.8	99.7	97.1	94.3	77.1	55.6	48.0	38.8	26.9
2	03/24/09		002-01	23.1	100.0	99.6	98.7	94.1	90.5	73.8	54.3	46.5	35.5	25.5
3														
4														
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19														
20														
			Ave	23.9	100.0	99.7	99.2	95.6	92.4	75.5	54.9	47.3	37.2	26.2

RAS Extraction