US 63, Phelps County
MO
Core No. 1

Extraction Date: November 11, 2012

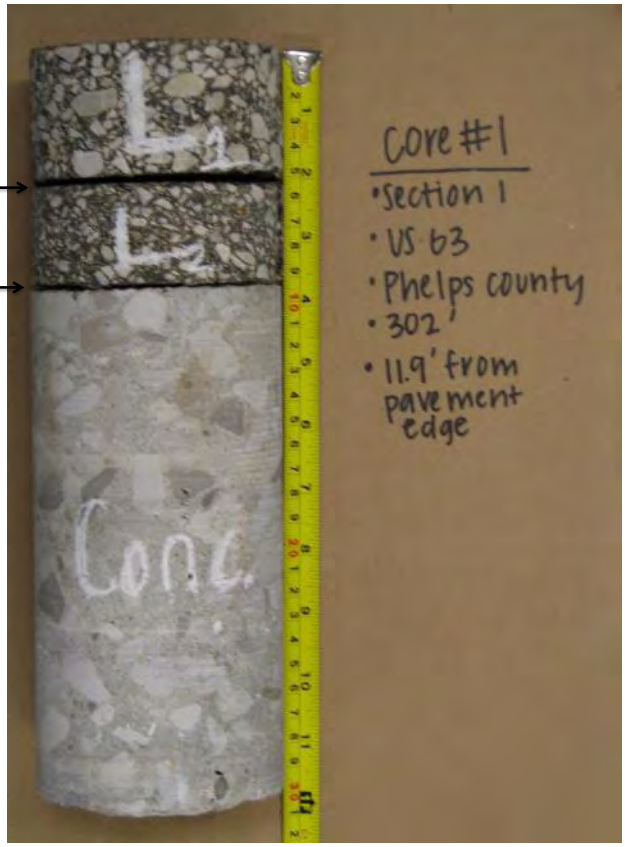
Core No. 1	
Distance from beginning (ft)	302
Distance from pavementedge (ft)	11.9

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	-	1 1/2"	No Stripping	-
	2	-	2"	No Stripping	-
	Concrete	-	7 3/4"	-	-
		Total Thickness	11 1/4"		

Note: No breaking load because it was done at MoDot for demostration

Z

Y



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	-	-
Y	-	-

Note: No breaking load because it was done at MoDot for demostration

Photograph No. 1
Picture of Core No. 1 extracted from pavement.

Photograph No. 2

Picture of Core No. 1 split open to evaluate the degree of stripping occurring.

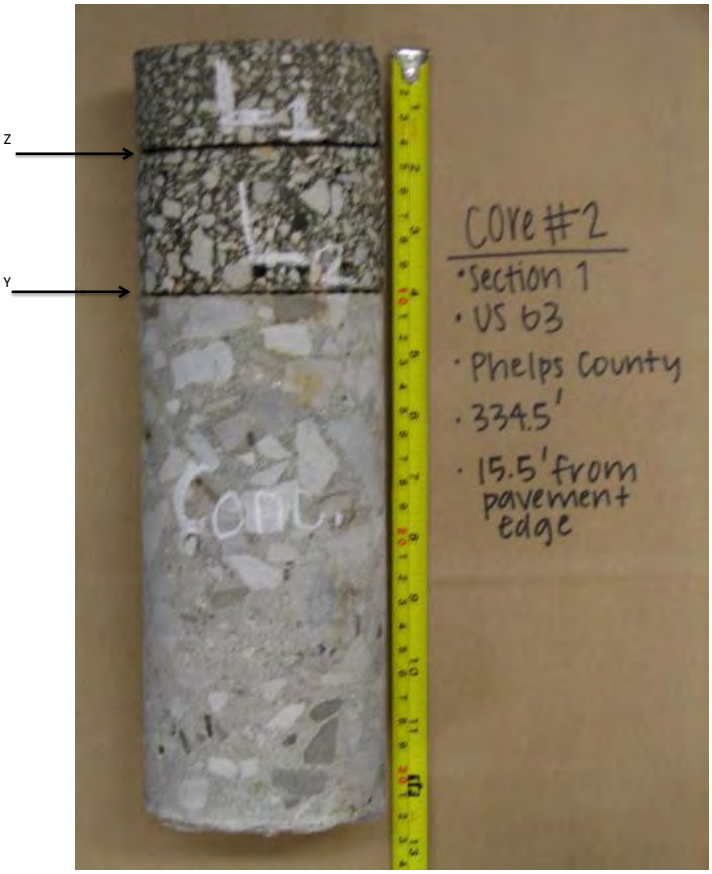
US 63, Phelps County
MO
Core No. 2

Extraction Date: November 11, 2012

Core No. 2	
Distance from beginning (ft)	334.5
Distance from pavement edge (ft)	15.5

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
2	A	-	1 1/2"	No Stripping	-
	B	-	2 1/4"	No Stripping	-
	Concrete	-	8"	-	-
		Total Thickness	11 3/4"		

Note: No breaking load because it was done at MoDot for demostration



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Note: No breaking load because it was done at MoDot for demostration

Photograph No. 3
Picture of Core No. 2 extracted from pavement.

Photograph No. 4
Picture of Core No. 2 split open to evaluate the degree of stripping occurring.

US 63, Phelps County
MO
Core No. 3

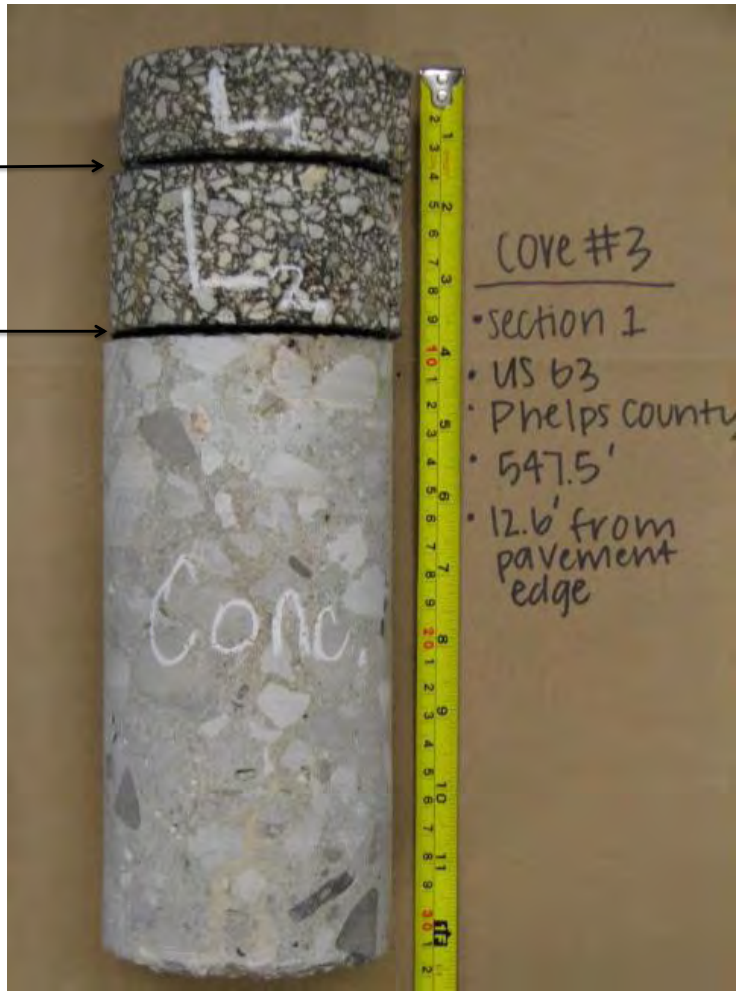
Extraction Date: November 11, 2012

Core No.	3
Distance from beginning (ft)	547.5
Distance from pavement edge (ft)	12.6

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
3	1	-	1 3/8"	Low	1100
	2	-	2"	Low	1712
	Concrete	-	8 1/8"	-	-
		Total Thickness	11 1/2"		

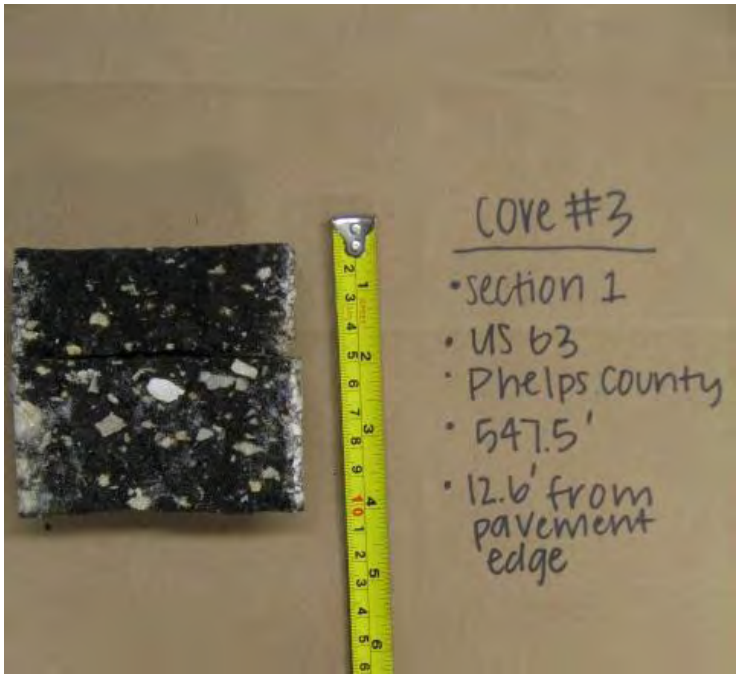
Z

Y



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	1400
Y	Weak Bond	250

Photograph No. 5
Picture of Core No. 3 extracted from pavement.



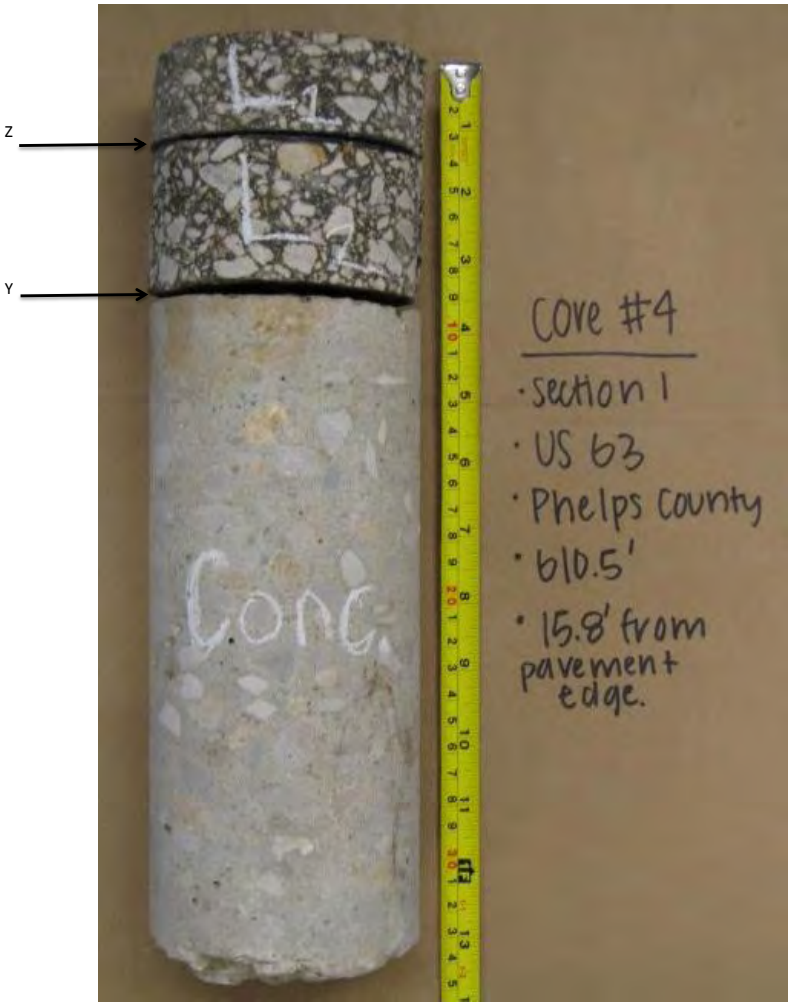
Photograph No. 6
Picture of Core No. 3 split open to evaluate the degree of stripping occurring.

US 63, Phelps County
MO
Core No. 4

Extraction Date: November 11, 2012

Core No.	4
Distance from beginning (ft)	610.5
Distance from pavement edge (ft)	15.8

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	-	1 3/8"	Low	1101
	2	-	2"	Low	180
	Concrete	-	9"	-	-
		Total Thickness	12 3/8"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	1430
Y	Debonded	-

Photograph No. 7
Picture of Core No. 4 extracted from pavement.

Photograph No. 8

Picture of Core No. 4 split open to evaluate the degree of stripping occurring.

US 63, Phelps County
MO
Core No. 5

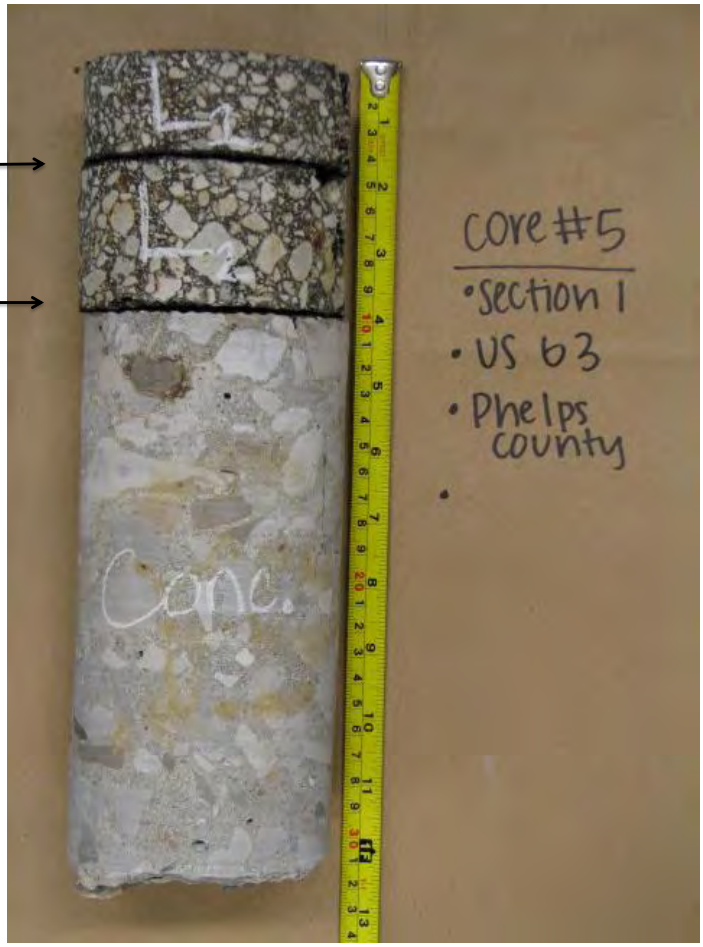
Extraction Date: November 11, 2012

Core No.	5
Distance from beginning (ft)	-
Distance from pavement edge (ft)	-

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Effort (lbs)
5	A	-	1 3/8"	Low	1769
	B	-	2"	Low	1125
	Concrete	-	7 7/8"	-	-
		Total Thickness	11 1/4"		

Z

Y



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Well Bonded	1305
Y	Well Bonded	1534

Photograph No. 9
Picture of Core No. 5 extracted from pavement.

Photograph No. 10
Picture of Core No. 5 split open to evaluate the degree of stripping occurring.

US 63, Phelps County
MO
Core No. 6

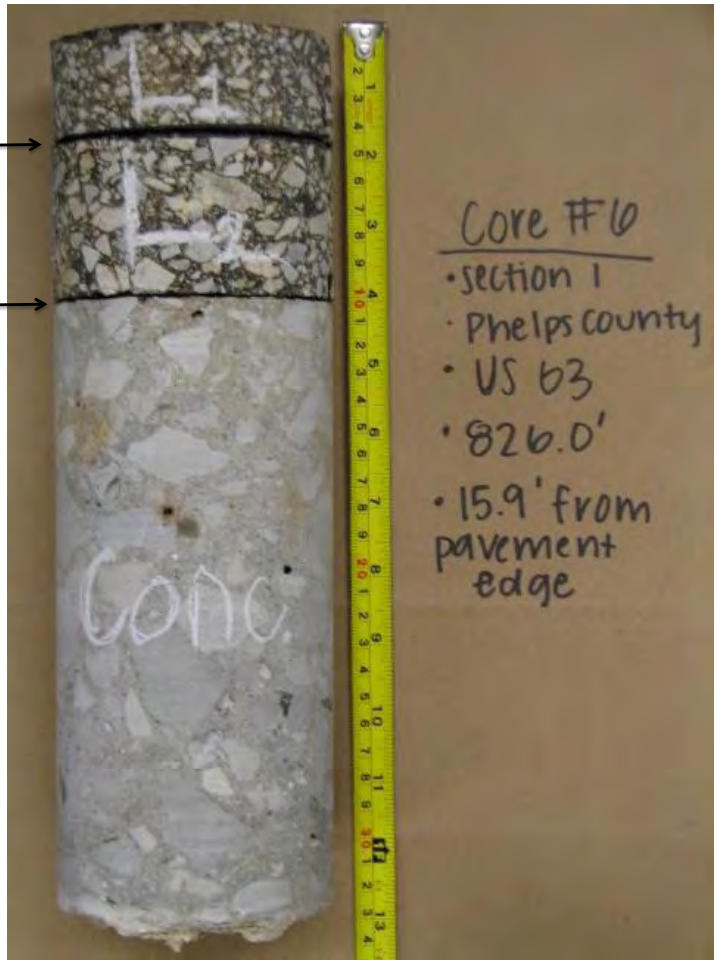
Extraction Date: November 11, 2012

Core No.	6
Distance from beginning (ft)	826
Distance from pavement edge (ft)	15.9

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Break Load (lbs)
6	1	-	1 3/8"	Low	1239
	2	-	2"	Low	2043
	Concrete	-	9 1/8"	-	-
		Total Thickness	12 1/2"		

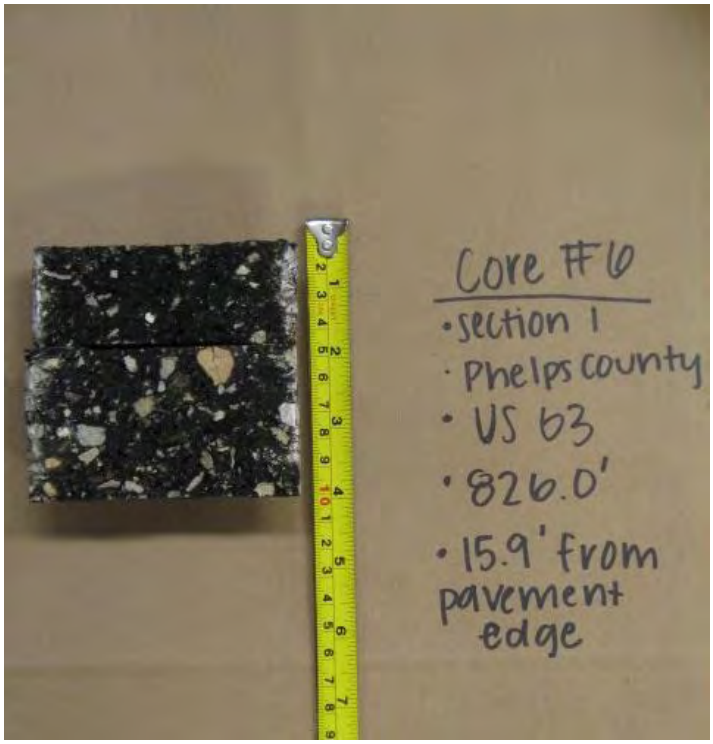
Z

Y



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	1033
Y	Well Bonded	840

Photograph No. 11
Picture of Core No. 6 extracted from pavement.



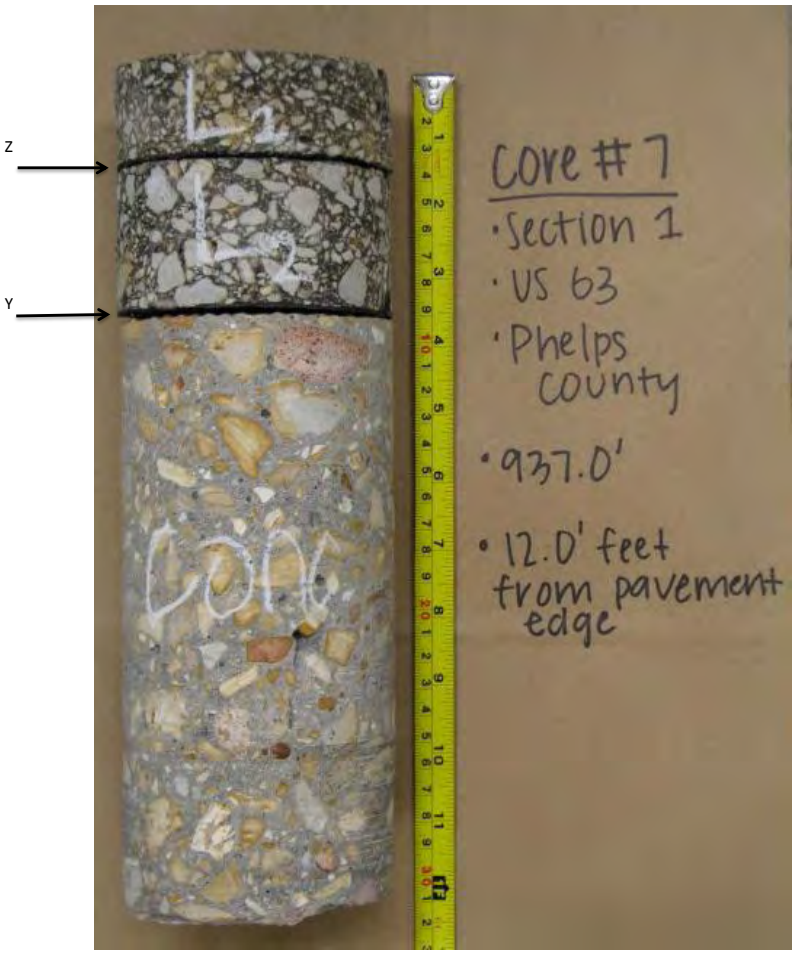
Photograph No. 12
Picture of Core No. 6 split open to evaluate the degree of stripping occurring.

US 63, Phelps County
MO
Core No. 7

Extraction Date: November 11, 2012

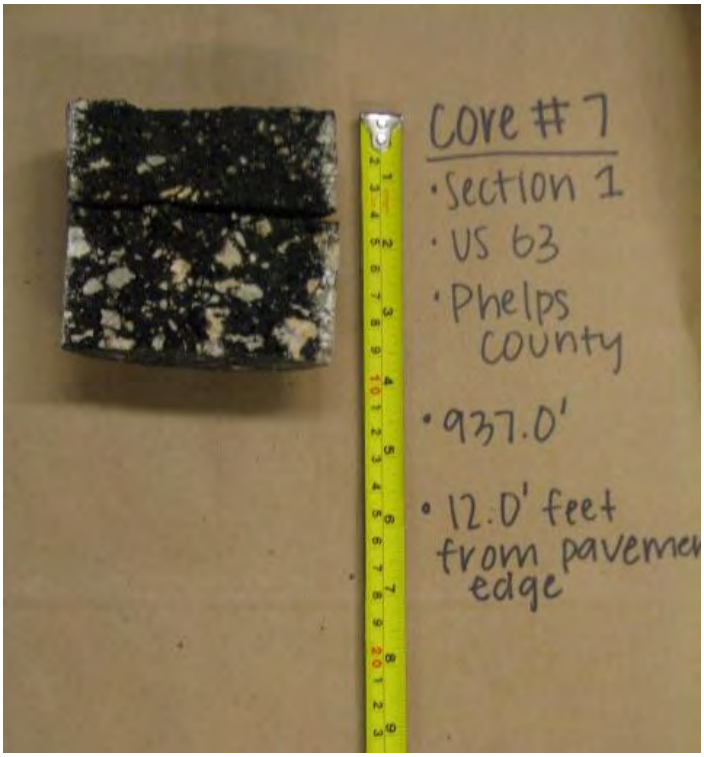
Core No.	7
Distance from beginning (ft)	937
Distance from pavement edge (ft)	12.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
7	A	-	1 3/8"	Low	1362
	B	-	2"	Low	1977 psi
	Concrete	-	8 1/8"	-	-
		Total Thickness	11 1/2"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	1958
Y	Debonded	-

Photograph No. 13
Picture of Core No. 7 extracted from pavement.



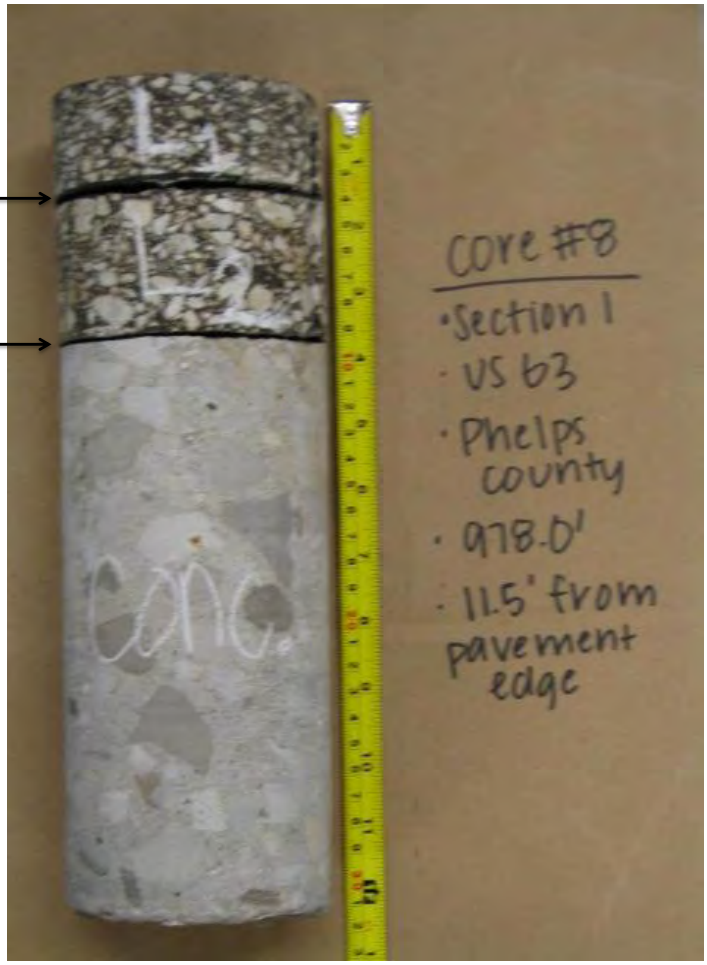
Photograph No. 14
Picture of Core No. 7 split open to evaluate the degree of stripping occurring.

US 63, Phelps County
MO
Core No. 8

Extraction Date: November 11, 2012

Core No.	8
Distance from beginning (ft)	978
Distance from pavement edge (ft)	11.5

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
8	A	-	1 1/2"	Low	1173
	B	-	2"	Low	2080
	Concrete	-	8"	-	-
		Total Thickness	11 1/2"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	1367
Y	Well Bonded	1421

Photograph No. 15
Picture of Core No. 8 extracted from pavement.

Photograph No. 16
Picture of Core No. 8 split open to evaluate the degree of stripping occurring.

Core 2

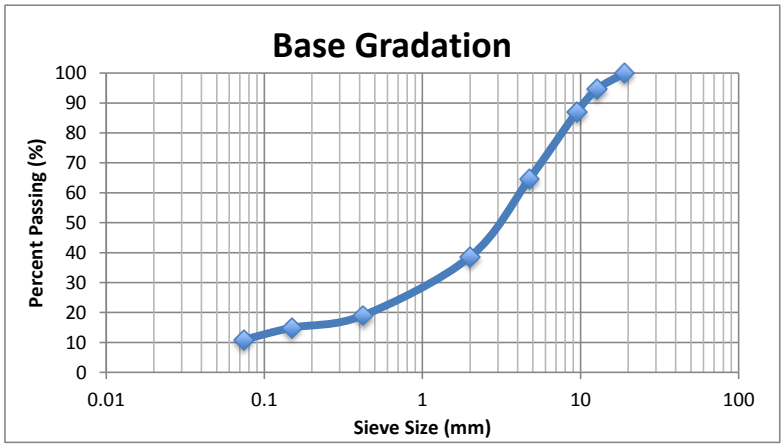
Base

Visual Classification: US 63, Phelps County, tan, damp, well graded material, subangular particles

Moisture Content	
Initial Sample + Pan (g)	1995.4
Weight of Pan (g)	403.5
Initial Weight	1591.9
Dry Weight + Pan	1859.9
Dry Weight	1456.4
Water content	9%

Gradation

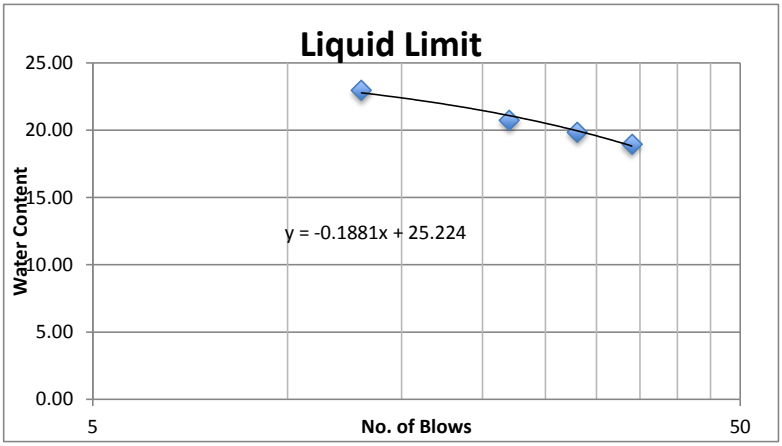
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	29.7	5.4	94.6
3/8"	9.51	41.3	7.5	87.1
No. 4	4.76	123.4	22.4	64.7
No. 10	2	143.4	26.1	38.6
No. 40	0.42	107.9	19.6	19
No. 100	0.149	22.8	4.1	14.9
No. 200	0.074	21.8	4	10.9
Pan		59.7	10.9	0



D_{10} = 0
D_{30} = 1.2mm
D_{60} = 4mm
C_u = -
C_c = -
% Gravel= 35.3
% Sand= 53.8
% Fines= 10.9
Unified Soil Classification: -

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	29.8	26.2	32.4	29.4
Mass of dry soil + can (g)	26.6	23.9	28.9	26
Mass of Can (g)	11.2	11.8	11.3	11.2
Mass of dry soil (g)	15.4	12.1	17.6	14.8
Mass of wet soil (g)	18.6	14.4	21.1	18.2
Water Content (%)	20.78	19.01	19.89	22.97
No. of Blows	22	34	28	13



Liquid Limit=	20.5
Plastic Limit=	*not enough soil to run test
Plasticity Index=	-

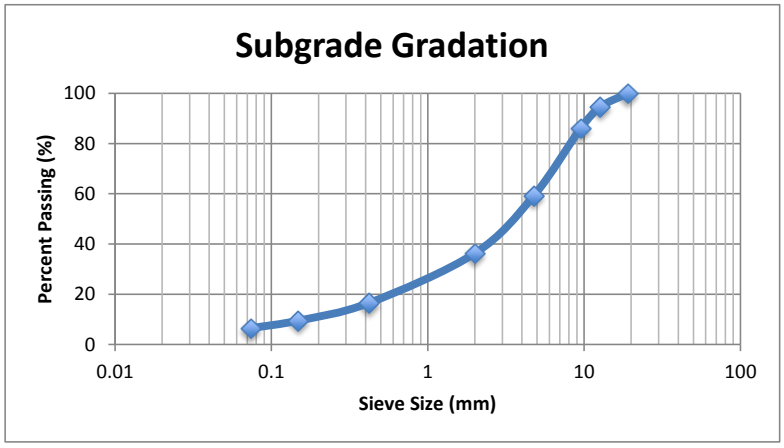
Subgrade

Visual Classification: US 63, Phelps County, dark brown with sandy coating on clumps , very clumped together

Moisture Content	
Initial Sample + Pan (g)	3195.6
Weight of Pan (g)	771.5
Initial Weight	2424.1
Dry Weight + Pan	2755.9
Dry Weight	1984.4
Water content	22%

Gradation

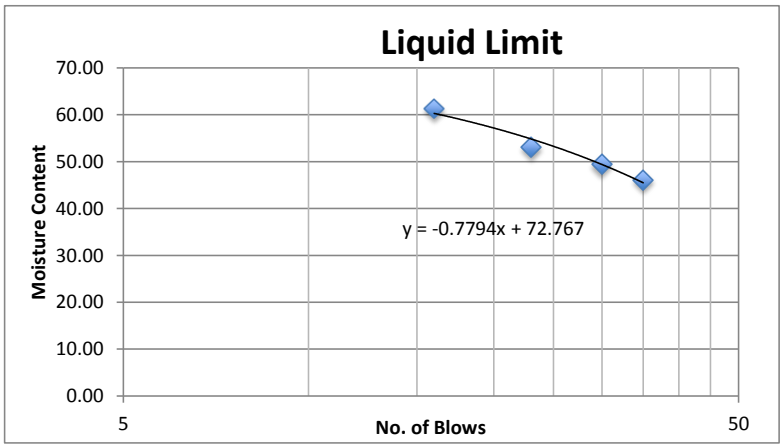
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	34	5.4	94.6
3/8"	9.51	53.9	8.5	86.1
No. 4	4.76	170	26.9	59.2
No. 10	2	144.8	22.9	36.3
No. 40	0.42	125.6	19.8	16.5
No. 100	0.149	44.4	7	9.5
No. 200	0.074	19.3	3	6.5
Pan		41.1	6.5	0



D_{10} = 0.149mm
D_{30} = 1.3mm
D_{60} = 4.78mm
C_u = 32.08
C_c = 2.37
% Gravel= 40.8
% Sand= 52.7
% Fines= 6.5
Unified Soil Classification: SW-SC- Well-graded sand with clay & gravel

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	34.5	27	29.2	27.5
Mass of dry soil + can (g)	28	22.7	23.2	21.3
Mass of Can (g)	13.9	14	11.9	11.2
Mass of dry soil (g)	14.1	8.7	11.3	10.1
Mass of wet soil (g)	20.6	13	17.3	16.3
Water Content (%)	46.10	49.43	53.10	61.39
No. of Blows	35	30	23	16



Liquid Limit=	53.3

Plastic Limit		
Mass of wet soil + can (g)	18.1	15.6
Mass of dry soil + can (g)	17.4	14.8
Mass of Can (g)	14.2	11.1
Mass of dry soil (g)	3.2	3.7
Mass of wet soil (g)	3.9	4.5
Water Content (%)	4.0	5.4

Plastic Limit=	4.7

Plasticity Index=	48.6

Core 4

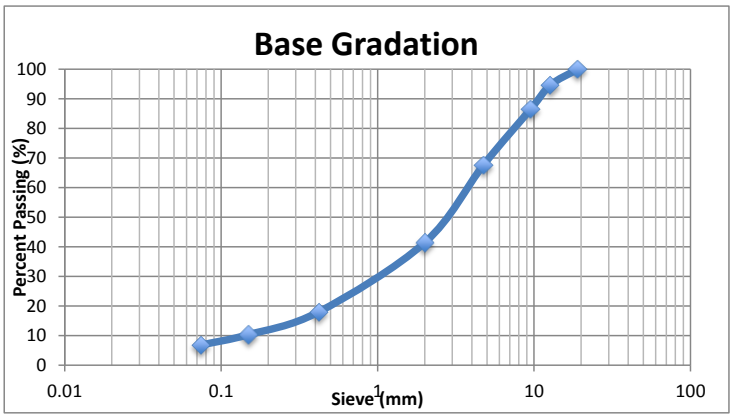
Base

Visual Classification: US 63, Phelps County, light brown, muddy/clayey, poorly graded

Moisture Content	
Initial Sample + Pan (g)	2153
Weight of Pan (g)	404
Initial Weight	1749
Dry Weight + Pan	1878
Dry Weight	1474
Water content	18.66

Gradation

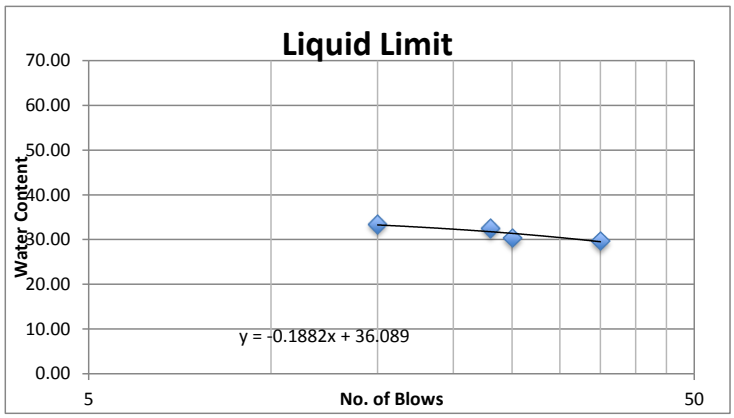
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	27.5	5.4	94.6
3/8"	9.51	41.4	8.1	86.5
No. 4	4.76	96.4	18.8	67.7
No. 10	2	134.8	26.3	41.4
No. 40	0.42	120	23.4	18
No. 100	0.149	39.5	7.7	10.3
No. 200	0.074	18.2	3.5	6.8
Pan		35	6.8	0



D_{10} = 0.12mm
D_{30} = 1mm
D_{60} = 2.9mm
C_u = 24.17
C_c = 2.87
% Gravel= 32.3
% Sand= 60.9
% Fines= 6.8
Unified Soil Classification: SW-SC - Well-graded sand with clay and gravel

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	35	34.6	31	34
Mass of dry soil + can (g)	30.2	29.4	26.5	28.9
Mass of Can (g)	14.4	11.9	13	13.2
Mass of dry soil (g)	15.8	17.5	13.5	15.7
Mass of wet soil (g)	20.6	22.7	18	20.8
Water Content (%)	30.38	29.71	33.33	32.48
No. of Blows	25	35	15	23



Liquid Limit=	31.4

Plastic Limit		
Mass of wet soil + can (g)	23.6	22
Mass of dry soil + can (g)	22.2	20.8
Mass of Can (g)	14.1	14
Mass of dry soil (g)	9.5	8
Mass of wet soil (g)	8.1	6.8
Water Content (%)	6.3	5.8

Plastic Limit=	6

Plasticity Index=	25.4

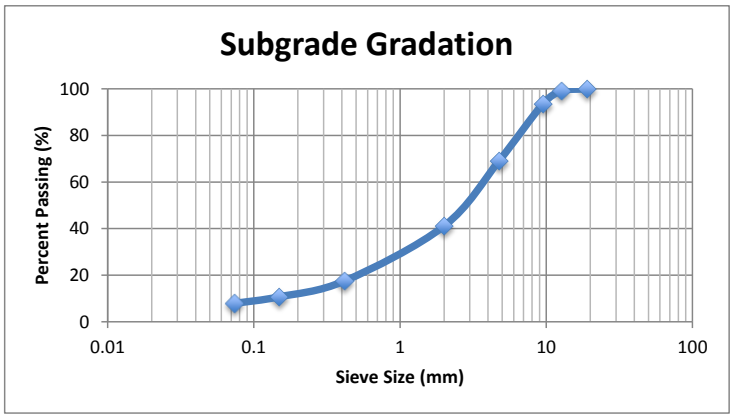
Subgrade

Visual Classification:	US 63, Phelps County, moist, very clumped together, clayey, deep brown color, cohesive and plyable

Moisture Content	
Initial Sample + Pan (g)	4654.1
Weight of Pan (g)	1029.8
Initial Weight	3624.3
Dry Weight + Pan	3920.1
Dry Weight	2890.3
Water content	25.4

Gradation

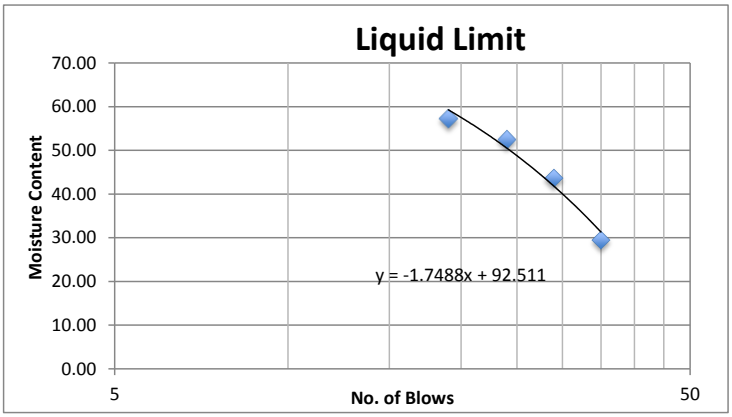
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	5.3	0.9	99.1
3/8"	9.51	31.7	5.5	93.6
No. 4	4.76	140.5	24.5	69.1
No. 10	2	160.5	28	41.1
No. 40	0.42	134.5	23.5	17.6
No. 100	0.149	39.6	6.9	10.7
No. 200	0.074	15.9	2.8	7.9
Pan		44.5	7.8	0



D_{10} = 0.1mm
D_{30} = 1mm
D_{60} = 3.7mm
C_u = 37
C_c = 2.7
% Gravel= 30.9
% Sand= 61.2
% Fines= 7.9
Unified Soil Classification: SW-SC - Well-graded sand with clay & gravel

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	25.2	30	32.3	31.4
Mass of dry soil + can (g)	21.3	25.2	24.9	24.3
Mass of Can (g)	8.1	14.2	10.8	11.9
Mass of dry soil (g)	13.2	11	14.1	12.4
Mass of wet soil (g)	17.1	15.8	21.5	19.5
Water Content (%)	29.55	43.64	52.48	57.26
No. of Blows	35	29	24	19



Liquid Limit=	48.8

Plastic Limit		
Mass of wet soil + can (g)	20.9	19.9
Mass of dry soil + can (g)	19.2	18.6
Mass of Can (g)	14.2	13.8
Mass of dry soil (g)	5	4.8
Mass of wet soil (g)	6.7	6.1
Water Content (%)	8.9	7.0

Plastic Limit=	7.9

Plasticity Index=	40.9

Core 6

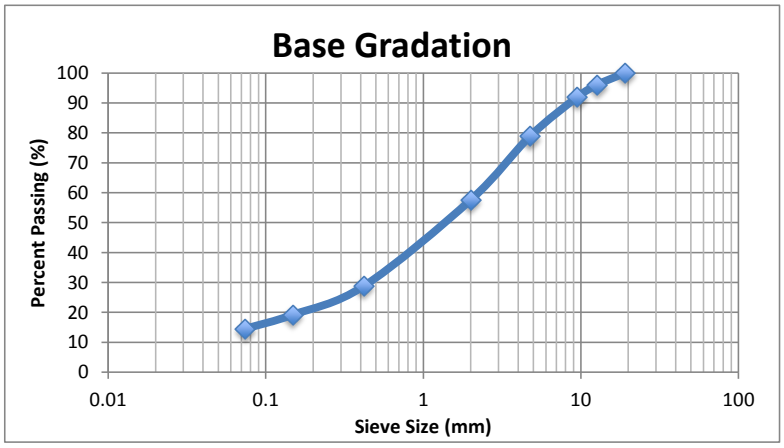
Base

Visual Classification: US 63, Phelps County, Brownish, Gravely, Clayey, Clumpy

Moisture Content	
Initial Sample + Pan (g)	3290.7
Weight of Pan (g)	774.6
Initial Weight	2516.1
Dry Weight + Pan	2956.9
Dry Weight	2182.3
Water content	15%

Gradation

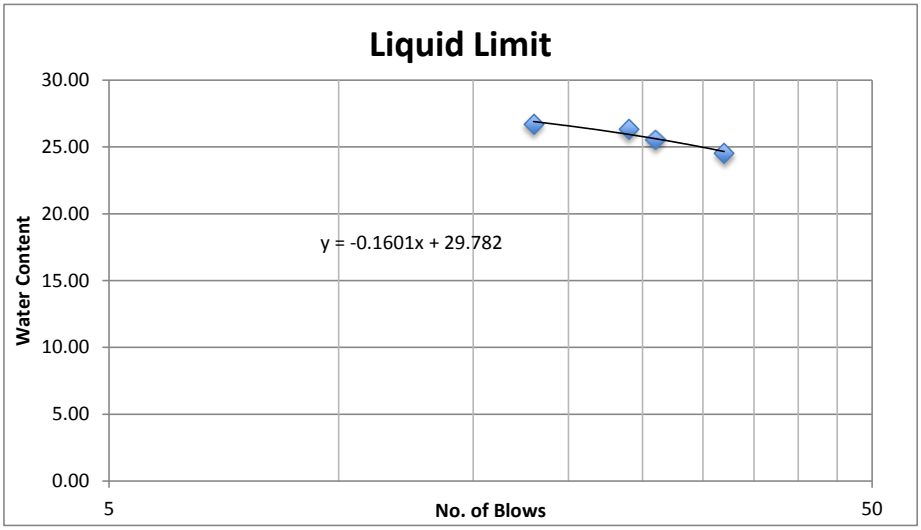
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	19.7	3.9	96.1
3/8"	9.51	21.2	4.1	92
No. 4	4.76	67.1	13.1	78.9
No. 10	2	109.1	21.3	57.6
No. 40	0.42	147.5	28.8	28.8
No. 100	0.149	48.9	9.6	19.2
No. 200	0.074	23.9	4.7	14.5
Pan		74	14.5	0



D_{10} = 0
D_{30} = 0.41mm
D_{60} = 2.1mm
C_u = -
C_c = -
% Gravel= 21.1
% Sand= 64.4
% Fines= 14.5
Unified Soil Classification: SC - Clayey sand with gravel

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	27.5	25	30.3	34.6
Mass of dry soil + can (g)	24.1	22.4	26.3	30.3
Mass of Can (g)	10.8	11.8	11.1	14.2
Mass of dry soil (g)	13.3	10.6	15.2	16.1
Mass of wet soil (g)	16.7	13.2	19.2	20.4
Water Content (%)	25.56	24.53	26.32	26.71
No. of Blows	26	32	24	18



Liquid Limit=	25.8

Plastic Limit		
Mass of wet soil + can (g)	20.3	19.6
Mass of dry soil + can (g)	19.4	18.7
Mass of Can (g)	14	13.1
Mass of dry soil (g)	5.4	5.6
Mass of wet soil (g)	6.3	6.5
Water Content (&)	4.6	4.8

Plastic Limit=	4.7

Plasticity Index=	21.1

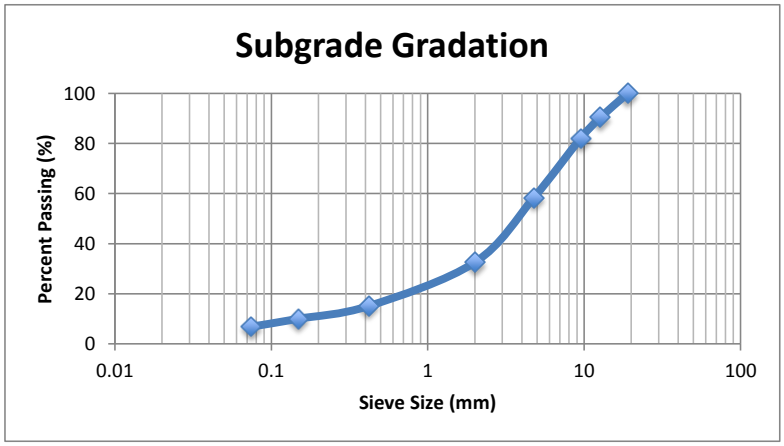
Subgrade

Visual Classification: US 63, Phelps County, Brown/tan, dirty

Moisture Content	
Initial Sample + Pan (g)	3195.6
Weight of Pan (g)	771.5
Initial Weight	2424.1
Dry Weight + Pan	2755.9
Dry Weight	1984.4
Water content	22%

Gradation

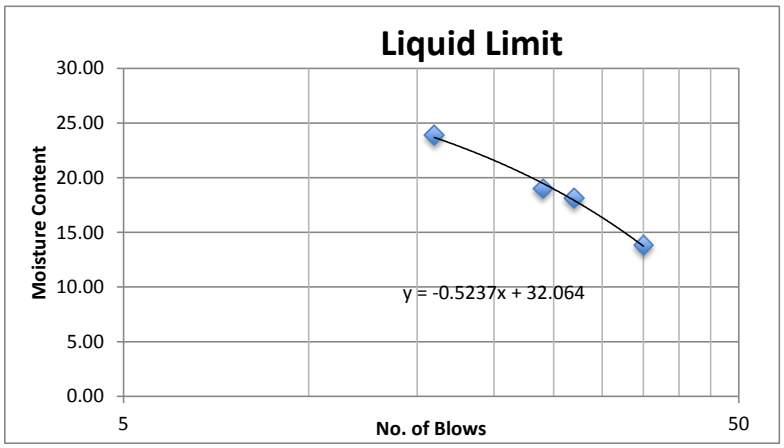
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	47.7	9.6	90.4
3/8"	9.51	42.1	8.3	82.1
No. 4	4.76	119.8	23.8	58.3
No. 10	2	130.2	25.8	32.5
No. 40	0.42	88	17.4	15.1
No. 100	0.149	25.9	5.1	10
No. 200	0.074	16.1	3.2	6.8
Pan		34.5	6.8	0



D_{10} = 0.12mm
D_{30} = 1.8mm
D_{60} = 4mm
C_u = 33.3
C_c = 6.75
% Gravel= 41.7
% Sand= 51.5
% Fines= 6.8
Unified Soil Classification: SP-SC - Poorly-graded sand with clay & gravel

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	30.9	25.7	27.3	32.7
Mass of dry soil + can (g)	27.7	23.4	25.6	29.4
Mass of Can (g)	14.3	11.3	13.3	11.2
Mass of dry soil (g)	13.4	12.1	12.3	18.2
Mass of wet soil (g)	16.6	14.4	14	21.5
Water Content (%)	23.88	19.01	13.82	18.13
No. of Blows	16	24	35	27



Liquid Limit=	18.9

Plastic Limit		
Mass of wet soil + can (g)	19.2	20.6
Mass of dry soil + can (g)	18.8	19.5
Mass of Can (g)	13.4	13.9
Mass of dry soil (g)	5.4	5.6
Mass of wet soil (g)	5.8	6.7
Water Content (%)	2.1	5.6

Plastic Limit=	3.9

Plasticity Index=	15

Core 8

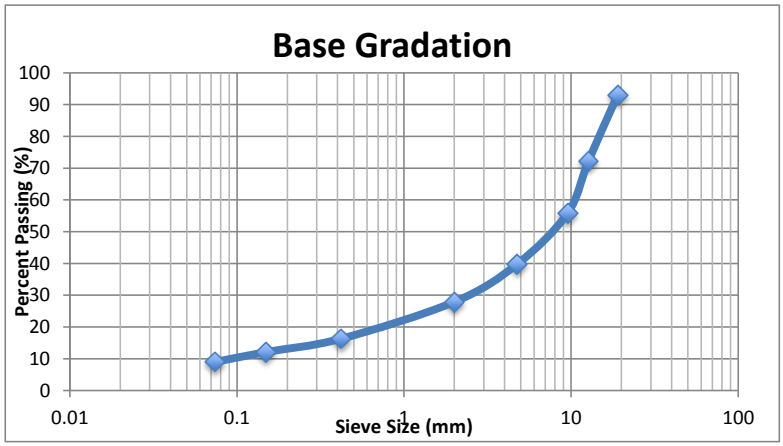
Base

Visual Classification: US 63, Phelps County, tan, damp, well graded material, subangular particles

Moisture Content	
Initial Sample + Pan (g)	1995.4
Weight of Pan (g)	403.5
Initial Weight	1591.9
Dry Weight + Pan	1859.9
Dry Weight	1456.4
Water content	9%

Gradation

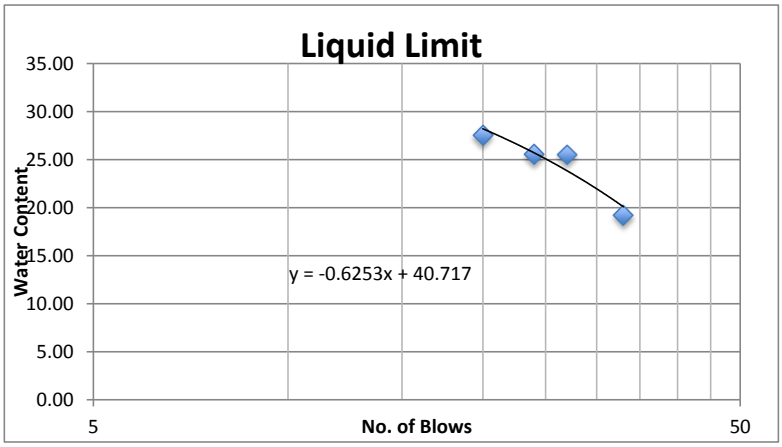
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	27.3	6.9	93.1
1/2"	12.7	82.2	20.8	72.3
3/8"	9.51	65.2	16.5	55.8
No. 4	4.76	63.3	16	39.8
No. 10	2	46.9	11.9	27.9
No. 40	0.42	45.8	11.6	16.3
No. 100	0.149	16.4	4.2	12.1
No. 200	0.074	12.3	3.1	9
Pan		35.7	9	0



D_{10} = 0.06mm
D_{30} = 2.5mm
D_{60} = 10.1mm
C_u = 168.3
C_c = 10.3
% Gravel= 60.2
% Sand= 30.8
% Fines= 9
Unified Soil Classification: GP-GC - Poorly-graded gravel with clay & sand

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	17.7	25.5	30.6	23.6
Mass of dry soil + can (g)	16.7	23	27.1	20.9
Mass of Can (g)	11.5	13.2	13.4	11.1
Mass of dry soil (g)	5.2	9.8	13.7	9.8
Mass of wet soil (g)	6.2	12.3	17.2	12.5
Water Content (%)	19.23	25.51	25.55	27.55
No. of Blows	33	27	24	20



Liquid Limit=	25.1
Plastic Limit=	*not enough soil
Plasticity Index=	

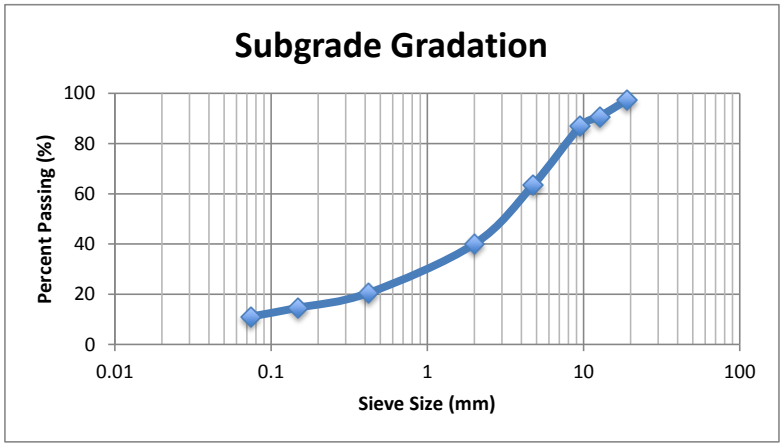
Subgrade

Visual Classification: US 63, Phelps County, Brownish, Clumpy, Clayey

Moisture Content	
Initial Sample + Pan (g)	4397.3
Weight of Pan (g)	772.5
Initial Weight	3624.8
Dry Weight + Pan	3884.6
Dry Weight	3112.1
Water content	16%

Gradation

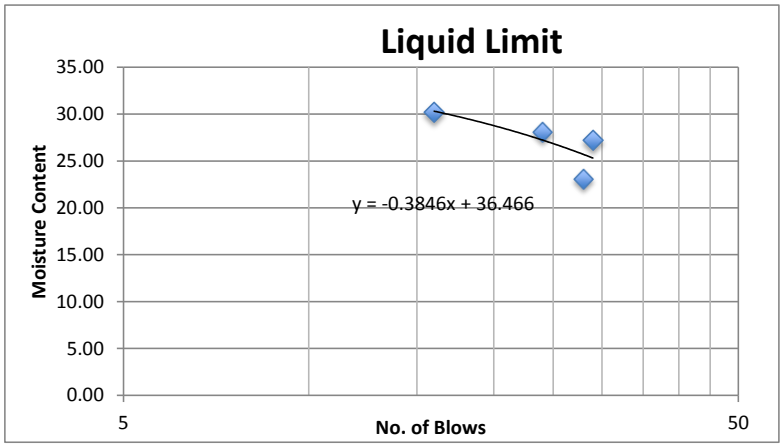
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	13.6	2.6	97.4
1/2"	12.7	34.6	6.6	90.8
3/8"	9.51	20.9	4	86.8
No. 4	4.76	121.5	23.3	63.5
No. 10	2	122.6	23.5	40
No. 40	0.42	101.6	19.5	20.5
No. 100	0.149	30.6	5.9	14.6
No. 200	0.074	18.3	3.5	11.1
Pan		58	11.1	0



D_{10} = 0
D_{30} = 1mm
D_{60} = 4mm
C_u = -
C_c = -
% Gravel= 36.5
% Sand= 52.4
% Fines= 11.1
Unified Soil Classification: -

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	33	31.8	30.7	36.1
Mass of dry soil + can (g)	29	27	26.6	31.6
Mass of Can (g)	14.3	11.1	12	12.1
Mass of dry soil (g)	14.7	15.9	14.6	19.5
Mass of wet soil (g)	18.7	20.7	18.7	24
Water Content (%)	27.21	30.19	28.08	23.08
No. of Blows	29	16	24	28



Liquid Limit=	24.4

Plastic Limit		
Mass of wet soil + can (g)	18.1	15.6
Mass of dry soil + can (g)	17.4	14.8
Mass of Can (g)	14.2	11.1
Mass of dry soil (g)	3.2	3.7
Mass of wet soil (g)	3.9	4.5
Water Content (%)	4.0	5.4

Plastic Limit=	4.7

Plasticity Index=	19.7

Section 1 Date

ibr>8	green
6 to 8	yellow
<6	red

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending" - Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT		diff
Core 1	1	300	315	12.4	15	15	14.1	13.4	21.1	17.0		
	1	315	325	12.8	10	10	22.2	22.3	33.2	20.0		0.4
	1	325	330	13.0	5	5	48.1	53.4	72.2	26.2		0.2
	1	330	340	13.4	10	10	22.2	22.3	33.2	20.0		0.4
	1	340	345	13.6	5	5	48.1	53.4	72.2	26.2		0.2
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2		0.2
	5	350	365	14.4	15	3	85.3	101.6	128.0	31.9		0.6
	5	365	390	15.4	25	5	48.1	53.4	72.2	26.2	*	1.0
	4	390	425	16.7	35	8.75	25.7	26.4	38.6	21.0		1.4
	4	425	465	18.3	40	10	22.2	22.3	33.2	20.0		1.6
	1	465	500	19.7	35	35	5.4	4.6	8.2	12.2		1.4
	1	500	515	20.3	15	15	14.1	13.4	21.1	17.0		0.6
	1	515	540	21.3	25	25	7.9	7.0	11.9	14.0		1.0
	1	540	550	21.7	10	10	22.2	22.3	33.2	20.0		0.4
	5	550	580	22.8	30	6	39.3	42.5	58.9	24.4		1.2
	5	580	600	23.6	20	4	61.8	70.8	92.7	28.5		0.8

*Note: Break in original data here, this is what was thought to be correct

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending" - Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 2	1	325	335	13.2	10	10.0	22.2	22.3	33.2	20.0	
	2	335	345	13.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	345	355	14.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	355	370	14.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	370	375	14.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	375	390	15.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	390	405	15.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	405	425	16.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	425	445	17.5	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	445	470	18.5	25	12.5	17.3	16.9	25.9	18.3	1.0
	5	470	485	19.1	15	3.0	85.3	101.6	128.0	31.9	0.6
	5	485	495	19.5	10	2.0	134.3	169.3	201.5	37.4	0.4
	5	495	505	19.9	10	2.0	134.3	169.3	201.5	37.4	0.4
	5	505	510	20.1	5	1.0	292.0	405.3	438.0	49.0	0.2
	5	510	520	20.5	10	2.0	134.3	169.3	201.5	37.4	0.4
	5	520	530	20.9	10	2.0	134.3	169.3	201.5	37.4	0.4
	5	530	550	21.7	20	4.0	61.8	70.8	92.7	28.5	0.8
	3	550	575	22.6	25	8.3	27.2	28.1	40.8	21.4	1.0
	2	575	600	23.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	1	600	610	24.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	610	630	24.8	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	630	650	25.6	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	650	665	26.2	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	665	680	26.8	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	680	690	27.2	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	690	700	27.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	700	705	27.8	5	5.0	48.1	53.4	72.2	26.2	0.2
	3	705	730	28.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	730	760	29.9	30	10.0	22.2	22.3	33.2	20.0	1.2
	1	760	785	30.9	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	785	805	31.7	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	805	830	32.7	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	830	855	33.7	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	855	885	34.8	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	885	910	35.8	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	935	965	38.0	30	30.0	6.5	5.6	9.7	13.0	2.2
	1	965	980	38.6	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	980	1010	39.8	30	30.0	6.5	5.6	9.7	13.0	1.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 3	1	310	325	12.8	15	15.0	14.1	13.4	21.1	17.0	
	5	325	340	13.4	15	3.0	85.3	101.6	128.0	31.9	0.6
	3	340	350	13.8	10	3.3	75.8	89.0	113.7	30.6	0.4
	5	350	370	14.6	20	4.0	61.8	70.8	92.7	28.5	0.8
	4	370	390	15.4	20	5.0	48.1	53.4	72.2	26.2	0.8
	3	390	410	16.1	20	6.7	34.9	37.2	52.3	23.4	0.8
	2	410	425	16.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	425	435	17.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	435	450	17.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	450	470	18.5	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	470	490	19.3	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	490	505	19.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	505	515	20.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	515	530	20.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	530	545	21.5	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	545	560	22.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	3	560	580	22.8	20	6.7	34.9	37.2	52.3	23.4	0.8
	3	580	590	23.2	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	590	605	23.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	3	605	620	24.4	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	620	635	25.0	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	635	650	25.6	15	5.0	48.1	53.4	72.2	26.2	0.6
	2	650	665	26.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	665	680	26.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	3	680	700	27.6	20	6.7	34.9	37.2	52.3	23.4	0.8
	3	700	710	28.0	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	710	725	28.5	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	725	745	29.3	20	6.7	34.9	37.2	52.3	23.4	0.8
	3	745	760	29.9	15	5.0	48.1	53.4	72.2	26.2	0.6
	2	760	775	30.5	15	7.5	30.6	32.1	45.9	22.3	0.6
	3	775	790	31.1	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	790	805	31.7	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	805	815	32.1	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	815	825	32.5	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	825	845	33.3	20	6.7	34.9	37.2	52.3	23.4	0.8
	3	845	860	33.9	15	5.0	48.1	53.4	72.2	26.2	0.6
	2	860	885	34.8	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	885	910	35.8	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	910	935	36.8	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	935	970	38.2	35	17.5	11.8	11.0	17.8	16.0	1.4
	1	970	980	38.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	980	1000	39.4	20	20.0	10.2	9.3	15.3	15.2	0.8

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 4	1	340	350	13.8	10	10.0	22.2	22.3	33.2	20.0	
	1	350	355	14.0	5	5.0	48.1	53.4	72.2	26.2	0.2
	1	355	360	14.2	5	5.0	48.1	53.4	72.2	26.2	0.2
	3	360	375	14.8	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	375	380	15.0	5	1.7	164.8	213.0	247.2	40.1	0.2
	3	380	390	15.4	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	390	410	16.1	20	6.7	34.9	37.2	52.3	23.4	0.8
	2	410	430	16.9	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	430	440	17.3	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	440	455	17.9	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	455	460	18.1	5	5.0	48.1	53.4	72.2	26.2	0.2
	2	460	470	18.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	470	475	18.7	5	5.0	48.1	53.4	72.2	26.2	0.2
	2	475	485	19.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	485	500	19.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	500	520	20.5	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	520	525	20.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	525	525	20.7	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0
	1	525	530	20.9	5	5.0	48.1	53.4	72.2	26.2	0.2
	1	530	535	21.1	5	5.0	48.1	53.4	72.2	26.2	0.2
	2	535	540	21.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	540	550	21.7	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	550	560	22.0	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	560	570	22.4	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	570	575	22.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	575	580	22.8	5	5.0	48.1	53.4	72.2	26.2	0.2
	1	580	585	23.0	5	5.0	48.1	53.4	72.2	26.2	0.2
	3	585	600	23.6	15	5.0	48.1	53.4	72.2	26.2	0.6
	2	600	615	24.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	615	635	25.0	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	635	655	25.8	20	20.0	10.2	9.3	15.3	15.2	0.8
	2	655	670	26.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	670	685	27.0	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	685	705	27.8	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	705	715	28.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	715	730	28.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	730	745	29.3	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	745	760	29.9	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	760	775	30.5	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	775	785	30.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	785	800	31.5	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	800	825	32.5	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	825	840	33.1	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	840	855	33.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	855	870	34.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	870	880	34.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	880	895	35.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	895	905	35.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	905	920	36.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	920	930	36.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	930	940	37.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	940	950	37.4	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	950	965	38.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	965	975	38.4	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	975	990	39.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	990	995	39.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	995	1005	39.6	10	5.0	48.1	53.4	72.2	26.2	0.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 5	1	305	320	12.6	15	15.0	14.1	13.4	21.1	17.0	#VALUE!
	1	320	325	12.8	5	5.0	48.1	53.4	72.2	26.2	0.2
	3	325	350	13.8	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	350	375	14.8	25	8.3	27.2	28.1	40.8	21.4	1.0
	2	375	410	16.1	35	17.5	11.8	11.0	17.8	16.0	1.4
	1	410	425	16.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	425	455	17.9	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	455	475	18.7	20	20.0	10.2	9.3	15.3	15.2	0.8
	2	475	490	19.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	490	500	19.7	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	500	515	20.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	515	550	21.7	35	17.5	11.8	11.0	17.8	16.0	1.4
	2	550	570	22.4	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	570	590	23.2	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	590	615	24.2	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	615	635	25.0	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	635	655	25.8	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	655	680	26.8	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	680	700	27.6	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	700	720	28.3	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	720	740	29.1	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	740	760	29.9	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	760	780	30.7	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	780	800	31.5	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	800	820	32.3	20	20.0	10.2	9.3	15.3	15.2	0.8
	2	820	860	33.9	40	20.0	10.2	9.3	15.3	15.2	1.6
	1	860	880	34.6	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	880	900	35.4	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	900	920	36.2	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	920	940	37.0	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	940	960	37.8	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	960	980	38.6	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	980	1000	39.4	20	20.0	10.2	9.3	15.3	15.2	0.8

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 6	2	310	330	13.0	20	10.0	22.2	22.3	33.2	20.0	
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	335	350	13.8	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	350	360	14.2	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	360	370	14.6	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	370	380	15.0	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	380	390	15.4	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	390	405	15.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	405	425	16.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	425	440	17.3	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	440	450	17.7	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	450	465	18.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	465	475	18.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	475	490	19.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	490	505	19.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	505	515	20.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	515	525	20.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	525	525	20.7	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0
	2	525	530	20.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	530	530	20.9	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0

*hit rock

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 7	2	315	330	13.0	15	7.50	30.6	32.1	45.9	22.3	
	2	330	340	13.4	10	5.00	48.1	53.4	72.2	26.2	0.4
	3	340	355	14.0	15	5.00	48.1	53.4	72.2	26.2	0.6
	3	355	365	14.4	10	3.33	75.8	89.0	113.7	30.6	0.4
	2	365	375	14.8	10	5.00	48.1	53.4	72.2	26.2	0.4
	1	375	380	15.0	5	5.00	48.1	53.4	72.2	26.2	0.2
	2	380	395	15.6	15	7.50	30.6	32.1	45.9	22.3	0.6
	2	395	415	16.3	20	10.00	22.2	22.3	33.2	20.0	0.8
	2	415	435	17.1	20	10.00	22.2	22.3	33.2	20.0	0.8
	2	435	465	18.3	30	15.00	14.1	13.4	21.1	17.0	1.2
	1	465	485	19.1	20	20.00	10.2	9.3	15.3	15.2	0.8
	1	485	500	19.7	15	15.00	14.1	13.4	21.1	17.0	0.6
	1	500	505	19.9	5	5.00	48.1	53.4	72.2	26.2	0.2
	3	505	530	20.9	25	8.33	27.2	28.1	40.8	21.4	1.0
	2	530	550	21.7	20	10.00	22.2	22.3	33.2	20.0	0.8
	2	550	560	22.0	10	5.00	48.1	53.4	72.2	26.2	0.4
	2	560	585	23.0	25	12.50	17.3	16.9	25.9	18.3	1.0
	2	585	610	24.0	25	12.50	17.3	16.9	25.9	18.3	1.0
	2	610	625	24.6	15	7.50	30.6	32.1	45.9	22.3	0.6
	3	625	645	25.4	20	6.67	34.9	37.2	52.3	23.4	0.8
	3	645	655	25.8	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	655	660	26.0	5	1.67	164.8	213.0	247.2	40.1	0.2
	3	660	670	26.4	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	670	690	27.2	20	6.67	34.9	37.2	52.3	23.4	0.8
	3	690	695	27.4	5	1.67	164.8	213.0	247.2	40.1	0.2
	3	695	705	27.8	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	705	715	28.1	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	715	725	28.5	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	725	735	28.9	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	735	745	29.3	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	745	750	29.5	5	1.67	164.8	213.0	247.2	40.1	0.2
	3	750	760	29.9	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	760	765	30.1	5	1.67	164.8	213.0	247.2	40.1	0.2
	3	765	770	30.3	5	1.67	164.8	213.0	247.2	40.1	0.2
	3	770	775	30.5	5	1.67	164.8	213.0	247.2	40.1	0.2
	3	775	775	30.5	0	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0
	3	775	775	30.5	0	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0

*hit rock

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 8	1	370	375	14.8	5	5.0	48.1	53.4	72.2	26.2	
	2	375	395	15.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	395	420	16.5	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	420	435	17.1	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	435	450	17.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	450	465	18.3	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	465	475	18.7	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	475	490	19.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	490	510	20.1	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	510	520	20.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	520	530	20.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	530	545	21.5	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	545	555	21.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	3	555	565	22.2	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	565	570	22.4	5	1.7	164.8	213.0	247.2	40.1	0.2
	3	570	580	22.8	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	580	590	23.2	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	590	610	24.0	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	610	620	24.4	10	5.0	48.1	53.4	72.2	26.2	0.4
	3	620	625	24.6	5	1.7	164.8	213.0	247.2	40.1	0.2
	3	625	630	24.8	5	1.7	164.8	213.0	247.2	40.1	0.2
	3	630	630	24.8	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0

*hit rock

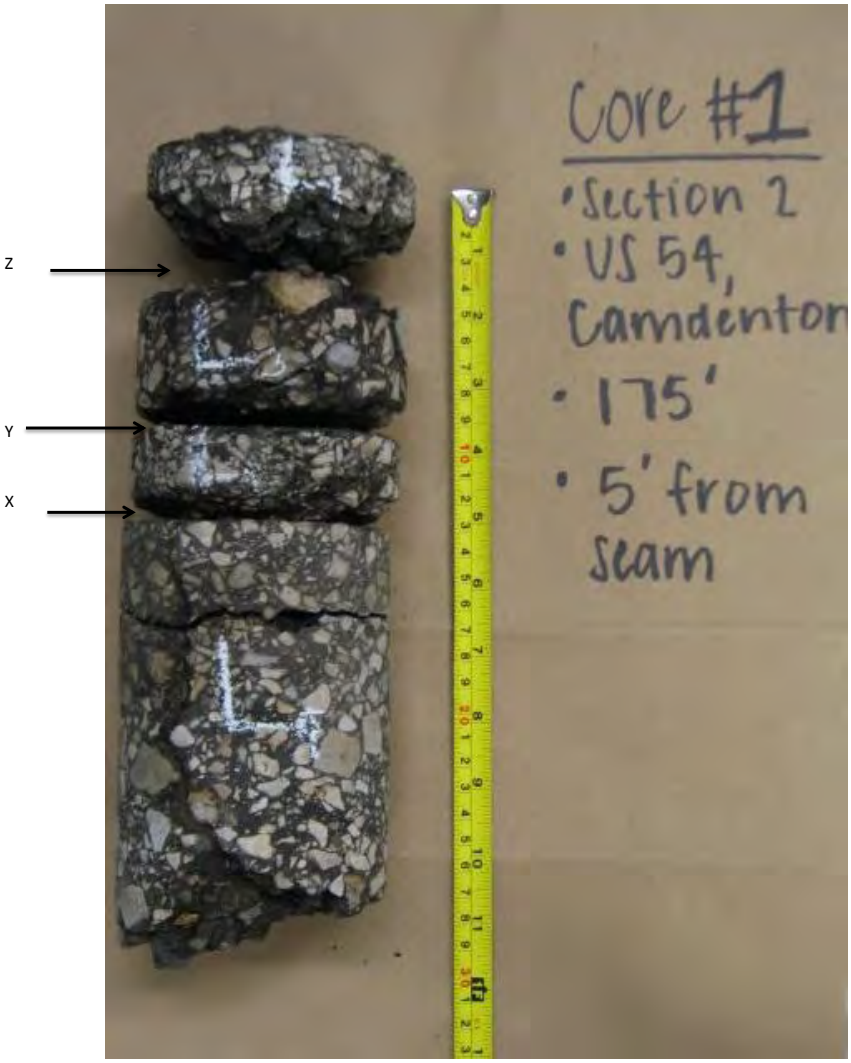
Core
1
2
3
4
5
6
7
8
Depth Below Pavement Surface (in.)
0
5
10
15
20
25
30
35
40
45

US 54, Camdenton
MO
Core No. 1

Extraction Date: December 12, 2012

Core No. 1	
Distance from beginning (ft)	175
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	HMA	1"	Moderate	305
	2	HMA	1"	Moderate	309
	3	HMA	1 1/4"	Low	574
	4	HMA	5 1/4"	Low	97
		Total AC Thickness	8 1/2"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Debonded	-
Y	Debonded	-
X	Debonded	-

Photograph No. 1
Picture of Core No. 1 extracted from pavement.

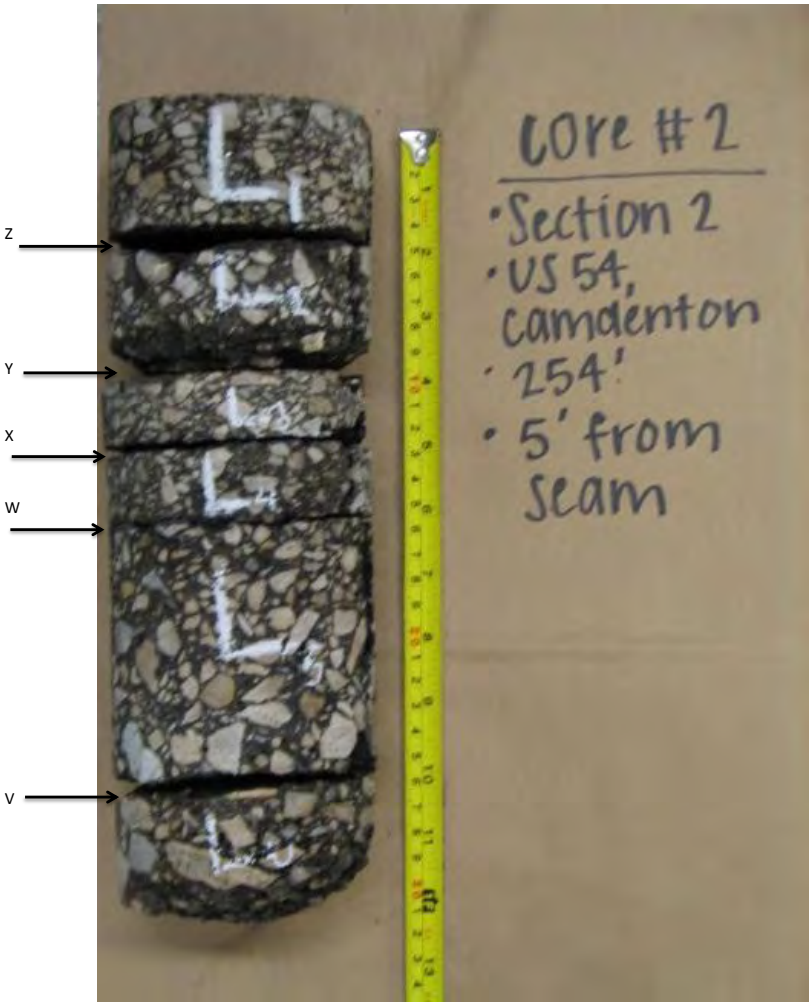
Photograph No. 2
Picture of Core No. 1 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 2

Extraction Date: December 12, 2012

Core No. 2	
Distance from beginning (ft)	254
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
2	1	HMA	2"	Low	782
	2	HMA	1 1/2"	Moderate	482
	3	HMA	1"	Moderate	177
	4	HMA	1"	Moderate	405
	5	HMA	3 1/2"	Low	1663
	6	HMA	1 1/2"	Low	744
		Total AC Thickness	10 1/2"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Debonded	-
Y	Debonded	-
X	Weak Bond	289
W	Weak Bond	298
V	Strong Bond	637

Photograph No. 3
Picture of Core No. 2 extracted from pavement.

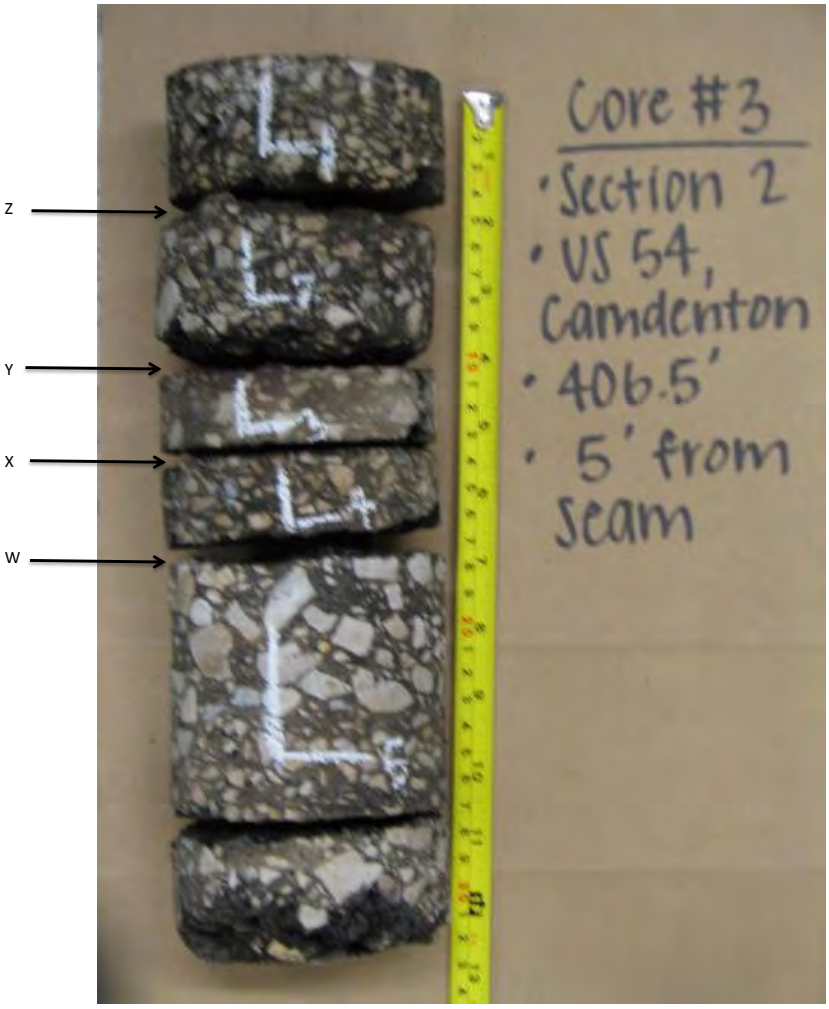
Photograph No. 4
Picture of Core No. 2 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 3

Extraction Date: December 12, 2012

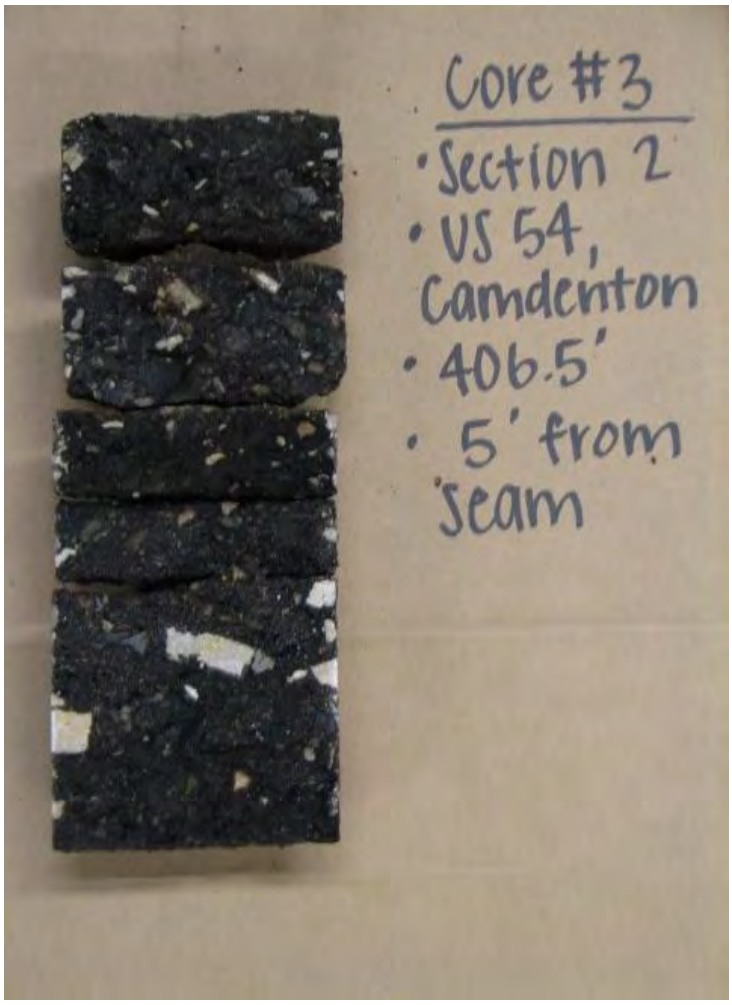
Core No. 3	
Distance from beginning (ft)	406.5
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
3	1	HMA	1 3/4"	Low	746
	2	HMA	2"	Moderate	530
	3	HMA	1"	Low	235
	4	HMA	1"	Low	415
	5	HMA	5 1/4"	Low	2773
		Total AC Thickness	11"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Debonded	-
Y	Debonded	-
X	Weak Bond	463
W	Weak Bond	293

Photograph No. 5
Picture of Core No. 3 extracted from pavement.



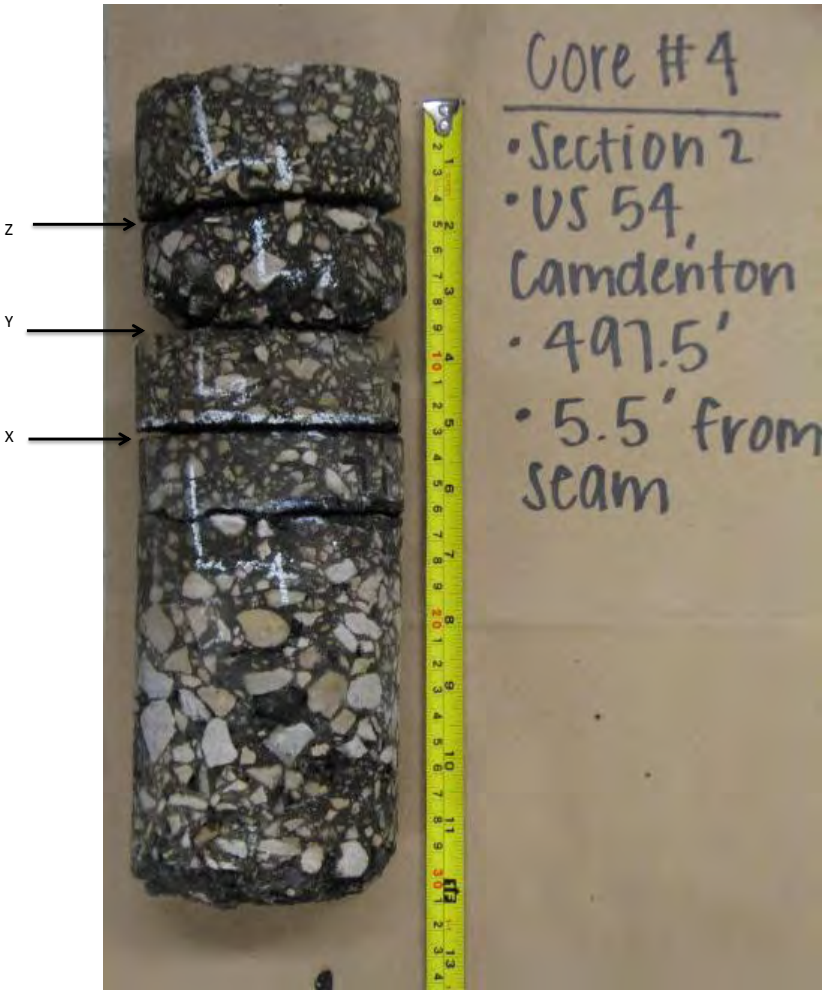
Photograph No. 6
Picture of Core No. 3 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 4

Extraction Date: December 12, 2012

Core No. 4	
Distance from beginning (ft)	497.5
Distance from seam (ft)	5.5

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	HMA	1 3/4"	Low	711
	2	HMA	1 1/4"	Low	543
	3	HMA	1 1/2"	Low	393
	4	HMA	6 3/4"	Low	304
		Total AC Thickness	11 1/4"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Debonded	-
Y	Debonded	-
X	Weak Bond	210

Photograph No. 7
Picture of Core No. 4 extracted from pavement.

Photograph No. 8
Picture of Core No. 4 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 5

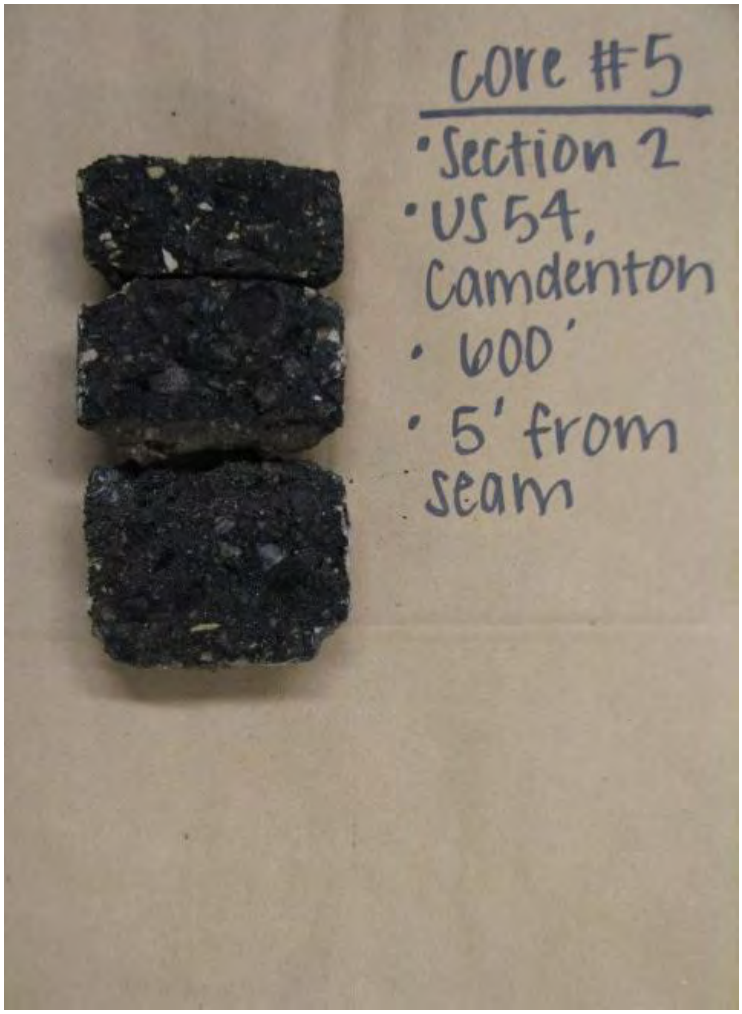
Extraction Date: December 12, 2012

Core No. 5	
Distance from beginning (ft)	600
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
5	1	HMA	1 3/4"	Low	745
	2	HMA	2"	Low	605
	3	HMA	5 3/4"	Low	517
		Total AC Thickness	9 1/2"		

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Debonded	-
Y	Debonded	-

Photograph No. 9
Picture of Core No. 5 extracted from pavement.



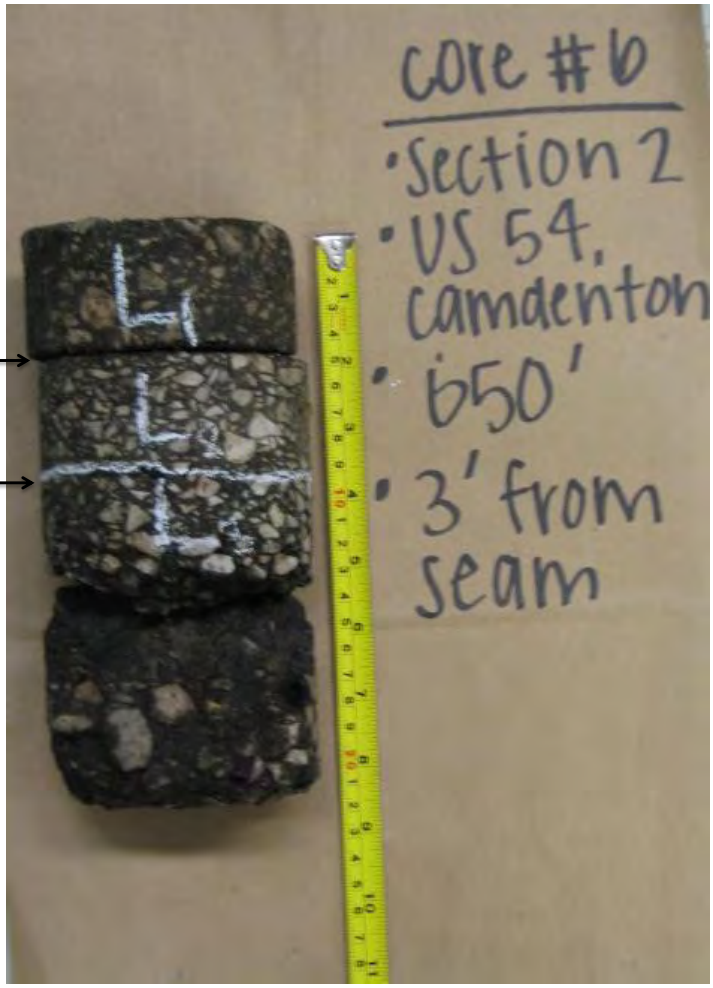
Photograph No. 10
Picture of Core No. 5 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 6

Extraction Date: December 12, 2012

Core No. 6	
Distance from beginning (ft)	650
Distance from seam (ft)	3.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
6	1	HMA	1 3/4"	Low	737
	2	HMA	1 1/2"	Low	616
	3	HMA	1 1/2"	Low	412
		Total AC Thickness	4 3/4"		

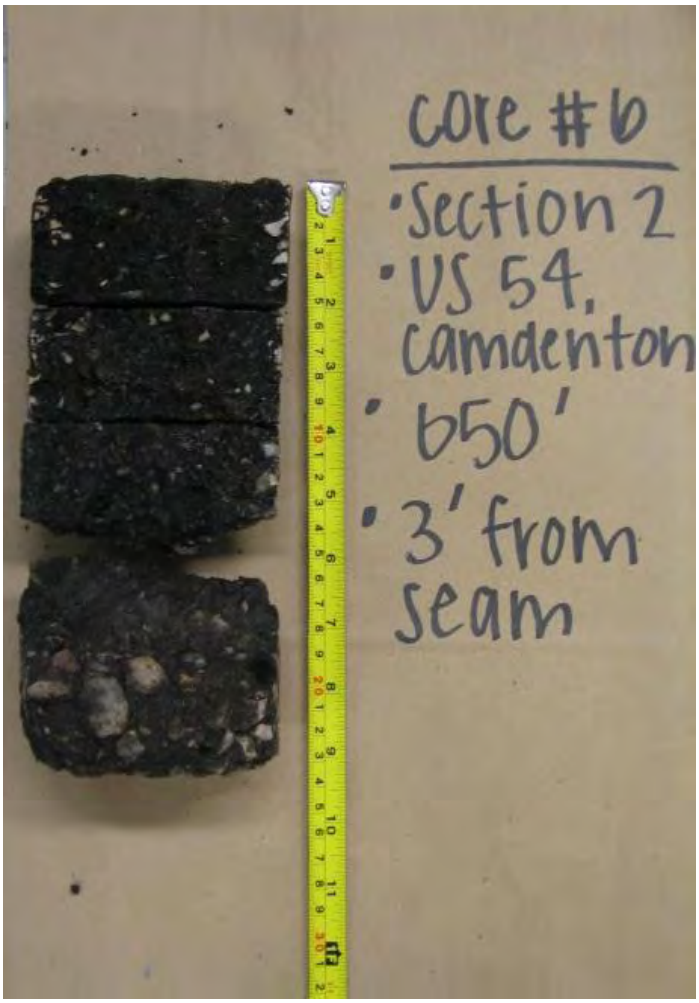


Z

Y

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Debonded	-
Y	Weak Bond	286

Photograph No. 11
Picture of Core No. 6 extracted from pavement.



Photograph No. 12

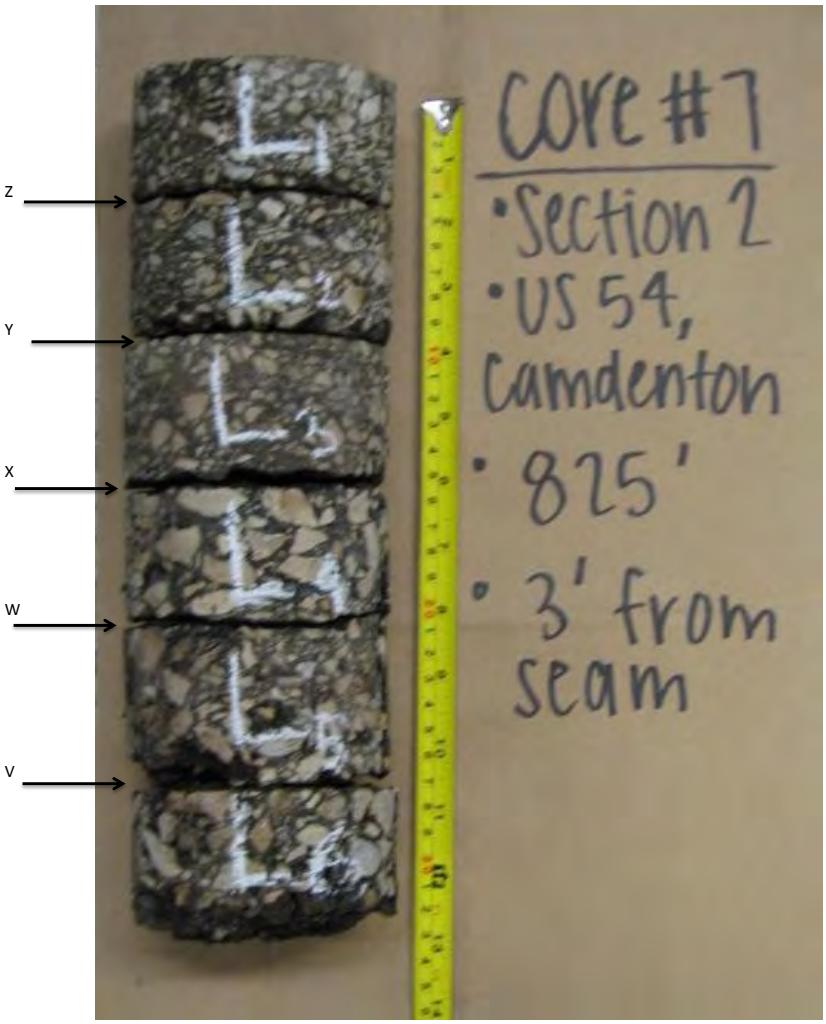
Picture of Core No. 6 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 7

Extraction Date: December 12, 2012

Core No. 7	
Distance from beginning (ft)	825
Distance from seam (ft)	3.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
7	1	HMA	2"	Low	943
	2	HMA	1 3/4"	Low	800
	3	HMA	2"	Low	849
	4	HMA	1 3/4"	Low	596
	5	HMA	2 1/4"	Low	1161
	6	HMA	1 1/2"	Low	590
		Total AC Thickness	11 1/4"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Debonded	-
Y	Weak Bond	286
X	Strong Bond	885
W	Strong Bond	721
V	Weak Bond	169

Photograph No. 13
Picture of Core No. 7 extracted from pavement.

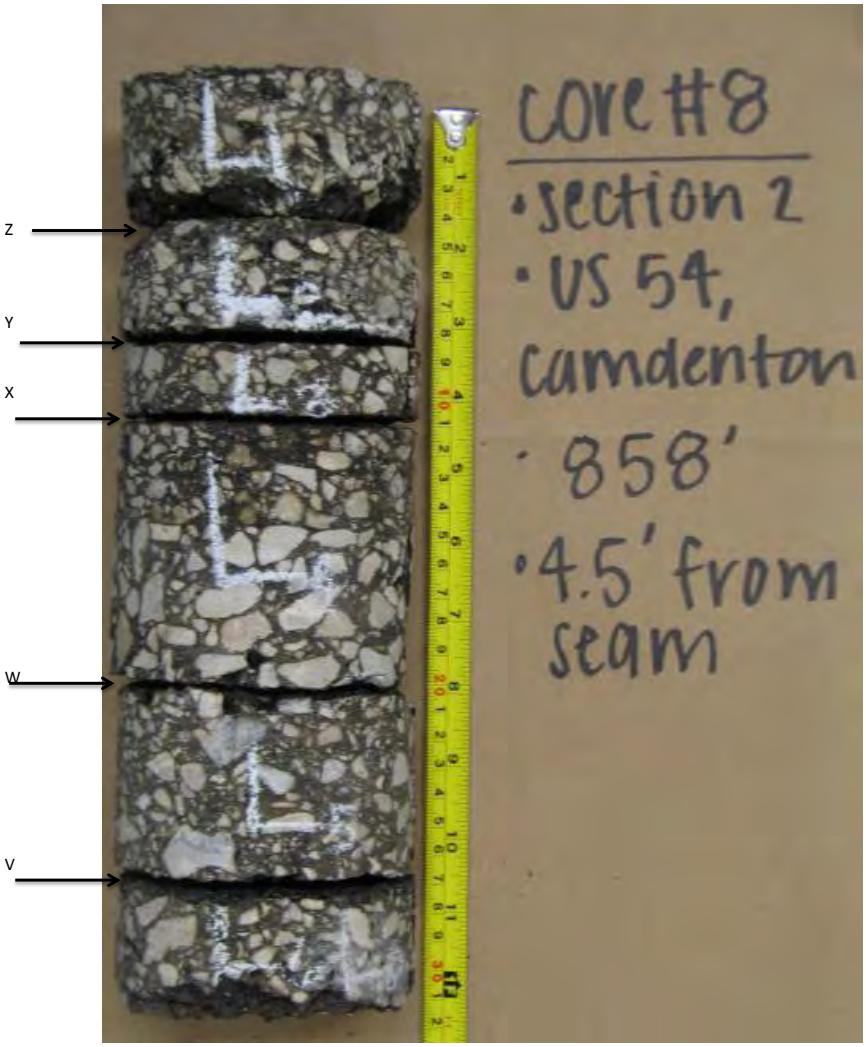
Photograph No. 14
Picture of Core No. 7 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 8

Extraction Date: December 12, 2012

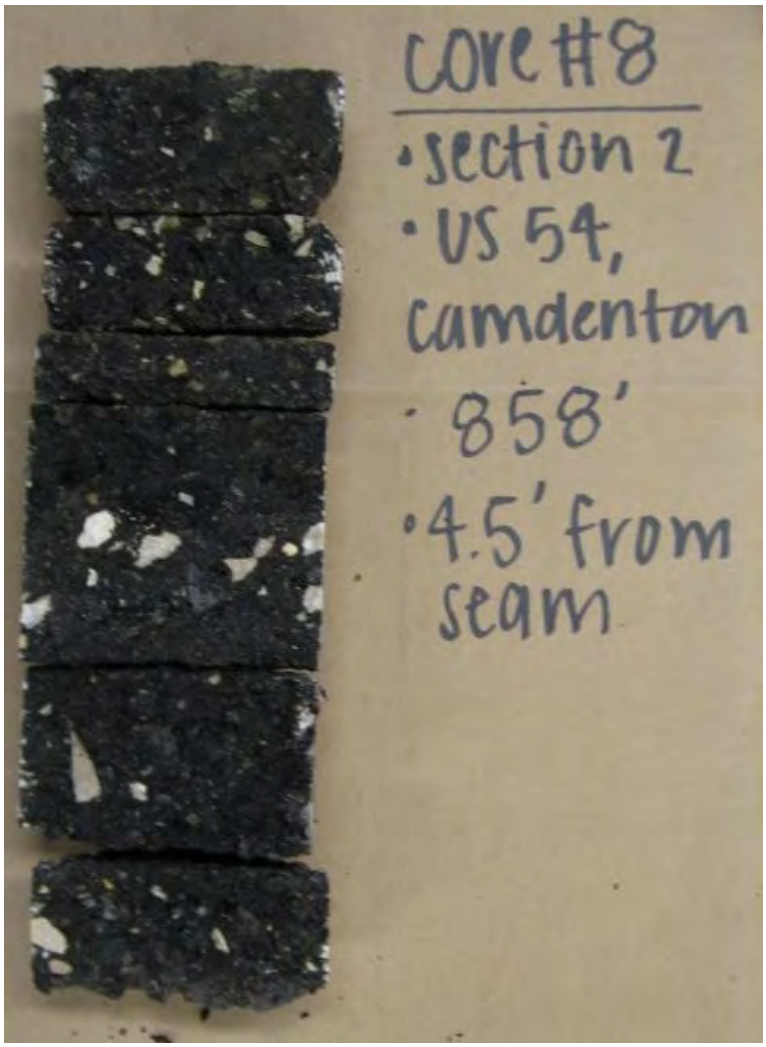
Core No. 8	
Distance from beginning (ft)	858
Distance from seam (ft)	4.5

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	HMA	1 1/2"	Low	762
	2	HMA	1 1/2"	Low	336
	3	HMA	3 /4"	Low	207
	4	HMA	3 1/4"	Low	2595
	5	HMA	2 1/2"	Low	1663
	6	HMA	1 1/2"	Low	1189
		Total AC Thickness	11"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Debonded	-
Y	Weak Bond	89
X	Weak Bond	50
W	Strong Bond	1937
V	Strong Bond	1035

Photograph No. 15
Picture of Core No. 8 extracted from pavement.



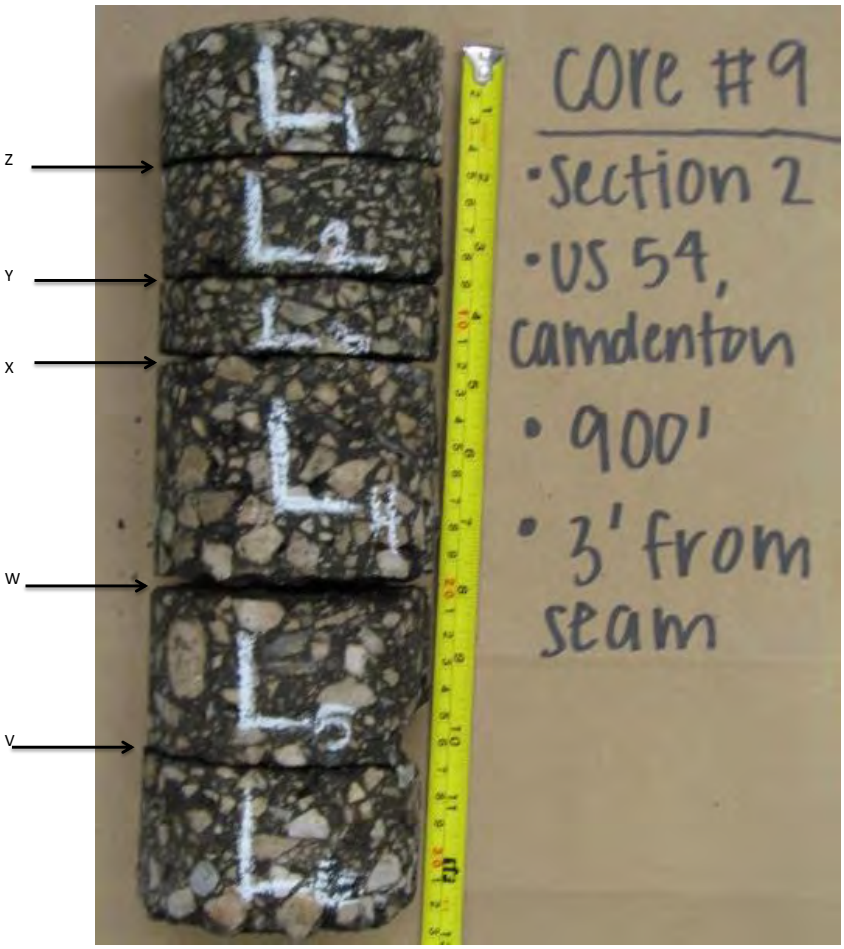
Photograph No. 16
Picture of Core No. 8 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 9

Extraction Date: December 12, 2012

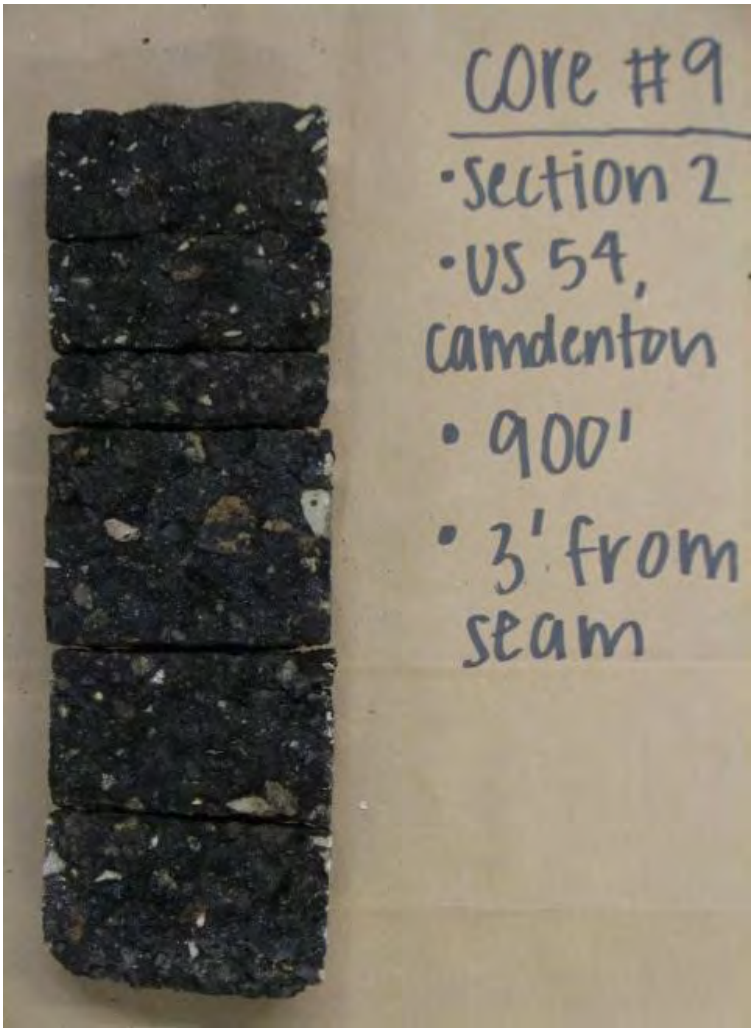
Core No. 9	
Distance from beginning (ft)	900
Distance from seam (ft)	3.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
9	1	HMA	1 3/4"	Low	1014
	2	HMA	1 1/2"	Low	519
	3	HMA	1"	Low	311
	4	HMA	3"	Low	1224
	5	HMA	2 1/4"	Low	894
	6	HMA	2"	Low	1315
		Total AC Thickness	11 1/2"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Debonded	-
Y	Weak Bond	334
X	Weak Bond	269
W	Debonded	-
V	Strong Bond	517

Photograph No. 17
Picture of Core No. 9 extracted from pavement.



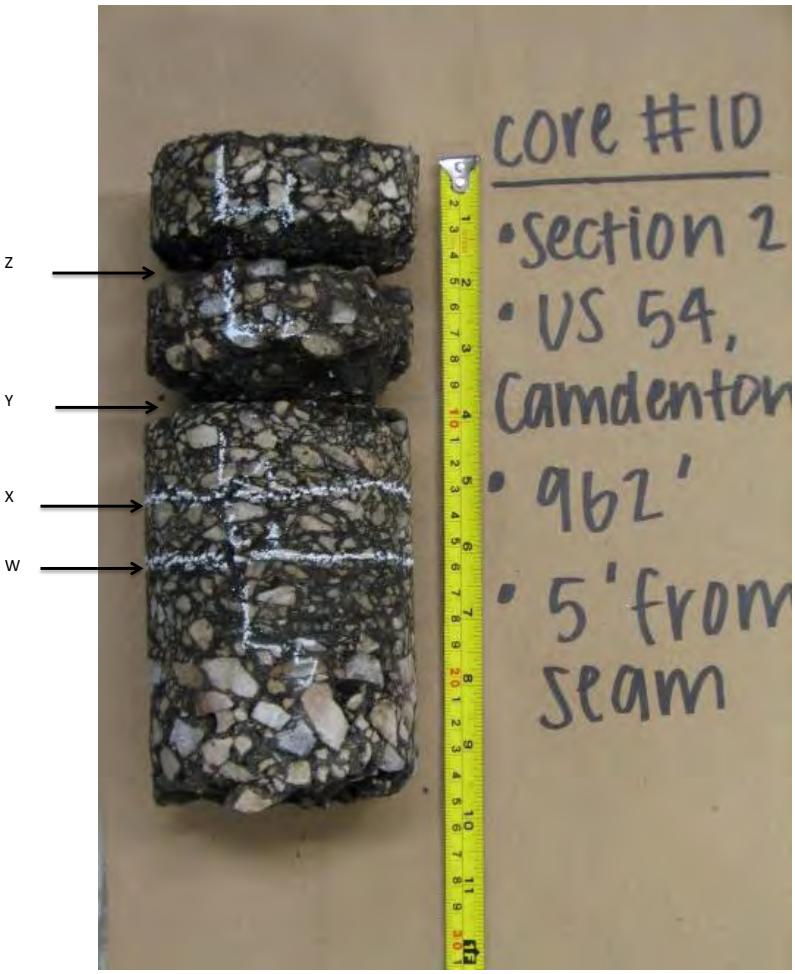
Photograph No. 18
Picture of Core No. 9 split open to evaluate the degree of stripping occurring.

US 54, Camdenton
MO
Core No. 10

Extraction Date: December 12, 2012

Core No. 10	
Distance from beginning (ft)	962
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
10	1	HMA	1 1/2"	Low	653
	2	HMA	1 1/4"	Low	417
	3	HMA	1 1/4"	Low	318
	4	HMA	1"	Low	185
	5	HMA	3 1/4"	Low	801
		Total AC Thickness	8 1/4"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Debonded	-
Y	Debonded	-
X	Weak Bond	173
W	Weak Bond	173

Photograph No. 19
Picture of Core No. 10 extracted from pavement.

Photograph No. 20
Picture of Core No. 9 split open to evaluate the degree of stripping occurring.

Core 1

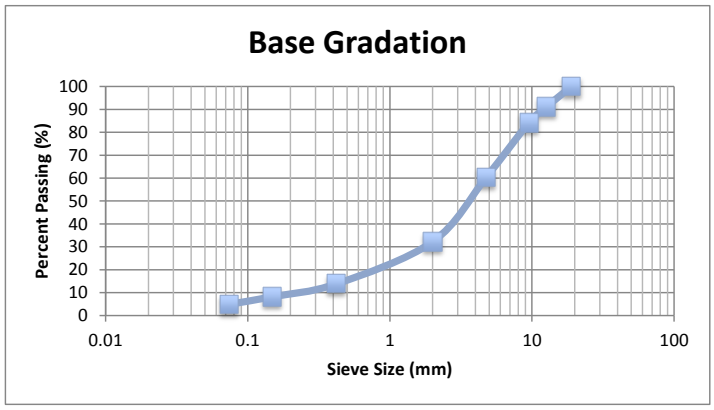
Base

Visual Classification: US 54 Camdenton MO, Light brown/tan, gravelly, rounded/subrounded particles

Moisture Content	
Initial Sample + Pan (g)	383.2
Weight of Pan (g)	79
Initial Weight	304.2
Dry Weight + Pan	360.9
Dry Weight	281.9
Water content	8%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	50.6	8.8	91.2
3/8"	9.51	41.2	7.1	84.1
No. 4	4.76	137.1	23.8	60.3
No. 10	2	162.3	28.1	32.2
No. 40	0.42	100.3	18.4	13.8
No. 100	0.149	32.1	5.6	8.2
No. 200	0.074	18.9	3.3	4.9
Pan		28.4	4.9	0



D_{10} = 0.2mm
D_{30} = 2mm
D_{60} = 4.9mm
C_u = 24.5
C_c = 4.08
% Gravel= 39.7
% Sand= 55.4
% Fines= 4.9
Unified Soil Classification: SP Poorly Graded Sand with Gravel

Atterberg Limits

*Non Plastic

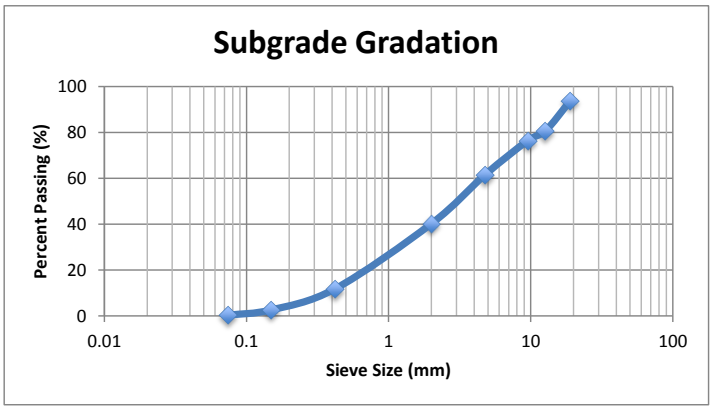
Subgrade

Visual Classification: US 54 Camdenton MO, Red-Brown, gravelly with some fines, angular particles

Moisture Content	
Initial Sample + Pan (g)	555.5
Weight of Pan (g)	196.5
Initial Weight	359
Dry Weight + Pan	535.7
Dry Weight	339.2
Water content	6%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	42.1	6.2	93.8
1/2"	12.7	88.1	13.1	80.7
3/8"	9.51	28.7	4.3	76.4
No. 4	4.76	100.4	14.9	61.5
No. 10	2	143.8	21.3	40.2
No. 40	0.42	191.8	28.4	11.8
No. 100	0.149	61.7	9.2	2.6
No. 200	0.074	15.2	2.3	0.3
Pan		2.5	0.3	0



D_{10} = 0.37mm
D_{30} = 1.3mm
D_{60} = 4.1mm
C_u = 11.08
C_c = 1.11
% Gravel= 38.5
% Sand= 61.2
% Fines= 0.3
Unified Soil Classification: SW Well-graded sand with gravel

Atterberg Limits

*Non Plastic

Core 3

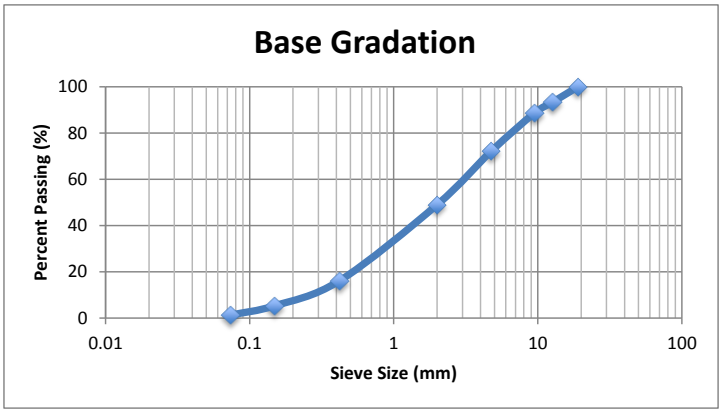
Base

Visual Classification: US 54 Camdenton MO, Light brown/tan, gravelly, angular particles

Moisture Content	
Initial Sample + Pan (g)	909.2
Weight of Pan (g)	532.5
Initial Weight	376.7
Dry Weight + Pan	883.7
Dry Weight	351.2
Water content	7%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	43.1	6.6	93.4
3/8"	9.51	30.8	4.7	88.7
No. 4	4.76	108	16.5	72.2
No. 10	2	151.3	23.2	49
No. 40	0.42	214.4	32.9	16.1
No. 100	0.149	70.7	10.8	5.3
No. 200	0.074	26	3.9	1.3
Pan		8.3	1.3	0



D_{10} = 0.25mm
D_{30} = 0.85mm
D_{60} = 3mm
C_u = 12
C_c = 0.96
% Gravel= 27.8
% Sand= 70.9
% Fines= 1.3
Unified Soil Classification: SP- Poorly-graded sand with gravel

Atterberg Limits

*Non Plastic

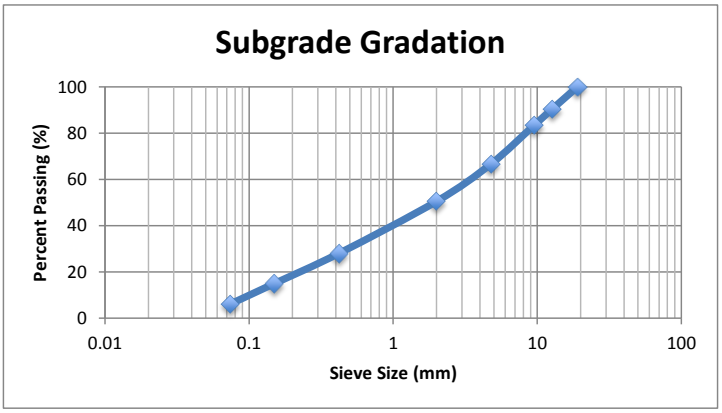
Subgrade

Visual Classification: US 54 Camdenton MO, gray, lots of sand with some gravel, rounded/angular particles

Moisture Content	
Initial Sample + Pan (g)	398.7
Weight of Pan (g)	113.3
Initial Weight	285.4
Dry Weight + Pan	388.9
Dry Weight	275.6
Water content	4%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	53.8	9.6	90.4
3/8"	9.51	39.3	7	83.4
No. 4	4.76	94.3	16.8	66.6
No. 10	2	90.7	16.1	50.5
No. 40	0.42	126.7	22.5	28
No. 100	0.149	73.6	13.1	14.9
No. 200	0.074	49.5	8.8	6.1
Pan		34	6.1	0



D_{10} = 0.07mm
D_{30} = 0.5mm
D_{60} = 3.1mm
C_u = 44.3
C_c = 1.2
% Gravel= 33.4
% Sand= 60.5
% Fines= 6.1
Unified Soil Classification: SW-SM - Well-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

Core 5

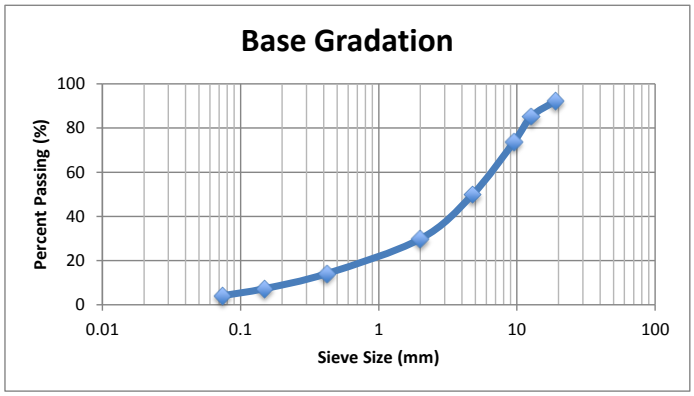
Base

Visual Classification: US 54 Camdenton MO, Dark Brown, muddy, moist, very clumped together

Moisture Content	
Initial Sample + Pan (g)	491
Weight of Pan (g)	78.6
Initial Weight	412.4
Dry Weight + Pan	448.1
Dry Weight	369.5
Water content	12%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	43.9	7.8	92.2
1/2"	12.7	39.5	7	85.2
3/8"	9.51	64.6	11.5	73.7
No. 4	4.76	134	23.9	49.8
No. 10	2	112.3	20	29.8
No. 40	0.42	88.3	15.7	14.1
No. 100	0.149	38.4	6.8	7.3
No. 200	0.074	18.2	3.2	4.1
Pan		22.3	4.1	0



D_{10} = 0.2mm
D_{30} = 2mm
D_{60} = 6.5mm
C_u = 32.5
C_c = 3.1
% Gravel= 50.2
% Sand= 45.7
% Fines= 4.1
Unified Soil Classification: GP - Poorly-graded gravel with sand

Atterberg Limits

*Non Plastic

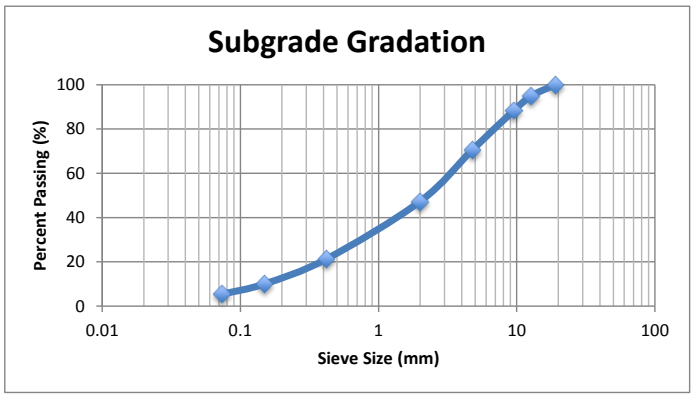
Subgrade

Visual Classification: US 54 Camdenton MO, Light brown/tan, mostly gravel, rounded/sunrounded particles

Moisture Content	
Initial Sample + Pan (g)	476.7
Weight of Pan (g)	194.8
Initial Weight	281.9
Dry Weight + Pan	456.5
Dry Weight	261.7
Water content	8%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	100	100
1/2"	12.7	31.1	5.2	94.9
3/8"	9.51	39.2	6.5	88.3
No. 4	4.76	107.3	17.8	70.5
No. 10	2	139.9	23.2	47.3
No. 40	0.42	156.6	26	21.3
No. 100	0.149	68.2	11.3	10
No. 200	0.074	27.9	4.6	5.4
Pan		32.1	5.4	0



D_{10} = 0.15mm
D_{30} = 0.71mm
D_{60} = 2.1mm
C_u = 14
C_c = 1.6
% Gravel= 29.5
% Sand= 65.1
% Fines= 5.4
Unified Soil Classification: SW-SM - Well-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

Core 7

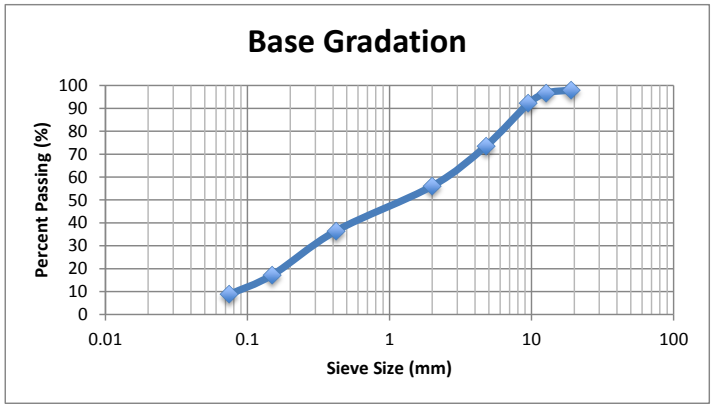
Base

Visual Classification: US 54 Camdenton MO, dark brown/tan, mostly gravel, some mositure, rounded/subrounded

Moisture Content	
Initial Sample + Pan (g)	867.2
Weight of Pan (g)	297.6
Initial Weight	569.6
Dry Weight + Pan	809.2
Dry Weight	511.6
Water content	11%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	11.2	2	98
1/2"	12.7	7.4	1.3	96.7
3/8"	9.51	25.8	4.6	92.1
No. 4	4.76	103.3	18.6	73.5
No. 10	2	96.8	17.4	56.1
No. 40	0.42	108.8	19.6	36.5
No. 100	0.149	107.5	19.3	17.2
No. 200	0.074	47.2	8.5	8.7
Pan		48.3	8.7	0



D_{10} = 0.69mm
D_{30} = 0.3mm
D_{60} = 2.5mm
C_u = 3.6
C_c = 0.05
% Gravel= 26.5
% Sand= 64.8
% Fines= 8.7
Unified Soil Classification: SP-SM - Poorly-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

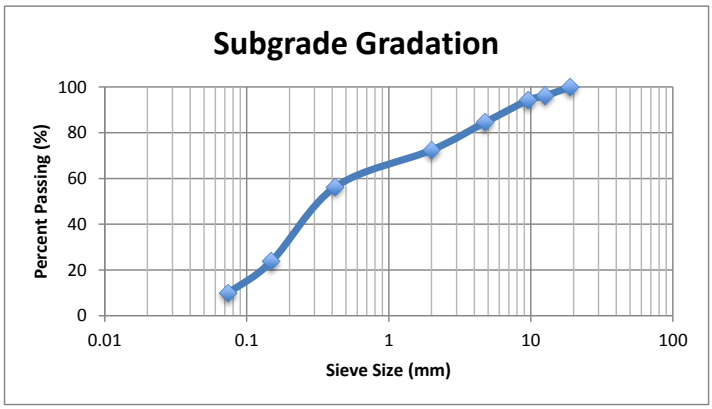
Subgrade

Visual Classification: US 54 Camdenton MO, gray, mostly sand and gravel, angular/subangular particles

Moisture Content	
Initial Sample + Pan (g)	829.8
Weight of Pan (g)	529.1
Initial Weight	300.7
Dry Weight + Pan	818.4
Dry Weight	289.3
Water content	4%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	100	100
1/2"	12.7	21.2	3.8	96.2
3/8"	9.51	11.6	2.1	94.1
No. 4	4.76	53.2	9.6	84.5
No. 10	2	66.7	12.1	72.4
No. 40	0.42	88.9	16.1	56.3
No. 100	0.149	180.2	32.6	23.7
No. 200	0.074	76.2	13.8	9.9
Pan		54.6	9.9	0



D_{10} = 0.049mm
D_{30} = 0.19mm
D_{60} = 0.5mm
C_u = 10.2
C_c = 1.5
% Gravel= 15.5
% Sand= 74.6
% Fines= 9.9
Unified Soil Classification: SW-SM - Well-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

Core 9

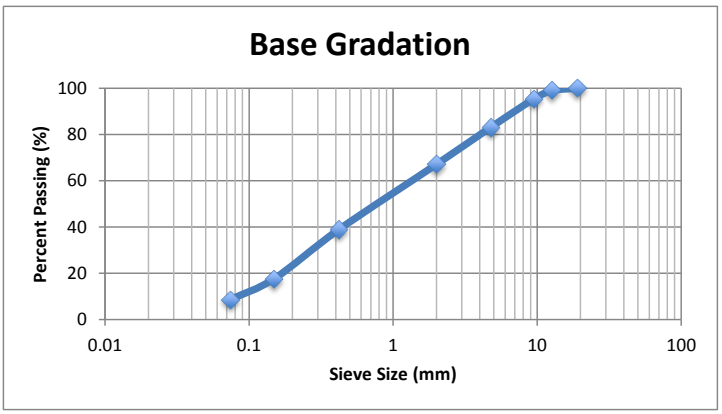
Base

Visual Classification: US 54 Camdenton MO, very light brown, fines w/gravel, rounded/angular particles

Moisture Content	
Initial Sample + Pan (g)	905.1
Weight of Pan (g)	618.5
Initial Weight	286.6
Dry Weight + Pan	880.1
Dry Weight	261.6
Water content	10%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	100	100
1/2"	12.7	6	1	99
3/8"	9.51	21.6	3.6	95.4
No. 4	4.76	73.7	12.3	83.1
No. 10	2	95.9	16	67.1
No. 40	0.42	169.4	28.2	38.9
No. 100	0.149	127.9	21.3	17.6
No. 200	0.074	53.4	9	8.6
Pan		52.1	8.6	0



D_{10} = 0.06mm
D_{30} = 0.29mm
D_{60} = 1.4mm
C_u = 23.3
C_c = 1
% Gravel= 16.9
% Sand= 74.5
% Fines= 8.6
Unified Soil Classification: SW-SM - Well-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

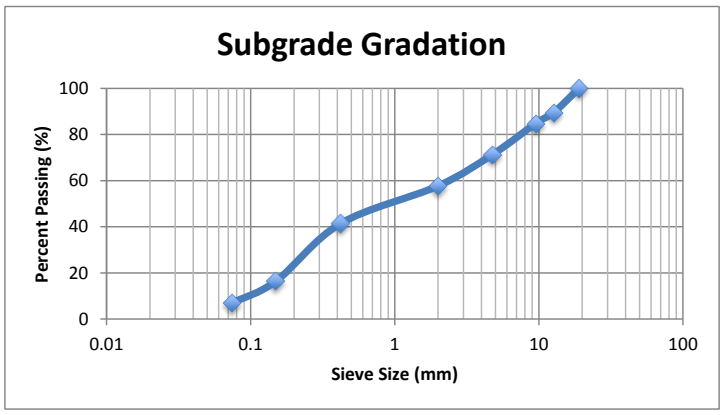
Subgrade

Visual Classification: US 54 Camdenton MO, light gray, mostly gravel, angular/subangular particles

Moisture Content	
Initial Sample + Pan (g)	781.4
Weight of Pan (g)	524.1
Initial Weight	257.3
Dry Weight + Pan	770.8
Dry Weight	246.7
Water content	4%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	100	100
1/2"	12.7	62.9	10.4	89.6
3/8"	9.51	28.8	4.8	84.8
No. 4	4.76	81.7	13.5	71.3
No. 10	2	82	13.6	57.7
No. 40	0.42	98.8	16.3	41.4
No. 100	0.149	151.7	25.1	16.3
No. 200	0.074	57	9.4	6.9
Pan		42.1	6.9	0



D_{10} = 0.075mm
D_{30} = 0.15mm
D_{60} = 2.3mm
C_u = 30.7
C_c = 0.13
% Gravel= 28.7
% Sand= 64.4
% Fines= 6.9
Unified Soil Classification: SP-SM - Poorly-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

Section 2 Date

ibr>8	green
6 to 8	yellow
<6	red

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 1	1	330	335	13.2	5	5	48.1	53.4	72.2	26.2	
	1	335	340	13.4	5	5	48.1	53.4	72.2	26.2	0.2
	2	340	345	13.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	355	360	14.2	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	365	370	14.6	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	370	375	14.8	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	375	380	15.0	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	380	385	15.2	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	385	390	15.4	5	1.6666667	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 2	1	310	315	12.4	5	5	48.1	53.4	72.2	26.2	
	1	315	320	12.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	320	325	12.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	335	340	13.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	340	345	13.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	4	345	350	13.8	5	1.25	227.4	306.0	341.1	44.9	0.2
	3	350	355	14.0	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	355	360	14.2	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	360	365	14.4	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	365	370	14.6	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	370	375	14.8	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	375	380	15.0	5	1.6666667	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 3	1	305	315	12.4	10	10	22.2	22.3	33.2	20.0	
	1	315	320	12.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	320	325	12.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	335	340	13.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	340	345	13.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	345	350	13.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	370	375	14.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	375	380	15.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	385	390	15.4	5	2.5	104.6	127.9	157.0	34.3	0.4
	1	390	395	15.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	395	400	15.7	5	5	48.1	53.4	72.2	26.2	0.2
	1	400	405	15.9	5	5	48.1	53.4	72.2	26.2	0.2
	1	405	410	16.1	5	5	48.1	53.4	72.2	26.2	0.2
	1	410	415	16.3	5	5	48.1	53.4	72.2	26.2	0.2
	1	415	420	16.5	5	5	48.1	53.4	72.2	26.2	0.2
	1	420	425	16.7	5	5	48.1	53.4	72.2	26.2	0.2
	1	425	430	16.9	5	5	48.1	53.4	72.2	26.2	0.2
	1	430	435	17.1	5	5	48.1	53.4	72.2	26.2	0.2
	1	435	440	17.3	5	5	48.1	53.4	72.2	26.2	0.2
	1	440	445	17.5	5	5	48.1	53.4	72.2	26.2	0.2
	1	445	450	17.7	5	5	48.1	53.4	72.2	26.2	0.2
	1	450	455	17.9	5	5	48.1	53.4	72.2	26.2	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 4	1	340	345	13.6	5	5	48.1	53.4	72.2	26.2	
	2	345	350	13.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	370	375	14.8	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	375	380	15.0	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	2	380	385	15.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	385	390	15.4	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	390	395	15.6	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	395	400	15.7	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	400	405	15.9	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	405	410	16.1	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	410	415	16.3	5	1.6666667	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 5	1	315	320	12.6	5	5	48.1	53.4	72.2	26.2	
	1	320	325	12.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	335	340	13.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	340	345	13.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	345	350	13.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	365	370	14.6	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	2	370	375	14.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	375	380	15.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	380	385	15.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	385	395	15.6	10	3.3333333	75.8	89.0	113.7	30.6	0.4
	2	395	400	15.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	400	405	15.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	405	410	16.1	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	410	415	16.3	5	2.5	104.6	127.9	157.0	34.3	0.2

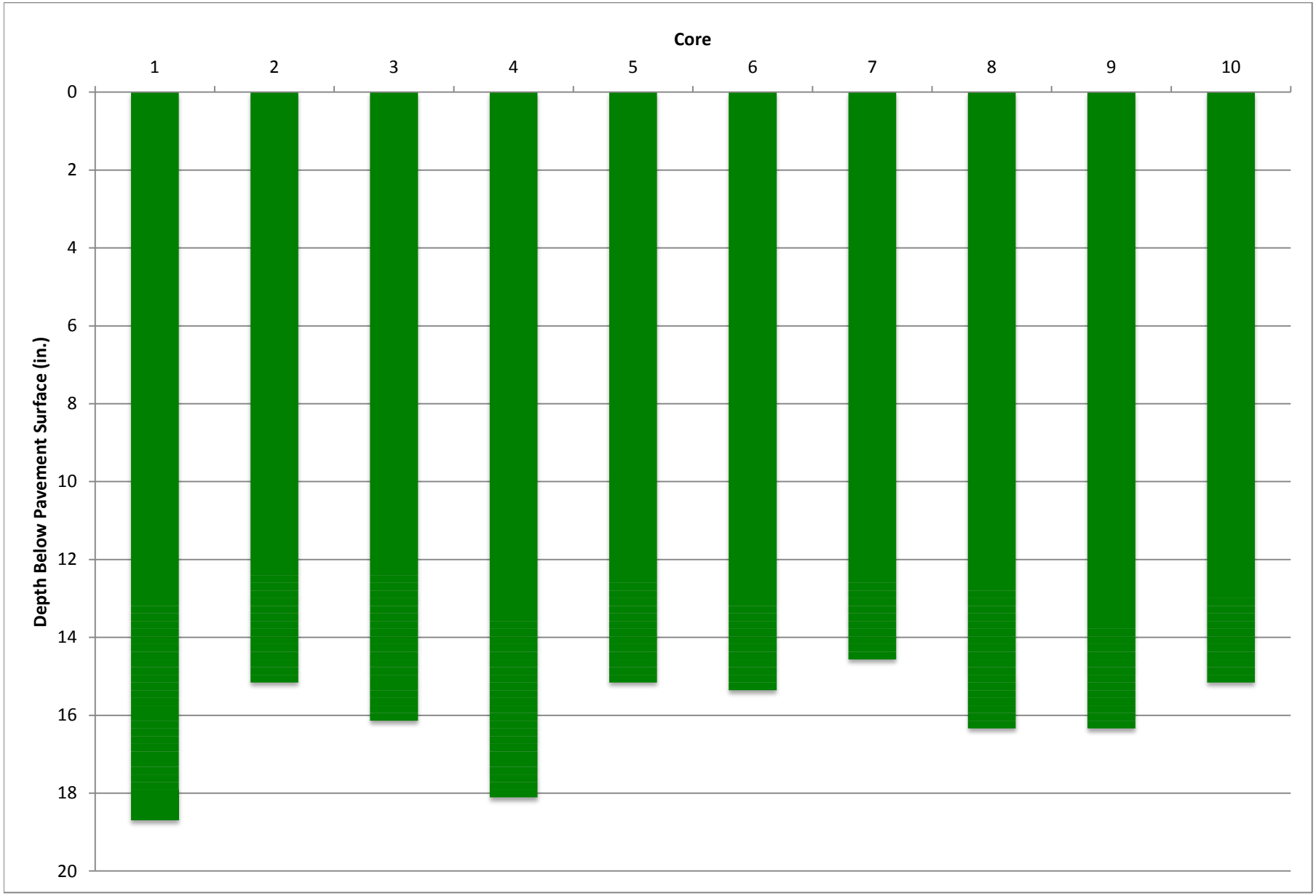
Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 6	1	325	335	13.2	10	10	22.2	22.3	33.2	20.0	
	1	335	340	13.4	5	5	48.1	53.4	72.2	26.2	0.2
	2	340	345	13.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	370	375	14.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	375	380	15.0	5	5	48.1	53.4	72.2	26.2	0.2
	2	380	385	15.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	385	390	15.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	390	395	15.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	395	400	15.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	400	405	15.9	5	5	48.1	53.4	72.2	26.2	0.2
	1	405	410	16.1	5	5	48.1	53.4	72.2	26.2	0.2
	1	410	415	16.3	5	5	48.1	53.4	72.2	26.2	0.2
	2	415	420	16.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	420	425	16.7	5	5	48.1	53.4	72.2	26.2	0.2
	1	425	430	16.9	5	5	48.1	53.4	72.2	26.2	0.2
	1	430	435	17.1	5	5	48.1	53.4	72.2	26.2	0.2
	2	435	440	17.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	440	445	17.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	445	450	17.7	5	2.5	104.6	127.9	157.0	34.3	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 7	1	310	320	12.6	10	10	22.2	22.3	33.2	20.0	
	1	320	325	12.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	335	340	13.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	340	345	13.6	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	2	345	350	13.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	350	355	14.0	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	355	360	14.2	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	360	365	14.4	5	1.6666667	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 8	1	315	325	12.8	10	10	22.2	22.3	33.2	20.0	
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	335	340	13.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	340	345	13.6	5	5	48.1	53.4	72.2	26.2	0.2
	3	345	350	13.8	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	350	355	14.0	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	360	365	14.4	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	365	370	14.6	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	370	375	14.8	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	375	380	15.0	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	3	380	385	15.2	5	1.6666667	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 9	1	340	350	13.8	10	10	22.2	22.3	33.2	20.0	
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	355	360	14.2	5	5	48.1	53.4	72.2	26.2	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	365	370	14.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	370	375	14.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	375	380	15.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	380	385	15.2	5	5	48.1	53.4	72.2	26.2	0.2
	2	385	390	15.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	390	395	15.6	5	1.6666667	164.8	213.0	247.2	40.1	0.2
	4	395	400	15.7	5	1.25	227.4	306.0	341.1	44.9	0.2
	5	400	405	15.9	5	1	292.0	405.3	438.0	49.0	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 10	1	325	330	13.0	5	5	48.1	53.4	72.2	26.2	
	1	330	335	13.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	335	340	13.4	5	5	48.1	53.4	72.2	26.2	0.2
	2	340	345	13.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	370	375	14.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	375	380	15.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	380	385	15.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	385	390	15.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	390	395	15.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	395	400	15.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	400	405	15.9	5	5	48.1	53.4	72.2	26.2	0.2
	2	405	410	16.1	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	410	415	16.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	415	420	16.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	420	425	16.7	5	5	48.1	53.4	72.2	26.2	0.2
	2	425	430	16.9	5	2.5	104.6	127.9	157.0	34.3	0.2


Core
1
2
3
4
5
6
7
8
9
10
Depth Below Pavement Surface (in.)
0
2
4
6
8
10
12
14
16
18
20

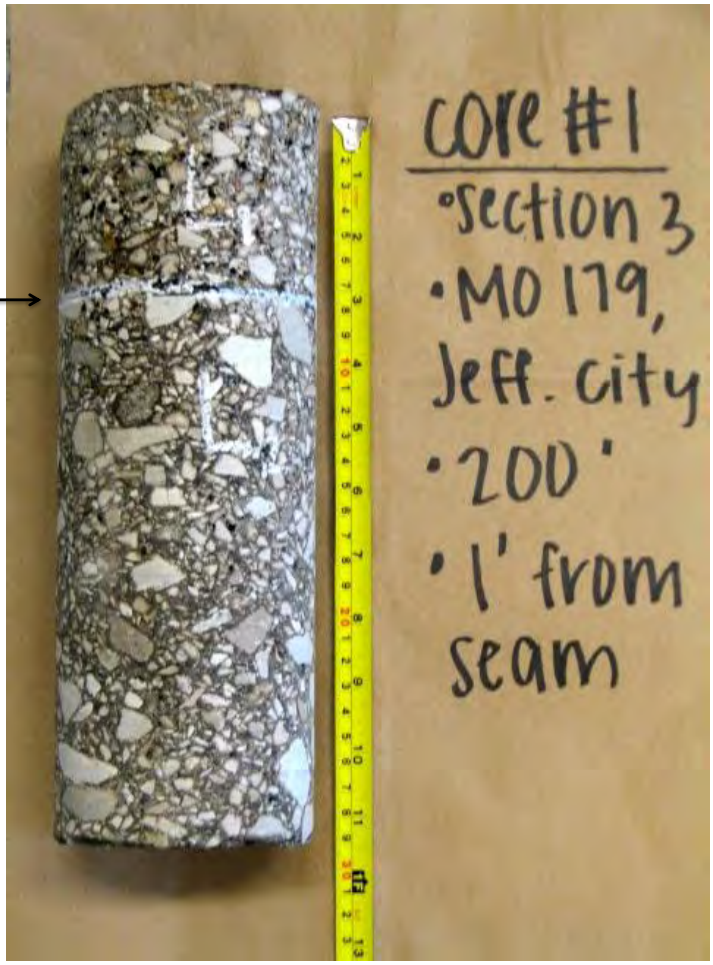
MO 179, Jefferson City
MO
Core No. 1

Extraction Date: December 11, 2012

Core No. 1	
Distance from beginning (ft)	200
Distance from seam (ft)	1.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	HMA	3"	Low	2291
	2	HMA	8 1/4"	High	1415
		Total AC Thickness	11 1/4"		

Z



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Well Bonded	714

Photograph No. 1
Picture of Core No. 1 extracted from pavement.

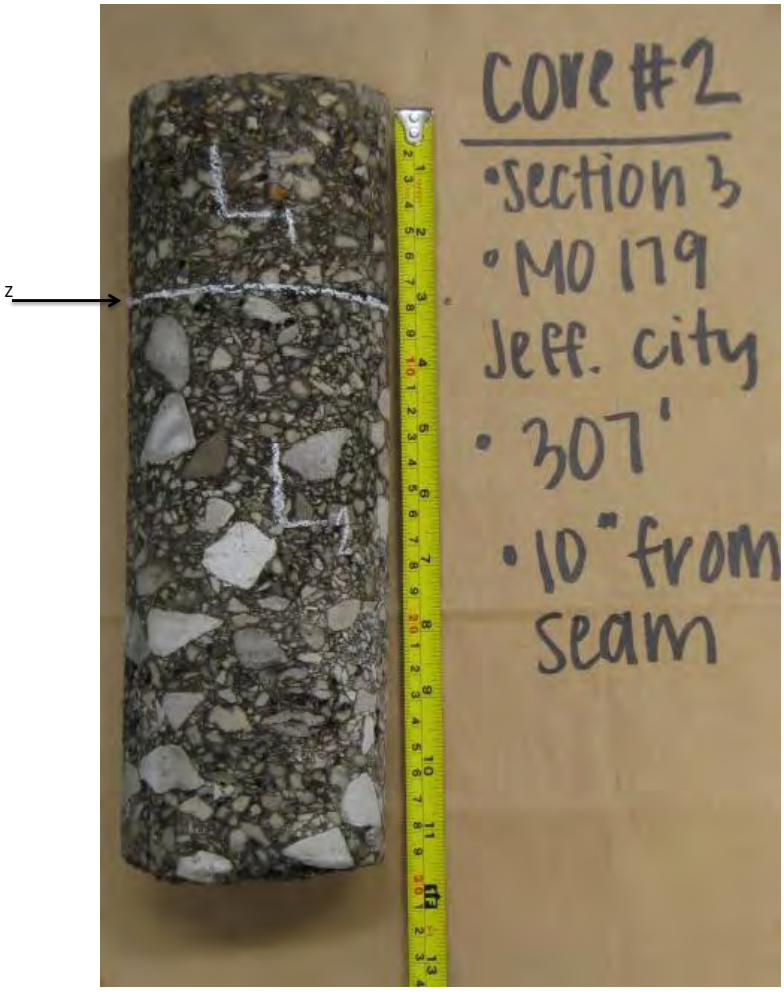
Photograph No. 2
Picture of Core No. 1 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 2

Extraction Date: December 11, 2012

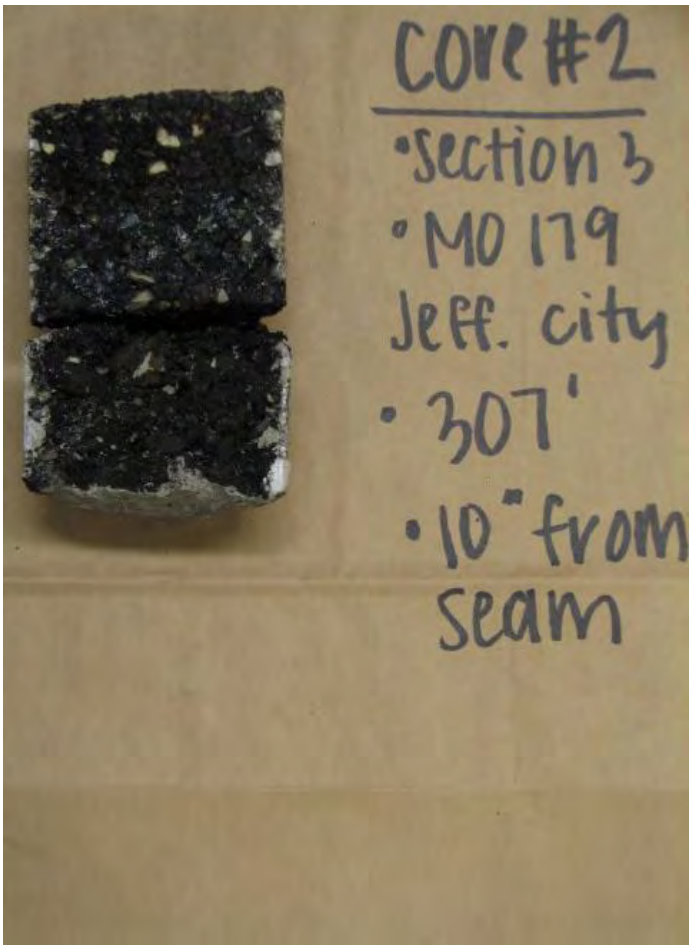
Core No. 2	
Distance from beginning (ft)	307
Distance from seam (ft)	10.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
2	1	HMA	3 1/4"	Low	1914
	2	HMA	8 1/4"	High	1615
		Total AC Thickness	11 1/2"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Well Bonded	801

Photograph No. 3
Picture of Core No. 2 extracted from pavement.



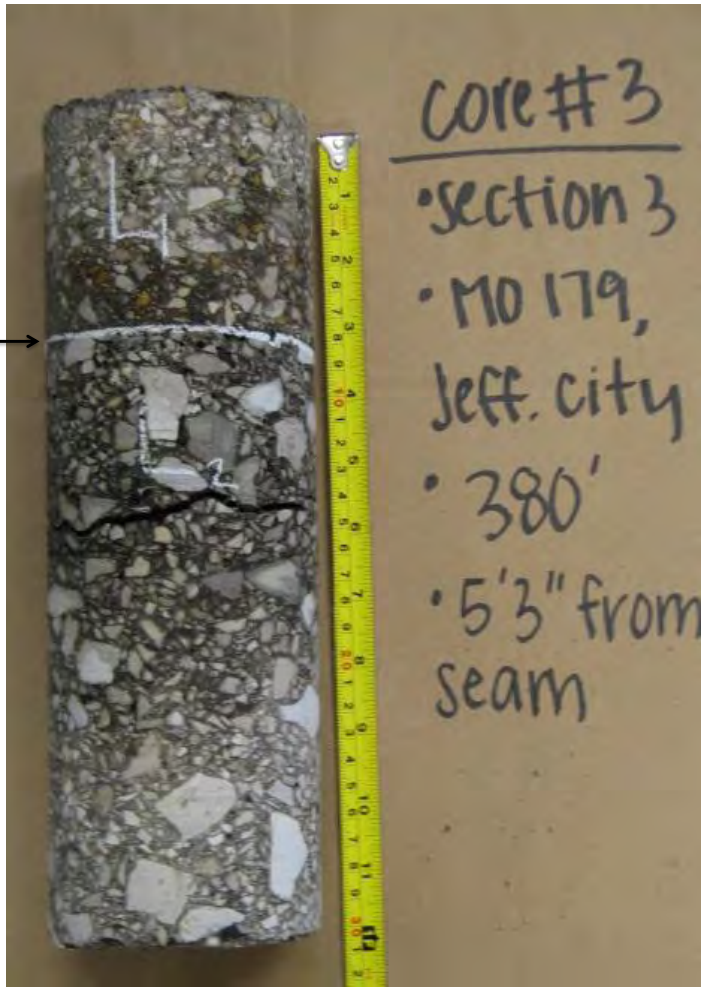
Photograph No. 4
Picture of Core No. 2 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 3

Extraction Date: December 11, 2012

Core No. 3	
Distance from beginning (ft)	380
Distance from seam (ft)	5' 3"

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
3	1	HMA	3 1/4"	Low	2591
	2	HMA	8 1/4"	Moderate	814
		Total AC Thickness	11 1/2"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Well Bonded	848

Photograph No. 5
Picture of Core No. 3 extracted from pavement.

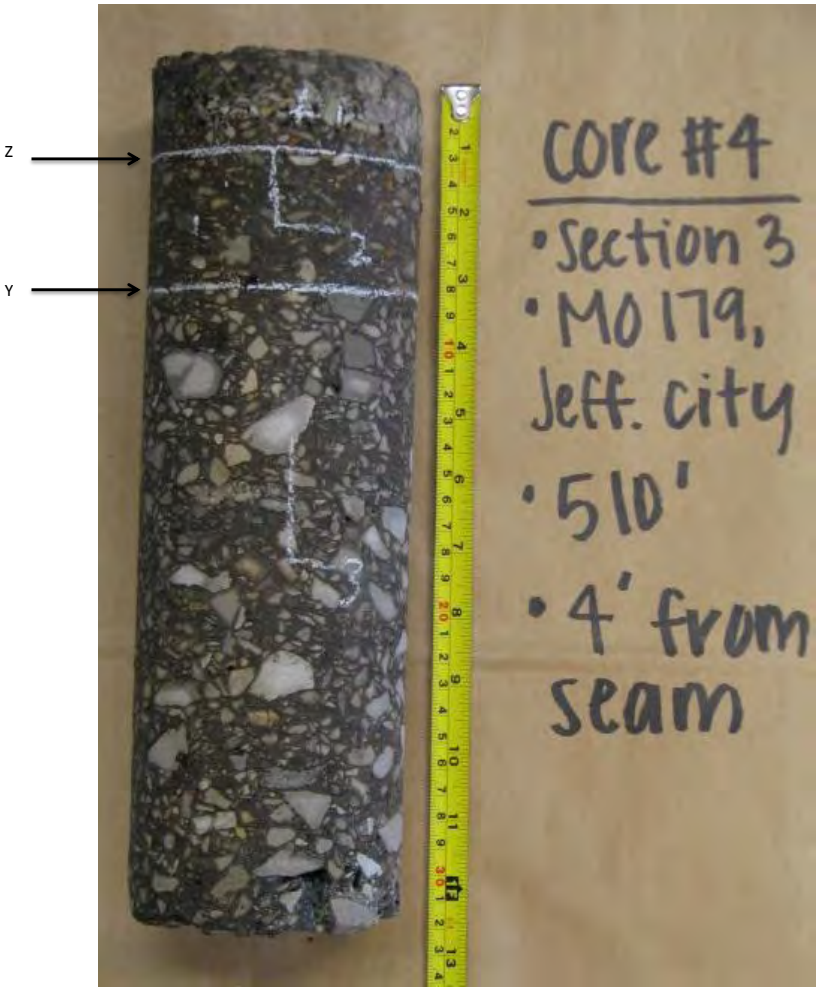
Photograph No. 6
Picture of Core No. 3 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 4

Extraction Date: December 11, 2012

Core No. 4	
Distance from beginning (ft)	510
Distance from seam (ft)	4.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	HMA	1 1/2"	Low	1149
	2	HMA	2"	Low	1443
	3	HMA	8 3/4"	High	1268
		Total AC Thickness	12 1/4"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	1492
Y	Well Bonded	816

Photograph No. 7
Picture of Core No. 4 extracted from pavement.

Photograph No. 8
Picture of Core No. 4 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 5

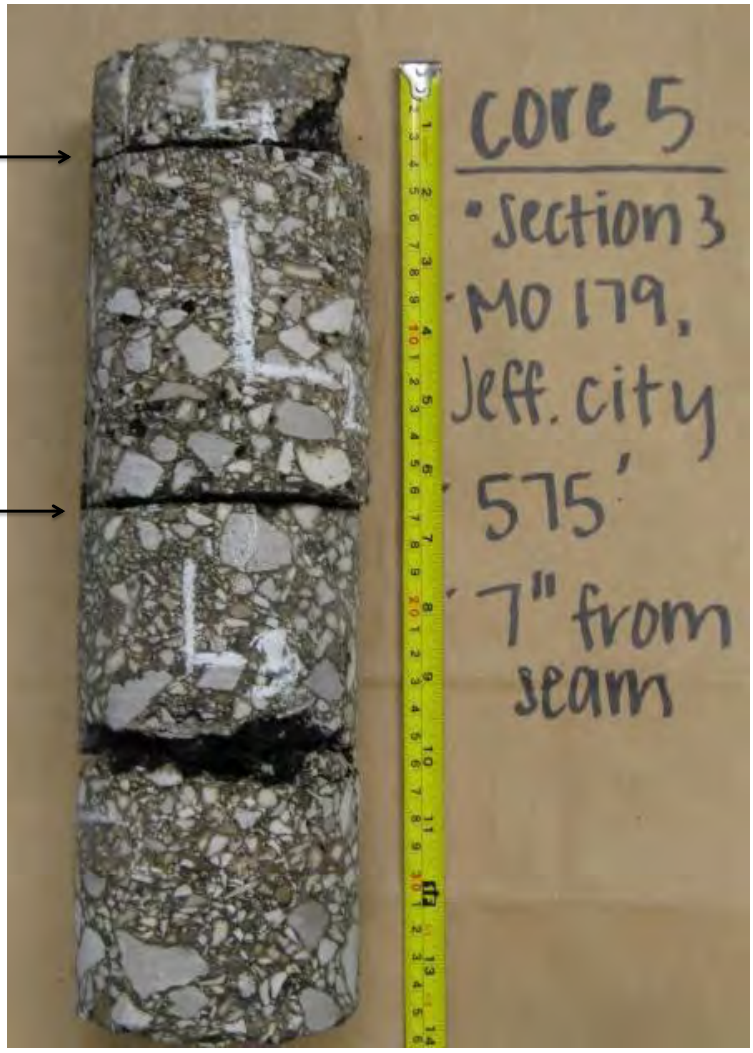
Extraction Date: December 11, 2012

Core No. 5	
Distance from beginning (ft)	575
Distance from seam (ft)	7.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
5	1	HMA	1 1/2"	Low	1099
	2	HMA	4 1/2"	High	2842
	3	HMA	6 1/4"	High	1719
		Total AC Thickness	12 1/4"		

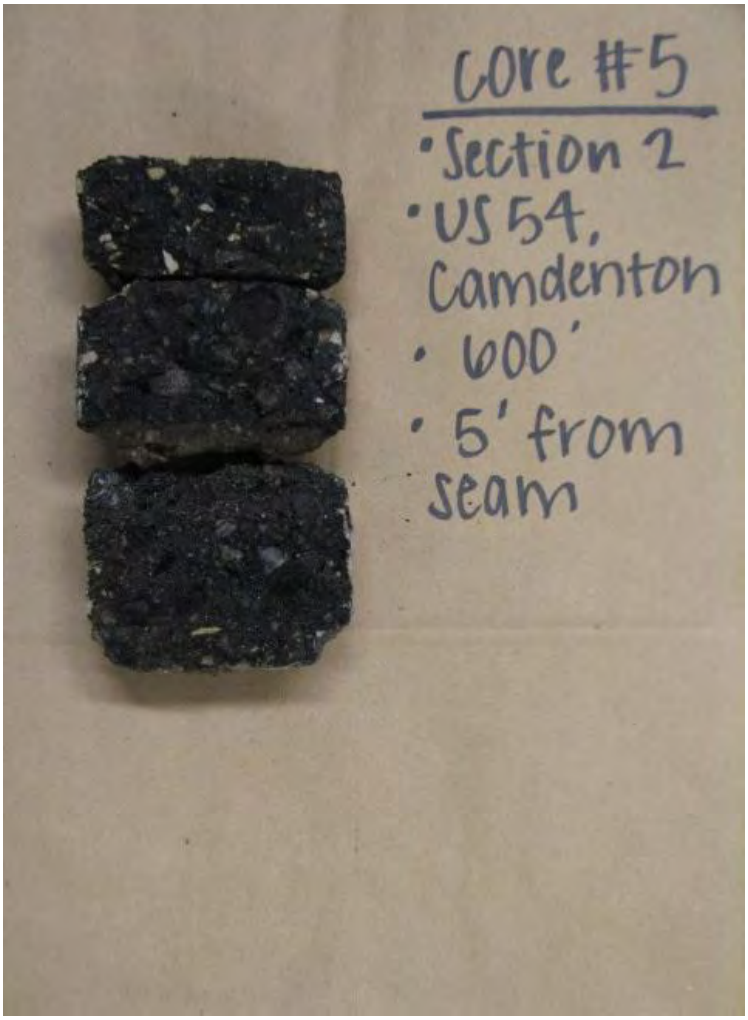
Z

Y



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	719
Y	Debonded	-

Photograph No. 9
Picture of Core No. 5 extracted from pavement.



Photograph No. 10

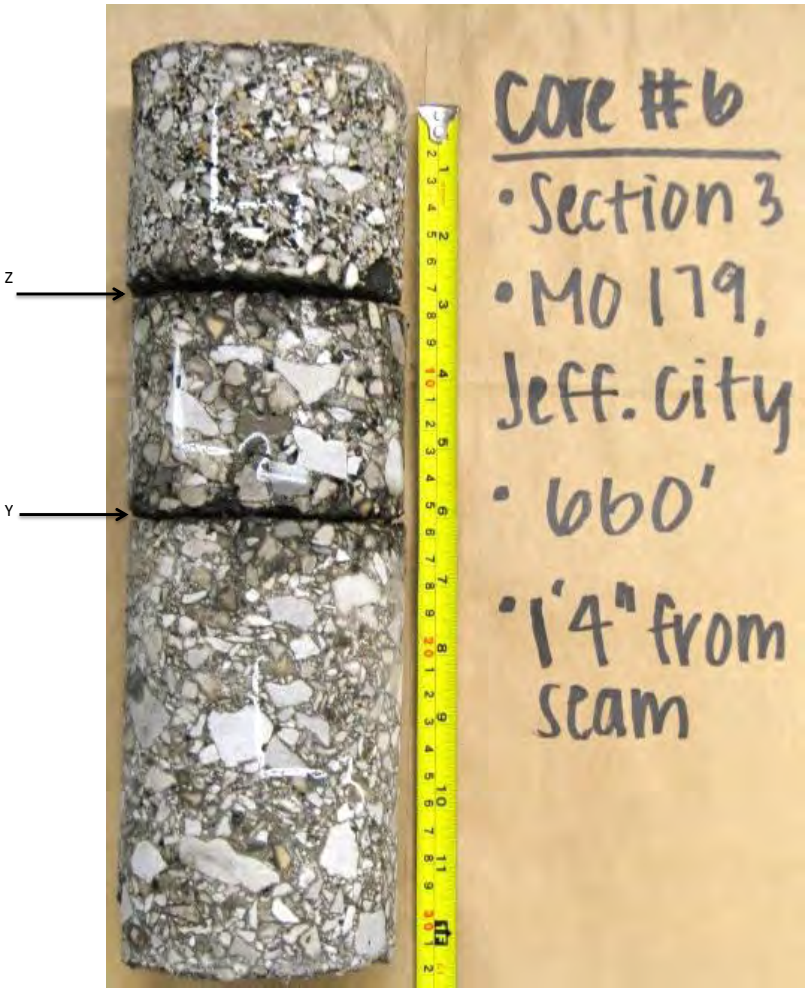
Picture of Core No. 5 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 6

Extraction Date: December 11, 2012

Core No. 6	
Distance from beginning (ft)	660
Distance from seam (ft)	1' 4"

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
6	1	HMA	3 1/4"	Low	1812
	2	HMA	3"	High	1209
	3	HMA	6"	High	1162
		Total Thickness	12 1/4"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Debonded	-
Y	Debonded	-

Photograph No. 11
Picture of Core No. 6 extracted from pavement.

Photograph No. 12
Picture of Core No. 6 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 7

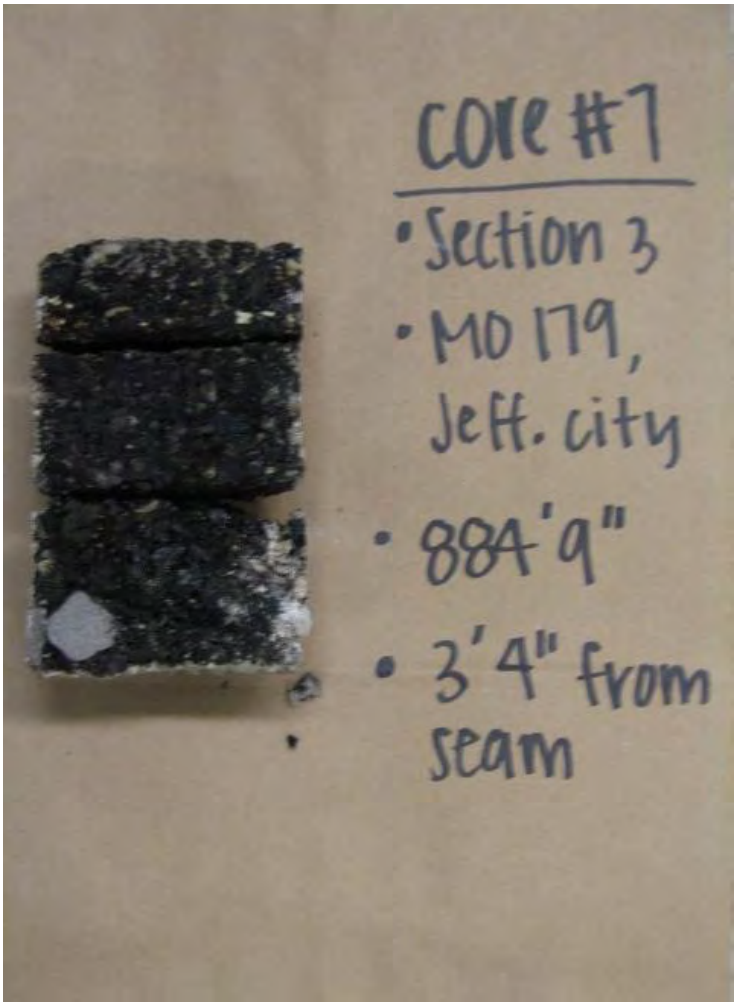
Extraction Date: December 11, 2012

Core No. 7	
Distance from beginning (ft)	884' 9"
Distance from seam (ft)	3' 4"

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
7	1	HMA	1 1/4"	Low	1722
	2	HMA	2"	Low	1635
	3	HMA	9 1/4"	High	1162
		Total AC Thickness	12 1/2"		

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	799
Y	Debonded	-

Photograph No. 13
Picture of Core No. 7 extracted from pavement.



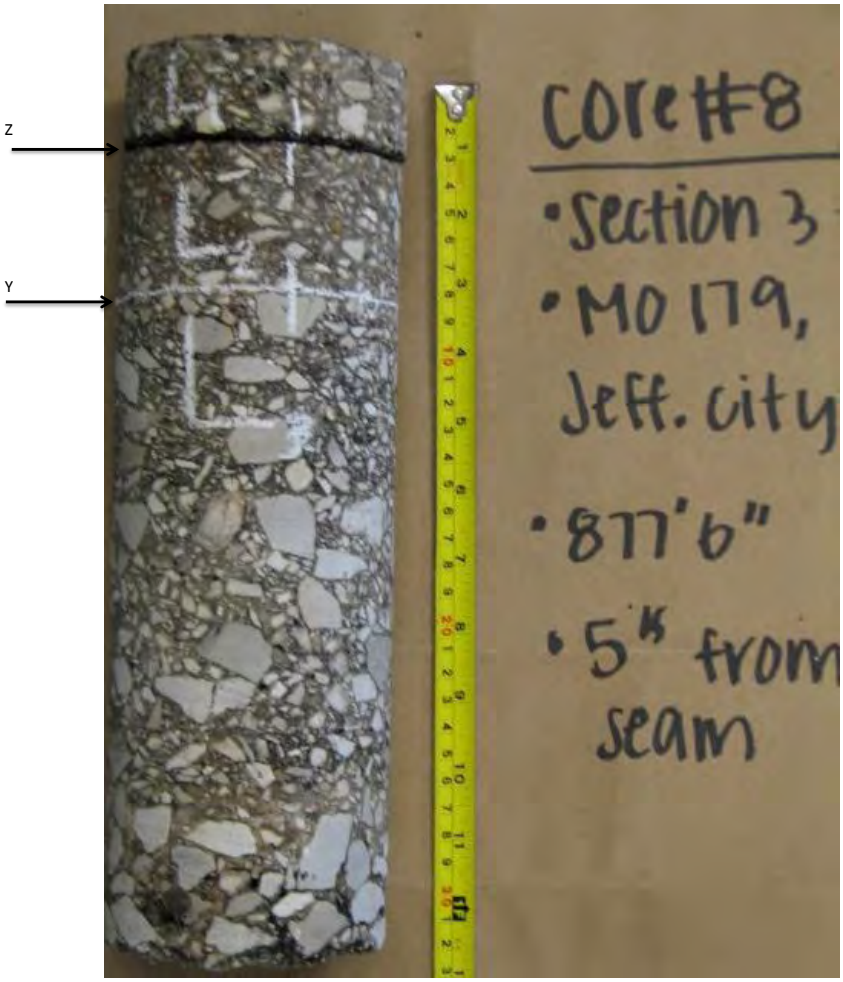
Photograph No. 14
Picture of Core No. 7 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 8

Extraction Date: December 11, 2012

Core No. 8	
Distance from beginning (ft)	877' 6"
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
8	1	HMA	1 1/4"	Low	682
	2	HMA	2"	Low	840
	3	HMA	9"	High	2208
		Total AC Thickness	12 1/4"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Debonded	-
Y	Well Bonded	834

Photograph No. 15
Picture of Core No. 8 extracted from pavement.

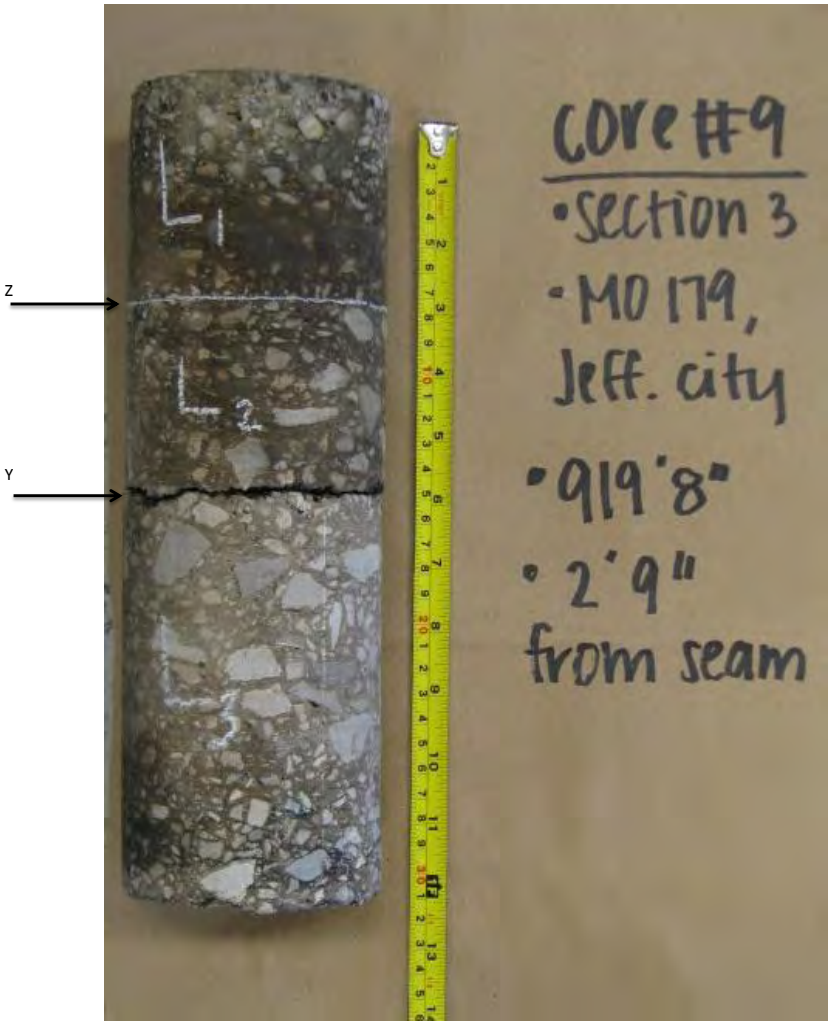
Photograph No. 16
Picture of Core No. 8 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 9

Extraction Date: December 11, 2012

Core No. 9	
Distance from beginning (ft)	919' 8"
Distance from seam (ft)	2' 9"

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
9	1	HMA	3 1/2"	Low	1868
	2	HMA	2 3/4"	Low	987
	3	HMA	5 3/4"	High	1869
		Total AC Thickness	12"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Well Bonded	801
y	Debonded	-

Photograph No. 17
Picture of Core No. 9 extracted from pavement.

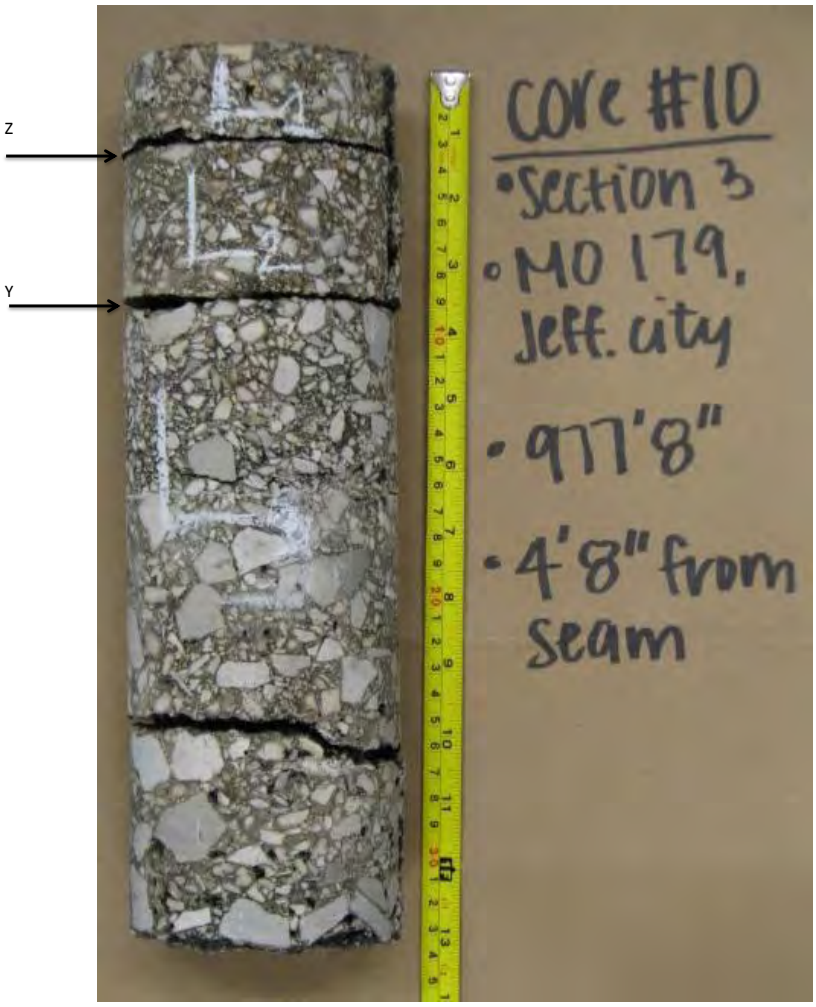
Photograph No. 18
Picture of Core No. 9 split open to evaluate the degree of stripping occurring.

MO 179, Jefferson City
MO
Core No. 10

Extraction Date: December 11, 2012

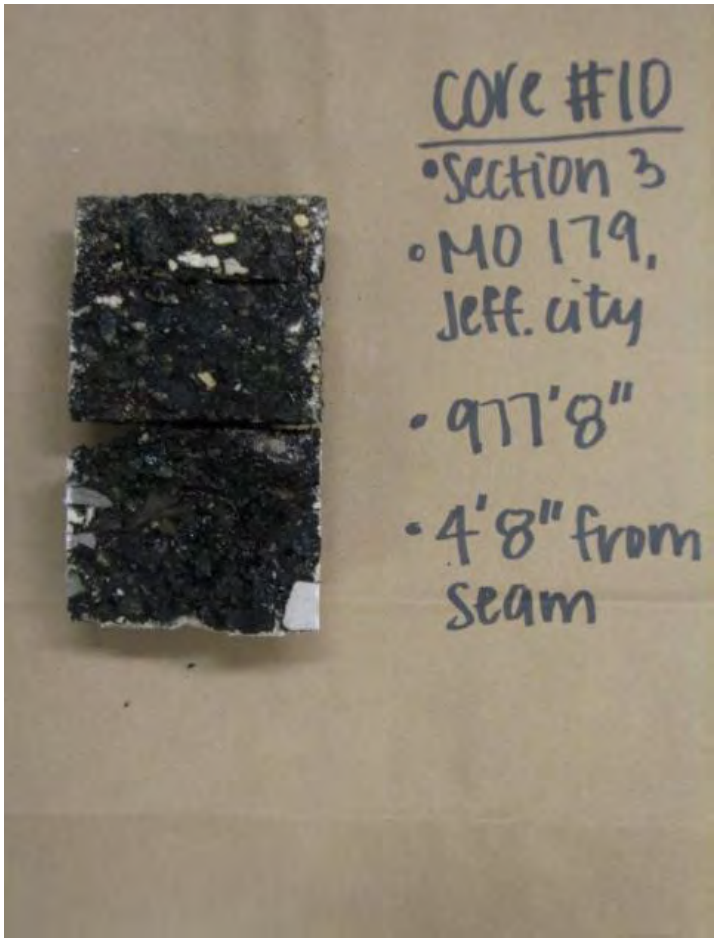
Core No. 10	
Distance from beginning (ft)	977' 8"
Distance from seam (ft)	4'8"

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
10	1	HMA	1 1/4"	Low	698
	2	HMA	2"	Low	899
	3	HMA	8 5/8"	High	2097
		Total AC Thickness	11 7/8"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Weak Bond	174
Y	Debonded	-

Photograph No. 19
Picture of Core No. 10 extracted from pavement.



Photograph No. 20
Picture of Core No. 10 split open to evaluate the degree of stripping occurring.

Core 1

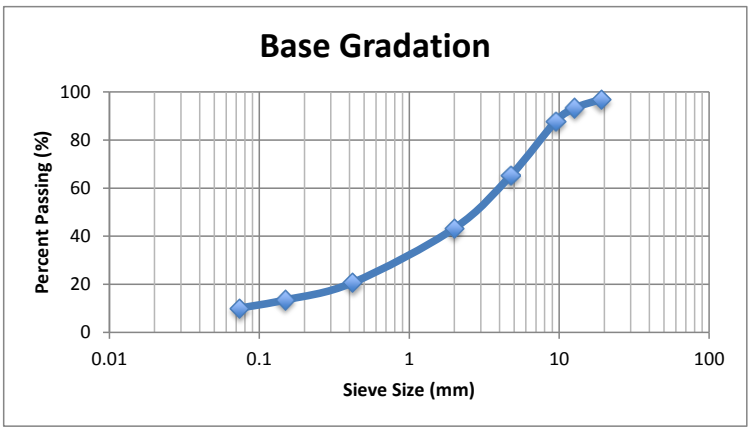
Base

Visual Classification: MO 179 Jefferson City MO, very light brown, mostly gravel, rounded/subrounded particles

Moisture Content	
Initial Sample + Pan (g)	645.2
Weight of Pan (g)	379.4
Initial Weight	265.8
Dry Weight + Pan	619.3
Dry Weight	239.9
Water content	11%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	17	3.1	96.9
1/2"	12.7	20	3.6	93.3
3/8"	9.51	29.9	5.4	87.9
No. 4	4.76	125.3	22.6	65.3
No. 10	2	122.1	22	43.3
No. 40	0.42	125.1	22.6	20.7
No. 100	0.149	40.1	7.2	13.5
No. 200	0.074	18.8	3.4	10.1
Pan		56.3	10.1	0



D_{10} = 0.047mm
D_{30} = 0.85mm
D_{60} = 4mm
C_u = 85.1
C_c = 3.8
% Gravel= 34.7
% Sand= 55.2
% Fines= 10.1
Unified Soil Classification: SP-SM - Poorly-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

Core 3

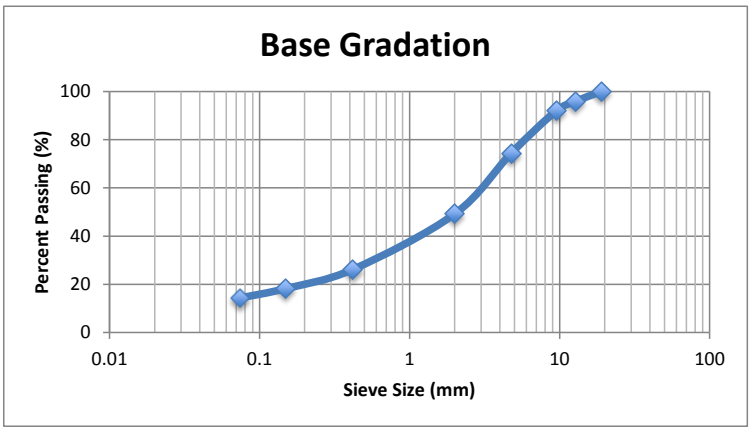
Base

Visual Classification: MO 179 Jefferson City MO, very light brown, gravel with some sands, angular/subangular particles

Moisture Content	
Initial Sample + Pan (g)	420.3
Weight of Pan (g)	261.2
Initial Weight	159.1
Dry Weight + Pan	407.5
Dry Weight	146.3
Water content	9%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	24.4	4.1	95.9
3/8"	9.51	23	3.9	92
No. 4	4.76	103.6	17.6	74.4
No. 10	2	148.8	25.2	49.2
No. 40	0.42	135.5	23	26.2
No. 100	0.149	46.7	8	18.2
No. 200	0.074	22.9	3.9	14.3
Pan		85.3	14.3	0



D_{10} = 0
D_{30} = 0.55mm
D_{60} = 3mm
C_u = -
C_c = -
% Gravel= 25.6
% Sand= 60.1
% Fines= 14.3
Unified Soil Classification: SM - Silty sand with gravel

Atterberg Limits

*Non Plastic

Core 5

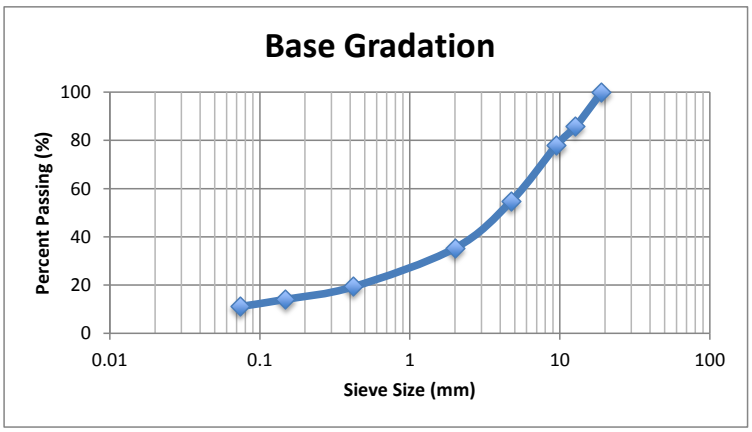
Base

Visual Classification: MO 179 Jefferson City MO, very light brown, gravel with some fines, mosit, angular particles

Moisture Content	
Initial Sample + Pan (g)	720.5
Weight of Pan (g)	369
Initial Weight	351.5
Dry Weight + Pan	680.4
Dry Weight	311.4
Water content	13%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	80.9	14.3	85.7
3/8"	9.51	43.6	7.7	78
No. 4	4.76	131.3	23.1	54.9
No. 10	2	111.2	19.6	35.3
No. 40	0.42	90.7	16	19.3
No. 100	0.149	29.6	5.2	14.1
No. 200	0.074	17.2	3	11.1
Pan		62.9	11.1	0



D_{10} = 0
D_{30} = 1.2mm
D_{60} = 5.4mm
C_u = -
C_c = -
% Gravel= 45.1
% Sand= 43.8
% Fines= 11.1
Unified Soil Classification: -

Atterberg Limits

*Non Plastic

Core 7

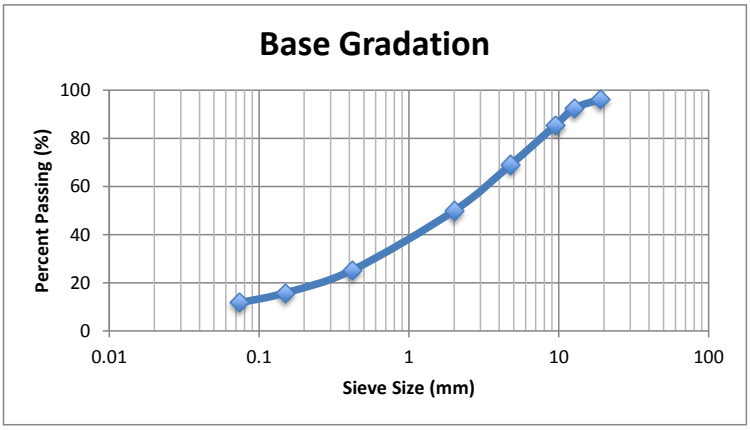
Base

Visual Classification: MO 179 Jefferson City MO, very light brown, smaller gravel particls with some sand, angular particles

Moisture Content	
Initial Sample + Pan (g)	867.1
Weight of Pan (g)	505.9
Initial Weight	361.2
Dry Weight + Pan	844.2
Dry Weight	338.3
Water content	7%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	22.6	3.8	96.2
1/2"	12.7	21.9	3.7	92.5
3/8"	9.51	41.3	7	85.5
No. 4	4.76	97.3	16.5	69
No. 10	2	112.5	19.1	49.9
No. 40	0.42	145.1	24.6	25.3
No. 100	0.149	56.1	9.5	15.8
No. 200	0.074	24.2	4.1	11.7
Pan		68.3	11.7	0



D_{10} = 0
D_{30} = 0.57mm
D_{60} = 3mm
C_u = -
C_c = -
% Gravel= 31
% Sand= 57.3
% Fines= 11.7
Unified Soil Classification: -

Atterberg Limits

*Non Plastic

Core 9

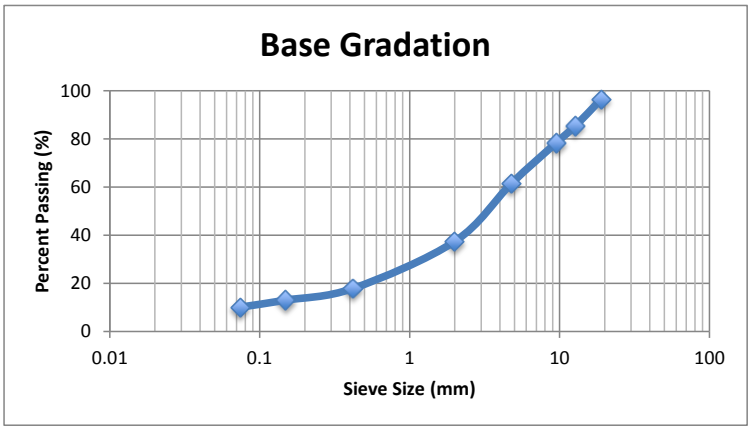
Base

Visual Classification: MO 179 Jefferson City MO, light brown/grayish, mostly gravel, angular particles

Moisture Content	
Initial Sample + Pan (g)	843.2
Weight of Pan (g)	296.2
Initial Weight	547
Dry Weight + Pan	792.4
Dry Weight	496.2
Water content	10%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	20.5	3.4	96.6
1/2"	12.7	67.9	11.3	85.3
3/8"	9.51	41.4	6.9	78.4
No. 4	4.76	101.8	17	61.4
No. 10	2	143.6	24	37.4
No. 40	0.42	117.1	19.5	17.9
No. 100	0.149	29.4	4.9	13
No. 200	0.074	17.4	2.9	10.1
Pan		61.4	10.1	0



D_{10} = 0.047mm
D_{30} = 1.3mm
D_{60} = 4.4mm
C_u = 93.6
C_c = 8.2
% Gravel= 38.6
% Sand= 51.3
% Fines= 10.1
Unified Soil Classification: SP-SM - Poorly-graded sand with silt and gravel

Atterberg Limits

*Non Plastic

Section	3							Date				ibr>8	green
												6 to 8	yellow
												<6	red
Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT		diff	
Core 1	1	335	345	13.6	10	10	22.2	22.3	33.2	20.0			
	2	345	365	14.4	20	10	22.2	22.3	33.2	20.0			0.8
	1	365	375	14.8	10	10	22.2	22.3	33.2	20.0			0.4
	2	375	390	15.4	15	7.5	30.6	32.1	45.9	22.3			0.6
	1	390	400	15.7	10	10	22.2	22.3	33.2	20.0			0.4
	3	400	420	16.5	20	6.66666667	34.9	37.2	52.3	23.4			0.8
	2	420	435	17.1	15	7.5	30.6	32.1	45.9	22.3			0.6
	2	435	445	17.5	10	5	48.1	53.4	72.2	26.2			0.4
	2	445	455	17.9	10	5	48.1	53.4	72.2	26.2			0.4
	2	455	465	18.3	10	5	48.1	53.4	72.2	26.2			0.4
	3	465	470	18.5	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	470	475	18.7	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	475	485	19.1	10	3.33333333	75.8	89.0	113.7	30.6			0.4
	3	485	490	19.3	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	490	495	19.5	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	495	500	19.7	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	500	505	19.9	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	505	510	20.1	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	510	515	20.3	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	515	525	20.7	10	3.33333333	75.8	89.0	113.7	30.6			0.4
	3	525	530	20.9	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	530	535	21.1	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	535	545	21.5	10	3.33333333	75.8	89.0	113.7	30.6			0.4
	3	545	550	21.7	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	550	560	22.0	10	3.33333333	75.8	89.0	113.7	30.6			0.4
	3	560	565	22.2	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	565	570	22.4	5	1.66666667	164.8	213.0	247.2	40.1			0.2
	3	570	570	22.4	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			0.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT		diff
Core 2	2	305	320	12.6	15	7.5	30.6	32.1	45.9	22.3		
	1	320	325	12.8	5	5	48.1	53.4	72.2	26.2		0.2
	1	325	330	13.0	5	5	48.1	53.4	72.2	26.2		0.2
	1	330	335	13.2	5	5	48.1	53.4	72.2	26.2		0.2
	1	335	340	13.4	5	5	48.1	53.4	72.2	26.2		0.2
	1	340	345	13.6	5	5	48.1	53.4	72.2	26.2		0.2
	2	345	350	13.8	5	2.5	104.6	127.9	157.0	34.3		0.2
	2	350	360	14.2	10	5	48.1	53.4	72.2	26.2		0.4
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3		0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3		0.2
	3	370	375	14.8	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	4	375	380	15.0	5	1.25	227.4	306.0	341.1	44.9		0.2
	3	380	385	15.2	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	385	390	15.4	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	390	395	15.6	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	4	395	400	15.7	5	1.25	227.4	306.0	341.1	44.9		0.2
	2	400	405	15.9	5	2.5	104.6	127.9	157.0	34.3		0.2
	2	405	410	16.1	5	2.5	104.6	127.9	157.0	34.3		0.2
	2	410	415	16.3	5	2.5	104.6	127.9	157.0	34.3		0.2
	2	415	420	16.5	5	2.5	104.6	127.9	157.0	34.3		0.2
	3	420	425	16.7	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	425	430	16.9	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	430	435	17.1	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	435	440	17.3	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	440	445	17.5	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	2	445	450	17.7	5	2.5	104.6	127.9	157.0	34.3		0.2
	2	450	455	17.9	5	2.5	104.6	127.9	157.0	34.3		0.2
	1	455	460	18.1	5	5	48.1	53.4	72.2	26.2		0.2
	2	460	465	18.3	5	2.5	104.6	127.9	157.0	34.3		0.2
	1	465	470	18.5	5	5	48.1	53.4	72.2	26.2		0.2
	2	470	475	18.7	5	2.5	104.6	127.9	157.0	34.3		0.2
	2	475	480	18.9	5	2.5	104.6	127.9	157.0	34.3		0.2
	1	480	485	19.1	5	5	48.1	53.4	72.2	26.2		0.2
	2	485	490	19.3	5	2.5	104.6	127.9	157.0	34.3		0.2
	1	490	495	19.5	5	5	48.1	53.4	72.2	26.2		0.2
	1	495	500	19.7	5	5	48.1	53.4	72.2	26.2		0.2
	2	500	505	19.9	5	2.5	104.6	127.9	157.0	34.3		0.2
	1	505	510	20.1	5	5	48.1	53.4	72.2	26.2		0.2
	2	510	515	20.3	5	2.5	104.6	127.9	157.0	34.3		0.2
	1	515	520	20.5	5	5	48.1	53.4	72.2	26.2		0.2
	1	520	525	20.7	5	5	48.1	53.4	72.2	26.2		0.2
	1	525	530	20.9	5	5	48.1	53.4	72.2	26.2		0.2
	2	530	535	21.1	5	2.5	104.6	127.9	157.0	34.3		0.2
	1	535	540	21.3	5	5	48.1	53.4	72.2	26.2		0.2
	1	540	545	21.5	5	5	48.1	53.4	72.2	26.2		0.2
	1	545	550	21.7	5	5	48.1	53.4	72.2	26.2		0.2
	1	550	555	21.9	5	5	48.1	53.4	72.2	26.2		0.2
	1	555	560	22.0	5	5	48.1	53.4	72.2	26.2		0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 3	1	315	330	13.0	15	15	14.1	13.4	21.1	17.0	
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	335	340	13.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	340	345	13.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	350	355	14.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	370	375	14.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	375	380	15.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	380	385	15.2	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	385	390	15.4	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	2	390	395	15.6	5	2.5	104.6	127.9	157.0	34.3	0.4
	2	395	400	15.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	400	405	15.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	405	410	16.1	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	2	410	415	16.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	415	420	16.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	420	425	16.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	5	425	430	16.9	5	1	292.0	405.3	438.0	49.0	0.2
	2	430	435	17.1	5	2.5	104.6	127.9	157.0	34.3	0.4
	4	435	440	17.3	5	1.25	227.4	306.0	341.1	44.9	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 4	1	335	340	13.4	5	5	48.1	53.4	72.2	26.2	
	1	340	345	13.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	345	355	14.0	10	5	48.1	53.4	72.2	26.2	0.4
	2	355	365	14.4	10	5	48.1	53.4	72.2	26.2	0.4
	2	365	375	14.8	10	5	48.1	53.4	72.2	26.2	0.4
	2	375	380	15.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	380	385	15.2	5	5	48.1	53.4	72.2	26.2	0.2
	2	385	395	15.6	10	5	48.1	53.4	72.2	26.2	0.4
	3	395	405	15.9	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	2	405	410	16.1	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	410	415	16.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	415	420	16.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	420	425	16.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	5	425	430	16.9	5	1	292.0	405.3	438.0	49.0	0.4
	5	430	435	17.1	5	1	292.0	405.3	438.0	49.0	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 5	2	340	360	14.2	20	10	22.2	22.3	33.2	20.0	
	3	360	375	14.8	15	5	48.1	53.4	72.2	26.2	0.6
	3	375	390	15.4	15	5	48.1	53.4	72.2	26.2	0.6
	3	390	405	15.9	15	5	48.1	53.4	72.2	26.2	0.6
	3	405	415	16.3	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	415	425	16.7	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	425	435	17.1	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	435	445	17.5	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	445	460	18.1	15	5	48.1	53.4	72.2	26.2	0.6
	3	460	470	18.5	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	470	480	18.9	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	480	485	19.1	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	485	495	19.5	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	495	510	20.1	15	5	48.1	53.4	72.2	26.2	1.0
	3	510	525	20.7	15	5	48.1	53.4	72.2	26.2	0.6

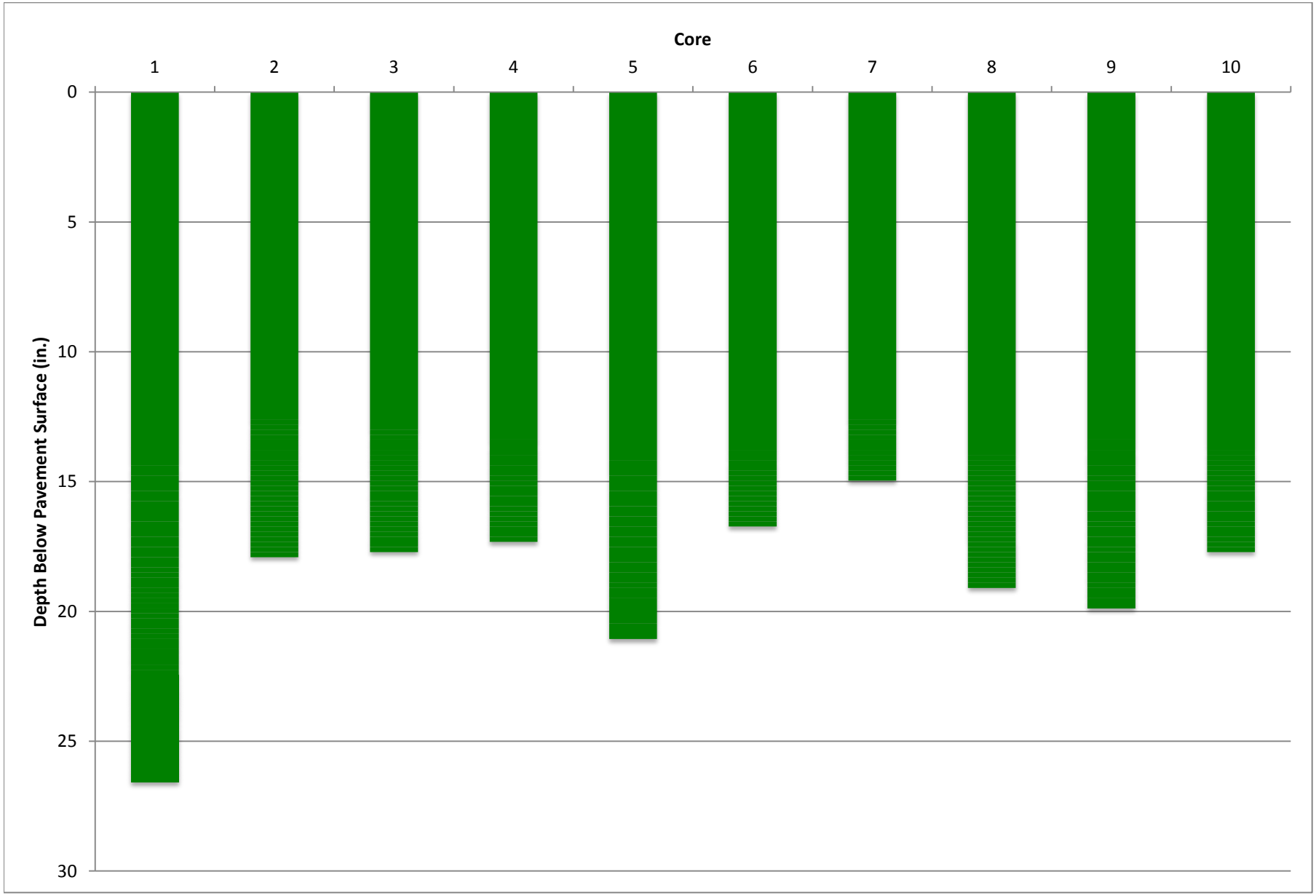
Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 6	2	330	350	13.8	20	10	22.2	22.3	33.2	20.0	
	3	350	360	14.2	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	360	370	14.6	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	370	370	14.6	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0
	3	370	375	14.8	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	375	380	15.0	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	380	385	15.2	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	385	390	15.4	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	390	395	15.6	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	395	400	15.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	400	405	15.9	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	405	410	16.1	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	410	410	16.1	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0
	3	410	415	16.3	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	415	420	16.5	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	420	425	16.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 7	1	310	320	12.6	10	10	22.2	22.3	33.2	20.0	
	1	320	325	12.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	325	330	13.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	330	335	13.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	335	340	13.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	340	345	13.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	345	350	13.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	350	355	14.0	5	5	48.1	53.4	72.2	26.2	0.2
	2	355	360	14.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	360	365	14.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	370	375	14.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	375	380	15.0	5	5	48.1	53.4	72.2	26.2	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 8	1	340	355	14.0	15	15	14.1	13.4	21.1	17.0	
	1	355	360	14.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	360	365	14.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	365	370	14.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	370	375	14.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	375	380	15.0	5	5	48.1	53.4	72.2	26.2	0.2
	2	380	385	15.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	385	390	15.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	390	395	15.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	395	400	15.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	400	405	15.9	5	5	48.1	53.4	72.2	26.2	0.2
	2	405	410	16.1	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	410	415	16.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	415	420	16.5	5	5	48.1	53.4	72.2	26.2	0.2
	2	420	425	16.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	425	430	16.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	430	435	17.1	5	5	48.1	53.4	72.2	26.2	0.2
	2	435	440	17.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	440	445	17.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	445	450	17.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	450	455	17.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	455	460	18.1	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	460	465	18.3	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	4	465	470	18.5	5	1.25	227.4	306.0	341.1	44.9	0.2
	3	470	475	18.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	475	480	18.9	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	4	480	485	19.1	5	1.25	227.4	306.0	341.1	44.9	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 9	3	325	340	13.4	15	5	48.1	53.4	72.2	26.2	
	3	340	350	13.8	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	350	365	14.4	15	5	48.1	53.4	72.2	26.2	0.6
	3	365	375	14.8	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	375	380	15.0	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	380	390	15.4	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	390	410	16.1	20	6.66666667	34.9	37.2	52.3	23.4	0.8
	3	410	420	16.5	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	420	425	16.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	425	435	17.1	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	435	445	17.5	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	445	450	17.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	450	460	18.1	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	460	470	18.5	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	470	480	18.9	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	480	485	19.1	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	485	495	19.5	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	495	505	19.9	10	3.33333333	75.8	89.0	113.7	30.6	0.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 10	1	335	345	13.6	10	10	22.2	22.3	33.2	20.0	
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	350	355	14.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	355	360	14.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	360	365	14.4	5	5	48.1	53.4	72.2	26.2	0.2
	2	365	370	14.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	370	375	14.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	375	380	15.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	380	385	15.2	5	5	48.1	53.4	72.2	26.2	0.2
	2	385	390	15.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	390	400	15.7	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	3	400	410	16.1	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	4	410	420	16.5	10	2.5	104.6	127.9	157.0	34.3	0.4
	3	420	425	16.7	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	4	425	435	17.1	10	2.5	104.6	127.9	157.0	34.3	0.4
	3	435	440	17.3	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	440	445	17.5	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	2	445	450	17.7	5	2.5	104.6	127.9	157.0	34.3	0.2

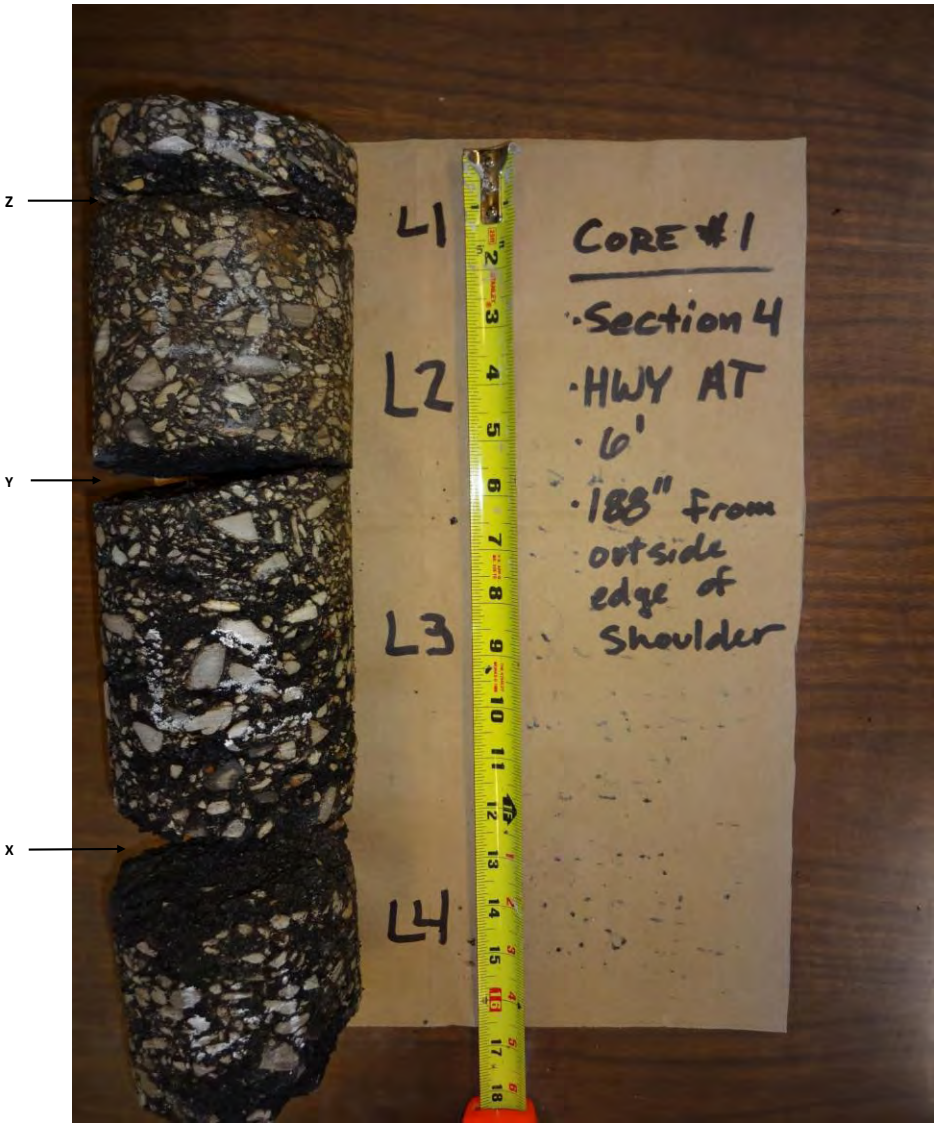

Core
1
2
3
4
5
6
7
8
9
10
0
5
10
15
20
25
30
Depth Below Pavement Surface (in.)

Hwy AT - Franklin County
MO
Core No. 1

Extraction Date: August 5, 2013

Core No.	1
Distance from beginning (ft)	6'
Distance from edge of lane(ft)	5'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	HMA	1 1/4"	Low	672
	2	HMA	3 1/2"	Low	1774
	3	HMA	6"	Low	647
	4	HMA	4 1/2"	Moderate	536
		Total Thickness	15 1/4"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-
X	-	-

Photograph No. 1
Picture of Core No. 1 extracted from pavement.

Photograph No. 2
Picture of Core No. 1 split open to evaluate the degree of stripping occurring.

Hwy AT - Franklin County
MO
Core No. 2

Extraction Date: August 5, 2013

Core No.	2
Distance from beginning (ft)	130'
Distance from edge of lane(ft)	1'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
2	1	HMA	1 1/2"	Low	661
	2	HMA	3"	Low	339
	3	Concrete	6"	-	-
		Total Thickness	10 1/2"		

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 3
Picture of Core No. 2 extracted from pavement.

Hwy AT - Franklin County
MO
Core No. 3

Extraction Date: August 5, 2013

Core No.	3
Distance from beginning (ft)	295'
Distance from edge of lane(ft)	7'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
3	1	HMA	3"	Low	855
	2	HMA	-	-	-
	3	Concrete	6 1/2"	-	-
		Total Thickness	9 1/2"		

Note: Lift 2 unknown thickness

Note: Total thickness may have been more before coring

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	-	-
Y	-	-

Photograph No. 4
Picture of Core No. 3 extracted from pavement.

Photograph No. 5

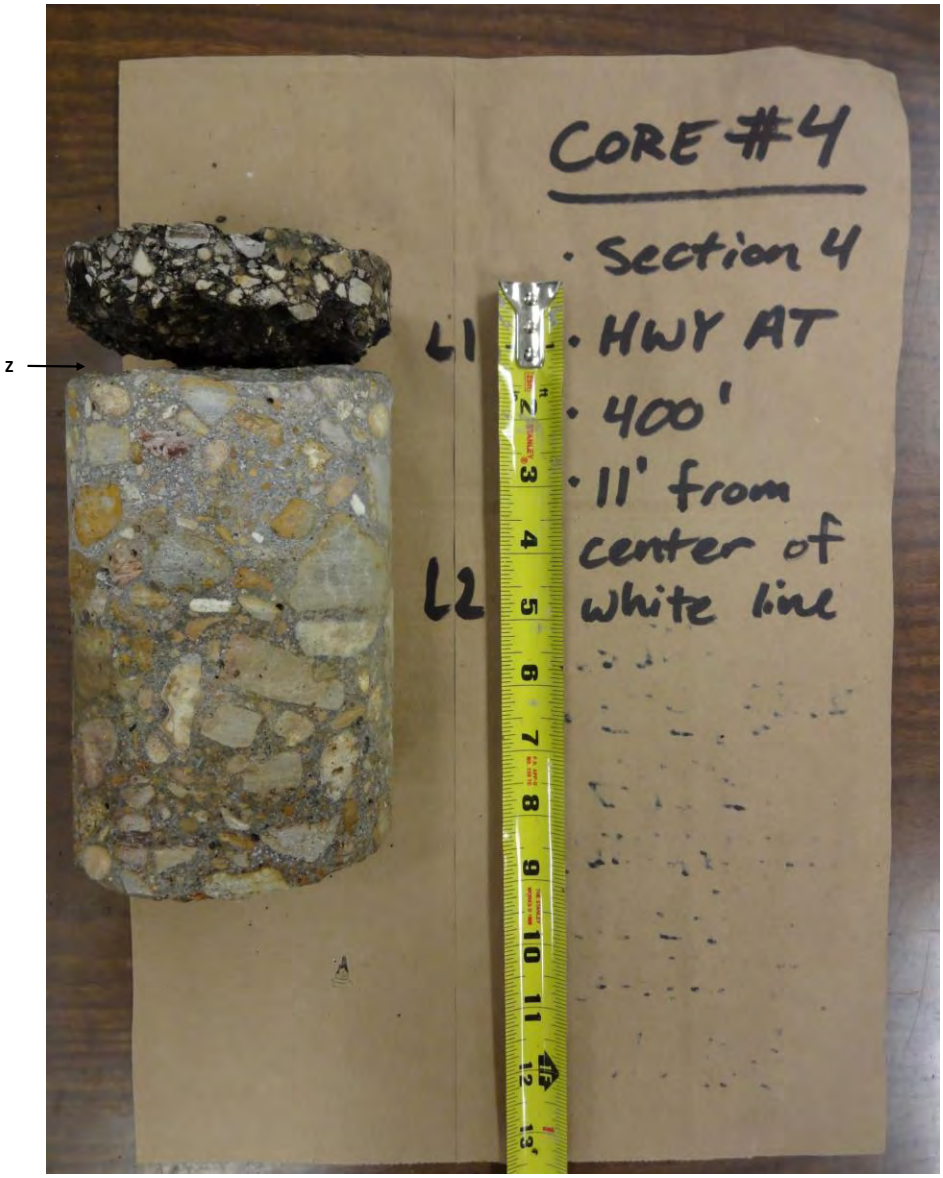
Picture of Core No. 3 split open to evaluate the degree of stripping occurring.

Hwy AT - Franklin County
MO
Core No. 4

Extraction Date: August 5, 2013

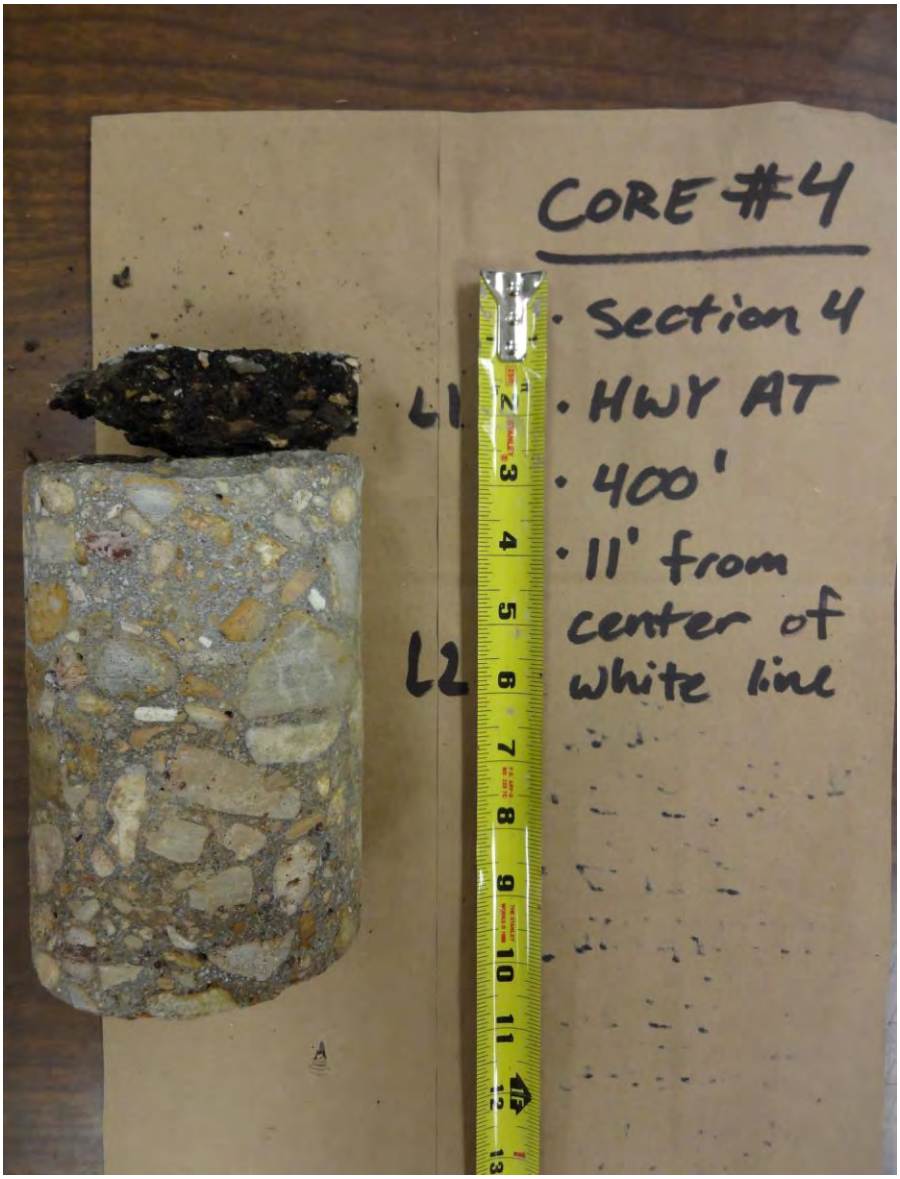
Core No.	4
Distance from beginning (ft)	400'
Distance from edge of lane(ft)	11'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	HMA	3 1/4"	Low	301
	2	Concrete	6"	-	-
		Total Thickness	9 1/4"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	-	-

Photograph No. 6
Picture of Core No. 4 extracted from pavement.



Photograph No. 7
Picture of Core No. 4 split open to evaluate the degree of stripping occurring.

Hwy AT - Franklin County
MO
Core No. 5

Extraction Date: August 5, 2013

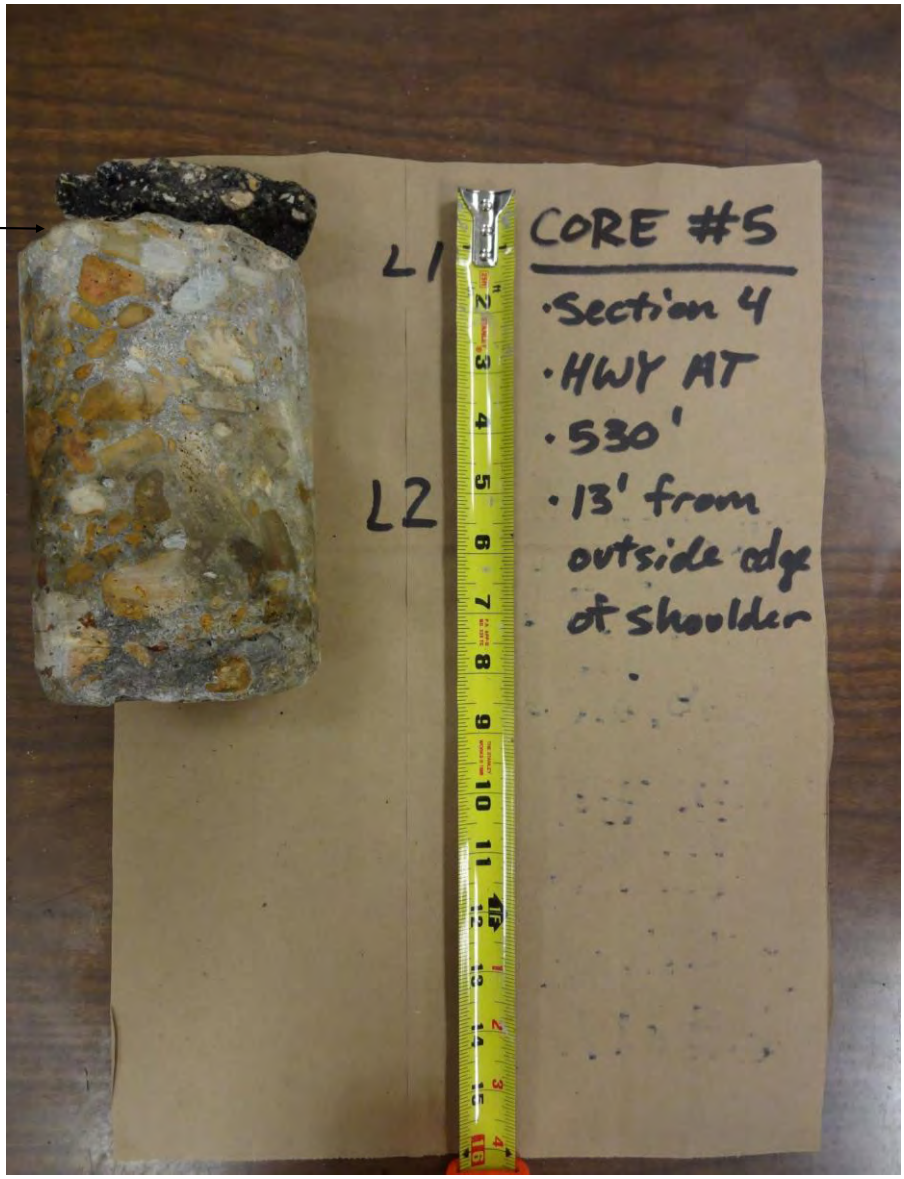
Core No.	5
Distance from beginning (ft)	530'
Distance from edge of lane(ft)	13'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
5	1	HMA	1"	-	-
	2	Concrete	6"	-	-
		Total Thickness	7"		

Note: Lift 1 was broken before testing

Z

Y



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	-	-
Y	-	-

Photograph No. 8
Picture of Core No. 5 extracted from pavement.

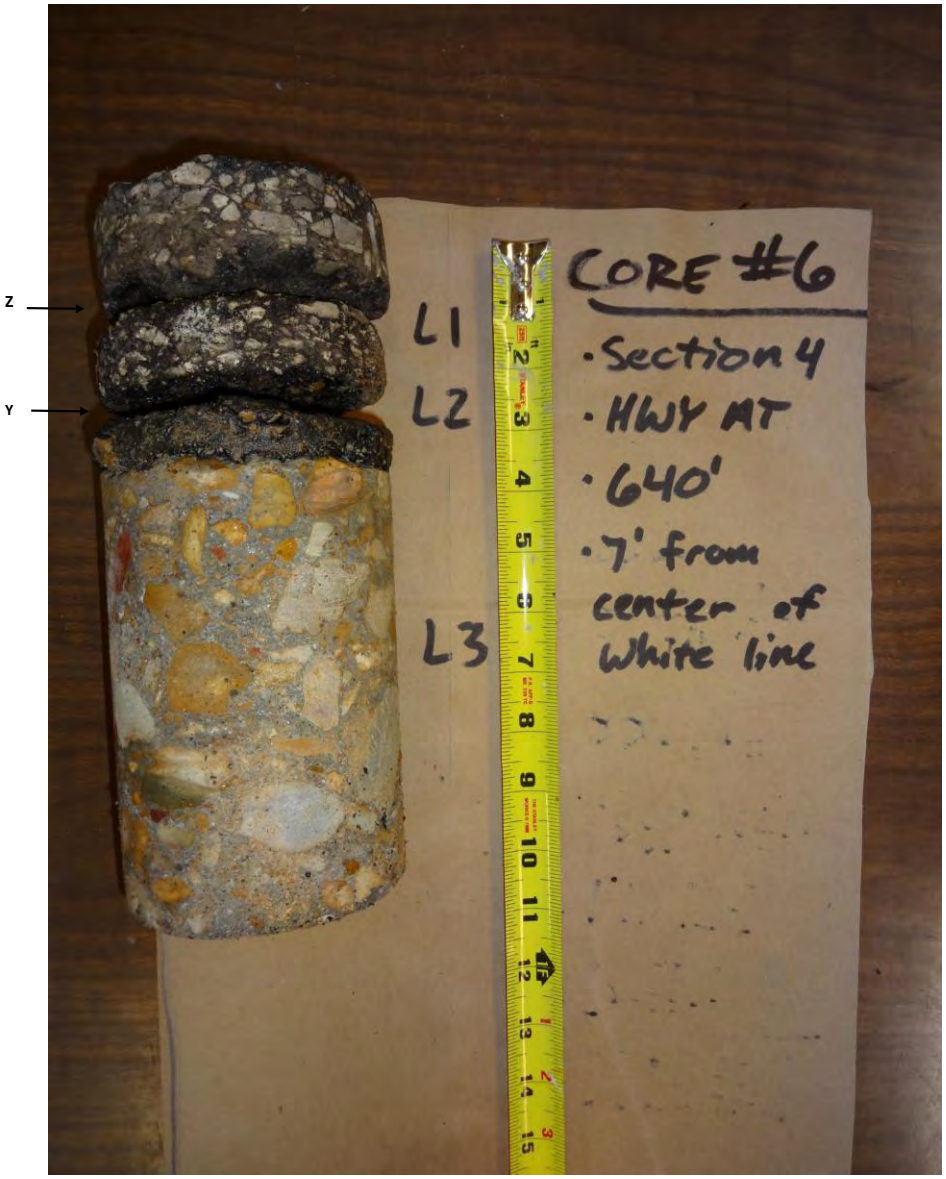
Photograph No. 9
Picture of Core No. 5 split open to evaluate the degree of stripping occurring.

Hwy AT - Franklin County
MO
Core No. 6

Extraction Date: August 5, 2013

Core No.	6
Distance from beginning (ft)	640'
Distance from edge of lane(ft)	7'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
6	1	HMA	1 1/2"	Low	752
	2	HMA	1 1/4"	Low	128
	3	Concrete	6"	-	-
		Total Thickness	8 3/4"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 10
Picture of Core No. 6 extracted from pavement.

Photograph No. 11
Picture of Core No. 6 split open to evaluate the degree of stripping occurring.

Hwy AT - Franklin County
MO
Core No. 7

Extraction Date: August 5, 2013

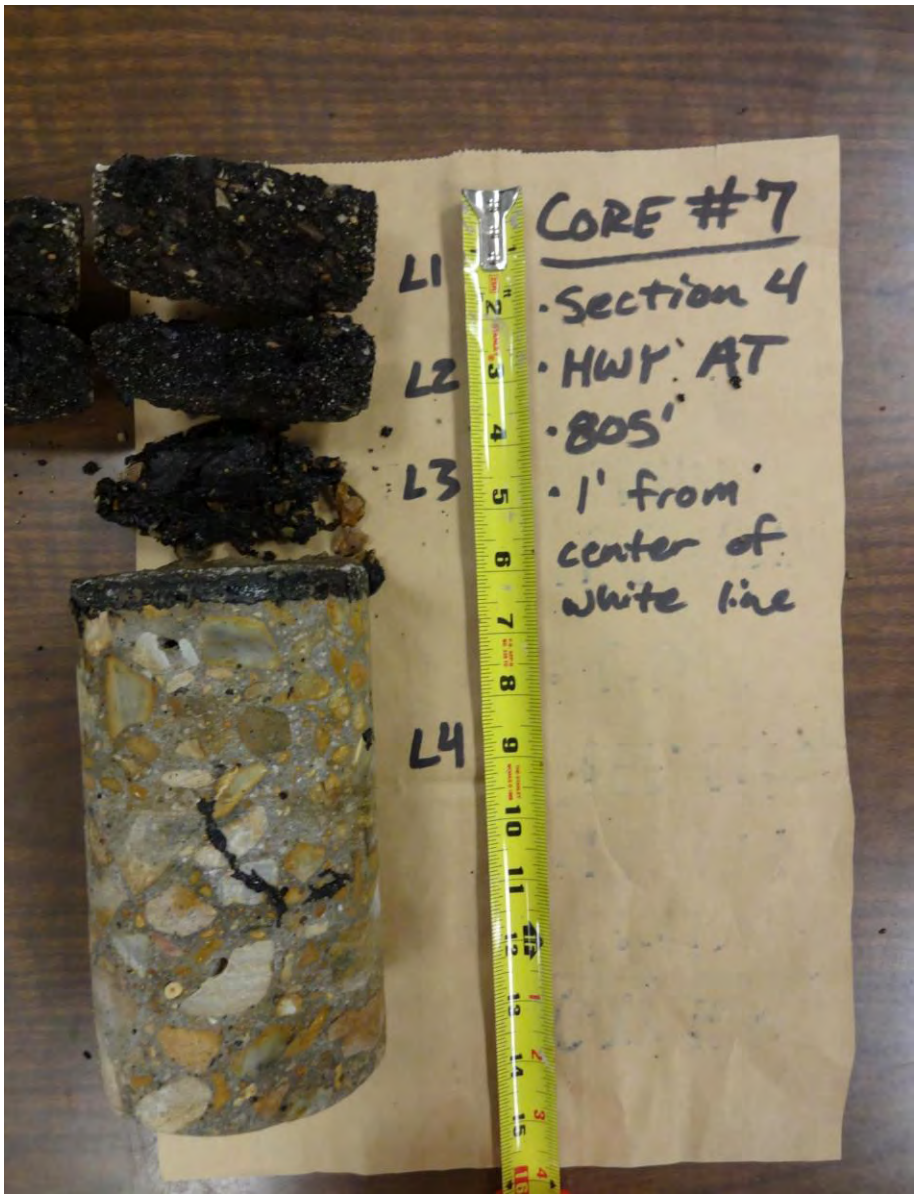
Core No.	7
Distance from beginning (ft)	805'
Distance from edge of lane(ft)	1'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
7	1	HMA	1 1/2"	Moderate	619
	2	HMA	1"	Low	104
	3	HMA	-	-	-
	4	Concrete	6"		
		Total Thickness	8 1/2"		

Note: Lift 3 was untestable

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-
X	-	-

Photograph No. 12
Picture of Core No. 7 extracted from pavement.



Photograph No. 13
Picture of Core No. 7 split open to evaluate the degree of stripping occurring.

Hwy AT - Franklin County
MO
Core No. 8

Extraction Date: August 5, 2013

Core No.	8
Distance from beginning (ft)	920'
Distance from edge of lane(ft)	5'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
8	1	HMA	1 1/2"	Low	774
	2	HMA	2 1/2"	Low	329
	3	Concrete	7"	-	-
		Total Thickness	11"		

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Weak	247
Y	-	-

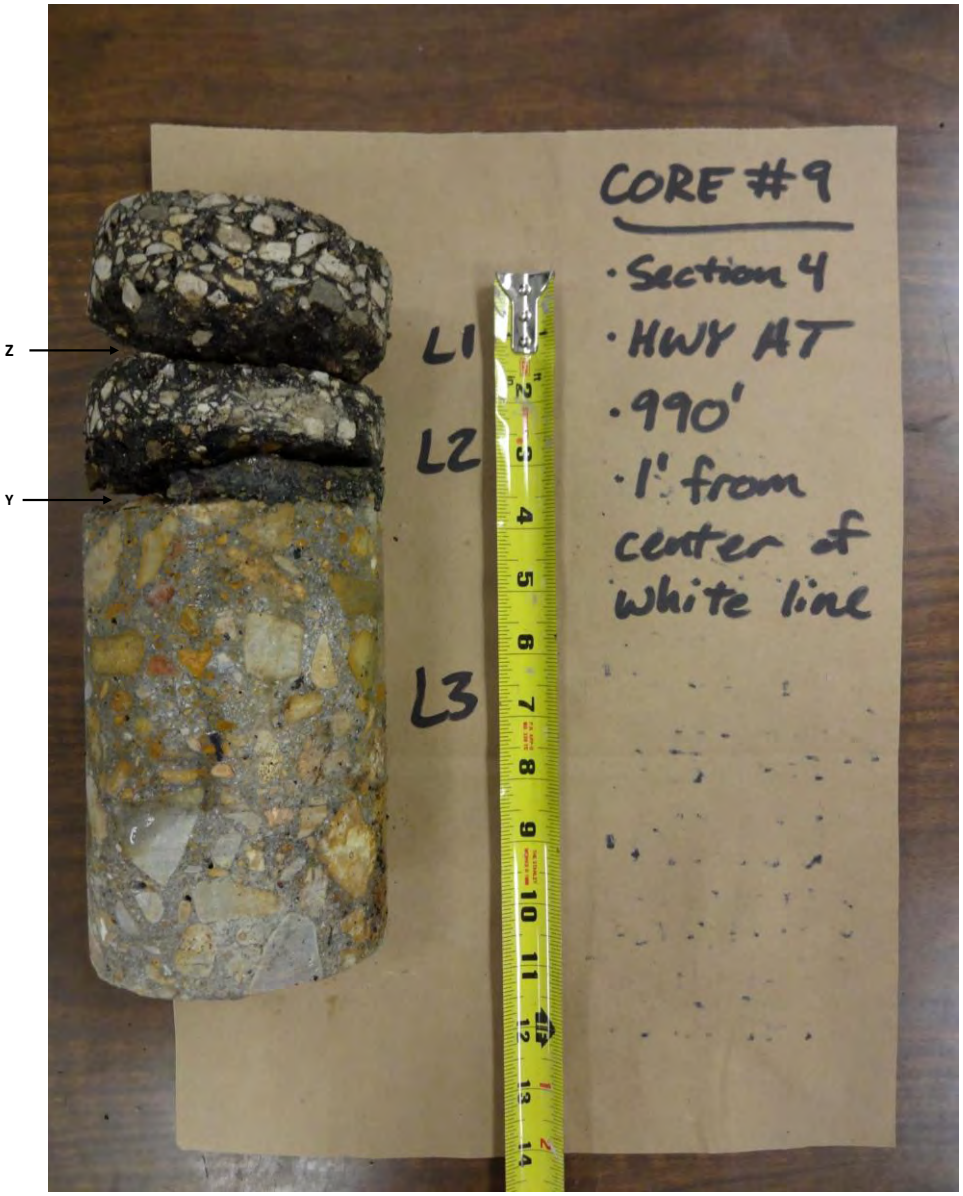
Photograph No. 14
Picture of Core No. 8 split open to evaluate the degree of stripping occurring.

Hwy AT - Franklin County
MO
Core No. 9

Extraction Date: August 5, 2013

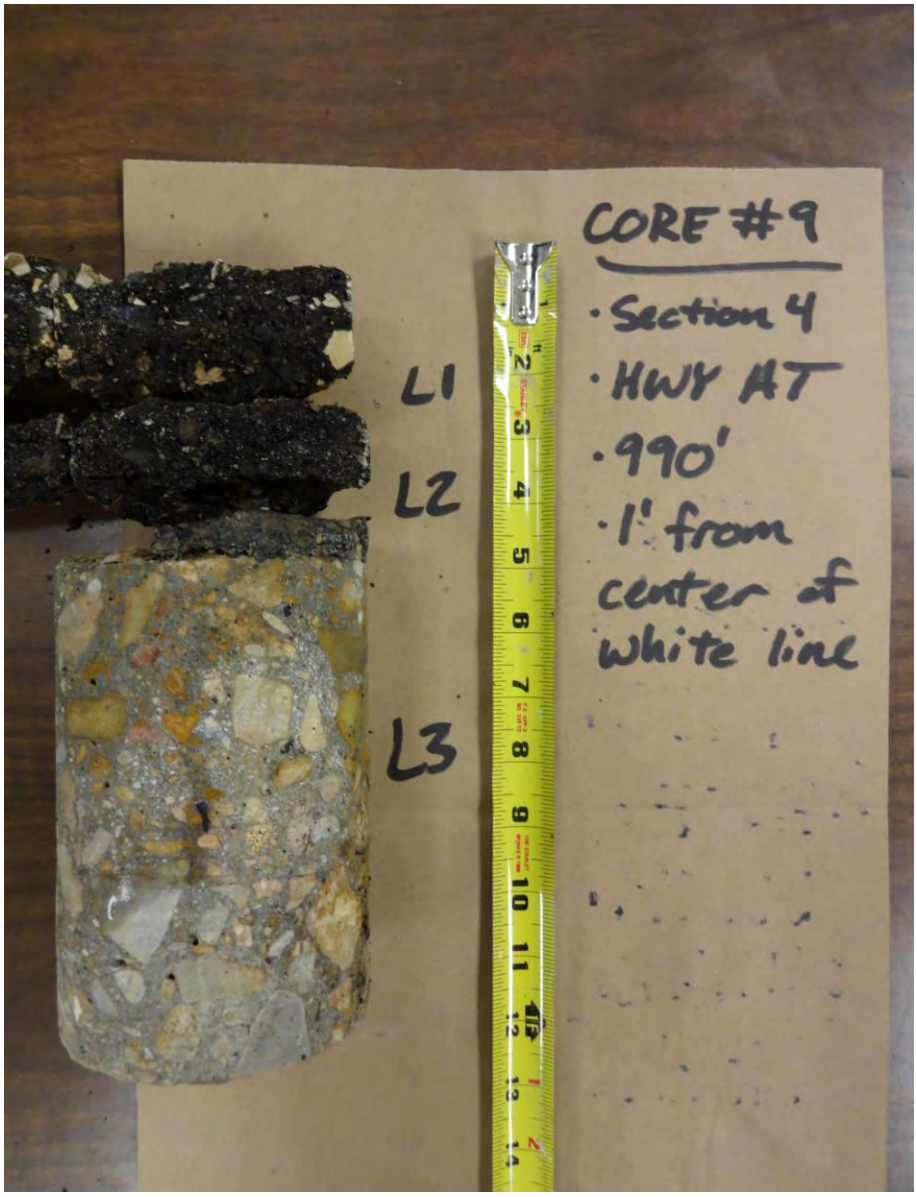
Core No.	9
Distance from beginning (ft)	990'
Distance from edge of lane(ft)	1'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
9	1	HMA	1 1/2"	Low	731
	2	HMA	1 1/2"	Moderate	198
	3	Concrete	6"	-	-
		Total Thickness	9"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 15
Picture of Core No. 9 extracted from pavement.

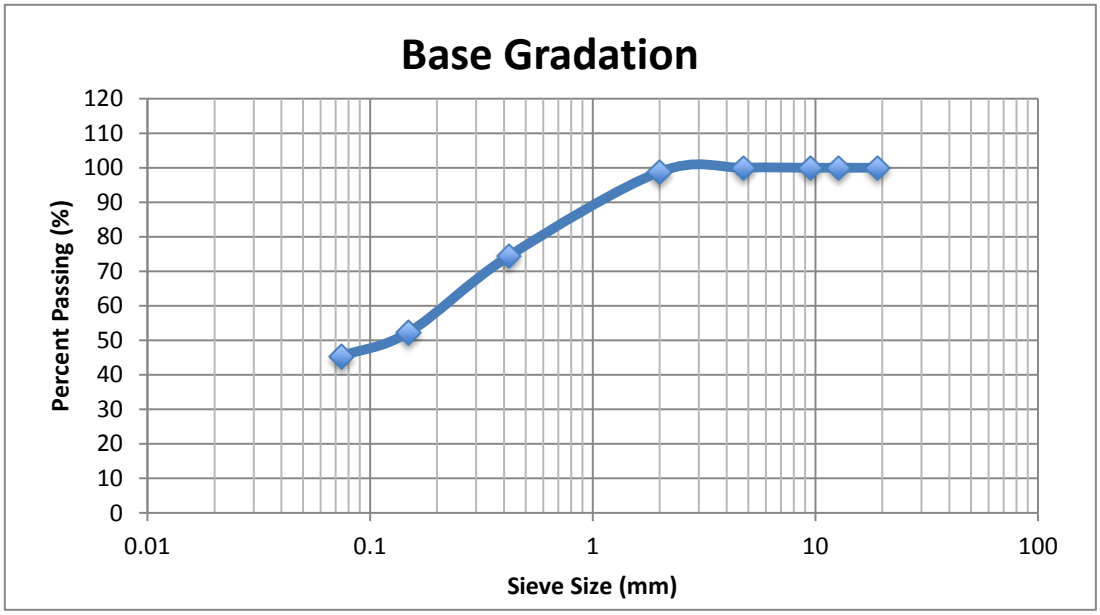


Photograph No. 16
Picture of Core No. 9 split open to evaluate the degree of stripping occurring.

Core 2

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	0	0	100
3/8"	9.51	0	0	100
No. 4	4.76	0	0	100
No. 10	2	4.7	1.2	98.8
No. 40	0.42	99	24.4	74.4
No. 100	0.149	89.4	22.1	52.3
No. 200	0.074	27.5	6.8	45.4
Pan		183.9	45.4	0



D_{10} = -

D_{30} = -

D_{60} = 0.2

C_u = -

C_c = -

% Gravel= 0

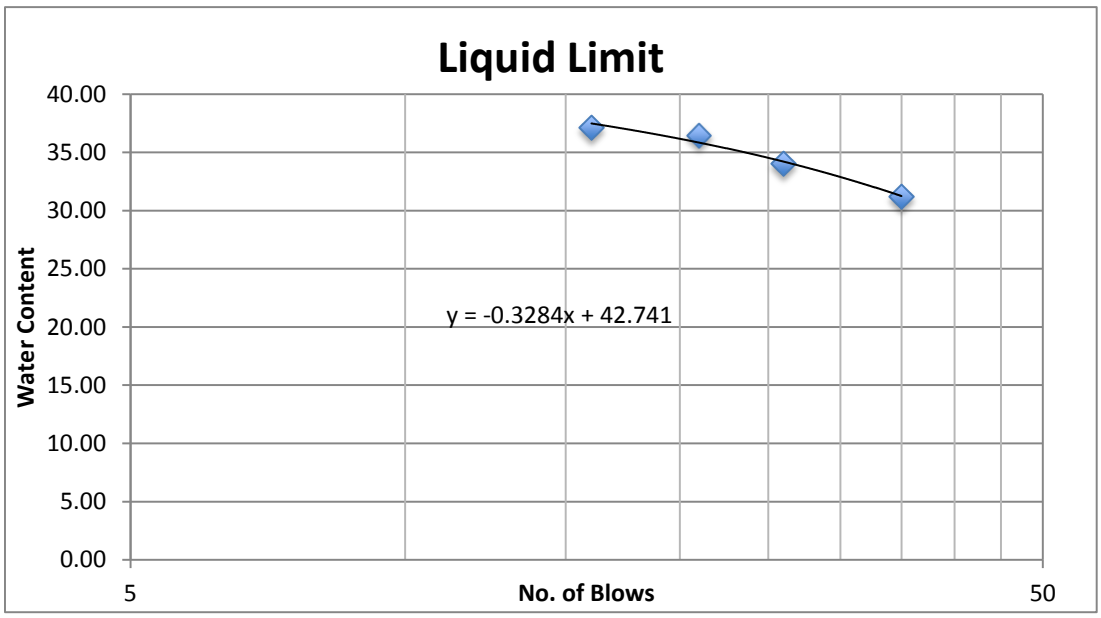
% Sand= 54.5

% Fines= 45.4

Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	28	32.9	33.2	33.2
Mass of dry soil + can (g)	23.4	27.9	28.2	27.9
Mass of Can (g)	11	14.2	13.5	10.9
Mass of dry soil (g)	12.4	13.7	14.7	17
Mass of wet soil (g)	17	18.7	19.7	22.3
Water Content (%)	37.10	36.50	34.01	31.18
No. of Blows	16	21	26	35



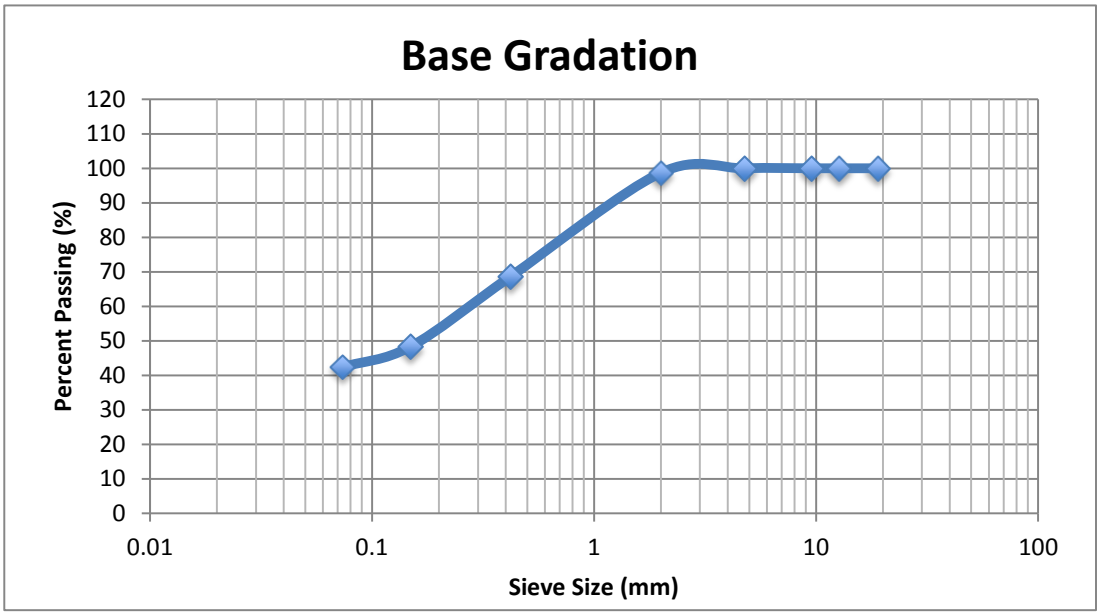
Plastic Limit		
Mass of wet soil + can (g)	17	22
Mass of dry soil + can (g)	16.5	20.8
Mass of Can (g)	13.8	14
Mass of dry soil (g)	2.7	6.8
Mass of wet soil (g)	3.2	8
Water Content (%)	3.0	5.8

Liquid Limit=	34.5
Plastic Limit=	4.4
Plasticity Index=	30.1

Core 3

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	0	0	100
3/8"	9.51	0	0	100
No. 4	4.76	0	0	100
No. 10	2	5.3	1.3	98.7
No. 40	0.42	125.3	30.1	68.6
No. 100	0.149	84.4	20.3	48.3
No. 200	0.074	24.3	5.8	42.4
Pan		176.4	42.4	0



D_{10} = -

D_{30} = -

D_{60} = 0.37

C_u = -

C_c = -

% Gravel= 0

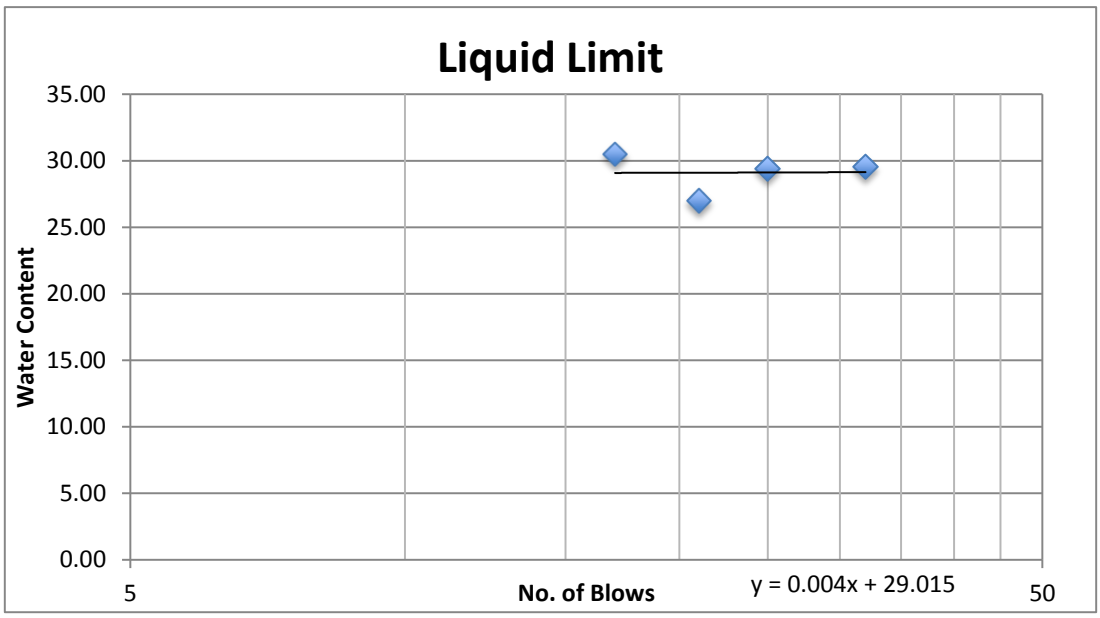
% Sand= 57.5

% Fines= 42.4

Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	35.2	34.4	35.7	31
Mass of dry soil + can (g)	30.2	30	30.7	27.1
Mass of Can (g)	13.8	13.7	13.7	13.9
Mass of dry soil (g)	16.4	16.3	17	13.2
Mass of wet soil (g)	21.4	20.7	22	17.1
Water Content (%)	30.49	26.99	29.41	29.55
No. of Blows	17	21	25	32



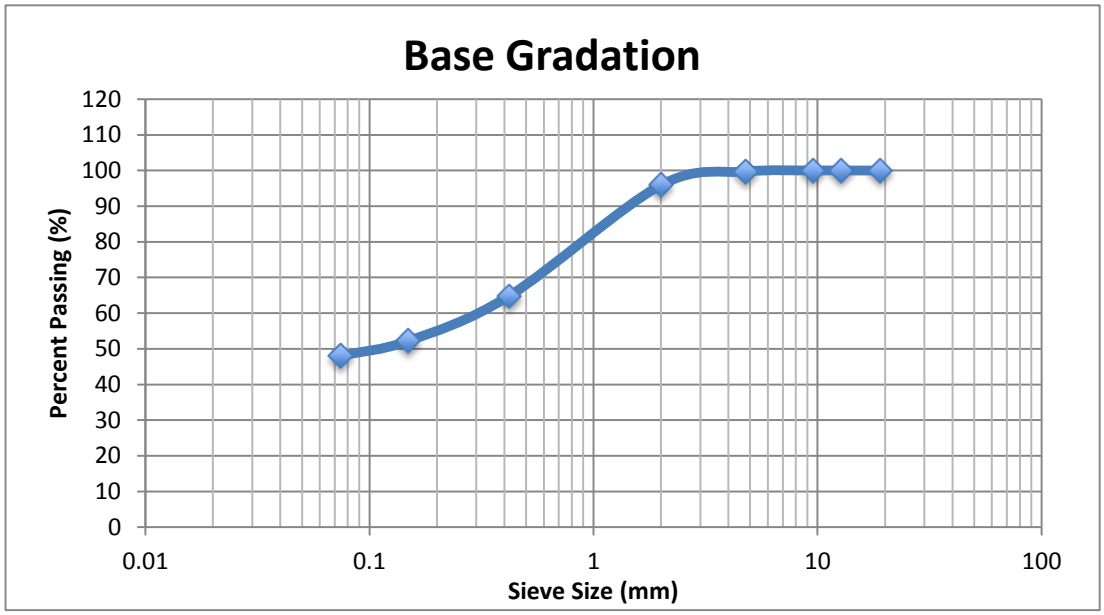
Plastic Limit		
Mass of wet soil + can (g)	19.3	21.3
Mass of dry soil + can (g)	18.4	20.2
Mass of Can (g)	14.2	14.3
Mass of dry soil (g)	4.2	5.9
Mass of wet soil (g)	5.1	7
Water Content (&)	4.9	5.4

Liquid Limit=	29.1
Plastic Limit=	5.2
Plasticity Index=	23.9

Core 4

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	0	0	100
3/8"	9.51	0	0	100
No. 4	4.76	1.1	0.3	99.7
No. 10	2	16.3	3.8	95.9
No. 40	0.42	134	31.1	64.8
No. 100	0.149	54.4	12.6	52.2
No. 200	0.074	18.3	4.2	48
Pan		206.8	48	0



D_{10} = -

D_{30} = -

D_{60} = 0.48

C_u = -

C_c = -

% Gravel= 0.3

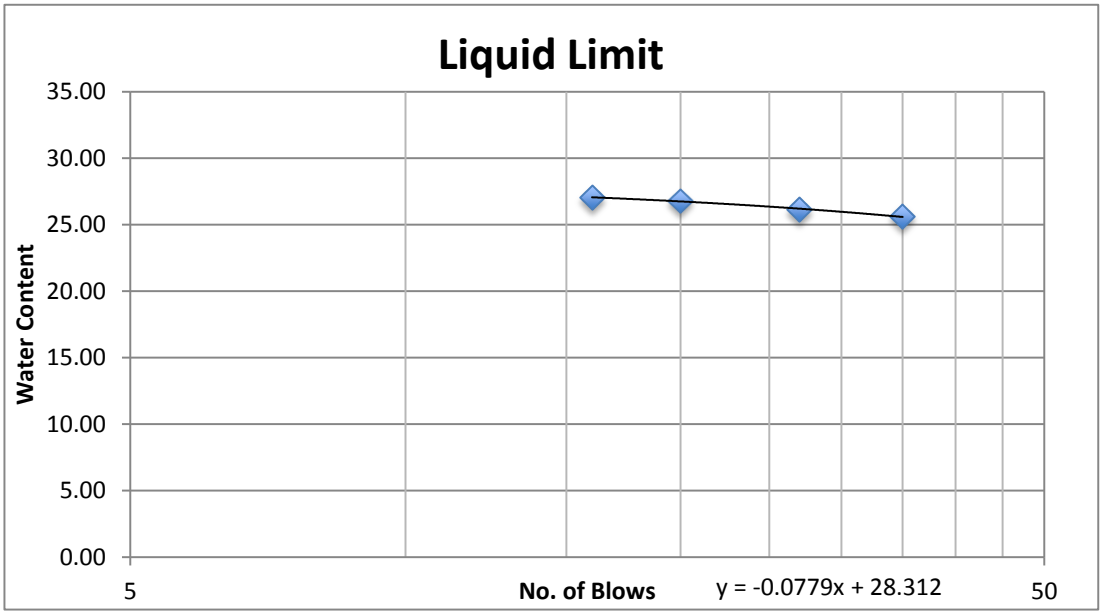
% Sand= 51.7

% Fines= 48

Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	28.6	32.4	30.4	37.1
Mass of dry soil + can (g)	25	27.9	26.4	31.9
Mass of Can (g)	11.7	11.1	11.1	11.6
Mass of dry soil (g)	13.3	16.8	15.3	20.3
Mass of wet soil (g)	16.9	21.3	19.3	25.5
Water Content (%)	27.07	26.79	26.14	25.62
No. of Blows	16	20	27	35



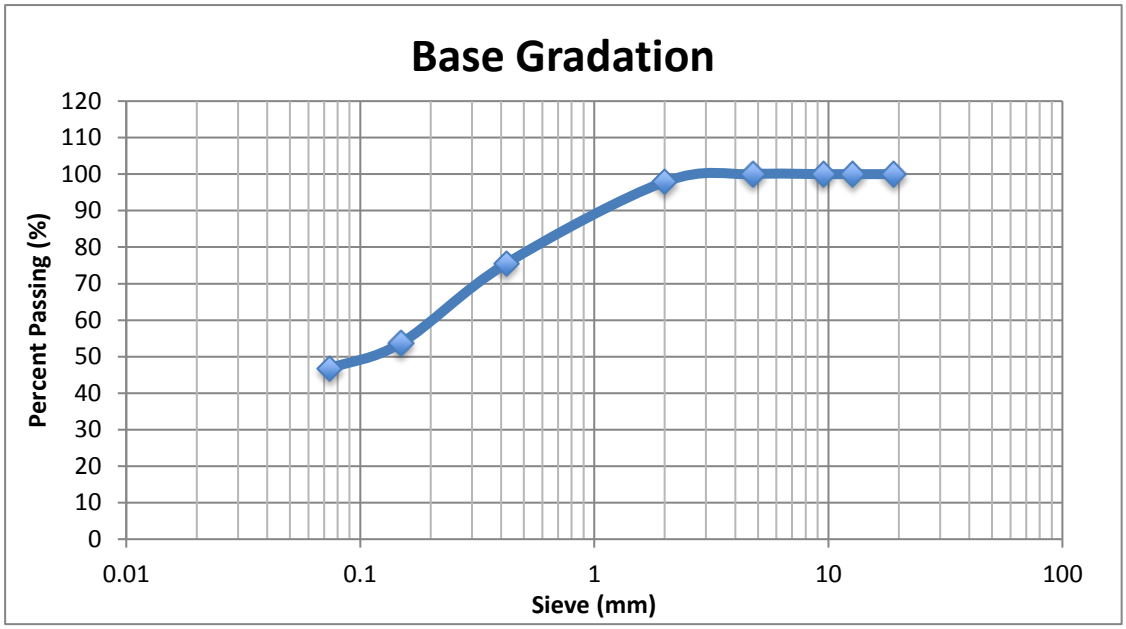
Plastic Limit		
Mass of wet soil + can (g)	17.4	18
Mass of dry soil + can (g)	16.6	17.1
Mass of Can (g)	13.2	13.5
Mass of dry soil (g)	3.4	3.6
Mass of wet soil (g)	4.2	4.5
Water Content (%)	4.8	5.3

Liquid Limit=	26.4
Plastic Limit=	5.0
Plasticity Index=	21.4

Core 5

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	0	0	100
3/8"	9.51	0	0	100
No. 4	4.76	0	0	100
No. 10	2	8.6	2.1	97.9
No. 40	0.42	91.7	22.4	75.5
No. 100	0.149	89.3	21.8	53.7
No. 200	0.074	28.7	7	46.8
Pan		191.7	46.8	0



D_{10} = -

D_{30} = -

D_{60} = 0.2

C_u = -

C_c = -

% Gravel= 0

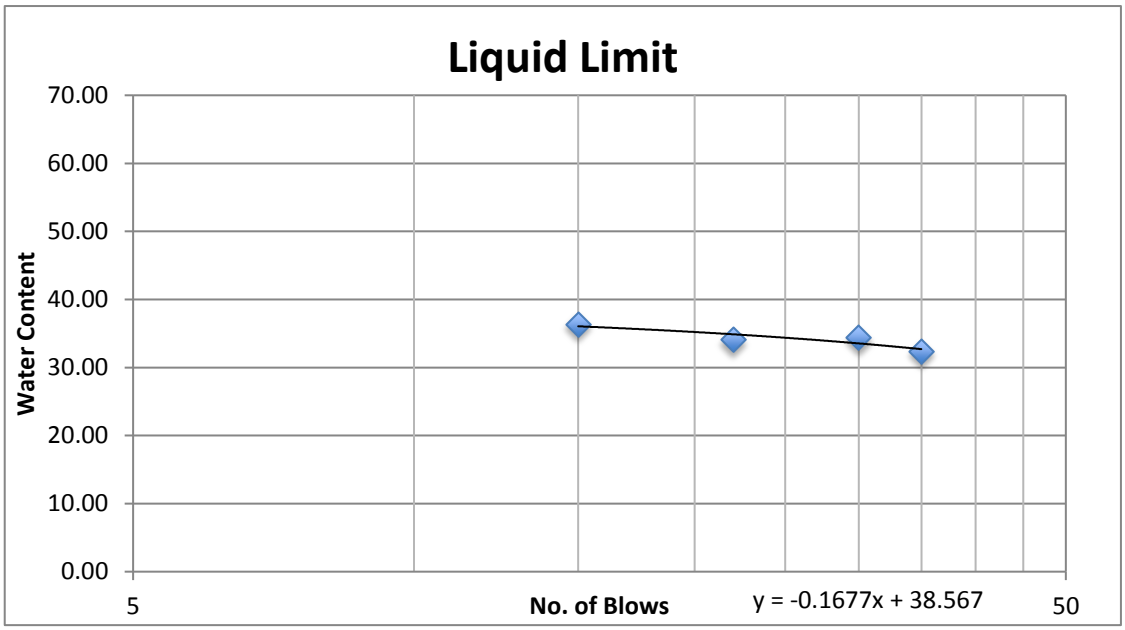
% Sand= 53.3

% Fines= 46.8

Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	36.6	29.5	38	29.9
Mass of dry soil + can (g)	30.6	25	32.3	25.4
Mass of Can (g)	14.1	11.8	15.7	11.5
Mass of dry soil (g)	16.5	13.2	16.6	13.9
Mass of wet soil (g)	22.5	17.7	22.3	18.4
Water Content (%)	36.36	34.09	34.34	32.37
No. of Blows	15	22	30	35



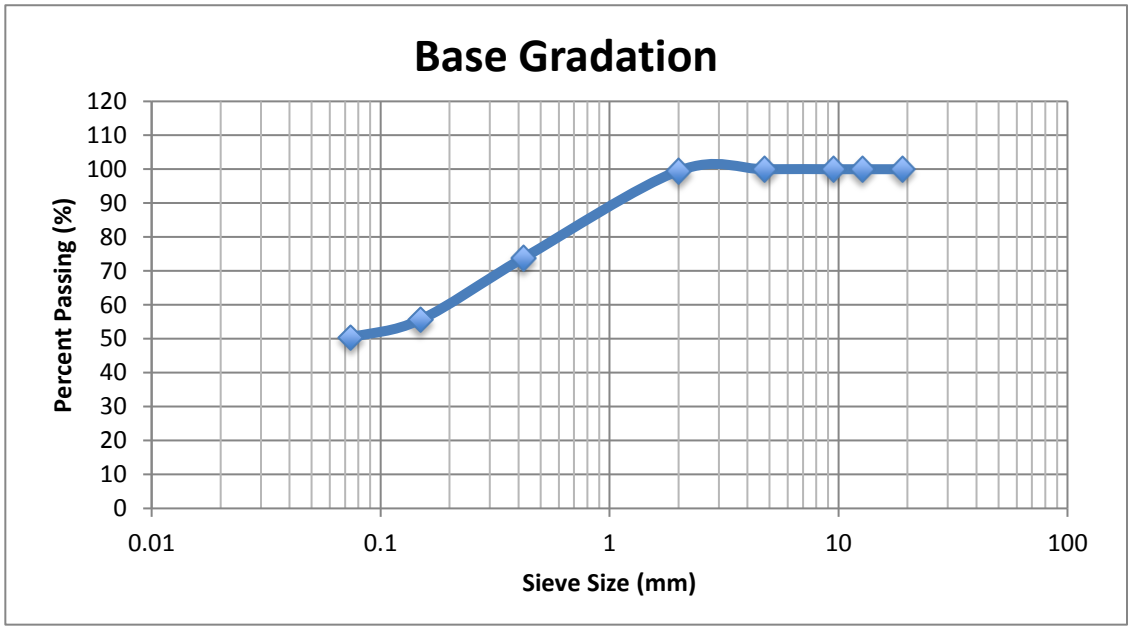
Plastic Limit		
Mass of wet soil + can (g)	17.9	17.5
Mass of dry soil + can (g)	17.3	16.9
Mass of Can (g)	14	14.1
Mass of dry soil (g)	3.9	3.4
Mass of wet soil (g)	3.3	2.8
Water Content (%)	3.5	3.6

Liquid Limit=	34.4
Plastic Limit=	3.5
Plasticity Index=	30.9

Core 7

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	0	0	100
3/8"	9.51	0	0	100
No. 4	4.76	0	0	100
No. 10	2	1.9	0.5	99.5
No. 40	0.42	105.7	25.7	73.8
No. 100	0.149	75	18.2	55.6
No. 200	0.074	21.2	5.1	50.4
Pan		207.8	50.4	0



D_{10} = -

D_{30} = -

D_{60} = 0.4

C_u = -

C_c = -

% Gravel= 0

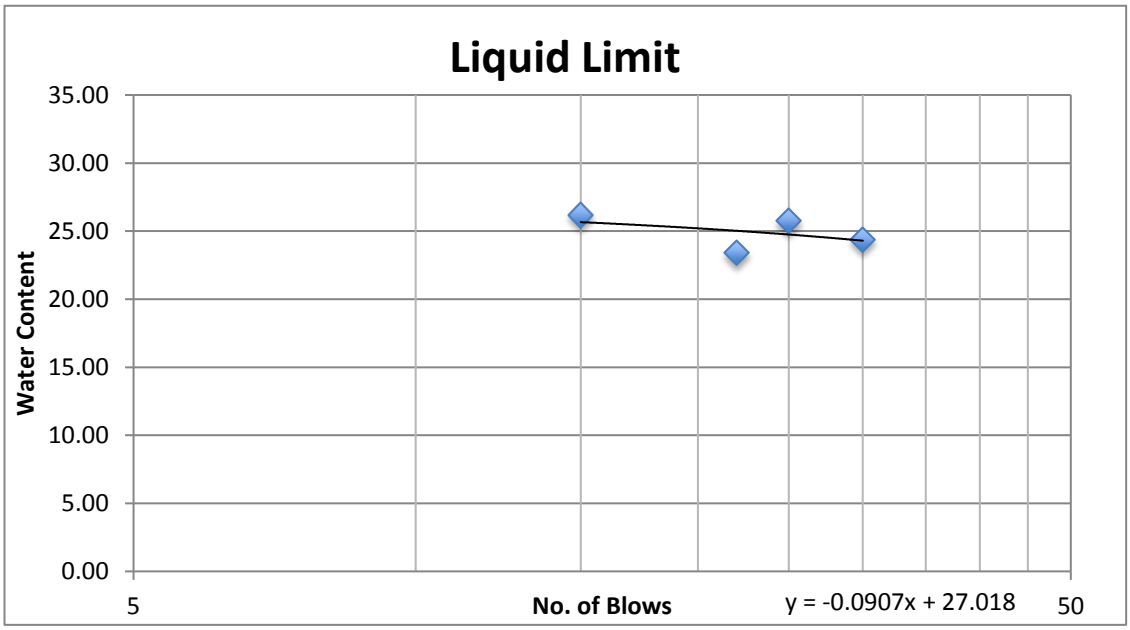
% Sand= 49.5

% Fines= 50.4

Unified Soil Classification: ML/CL

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	35.2	31.3	35.6	31
Mass of dry soil + can (g)	30.2	27.6	30.5	27.1
Mass of Can (g)	11.1	11.8	10.7	11.1
Mass of dry soil (g)	19.1	15.8	19.8	16
Mass of wet soil (g)	24.1	19.5	24.9	19.9
Water Content (%)	26.18	23.42	25.76	24.38
No. of Blows	15	22	25	30



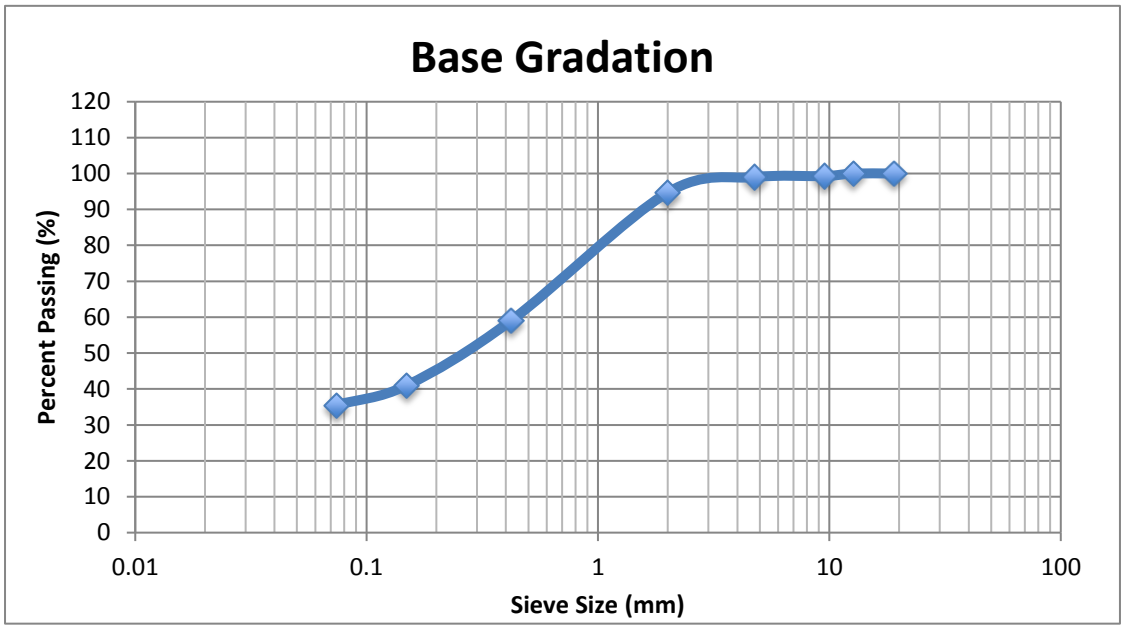
Plastic Limit		
Mass of wet soil + can (g)	16.5	16
Mass of dry soil + can (g)	15.7	15.1
Mass of Can (g)	11.1	10.8
Mass of dry soil (g)	4.6	4.3
Mass of wet soil (g)	5.4	5.2
Water Content (%)	5.1	6.0

Liquid Limit=	24.8
Plastic Limit=	5.5
Plasticity Index=	19.3

Core 9

Gradation

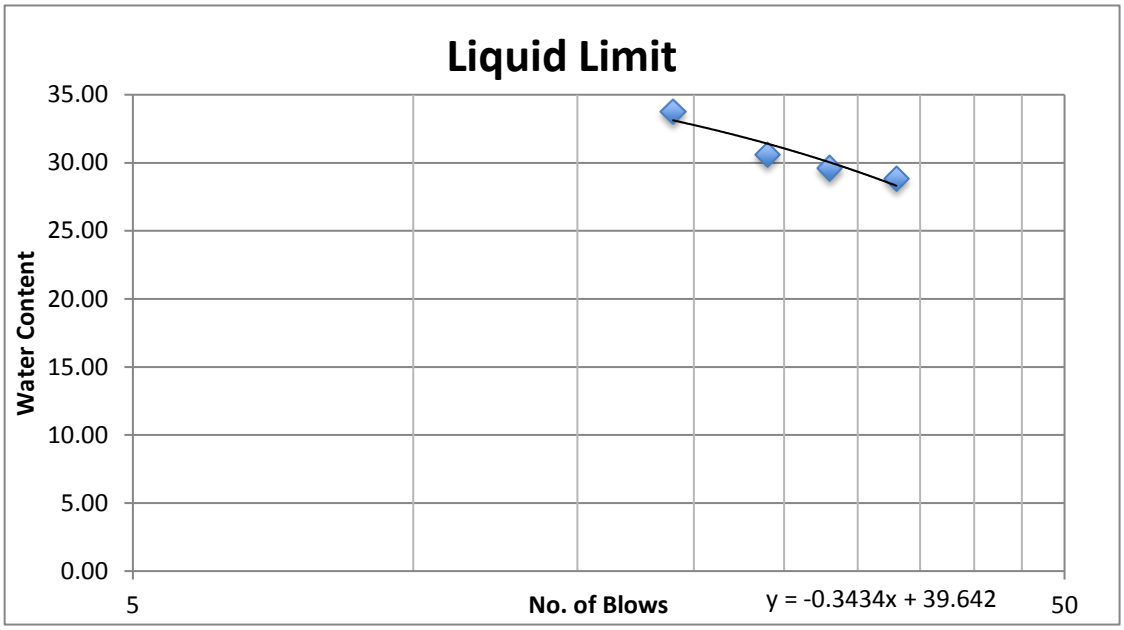
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0	100
1/2"	12.7	0	0	100
3/8"	9.51	3.1	0.7	99.3
No. 4	4.76	1.4	0.3	99
No. 10	2	18.2	4.3	94.7
No. 40	0.42	149.6	35.7	59
No. 100	0.149	75.4	18	41
No. 200	0.074	22.3	5.3	35.5
Pan		148.7	35.5	0



D_{10} = -
D_{30} = -
D_{60} = 0.4
C_u = -
C_c = -
% Gravel= 1
% Sand= 63.3
% Fines= 35.5
Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	30.8	28.5	34.3	36.5
Mass of dry soil + can (g)	25.8	24.4	29	30.9
Mass of Can (g)	11	11	11.1	11.5
Mass of dry soil (g)	14.8	13.4	17.9	19.4
Mass of wet soil (g)	19.8	17.5	23.2	25
Water Content (%)	33.78	30.60	29.61	28.87
No. of Blows	19	24	28	33



Plastic Limit		
Mass of wet soil + can (g)	15.8	18.7
Mass of dry soil + can (g)	15.1	17.6
Mass of Can (g)	11.4	11.9
Mass of dry soil (g)	3.7	5.7
Mass of wet soil (g)	4.4	6.8
Water Content (%)	4.6	6.2

Liquid Limit=	31.1
Plastic Limit=	5.4
Plasticity Index=	25.7

Section 1 Date

ibr>8	green
6 to 8	yellow
<6	red

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT		diff
Core 1	1	525	555	21.9	30	30	6.5	5.6	9.7	13.0		
	1	555	580	22.8	25	25	7.9	7.0	11.9	14.0		1.0
	1	580	625	24.6	45	45	4.1	3.4	6.2	11.1		1.8
	2	625	650	25.6	25	12.5	17.3	16.9	25.9	18.3		1.0
	2	650	675	26.6	25	12.5	17.3	16.9	25.9	18.3		1.0
	3	675	700	27.6	25	8.33333333	27.2	28.1	40.8	21.4		1.0
	3	700	725	28.5	25	8.33333333	27.2	28.1	40.8	21.4		1.0
	3	725	750	29.5	25	8.33333333	27.2	28.1	40.8	21.4	*	1.0
	3	750	775	30.5	25	8.33333333	27.2	28.1	40.8	21.4		1.0
	3	775	800	31.5	25	8.33333333	27.2	28.1	40.8	21.4		1.0
	3	800	825	32.5	25	8.33333333	27.2	28.1	40.8	21.4		1.0
	2	825	850	33.5	25	12.5	17.3	16.9	25.9	18.3		1.0
	2	850	875	34.4	25	12.5	17.3	16.9	25.9	18.3		1.0
	2	875	910	35.8	35	17.5	11.8	11.0	17.8	16.0		1.4
	1	910	925	36.4	15	15	14.1	13.4	21.1	17.0		0.6
	1	925	950	37.4	25	25	7.9	7.0	11.9	14.0		1.0
	1	950	975	38.4	25	25	7.9	7.0	11.9	14.0		1.0
	1	975	1000	39.4	25	25	7.9	7.0	11.9	14.0		1.0
	1	1000	1025	40.4	25	25	7.9	7.0	11.9	14.0		1.0
	1	1025	1050	41.3	25	25	7.9	7.0	11.9	14.0		0.984251969

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 2	1	340	375	14.8	35	35.0	5.4	4.6	8.2	12.2	
	2	375	400	15.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	400	430	16.9	30	15.0	14.1	13.4	21.1	17.0	1.2
	2	430	455	17.9	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	455	475	18.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	3	475	500	19.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	500	525	20.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	525	555	21.9	30	10.0	22.2	22.3	33.2	20.0	1.2
	2	555	575	22.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	575	600	23.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	600	625	24.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	625	670	26.4	45	22.5	8.9	8.0	13.4	14.5	1.8
	1	670	690	27.2	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	690	720	28.3	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	720	750	29.5	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	750	790	31.1	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	790	825	32.5	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	825	860	33.9	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	860	905	35.6	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	905	960	37.8	55	55.0	3.3	2.6	4.9	10.3	2.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 3	1	375	410	16.1	35	35.0	5.4	4.6	8.2	12.2	
	1	410	425	16.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	2	425	450	17.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	450	475	18.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	3	475	500	19.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	500	525	20.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	4	525	550	21.7	25	6.3	37.5	40.3	56.2	24.0	1.0
	4	550	580	22.8	30	7.5	30.6	32.1	45.9	22.3	1.2
	2	580	600	23.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	3	600	630	24.8	30	10.0	22.2	22.3	33.2	20.0	1.2
	2	630	650	25.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	650	680	26.8	30	15.0	14.1	13.4	21.1	17.0	1.2
	2	680	705	27.8	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	705	730	28.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	1	730	750	29.5	20	20.0	10.2	9.3	15.3	15.2	0.8
	2	750	785	30.9	35	17.5	11.8	11.0	17.8	16.0	1.4
	1	785	820	32.3	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	820	850	33.5	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	850	885	34.8	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	885	920	36.2	35	35.0	5.4	4.6	8.2	12.2	1.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 4	1	320	400	15.7	80	80.0	2.2	1.6	3.2	8.9	
	2	400	425	16.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	3	425	450	17.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	2	450	475	18.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	475	500	19.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	3	500	530	20.9	30	10.0	22.2	22.3	33.2	20.0	1.2
	2	530	550	21.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	550	575	22.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	575	600	23.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	600	625	24.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	625	630	24.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	630	675	26.6	45	22.5	8.9	8.0	13.4	14.5	1.8
	2	675	715	28.1	40	20.0	10.2	9.3	15.3	15.2	1.6
	2	715	735	28.9	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	735	775	30.5	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	775	825	32.5	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	825	850	33.5	25	25.0	7.9	7.0	11.9	14.0	1.0

	1	850	885	34.8	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	885	920	36.2	35	35.0	5.4	4.6	8.2	12.2	1.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 5	1	325	350	13.8	25	25.0	7.9	7.0	11.9	14.0	#VALUE!
	1	350	375	14.8	25	25.0	7.9	7.0	11.9	14.0	1.0
	2	375	415	16.3	40	20.0	10.2	9.3	15.3	15.2	1.6
	1	415	430	16.9	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	430	450	17.7	20	20.0	10.2	9.3	15.3	15.2	0.8
	2	450	485	19.1	35	17.5	11.8	11.0	17.8	16.0	1.4
	1	485	500	19.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	500	525	20.7	25	25.0	7.9	7.0	11.9	14.0	1.0
	2	525	565	22.2	40	20.0	10.2	9.3	15.3	15.2	1.6
	1	565	600	23.6	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	600	625	24.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	625	665	26.2	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	665	700	27.6	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	700	745	29.3	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	745	785	30.9	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	785	825	32.5	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	825	860	33.9	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	860	900	35.4	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	900	935	36.8	35	35.0	5.4	4.6	8.2	12.2	1.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 6	1	330	380	15.0	50	50.0	3.7	2.9	5.5	10.7	
	1	380	410	16.1	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	410	430	16.9	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	430	475	18.7	45	45.0	4.1	3.4	6.2	11.1	1.8
	2	475	500	19.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	500	525	20.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	1	525	570	22.4	45	45.0	4.1	3.4	6.2	11.1	1.8
	2	570	600	23.6	30	15.0	14.1	13.4	21.1	17.0	1.2
	1	600	625	24.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	625	650	25.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	650	685	27.0	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	685	720	28.3	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	720	750	29.5	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	750	785	30.9	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	785	825	32.5	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	825	870	34.3	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	870	900	35.4	30	30.0	6.5	5.6	9.7	13.0	1.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 7	1	360	390	15.4	30	30.00	6.5	5.6	9.7	13.0	
	1	390	410	16.1	20	20.00	10.2	9.3	15.3	15.2	0.8
	1	410	425	16.7	15	15.00	14.1	13.4	21.1	17.0	0.6
	3	425	450	17.7	25	8.33	27.2	28.1	40.8	21.4	1.0
	3	450	480	18.9	30	10.00	22.2	22.3	33.2	20.0	1.2
	2	480	500	19.7	20	10.00	22.2	22.3	33.2	20.0	0.8
	3	500	525	20.7	25	8.33	27.2	28.1	40.8	21.4	1.0
	3	525	550	21.7	25	8.33	27.2	28.1	40.8	21.4	1.0
	2	550	575	22.6	25	12.50	17.3	16.9	25.9	18.3	1.0
	3	575	605	23.8	30	10.00	22.2	22.3	33.2	20.0	1.2
	2	605	625	24.6	20	10.00	22.2	22.3	33.2	20.0	0.8
	2	625	650	25.6	25	12.50	17.3	16.9	25.9	18.3	1.0
	3	650	675	26.6	25	8.33	27.2	28.1	40.8	21.4	1.0
	2	675	700	27.6	25	12.50	17.3	16.9	25.9	18.3	1.0
	3	700	730	28.7	30	10.00	22.2	22.3	33.2	20.0	1.2
	3	730	755	29.7	25	8.33	27.2	28.1	40.8	21.4	1.0
	2	755	780	30.7	25	12.50	17.3	16.9	25.9	18.3	1.0
	2	780	800	31.5	20	10.00	22.2	22.3	33.2	20.0	0.8
	2	800	825	32.5	25	12.50	17.3	16.9	25.9	18.3	1.0
	2	825	850	33.5	25	12.50	17.3	16.9	25.9	18.3	1.0
	2	850	880	34.6	30	15.00	14.1	13.4	21.1	17.0	1.2
	1	880	900	35.4	20	20.00	10.2	9.3	15.3	15.2	0.8

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 8	1	385	410	16.1	25	25.0	7.9	7.0	11.9	14.0	
	1	410	425	16.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	2	425	450	17.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	450	475	18.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	475	500	19.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	500	530	20.9	30	15.0	14.1	13.4	21.1	17.0	1.2
	1	530	550	21.7	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	550	575	22.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	575	600	23.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	600	625	24.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	625	660	26.0	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	660	690	27.2	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	690	725	28.5	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	725	750	29.5	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	750	775	30.5	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	775	805	31.7	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	805	835	32.9	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	835	860	33.9	25	25.0	7.9	7.0	11.9	14.0	1.0
	2	860	900	35.4	40	20.0	10.2	9.3	15.3	15.2	1.6
	1	900	925	36.4	25	25.0	7.9	7.0	11.9	14.0	1.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 9	2	350	385	15.2	35	17.5	11.8	11.0	17.8	16.0	
	1	385	400	15.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	2	400	425	16.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	3	425	455	17.9	30	10.0	22.2	22.3	33.2	20.0	1.2
	2	455	475	18.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	3	475	500	19.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	2	500	525	20.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	525	550	21.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	550	585	23.0	35	17.5	11.8	11.0	17.8	16.0	1.4
	1	585	605	23.8	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	605	625	24.6	20	20.0	10.2	9.3	15.3	15.2	0.8
	2	625	665	26.2	40	20.0	10.2	9.3	15.3	15.2	1.6
	1	665	685	27.0	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	685	720	28.3	35	35.0	5.4	4.6	8.2	12.2	1.4
	2	720	775	30.5	55	27.5	7.1	6.2	10.7	13.5	2.2
	1	775	820	32.3	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	820	850	33.5	30	30.0	6.5	5.6	9.7	13.0	1.2

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45
Depth Below Pavement Surface (in.)

I-55 Pemiscot County
MO
Core No. 1

Extraction Date: August 29, 2013

Core No.	1
Distance from beginning (ft)	100
Distance from pavement edge (ft)	4.3

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	Concrete	9"	-	-
	2	HMA	1"	Moderate	555
	3	Concrete	9"	-	-
		Total Thickness	19"		

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	-	-
Y	-	-

Photograph No. 1
Picture of Core No. 1 extracted from pavement.

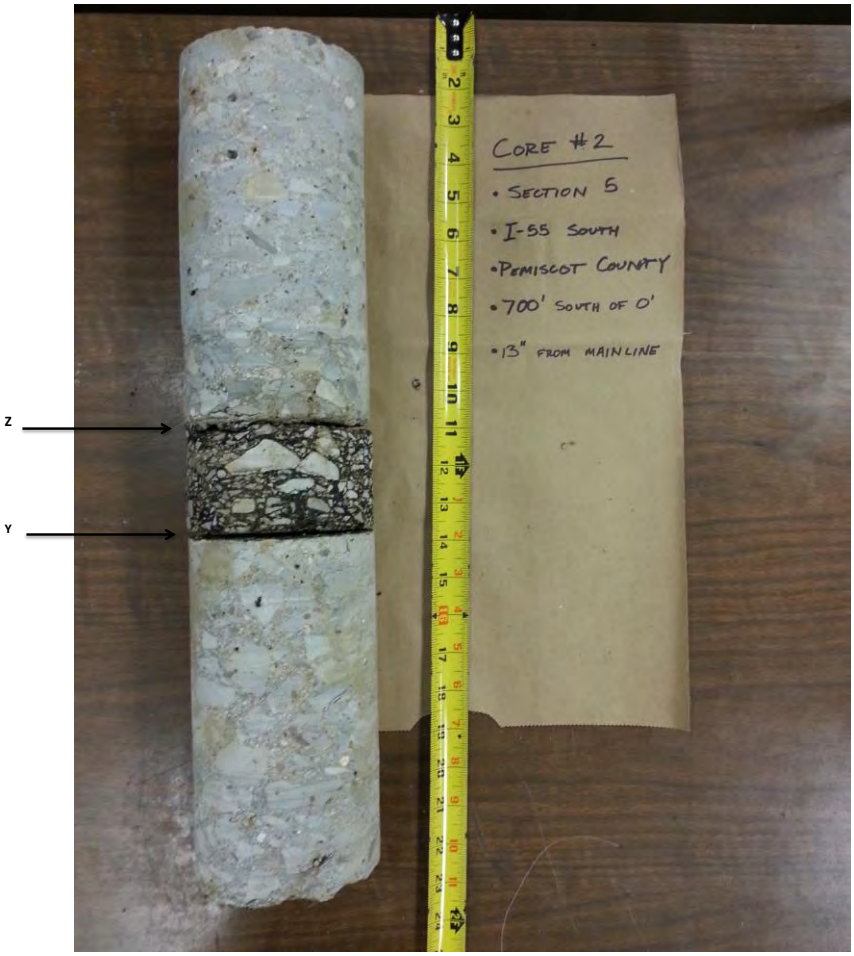
Photograph No. 2
Picture of Core No. 1 split open to evaluate the degree of stripping occurring.

I-55 Pemiscot County
MO
Core No. 2

Extraction Date: August 29, 2013

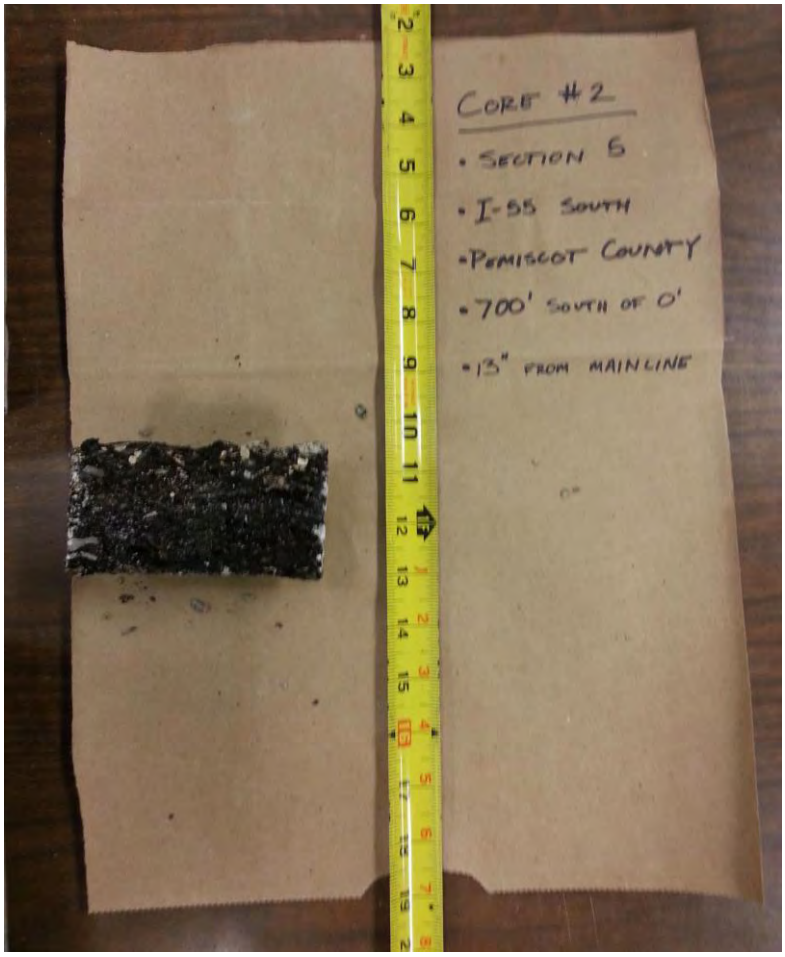
Core No.	2
Distance from beginning (ft)	700'
Distance from pavement edge (ft)	1.083'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
2	1	Concrete	9"	-	-
	2	HMA	2 1/2"	Low	1150
	3	Concrete	9"	-	-
		Total Thickness	20 1/2"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 3
Picture of Core No. 2 extracted from pavement.



Photograph No. 4
Picture of Core No. 2 split open to evaluate the degree of stripping occurring.

I-55 Pemiscot County
MO
Core No. 3

Extraction Date: August 29, 2013

Core No.	3
Distance from beginning (ft)	892.167'
Distance from pavement edge (ft)	3.33'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
3	1	Concrete	9"	-	-
	2	HMA	3"	Low	1754
	3	Concrete	9"	-	-
		Total Thickness	21"		

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Strong	1203
Y	-	-

Photograph No. 5
Picture of Core No. 3 extracted from pavement.

Photograph No. 6
Picture of Core No. 3 split open to evaluate the degree of stripping occurring.

I-55 Pemiscot County
MO
Core No. 4

Extraction Date: August 29, 2013

Core No.	4
Distance from beginning (ft)	598.33'
Distance from pavement edge (ft)	5.83'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	Concrete	8 1/2"	-	-
	2	HMA	2 1/2"	Low	1289
	3	Concrete	9"	-	-
		Total Thickness	20"		

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Weak	267
Y	-	-

Photograph No. 7
Picture of Core No. 4 extracted from pavement.

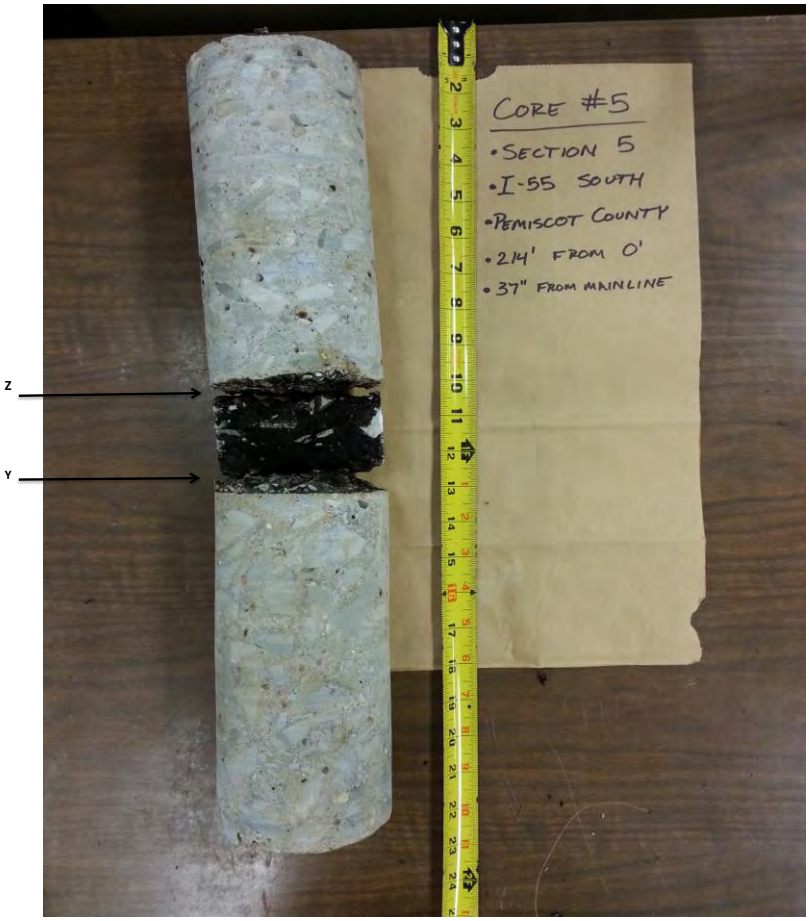
Photograph No. 8
Picture of Core No. 4 split open to evaluate the degree of stripping occurring.

I-55 Pemiscot County
MO
Core No. 5

Extraction Date: August 29, 2013

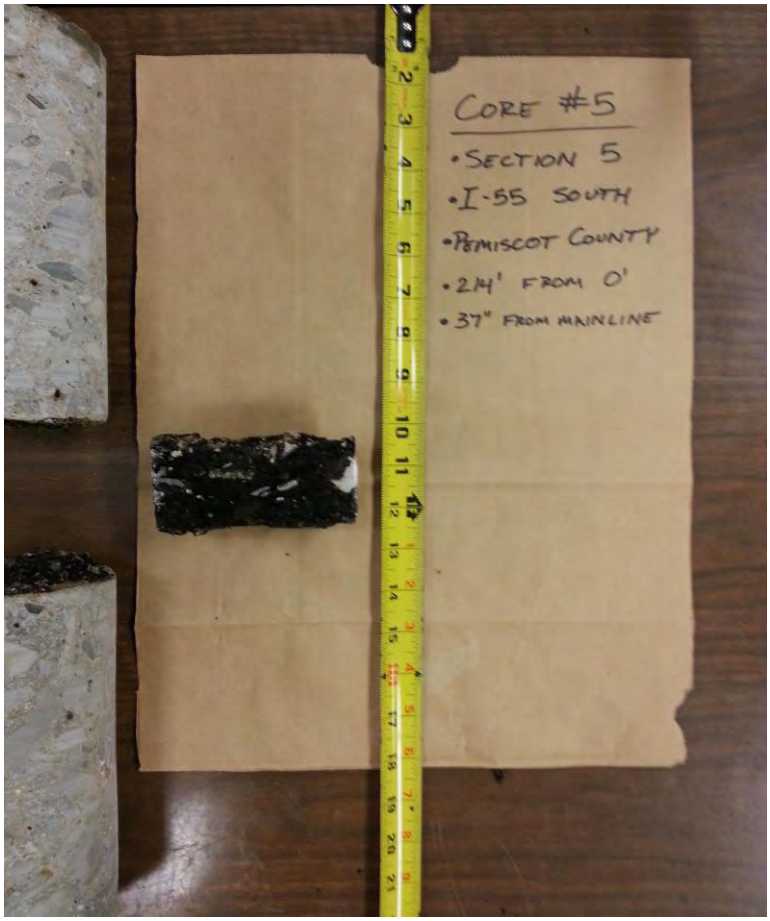
Core No.	5
Distance from beginning (ft)	214'
Distance from pavement edge (ft)	3.083'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
5	1	Concrete	8"	-	-
	2	HMA	2"	Low	1203
	3	Concrete	8 1/2"	-	-
		Total Thickness	18 1/2"		



Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Strong	859
Y	-	-

Photograph No. 9
Picture of Core No. 5 extracted from pavement.



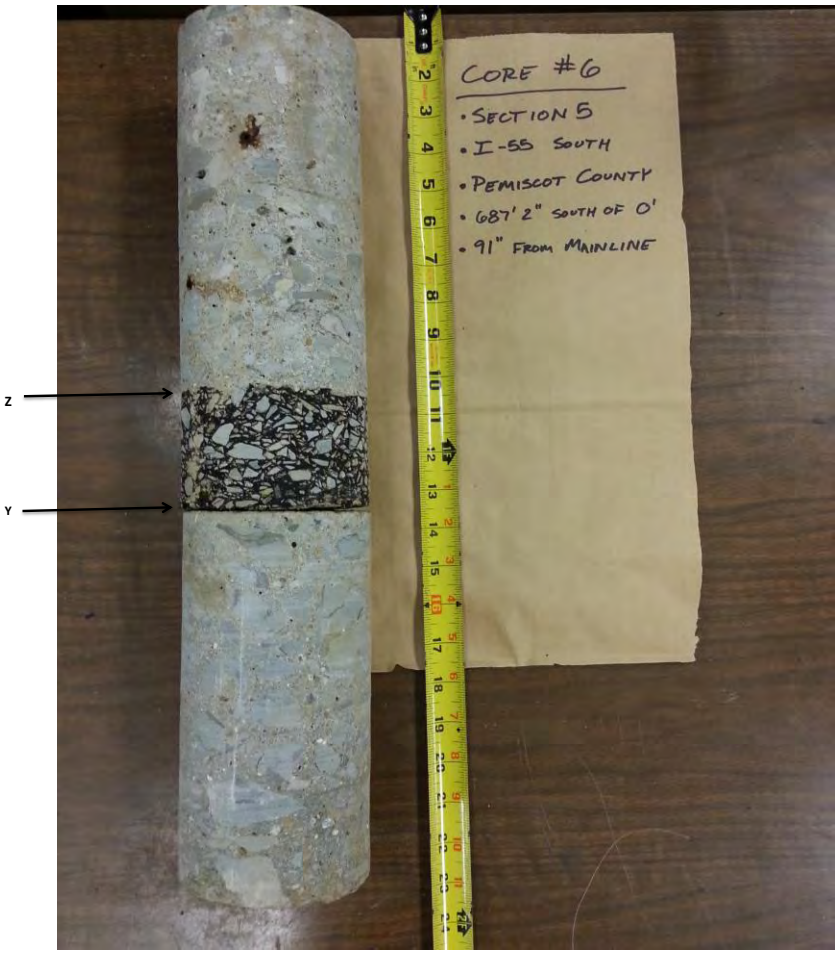
Photograph No. 10
Picture of Core No. 5 split open to evaluate the degree of stripping occurring.

I-55 Pemiscot County
MO
Core No. 6

Extraction Date: August 29, 2013

Core No.	6
Distance from beginning (ft)	687.167'
Distance from pavement edge (ft)	7.583'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
6	1	Concrete	9"	-	-
	2	HMA	2 1/2"	Low	1498
	3	Concrete	8 1/2"	-	-
		Total Thickness	20"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Strong	1339
Y	-	-

Photograph No. 11
Picture of Core No. 6 extracted from pavement.

Photograph No. 12
Picture of Core No. 6 split open to evaluate the degree of stripping occurring.

I-55 Pemiscot County
MO
Core No. 7

Extraction Date: August 29, 2013

Core No.	7
Distance from beginning (ft)	576'
Distance from pavement edge (ft)	6.083'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
7	1	Concrete	8 1/2"	-	-
	2	HMA	3"	Low	1136
	3	Concrete	9"	-	-
		Total Thickness	20 1/2"		

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Strong	592
Y	-	-

Photograph No. 13
Picture of Core No. 7 extracted from pavement.

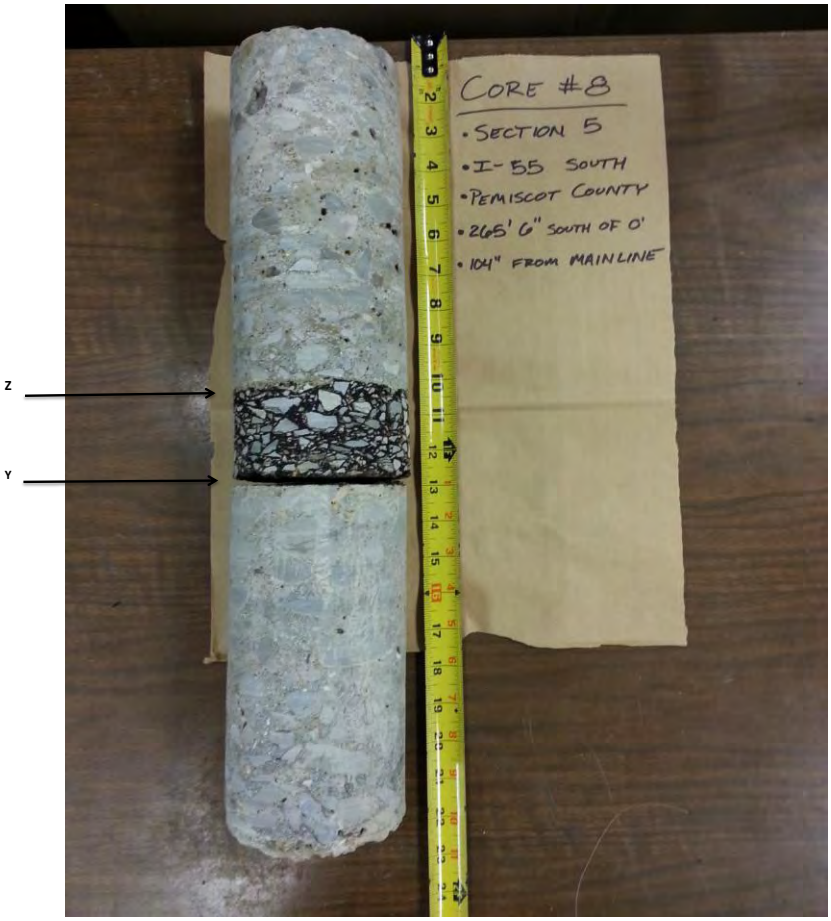
Photograph No. 14
Picture of Core No. 7 split open to evaluate the degree of stripping occurring.

I-55 Pemiscot County
MO
Core No. 8

Extraction Date: August 29, 2013

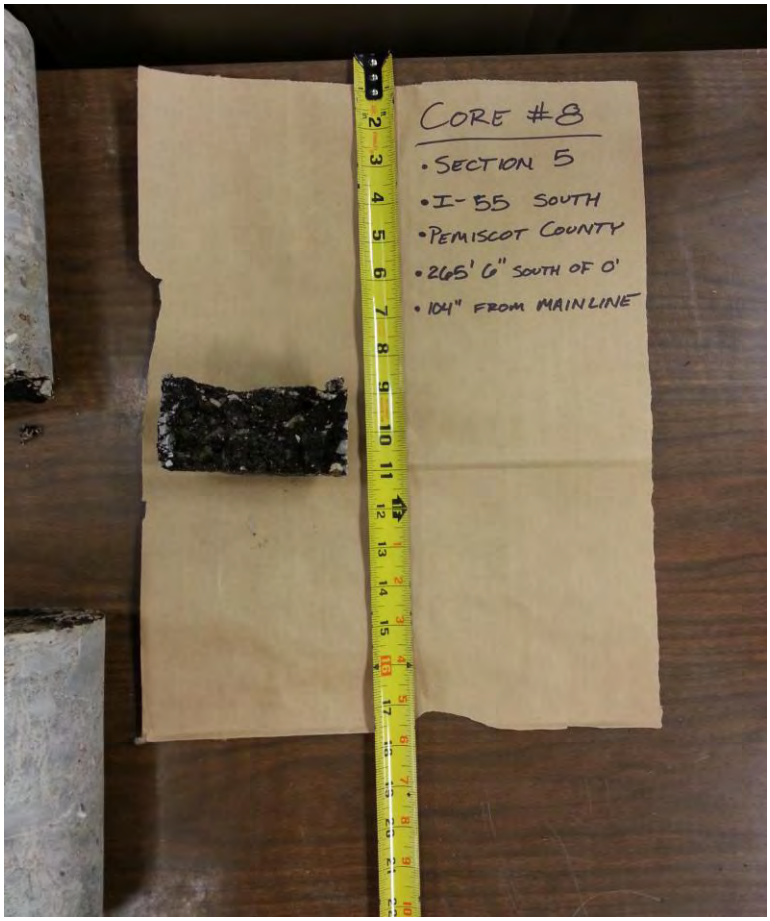
Core No.	8
Distance from beginning (ft)	265.5'
Distance from pavement edge (ft)	8.67'

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
8	1	Concrete	8 1/2"	-	-
	2	HMA	2 1/2"	Low	955
	3	Concrete	9"	-	-
		Total Thickness	20"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	Strong	729
Y	-	-

Photograph No. 15
Picture of Core No. 8 extracted from pavement.



Photograph No. 16
Picture of Core No. 8 split open to evaluate the degree of stripping occurring.

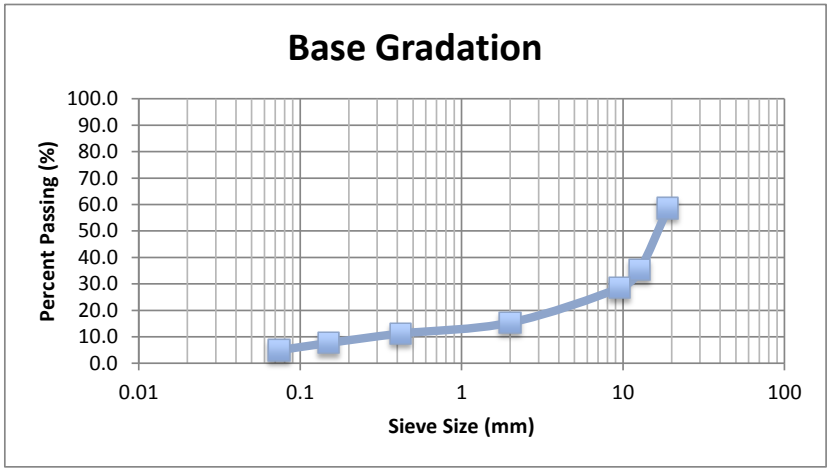
Core 1

Base

Moisture Content	
Initial Sample + Pan (g)	650.7
Weight of Pan (g)	372.9
Initial Weight	277.8
Dry Weight + Pan	631.7
Dry Weight	258.8
Water content	7%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	107.1	41.4	58.6
1/2"	12.7	60.3	23.3	35.3
3/8"	9.51	17.8	6.9	28.4
No. 10	2	33.9	13.1	15.3
No. 40	0.42	10.7	4.1	11.2
No. 100	0.149	9.3	3.6	7.6
No. 200	0.074	7.0	2.7	4.9
Pan		12.2	4.7	0



D_{10} = 0.31 mm

D_{30} = 10.15 mm

D_{60} = 20.62 mm

C_u = 65.24

C_c = 15.82

% Gravel= 71.6

% Sand= 23.5

% Fines= 4.9

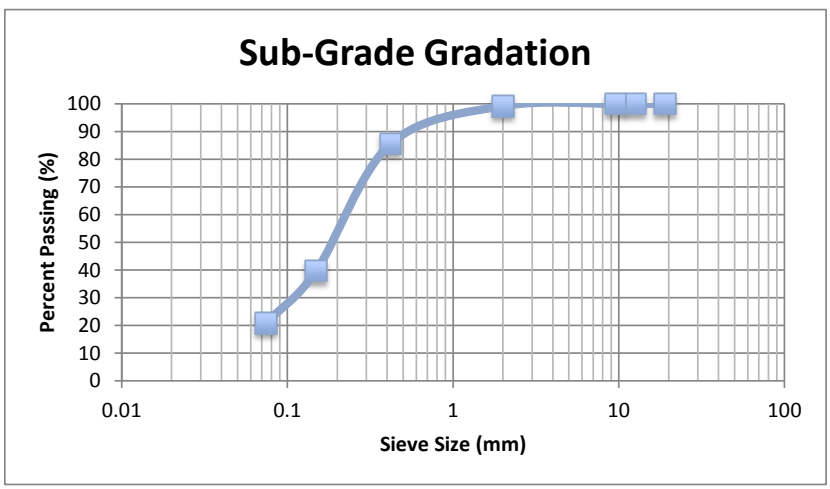
Unified Soil Classification: GW/GP

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	885.1
Weight of Pan (g)	378.8
Initial Weight	506.3
Dry Weight + Pan	838.1
Dry Weight	459.3
Water content	10%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	0	0.0	100
No. 10	2	3.6	0.8	99.2
No. 40	0.42	62.5	13.6	85.6
No. 100	0.149	211.2	46.0	39.6
No. 200	0.074	86.5	18.8	20.8
Pan		91.0	19.8	0



D_{10} = 0.015 mm

D_{30} = 0.109 mm

D_{60} = 0.254 mm

C_u = 17.17

C_c = 3.14

% Gravel= 0.0

% Sand= 79.2

% Fines= 20.8

Unified Soil Classification: SM/SC

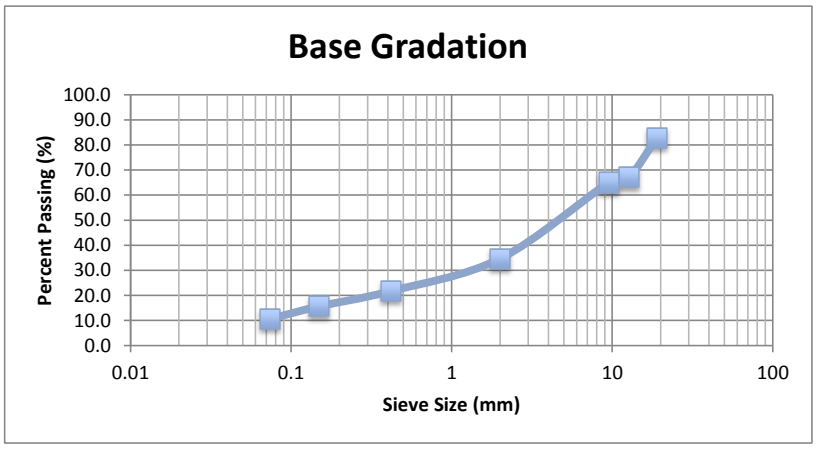
Core 3

Base

Moisture Content	
Initial Sample + Pan (g)	833.2
Weight of Pan (g)	375.4
Initial Weight	457.8
Dry Weight + Pan	822.9
Dry Weight	447.5
Water content	2%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	76.8	17.2	82.8
1/2"	12.7	70.6	15.8	67.1
3/8"	9.51	9.2	2.1	65.0
No. 10	2	135.9	30.4	34.6
No. 40	0.42	57.7	12.9	21.7
No. 100	0.149	27.4	6.1	15.6
No. 200	0.074	22.3	5.0	10.6
Pan		46.5	10.4	0



D_{10} = 0.066 mm

D_{30} = 1.23 mm

D_{60} = 7.80 mm

C_u = 118.3

C_c = 2.96

% Gravel= 35.0

% Sand= 54.4

% Fines= 10.6

Unified Soil Classification: SW/SP

Atterberg Limits

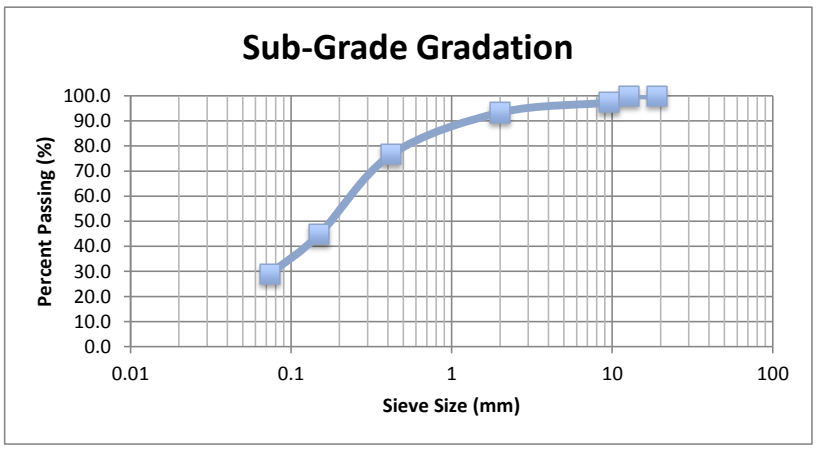
Non- Plastic

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	870.8
Weight of Pan (g)	364.9
Initial Weight	505.9
Dry Weight + Pan	816.2
Dry Weight	451.3
Water content	12%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100.0
1/2"	12.7	0	0.0	100.0
3/8"	9.51	12.0	2.7	97.3
No. 10	2	18.2	4.0	93.3
No. 40	0.42	75.5	16.7	76.6
No. 100	0.149	144.1	31.9	44.6
No. 200	0.074	70.5	15.6	29.0
Pan		126.0	27.9	0



D_{10} = 0.007 mm
D_{30} = 0.079 mm
D_{60} = 0.264 mm
C_u = 37.38
C_c = 3.37
% Gravel= 2.7
% Sand= 68.3
% Fines= 29.0
Unified Soil Classification: SM/SC

Atterberg Limits

Non- Plastic

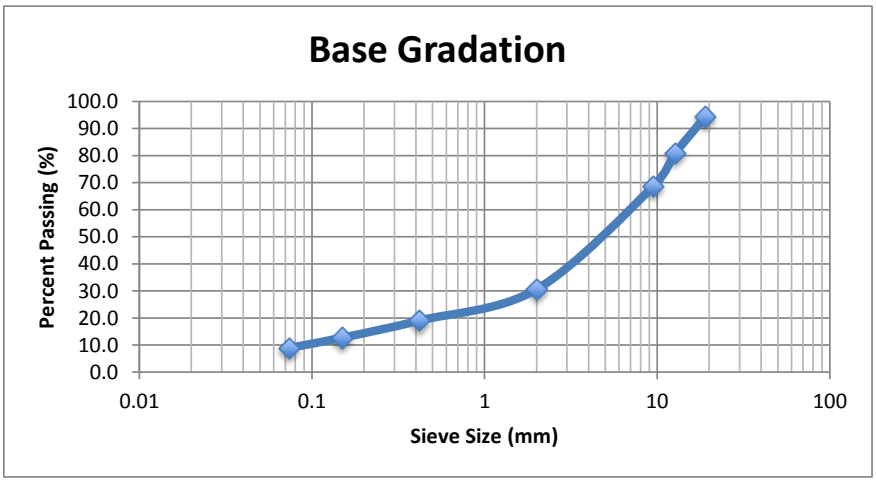
Core 5

Base

Moisture Content	
Initial Sample + Pan (g)	1039.8
Weight of Pan (g)	524.2
Initial Weight	515.6
Dry Weight + Pan	992.5
Dry Weight	468.3
Water content	10%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	26.2	5.6	94.4
1/2"	12.7	62.9	13.5	80.9
3/8"	9.51	56.3	12.1	68.8
No. 10	2	177.6	38.2	30.6
No. 40	0.42	53.7	11.5	19.0
No. 100	0.149	29.7	6.4	12.7
No. 200	0.074	17.3	3.7	8.9
Pan		41.6	8.9	0



D_{10} = 0.094 mm

D_{30} = 1.78 mm

D_{60} = 7.17 mm

C_u = 76.41

C_c = 4.73

% Gravel= 31.2

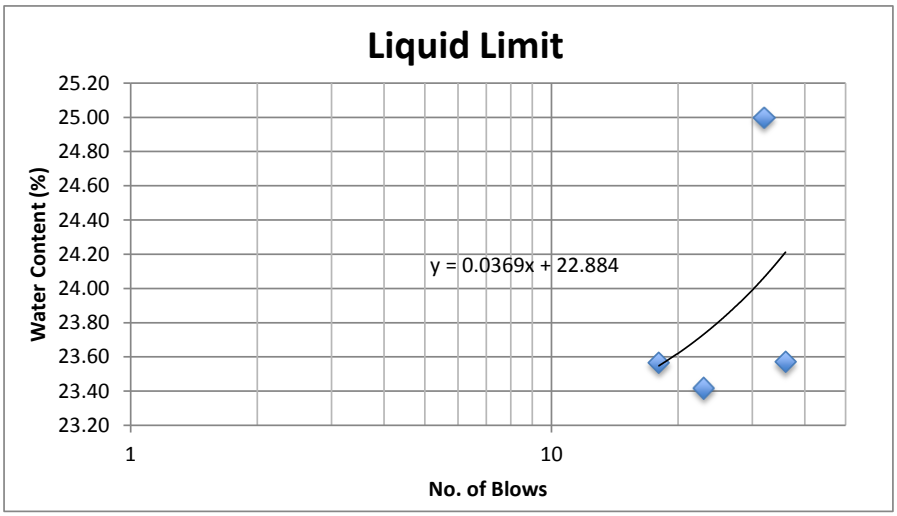
% Sand= 59.8

% Fines= 8.9

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	30.4	30.9	28.5	30.1
Mass of dry soil + can (g)	26.7	27.2	25.2	26.8
Mass of Can (g)	11	11.4	11.2	13.6
Mass of dry soil (g)	15.7	15.8	14	13.2
Mass of wet soil (g)	19.4	19.5	17.3	16.5
Water Content (%)	23.57	23.42	23.57	25.00
No. of Blows	18	23	36	32



Liquid Limit=	23.8

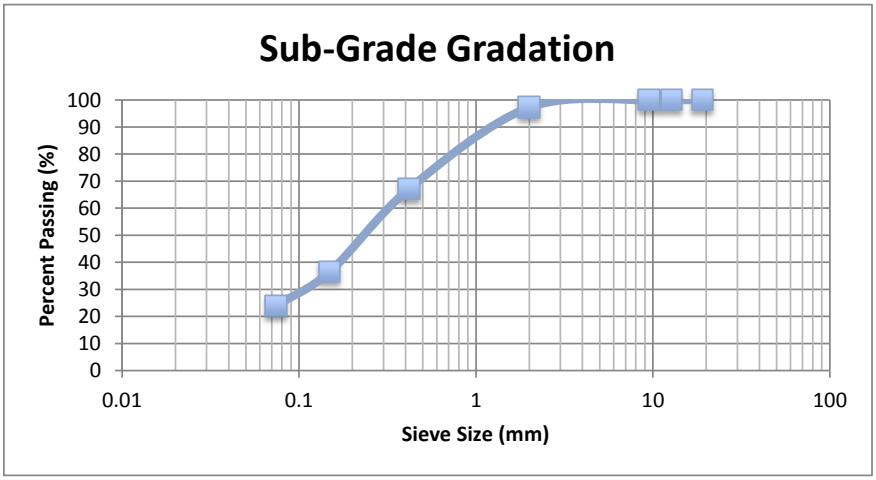
Plastic Limit	**not enough material for plastic limit

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	876.9
Weight of Pan (g)	368.6
Initial Weight	508.3
Dry Weight + Pan	816.8
Dry Weight	448.2
Water content	13%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	0	0.0	100
No. 10	2	12.3	2.8	97.2
No. 40	0.42	134.0	30.0	67.2
No. 100	0.149	137.2	30.7	36.5
No. 200	0.074	55.9	12.5	24.0
Pan		107.0	24.0	0



D_{10} = 0.0107 mm

D_{30} = 0.1067 mm

D_{60} = 0.3454 mm

C_u = 32.33

C_c = 3.11

% Gravel= 0.0

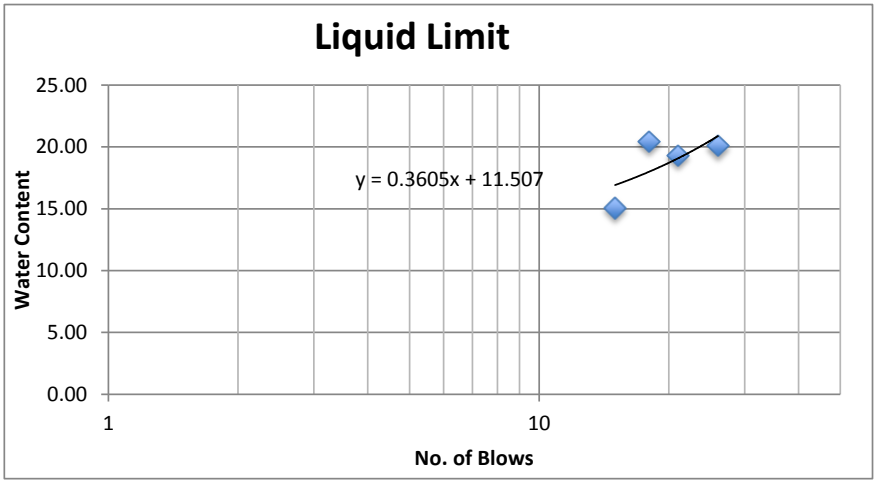
% Sand= 76.0

% Fines= 24.0

Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	32.2	31.8	35.6	34.9
Mass of dry soil + can (g)	29.4	28.5	31.6	31
Mass of Can (g)	10.8	11.4	11.7	11.9
Mass of dry soil (g)	18.6	17.1	19.9	19.1
Mass of wet soil (g)	21.4	20.4	23.9	23
Water Content (%)	15.05	19.30	20.10	20.42
No. of Blows	15	21	26	18



*Diffcult to run, kind of sandy

Liquid Limit=	20.5

Plastic Limit		
Mass of wet soil + can (g)	19.7	22.8
Mass of dry soil + can (g)	18.5	21.5
Mass of Can (g)	12.1	13.8
Mass of dry soil (g)	7.6	9
Mass of wet soil (g)	6.4	7.7
Water Content (%)	6.5	6.0

Plastic Limit=	6.3

Plasticity Index=	14.2335009

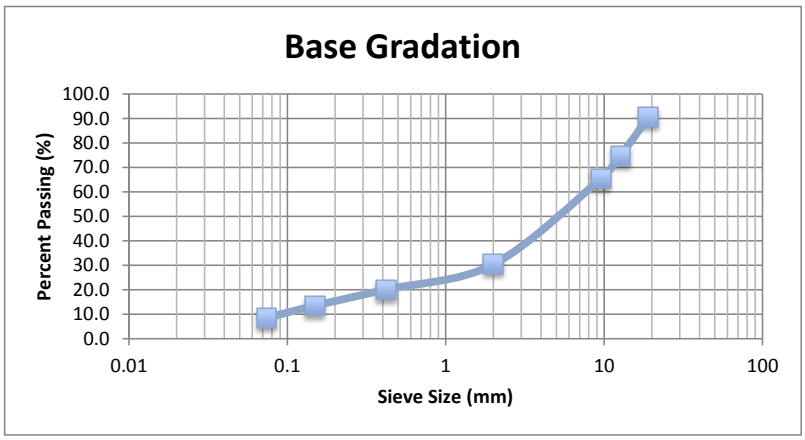
Core 7

Base

Moisture Content	
Initial Sample + Pan (g)	1041
Weight of Pan (g)	532.5
Initial Weight	508.5
Dry Weight + Pan	996.5
Dry Weight	464
Water content	10%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	44.0	9.5	90.5
1/2"	12.7	72.5	15.7	74.8
3/8"	9.51	43.5	9.4	65.4
No. 10	2	161.6	35.0	30.4
No. 40	0.42	47.6	10.3	20.1
No. 100	0.149	30.4	6.6	13.5
No. 200	0.074	23.2	5.0	8.5
Pan		39.2	8.5	0



D_{10} = 0.0940 mm

D_{30} = 1.808 mm

D_{60} = 7.899 mm

C_u = 83.55

C_c = 4.38

% Gravel= 34.6

% Sand= 56.9

% Fines= 8.5

Unified Soil Classification: SW/SP

Atterberg Limits

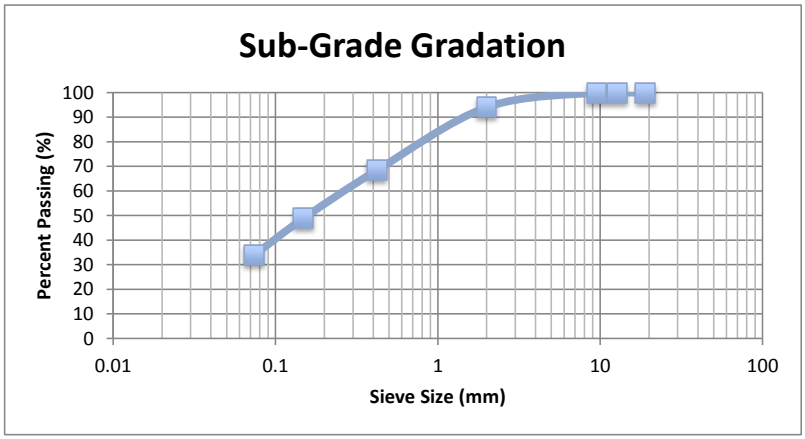
Non- Plastic

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	1035.4
Weight of Pan (g)	529.3
Initial Weight	506.1
Dry Weight + Pan	961.9
Dry Weight	432.6
Water content	17%

Gradation

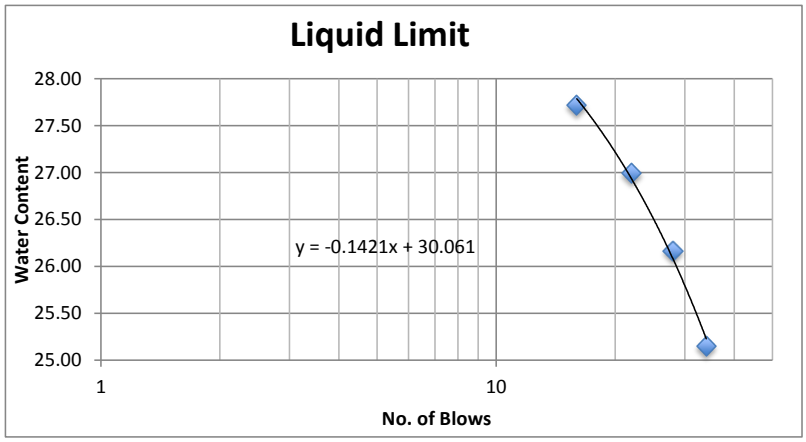
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	0	0.0	100
No. 10	2	25.5	5.9	94.1
No. 40	0.42	110.2	25.7	68.4
No. 100	0.149	83.4	19.4	48.9
No. 200	0.074	64.2	15.0	33.9
Pan		145.5	33.9	0



D_{10} = 0.0050 mm
D_{30} = 0.0584 mm
D_{60} = 0.2870 mm
C_u = 57.8
C_c = 2.28
% Gravel= 0.0
% Sand= 66.1
% Fines= 33.9
Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	32.8	24.6	35.4	31.8
Mass of dry soil + can (g)	28.6	21.8	30.3	27.4
Mass of Can (g)	11.9	11.1	11.9	11.1
Mass of dry soil (g)	16.7	10.7	18.4	16.3
Mass of wet soil (g)	20.9	13.5	23.5	20.7
Water Content (%)	25.15	26.17	27.72	26.99
No. of Blows	34	28	16	22



Liquid Limit=	26.5

Plastic Limit		
Mass of wet soil + can (g)	17.5	17.7
Mass of dry soil + can (g)	16.4	16.8
Mass of Can (g)	10.8	12
Mass of dry soil (g)	6.7	5.7
Mass of wet soil (g)	5.6	4.8
Water Content (%)	6.7	5.4

Plastic Limit=	6.0

Plasticity Index=	20.46777

Section 1 Date

ibr>8	green
6 to 8	yellow
<6	red

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 1	1	490	505	19.9	15	15	14.1	13.4	21.1	17.0	
	2	505	515	20.3	10	5	48.1	53.4	72.2	26.2	0.4
	1	515	525	20.7	10	10	22.2	22.3	33.2	20.0	0.4
	2	525	535	21.1	10	5	48.1	53.4	72.2	26.2	0.4
	2	535	550	21.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	550	565	22.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	565	580	22.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	580	595	23.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	595	605	23.8	10	5	48.1	53.4	72.2	26.2	0.4
	2	605	615	24.2	10	5	48.1	53.4	72.2	26.2	0.4
	1	615	625	24.6	10	10	22.2	22.3	33.2	20.0	0.4
	2	625	640	25.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	640	650	25.6	10	10	22.2	22.3	33.2	20.0	0.4
	1	650	660	26.0	10	10	22.2	22.3	33.2	20.0	0.4
	1	660	670	26.4	10	10	22.2	22.3	33.2	20.0	0.4
	2	670	685	27.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	685	700	27.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	700	710	28.0	10	5	48.1	53.4	72.2	26.2	0.4
	1	710	720	28.3	10	10	22.2	22.3	33.2	20.0	0.4
	1	720	730	28.7	10	10	22.2	22.3	33.2	20.0	0.4
	1	730	740	29.1	10	10	22.2	22.3	33.2	20.0	0.4
	1	740	750	29.5	10	10	22.2	22.3	33.2	20.0	0.4
	1	750	760	29.9	10	10	22.2	22.3	33.2	20.0	0.4
	2	760	770	30.3	10	5	48.1	53.4	72.2	26.2	0.4
	2	770	780	30.7	10	5	48.1	53.4	72.2	26.2	0.393700787
	2	780	800	31.5	20	10	22.2	22.3	33.2	20.0	0.8
	1	800	810	31.9	10	10	22.2	22.3	33.2	20.0	0.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 2	1	525	540	21.3	15	15.0	14.1	13.4	21.1	17.0	
	1	540	550	21.7	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	550	560	22.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	560	570	22.4	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	570	585	23.0	15	15.0	14.1	13.4	21.1	17.0	0.6
	2	585	595	23.4	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	595	615	24.2	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	615	625	24.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	625	635	25.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	635	645	25.4	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	645	655	25.8	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	655	665	26.2	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	665	675	26.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	675	685	27.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	685	695	27.4	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	695	705	27.8	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	705	720	28.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	720	730	28.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	730	740	29.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	740	750	29.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	750	760	29.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	760	770	30.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	770	780	30.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	780	790	31.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	790	800	31.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	800	810	31.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	810	820	32.3	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	820	830	32.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	830	840	33.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	840	850	33.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	850	860	33.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	860	870	34.3	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	870	880	34.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	880	890	35.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	890	900	35.4	10	5.0	48.1	53.4	72.2	26.2	0.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 3	1	565	575	22.6	10	10.0	22.2	22.3	33.2	20.0	
	2	575	590	23.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	590	600	23.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	600	610	24.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	610	625	24.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	625	635	25.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	635	650	25.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	650	665	26.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	665	675	26.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	675	685	27.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	685	700	27.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	700	710	28.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	710	720	28.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	720	730	28.7	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	730	740	29.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	740	750	29.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	750	765	30.1	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	765	780	30.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	780	795	31.3	15	15.0	14.1	13.4	21.1	17.0	0.6

	1	795	805	31.7	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	805	815	32.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	815	825	32.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	825	835	32.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	835	855	33.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	855	865	34.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	865	875	34.4	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	875	890	35.0	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	890	900	35.4	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	900	915	36.0	15	15.0	14.1	13.4	21.1	17.0	0.6

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 4	1	530	540	21.3	10	10.0	22.2	22.3	33.2	20.0	
	2	540	555	21.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	555	570	22.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	570	580	22.8	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	580	590	23.2	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	590	600	23.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	600	610	24.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	610	625	24.6	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	625	650	25.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	2	650	665	26.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	665	675	26.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	675	685	27.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	3	685	700	27.6	15	5.0	48.1	53.4	72.2	26.2	0.6
	2	700	710	28.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	3	710	720	28.3	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	720	730	28.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	730	740	29.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	740	750	29.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	750	760	29.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	760	770	30.3	10	10.0	22.2	22.3	33.2	20.0	0.4
	3	770	780	30.7	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	780	790	31.1	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	790	800	31.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	800	810	31.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	810	820	32.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	820	830	32.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	830	845	33.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	845	855	33.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	3	855	875	34.4	20	6.7	34.9	37.2	52.3	23.4	0.8
	1	875	885	34.8	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	885	900	35.4	15	7.5	30.6	32.1	45.9	22.3	0.6

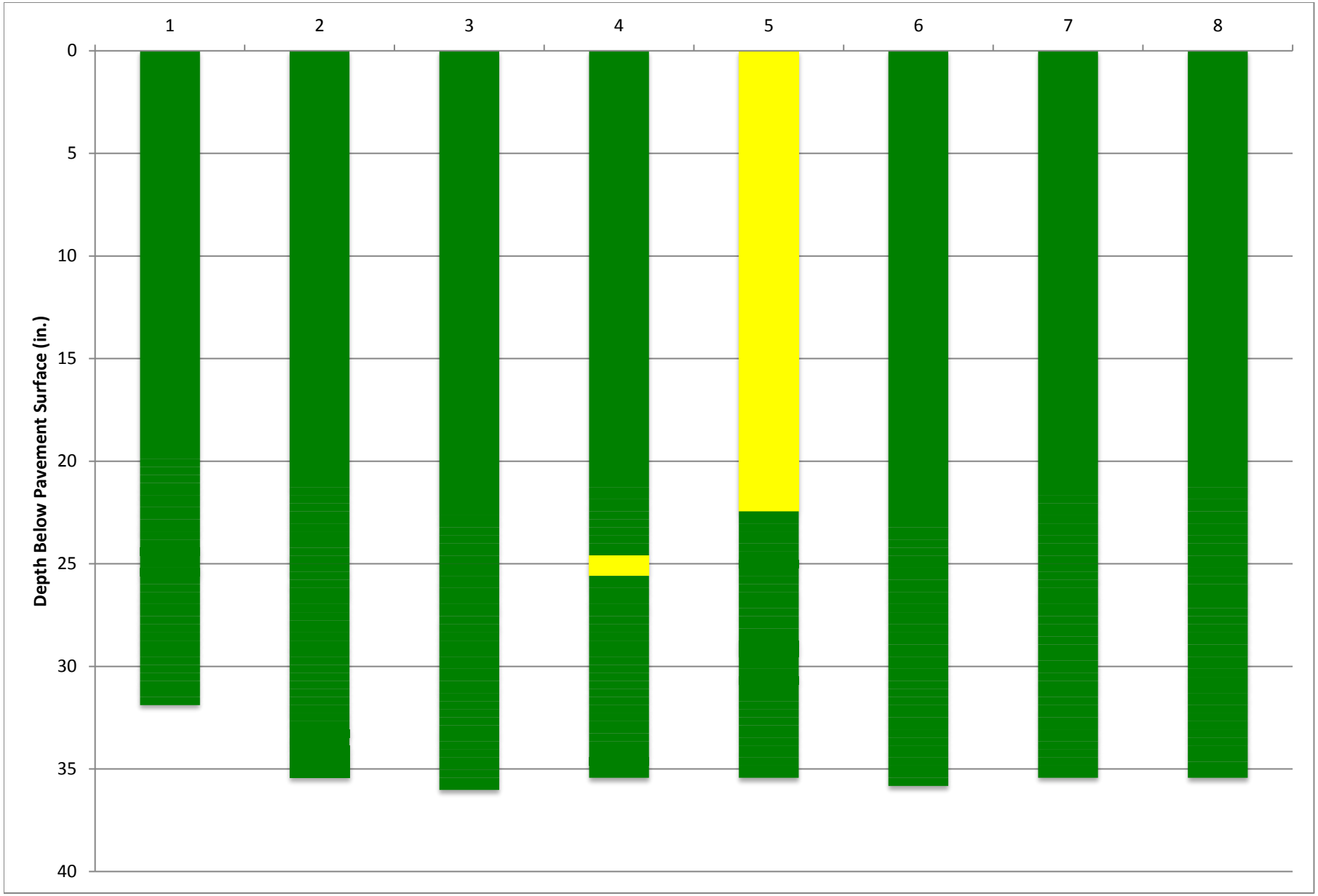
Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 5	1	545	570	22.4	25	25.0	7.9	7.0	11.9	14.0	#VALUE!
	1	570	585	23.0	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	585	595	23.4	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	595	610	24.0	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	610	620	24.4	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	620	630	24.8	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	630	640	25.2	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	640	650	25.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	650	660	26.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	660	670	26.4	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	670	690	27.2	20	10.0	22.2	22.3	33.2	20.0	0.8
	3	690	700	27.6	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	700	715	28.1	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	715	730	28.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	730	750	29.5	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	750	765	30.1	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	765	775	30.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	775	785	30.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	785	805	31.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	1	805	815	32.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	815	825	32.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	825	835	32.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	835	850	33.5	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	850	860	33.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	860	875	34.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	875	885	34.8	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	885	900	35.4	15	15.0	14.1	13.4	21.1	17.0	0.6

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 6	2	575	590	23.2	15	7.5	30.6	32.1	45.9	22.3	
	2	590	605	23.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	605	615	24.2	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	615	625	24.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	625	640	25.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	640	655	25.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	655	670	26.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	670	685	27.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	685	695	27.4	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	695	710	28.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	710	720	28.3	10	10.0	22.2	22.3	33.2	20.0	0.4
	3	720	735	28.9	15	5.0	48.1	53.4	72.2	26.2	0.6
	2	735	750	29.5	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	750	765	30.1	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	765	780	30.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	780	790	31.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	790	800	31.5	10	10.0	22.2	22.3	33.2	20.0	0.4

	1	800	810	31.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	810	825	32.5	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	825	840	33.1	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	840	850	33.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	850	860	33.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	860	875	34.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	875	885	34.8	10	5.0	48.1	53.4	72.2	26.2	0.4
	3	885	900	35.4	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	900	910	35.8	10	3.3	75.8	89.0	113.7	30.6	0.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 7	1	535	550	21.7	15	15.00	14.1	13.4	21.1	17.0	
	2	550	560	22.0	10	5.00	48.1	53.4	72.2	26.2	0.4
	2	560	575	22.6	15	7.50	30.6	32.1	45.9	22.3	0.6
	2	575	585	23.0	10	5.00	48.1	53.4	72.2	26.2	0.4
	2	585	600	23.6	15	7.50	30.6	32.1	45.9	22.3	0.6
	2	600	610	24.0	10	5.00	48.1	53.4	72.2	26.2	0.4
	2	610	625	24.6	15	7.50	30.6	32.1	45.9	22.3	0.6
	1	625	635	25.0	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	635	645	25.4	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	645	655	25.8	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	655	665	26.2	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	665	675	26.6	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	675	685	27.0	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	685	700	27.6	15	15.00	14.1	13.4	21.1	17.0	0.6
	1	700	710	28.0	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	710	725	28.5	15	15.00	14.1	13.4	21.1	17.0	0.6
	1	725	735	28.9	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	735	755	29.7	20	20.00	10.2	9.3	15.3	15.2	0.8
	1	755	770	30.3	15	15.00	14.1	13.4	21.1	17.0	0.6
	1	770	780	30.7	10	10.00	22.2	22.3	33.2	20.0	0.4
	2	780	800	31.5	20	10.00	22.2	22.3	33.2	20.0	0.8
	1	800	810	31.9	10	10.00	22.2	22.3	33.2	20.0	0.4
	2	810	825	32.5	15	7.50	30.6	32.1	45.9	22.3	0.6
	1	825	840	33.1	15	15.00	14.1	13.4	21.1	17.0	0.6
	2	840	855	33.7	15	7.50	30.6	32.1	45.9	22.3	0.6
	1	855	865	34.1	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	865	875	34.4	10	10.00	22.2	22.3	33.2	20.0	0.4
	2	875	885	34.8	10	5.00	48.1	53.4	72.2	26.2	0.4
	1	885	900	35.4	15	15.00	14.1	13.4	21.1	17.0	0.6

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 8	1	525	540	21.3	15	15.0	14.1	13.4	21.1	17.0	
	2	540	555	21.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	555	570	22.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	570	585	23.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	585	600	23.6	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	600	610	24.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	610	625	24.6	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	625	640	25.2	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	640	650	25.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	650	660	26.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	660	675	26.6	15	15.0	14.1	13.4	21.1	17.0	0.6
	2	675	690	27.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	690	700	27.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	700	710	28.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	710	720	28.3	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	720	735	28.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	735	750	29.5	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	750	765	30.1	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	765	775	30.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	775	795	31.3	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	795	810	31.9	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	810	820	32.3	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	820	830	32.7	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	830	840	33.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	840	850	33.5	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	850	860	33.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	860	880	34.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	880	900	35.4	20	10.0	22.2	22.3	33.2	20.0	0.8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Depth Below Pavement Surface (in.)

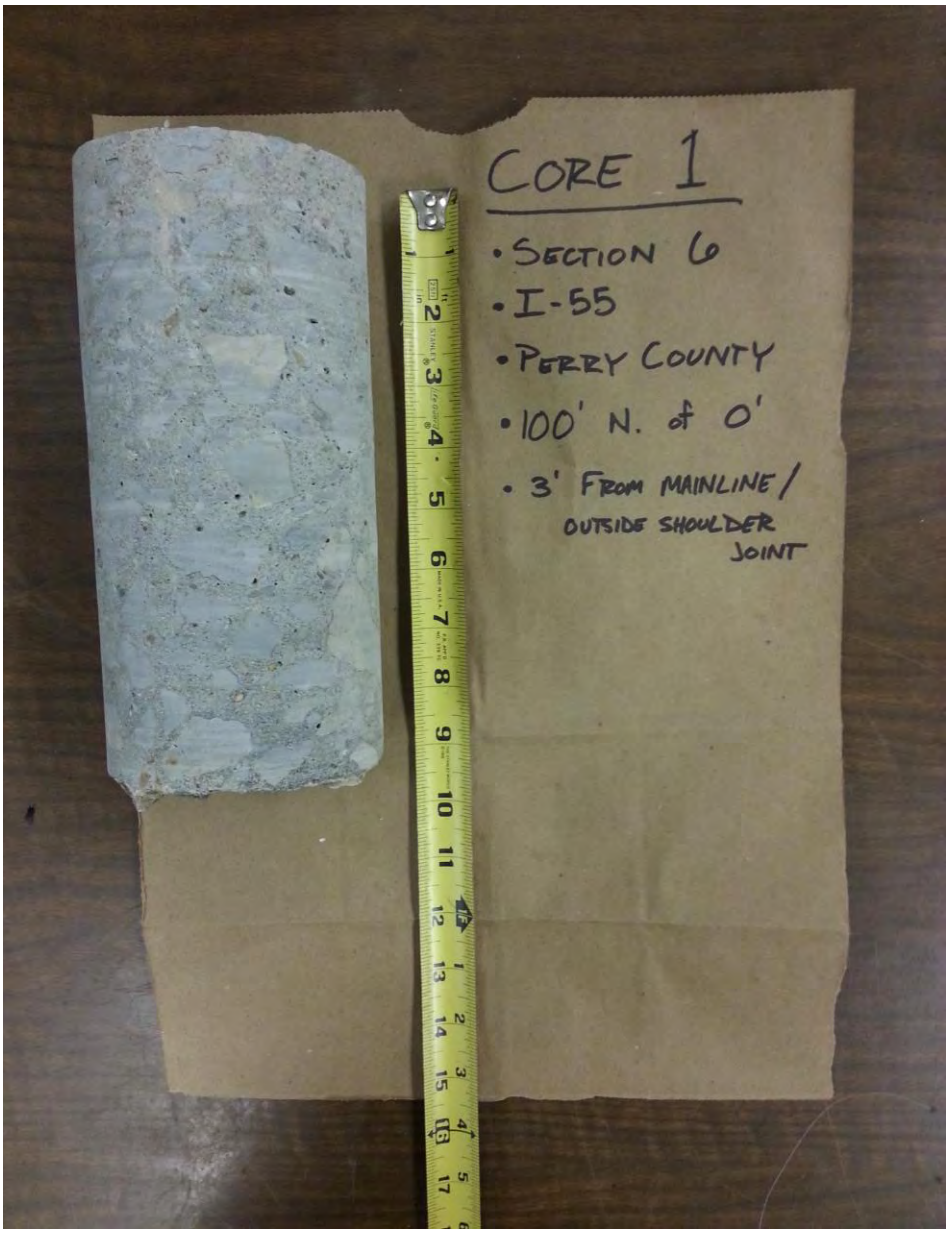
I-55 Perry County
MO
Core No. 1

Extraction Date: September 24, 2013

Core No. 1	
Distance from beginning (ft)	100'
Distance from mainline / shoulder joint (ft)	3'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	Conrete	9"	-	-
		Total Thickness	9"		



Photograph No. 1
Picture of Core No. 1 extracted from pavement.

I-55 Perry County
MO
Core No. 2

Extraction Date: September 24, 2013

Core No. 2	
Distance from beginning (ft)	230'
Distance from mainline / shoulder joint (ft)	3'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
2	1	Conrete	8"	-	-
		Total Thickness	8"		

Photograph No. 2
Picture of Core No. 2 extracted from pavement.

I-55 Perry County
MO
Core No. 3

Extraction Date: September 24, 2013

Core No. 3	
Distance from beginning (ft)	300'
Distance from mainline / shoulder joint (ft)	5'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
3	1	Conrete	8.5"	-	-
		Total Thickness	8.5"		

Photograph No. 3

Picture of Core No. 3 extracted from pavement.

I-55 Perry County
MO
Core No. 4

Extraction Date: September 24, 2013

Core No. 4	
Distance from beginning (ft)	470'
Distance from mainline / shoulder joint (ft)	3'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	Conrete	9"	-	-
		Total Thickness	9"		

Photograph No. 4
Picture of Core No. 4 extracted from pavement.

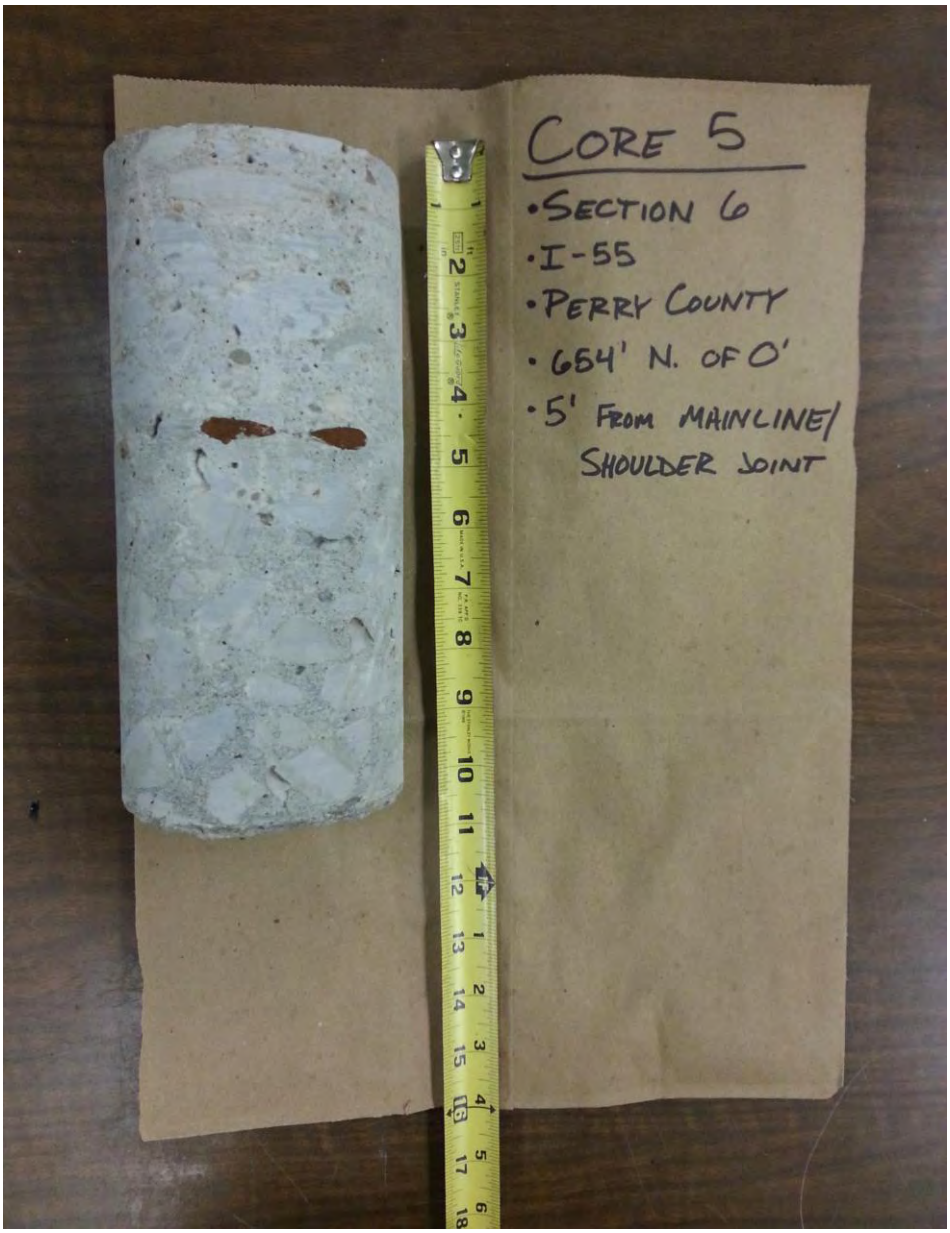
I-55 Perry County
MO
Core No. 5

Extraction Date: September 24, 2013

Core No. 5	
Distance from beginning (ft)	654'
Distance from mainline / shoulder joint (ft)	5'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
5	1	Conrete	9"	-	-
		Total Thickness	9"		



Photograph No. 5
Picture of Core No. 5 extracted from pavement.

I-55 Perry County
MO
Core No. 6

Extraction Date: September 24, 2013

Core No. 6	
Distance from beginning (ft)	714'
Distance from mainline / shoulder joint (ft)	5'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
6	1	Conrete	9"	-	-
		Total Thickness	9"		

Photograph No. 6

Picture of Core No. 6 extracted from pavement.

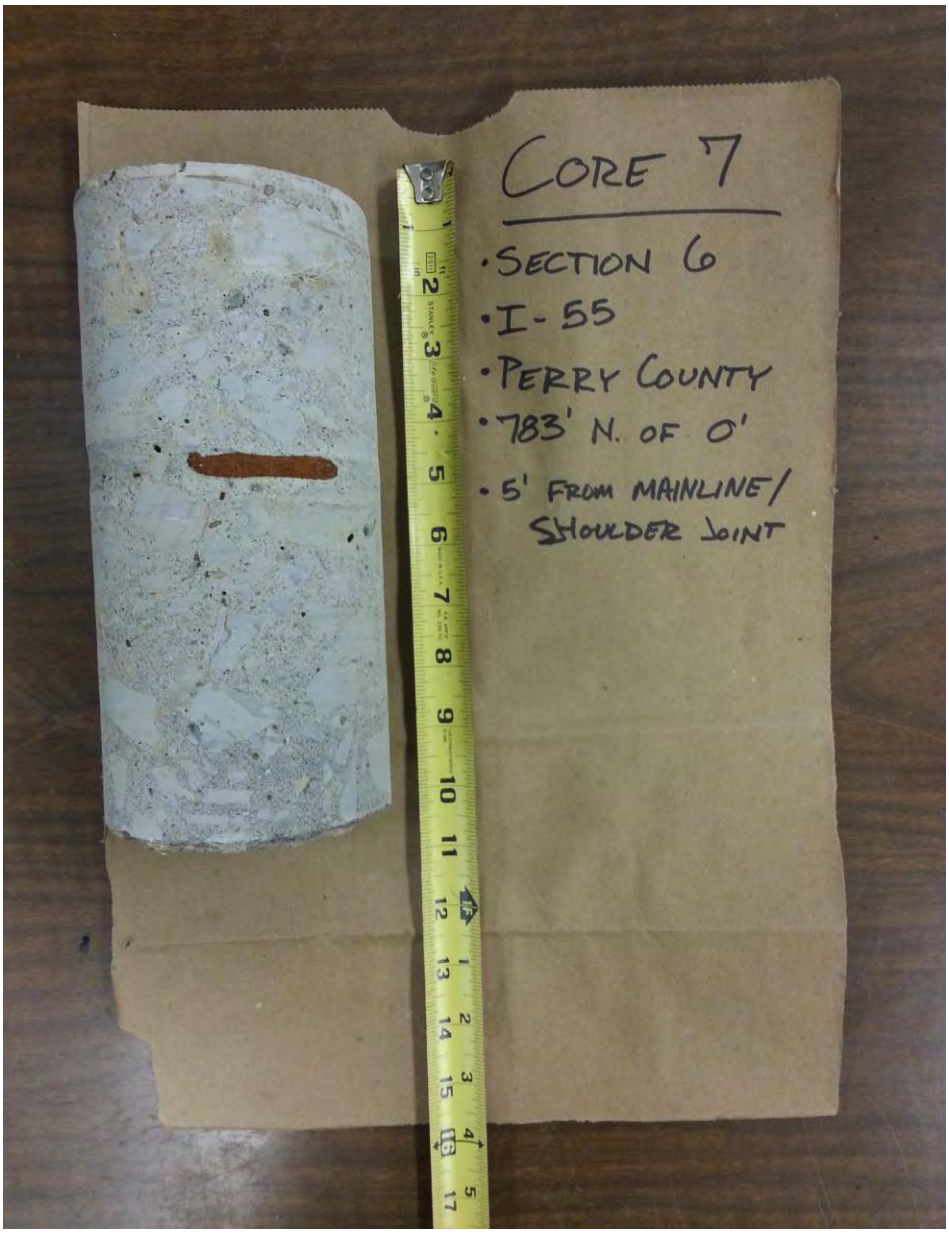
I-55 Perry County
MO
Core No. 7

Extraction Date: September 24, 2013

Core No. 7	
Distance from beginning (ft)	783'
Distance from mainline / shoulder joint (ft)	5'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
7	1	Conrete	8.5"	-	-
		Total Thickness	8.5"		



Photograph No. 7
Picture of Core No. 7 extracted from pavement.

I-55 Perry County
MO
Core No. 8

Extraction Date: September 24, 2013

Core No. 8	
Distance from beginning (ft)	856'
Distance from mainline / shoulder joint (ft)	3'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
8	1	Conrete	8"	-	-
		Total Thickness	8"		

Photograph No. 8
Picture of Core No. 8 extracted from pavement.

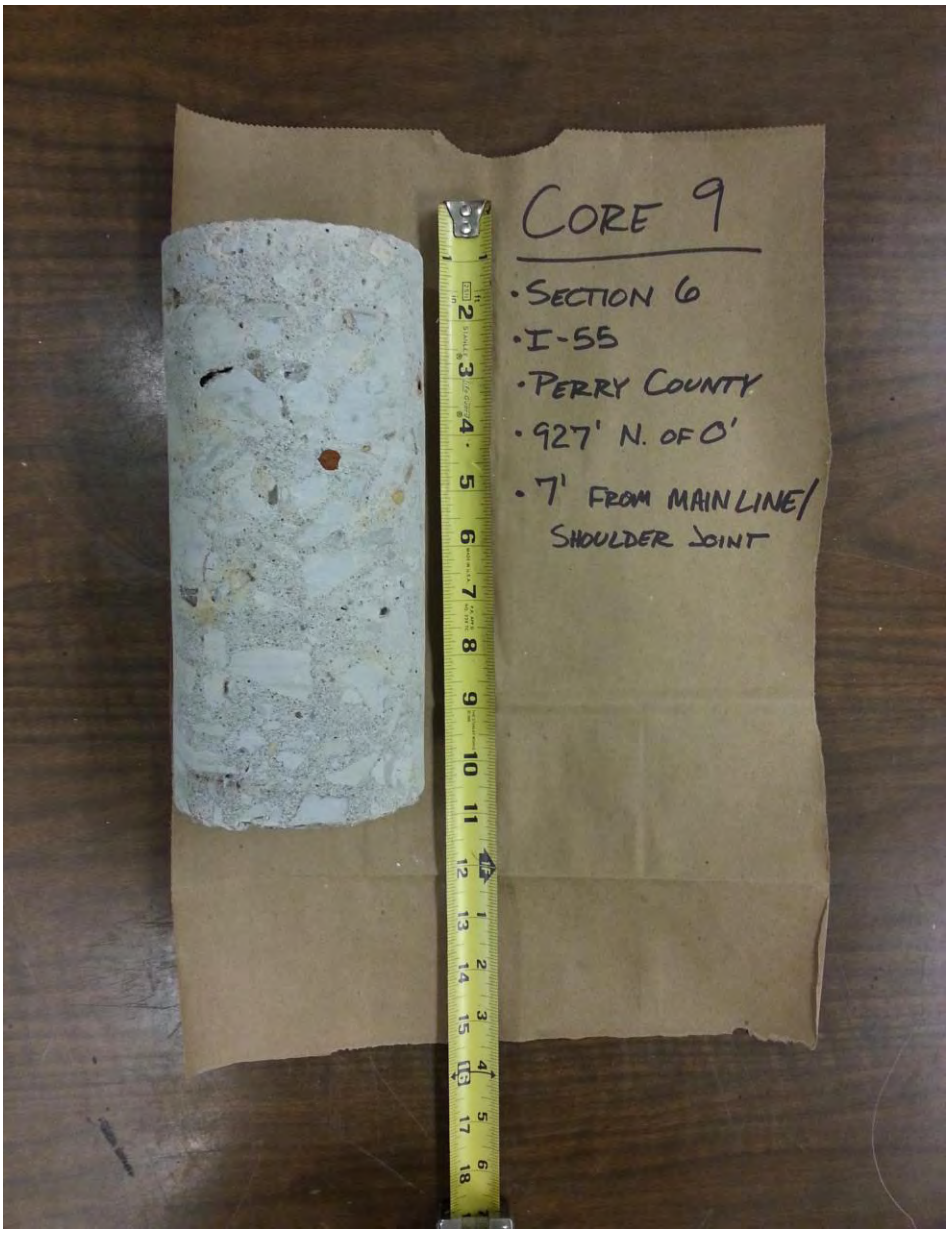
I-55 Perry County
MO
Core No. 9

Extraction Date: September 24, 2013

Core No. 9	
Distance from beginning (ft)	927'
Distance from mainline / shoulder joint (ft)	7'

Note: Rebar approximately 4" below surface

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
9	1	Conrete	8.75"	-	-
		Total Thickness	8.75"		



Photograph No. 9
Picture of Core No. 9 extracted from pavement.

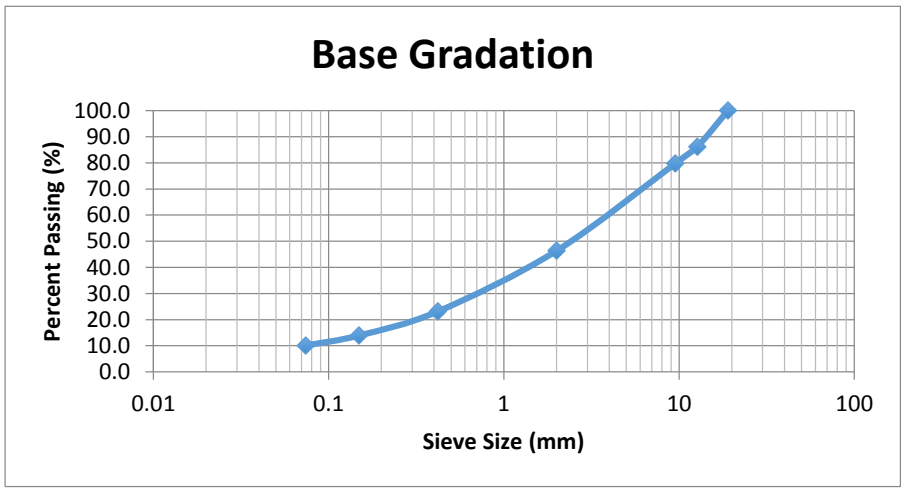
Core 1

Base

Moisture Content	
Initial Sample + Pan (g)	716.9
Weight of Pan (g)	117.4
Initial Weight	599.5
Dry Weight + Pan	681.2
Dry Weight	563.8
Water content	6%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100.0
1/2"	12.7	78.1	13.9	86.1
3/8"	9.51	36	6.4	79.8
No. 10	2	188.4	33.4	46.3
No. 40	0.42	131	23.2	23.1
No. 100	0.149	51.9	9.2	13.9
No. 200	0.074	21.7	3.8	10.1
Pan		55.9	9.9	0



D_{10} = 0.0737 mm

D_{30} = 0.7417 mm

D_{60} = 4.227 mm

C_u = 57.62

C_c = 1.77

% Gravel= 20.2

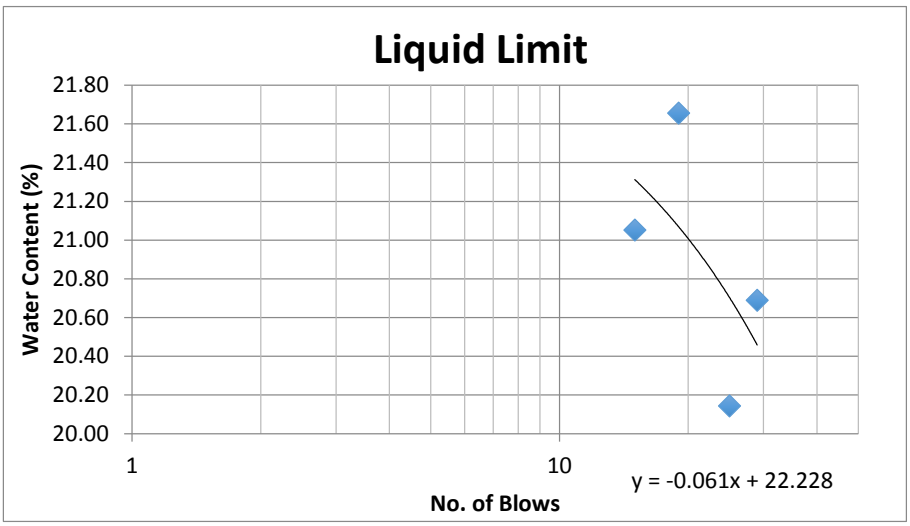
% Sand= 69.7

% Fines= 10.1

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	32.4	30.6	29.8	32.8
Mass of dry soil + can (g)	28.8	27.2	27	29.2
Mass of Can (g)	11.7	11.5	13.1	11.8
Mass of dry soil (g)	17.1	15.7	13.9	17.4
Mass of wet soil (g)	20.7	19.1	16.7	21
Water Content (%)	21.05	21.66	20.14	20.69
No. of Blows	15	19	25	29



Liquid Limit=	20.7

Plastic Limit		
Mass of wet soil + can (g)	17.6	18.2
Mass of dry soil + can (g)	16.9	17.6
Mass of Can (g)	11.6	13.8
Mass of dry soil (g)	6	4.4
Mass of wet soil (g)	5.3	3.8
Water Content (%)	4.1	3.4

Plastic Limit=	3.8

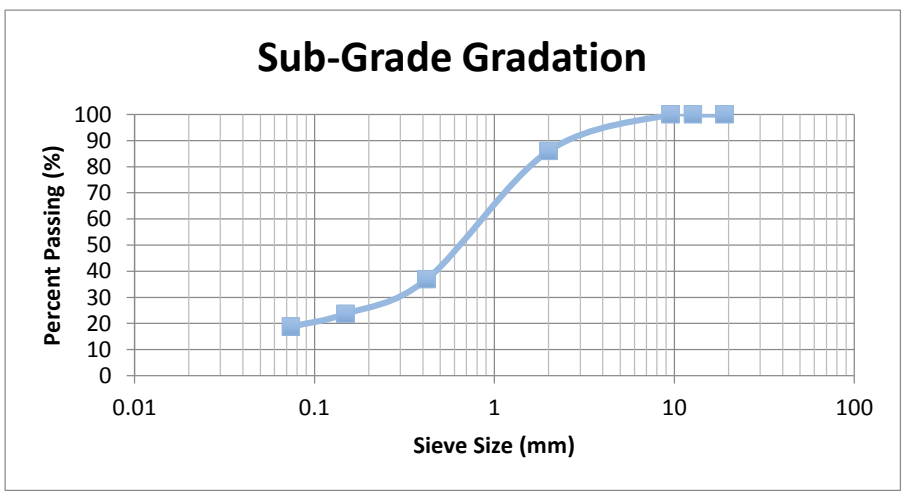
Plasticity Index=	16.92744863

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	692.7
Weight of Pan (g)	162.1
Initial Weight	530.6
Dry Weight + Pan	593.7
Dry Weight	431.6
Water content	23%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	0	0.0	100
No. 10	2	60.4	14.0	86.0
No. 40	0.42	212.1	49.1	36.9
No. 100	0.149	57.0	13.2	23.7
No. 200	0.074	21.2	4.9	18.7
Pan		82.4	19.1	0



D_{10} = 0.01867 mm

D_{30} = 0.2616 mm

D_{60} = 0.9703 mm

C_u = 51.99

C_c = 3.79

% Gravel= 0.0

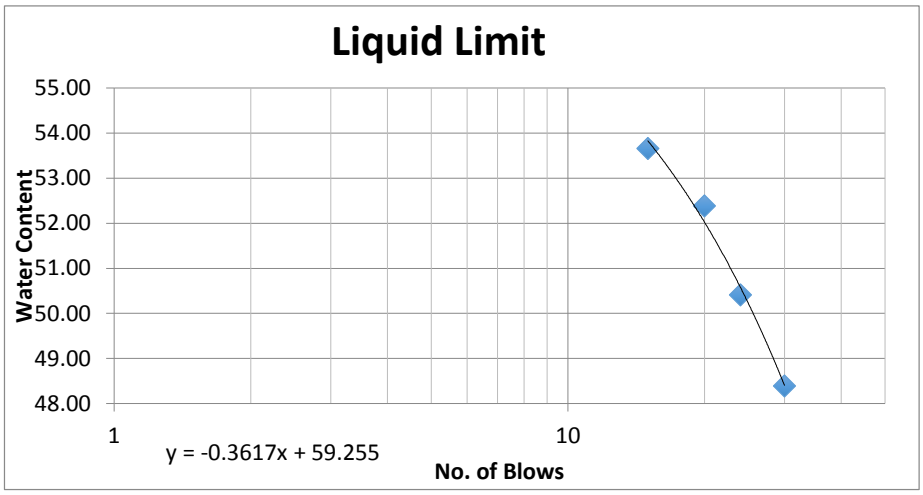
% Sand= 81.3

% Fines= 18.7

Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	30	30.2	29.4	35.1
Mass of dry soil + can (g)	23.4	23.6	23.2	27.6
Mass of Can (g)	11.1	11	10.9	12.1
Mass of dry soil (g)	12.3	12.6	12.3	15.5
Mass of wet soil (g)	18.9	19.2	18.5	23
Water Content (%)	53.66	52.38	50.41	48.39
No. of Blows	15	20	24	30



*Diffcult to run, kind of sandy

Liquid Limit=	50.2

Plastic Limit		
Mass of wet soil + can (g)	15.2	14.8
Mass of dry soil + can (g)	14.5	14.2
Mass of Can (g)	11	11.1
Mass of dry soil (g)	4.2	3.7
Mass of wet soil (g)	3.5	3.1
Water Content (%)	4.8	4.2

Plastic Limit=	4.5

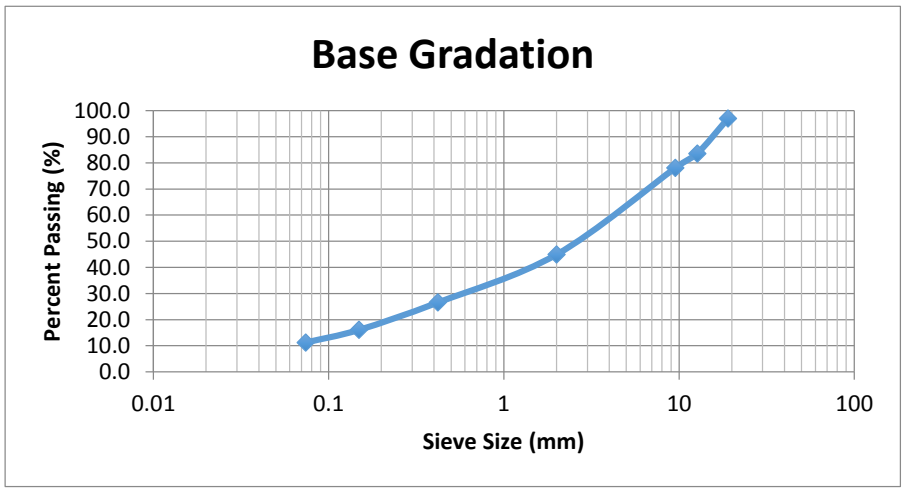
Plasticity Index=	45.68603084

Core 3
Base

Moisture Content	
Initial Sample + Pan (g)	808.7
Weight of Pan (g)	295.4
Initial Weight	513.3
Dry Weight + Pan	768.5
Dry Weight	473.1
Water content	8%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	14.5	3.1	96.9
1/2"	12.7	63.3	13.4	83.6
3/8"	9.51	26.1	5.5	78.0
No. 10	2	156.7	33.1	44.9
No. 40	0.42	87	18.4	26.5
No. 100	0.149	49.5	10.5	16.1
No. 200	0.074	22.9	4.8	11.2
Pan		53.1	11.2	0



D_{10} = 0.0584 mm

D_{30} = 0.6172 mm

D_{60} = 4.564 mm

C_u = 78.29

C_c = 1.43

% Gravel= 22.0

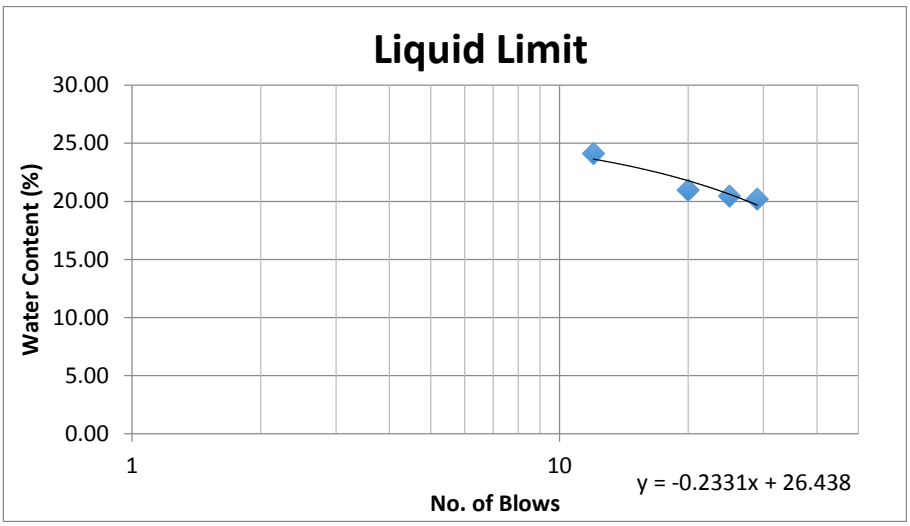
% Sand= 66.8

% Fines= 11.2

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	28.6	32	33.6	36
Mass of dry soil + can (g)	25.2	28.5	29.9	31.8
Mass of Can (g)	11.1	11.8	11.8	11
Mass of dry soil (g)	14.1	16.7	18.1	20.8
Mass of wet soil (g)	17.5	20.2	21.8	25
Water Content (%)	24.11	20.96	20.44	20.19
No. of Blows	12	20	25	29



Liquid Limit=	20.6

Plastic Limit		
Mass of wet soil + can (g)	16.5	15.5
Mass of dry soil + can (g)	16	15.1
Mass of Can (g)	11.1	11.8
Mass of dry soil (g)	5.4	3.7
Mass of wet soil (g)	4.9	3.3
Water Content (%)	3.1	2.6

Plastic Limit=	2.9

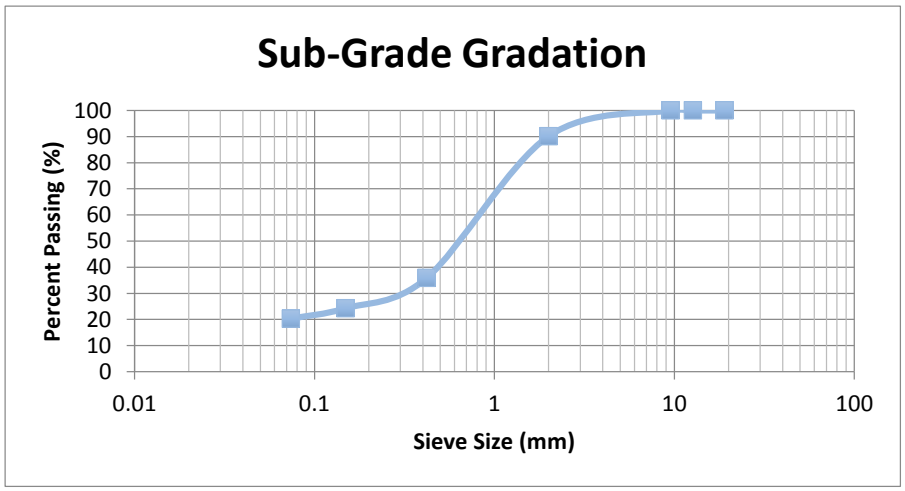
Plasticity Index=	17.72349669

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	1021.5
Weight of Pan (g)	506.5
Initial Weight	515
Dry Weight + Pan	940.3
Dry Weight	433.8
Water content	19%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	2.5	0.6	100
No. 10	2	42.8	9.9	90.1
No. 40	0.42	235.5	54.3	35.8
No. 100	0.149	50.2	11.6	24.3
No. 200	0.074	17.3	4.0	20.3
Pan		85.3	19.7	0



D_{10} = 0.01554 mm

D_{30} = 0.2667 mm

D_{60} = 0.9347 mm

C_u = 60.15

C_c = 4.9

% Gravel= 0.6

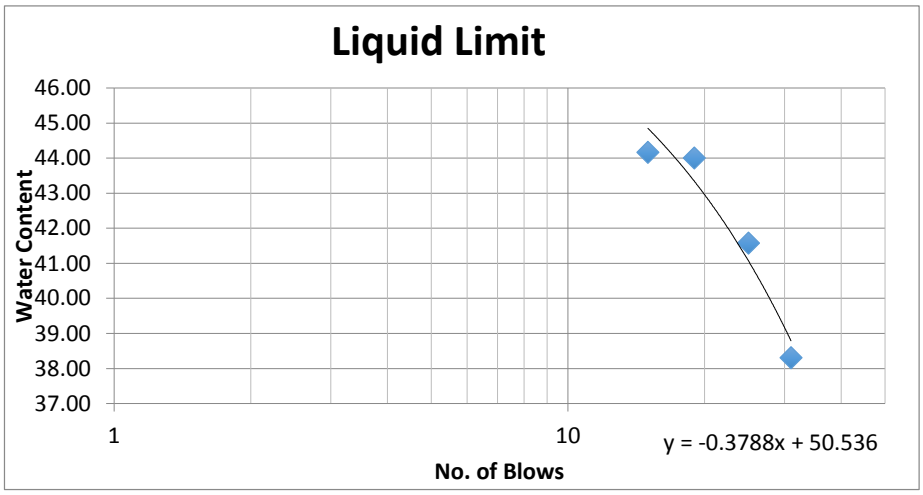
% Sand= 79.7

% Fines= 20.3

Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	28.4	32.4	38	38.9
Mass of dry soil + can (g)	23.1	25.8	30.1	31.2
Mass of Can (g)	11.1	10.8	11.1	11.1
Mass of dry soil (g)	12	15	19	20.1
Mass of wet soil (g)	17.3	21.6	26.9	27.8
Water Content (%)	44.17	44.00	41.58	38.31
No. of Blows	15	19	25	31



*Diffcult to run, kind of sandy

Liquid Limit=	41.1

Plastic Limit		
Mass of wet soil + can (g)	14.2	15.5
Mass of dry soil + can (g)	13.8	14.9
Mass of Can (g)	11.4	11.1
Mass of dry soil (g)	2.8	4.4
Mass of wet soil (g)	2.4	3.8
Water Content (%)	2.9	4.0

Plastic Limit=	3.5

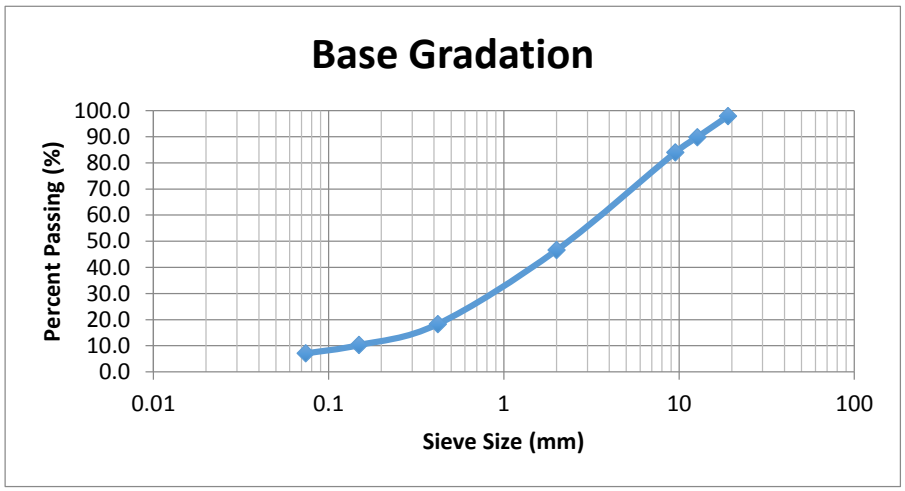
Plasticity Index=	37.60330182

Core 5
Base

Moisture Content	
Initial Sample + Pan (g)	805.7
Weight of Pan (g)	295.8
Initial Weight	509.9
Dry Weight + Pan	754
Dry Weight	458.2
Water content	11%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	9.8	2.1	97.9
1/2"	12.7	36.8	8.0	89.8
3/8"	9.51	26.6	5.8	84.0
No. 10	2	171.6	37.5	46.6
No. 40	0.42	129.6	28.3	18.3
No. 100	0.149	36.9	8.1	10.2
No. 200	0.074	14.6	3.2	7.0
Pan		31.6	6.9	0



D_{10} = 0.1448 mm

D_{30} = 0.8915 mm

D_{60} = 3.881 mm

C_u = 26.86

C_c = 1.42

% Gravel= 16.0

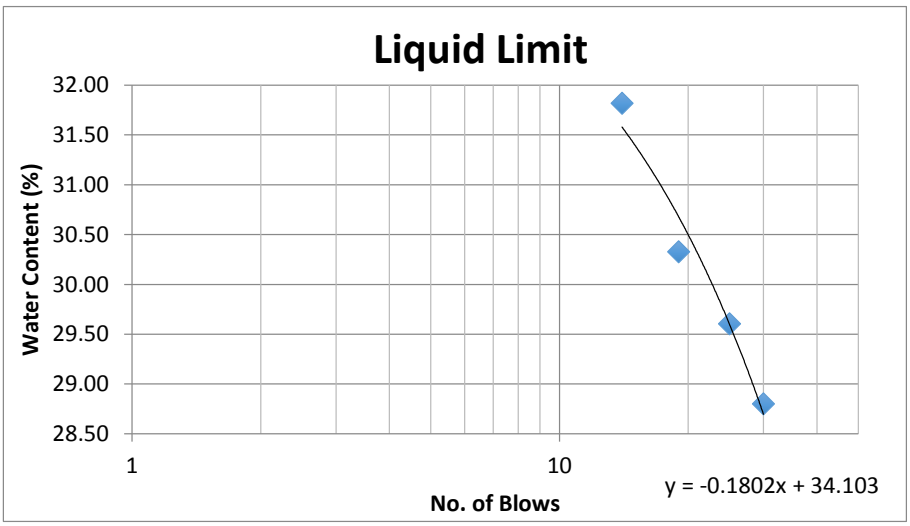
% Sand= 77.0

% Fines= 7.0

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	28.2	27	30.9	27
Mass of dry soil + can (g)	24	23.3	26.4	23.4
Mass of Can (g)	10.8	11.1	11.2	10.9
Mass of dry soil (g)	13.2	12.2	15.2	12.5
Mass of wet soil (g)	17.4	15.9	19.7	16.1
Water Content (%)	31.82	30.33	29.61	28.80
No. of Blows	14	19	25	30



Liquid Limit=	29.6

Plastic Limit		
Mass of wet soil + can (g)	17.4	16.6
Mass of dry soil + can (g)	16.8	15.9
Mass of Can (g)	12.1	10.8
Mass of dry soil (g)	5.3	5.8
Mass of wet soil (g)	4.7	5.1
Water Content (%)	3.6	4.4

Plastic Limit=	4.0

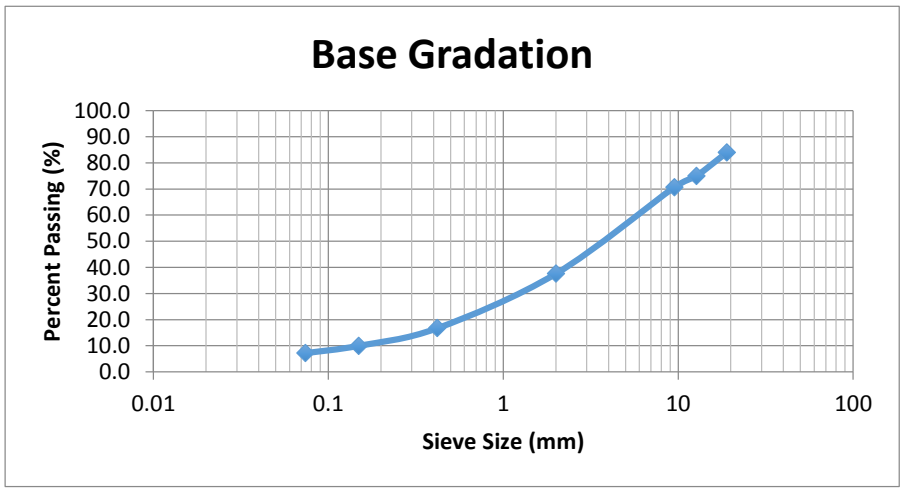
Plasticity Index=	25.6

Core 7
Base

Moisture Content	
Initial Sample + Pan (g)	739.8
Weight of Pan (g)	224.9
Initial Weight	514.9
Dry Weight + Pan	699.2
Dry Weight	474.3
Water content	9%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	75.9	16.0	84.0
1/2"	12.7	42.7	9.0	75.0
3/8"	9.51	20.5	4.3	70.7
No. 10	2	157.1	33.1	37.6
No. 40	0.42	98.9	20.9	16.7
No. 100	0.149	32	6.7	10.0
No. 200	0.074	13.3	2.8	7.1
Pan		32.6	6.9	0



D_{10} = 0.150 mm

D_{30} = 1.222 mm

D_{60} = 6.33 mm

C_u = 42.19

C_c = 1.57

% Gravel= 29.3

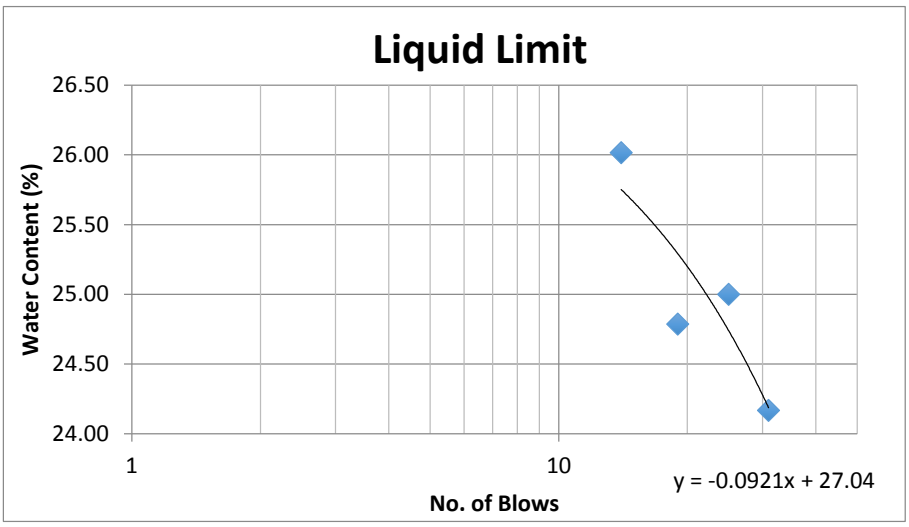
% Sand= 63.5

% Fines= 7.1

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	26.4	26.5	30.9	26.3
Mass of dry soil + can (g)	23.2	23.6	27	23.4
Mass of Can (g)	10.9	11.9	11.4	11.4
Mass of dry soil (g)	12.3	11.7	15.6	12
Mass of wet soil (g)	15.5	14.6	19.5	14.9
Water Content (%)	26.02	24.79	25.00	24.17
No. of Blows	14	19	25	31



Liquid Limit=	24.7

Plastic Limit		
Mass of wet soil + can (g)	15.3	15.2
Mass of dry soil + can (g)	14.7	14.6
Mass of Can (g)	10.7	11.4
Mass of dry soil (g)	4.6	3.8
Mass of wet soil (g)	4	3.2
Water Content (%)	4.1	4.1

Plastic Limit=	4.1

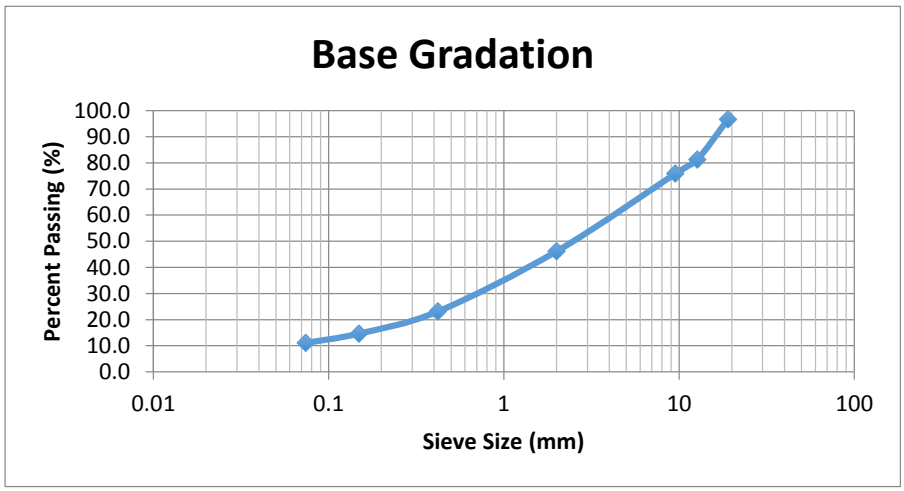
Plasticity Index=	20.6

Core 9
Base

Moisture Content	
Initial Sample + Pan (g)	828.4
Weight of Pan (g)	309.5
Initial Weight	518.9
Dry Weight + Pan	774.6
Dry Weight	465.1
Water content	12%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	15.6	3.4	96.6
1/2"	12.7	71.7	15.4	81.2
3/8"	9.51	25.1	5.4	75.8
No. 10	2	138.1	29.7	46.1
No. 40	0.42	107.2	23.0	23.1
No. 100	0.149	39.3	8.4	14.6
No. 200	0.074	16.7	3.6	11.1
Pan		46.8	10.1	0



D_{10} = 0.0584 mm

D_{30} = 0.7442 mm

D_{60} = 4.651 mm

C_u = 78.2

C_c = 2

% Gravel= 24.2

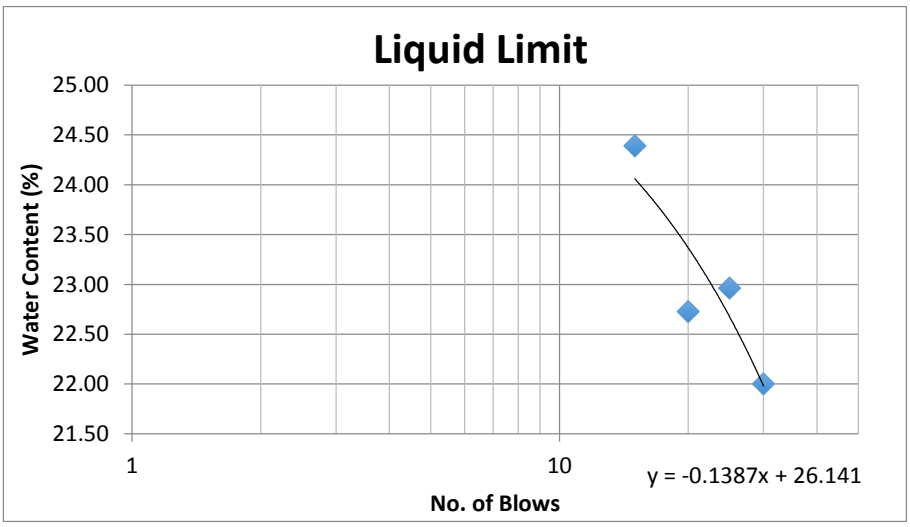
% Sand= 64.8

% Fines= 11.1

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	32.2	28	30.2	29.9
Mass of dry soil + can (g)	28.2	25	27.1	26.6
Mass of Can (g)	11.8	11.8	13.6	11.6
Mass of dry soil (g)	16.4	13.2	13.5	15
Mass of wet soil (g)	20.4	16.2	16.6	18.3
Water Content (%)	24.39	22.73	22.96	22.00
No. of Blows	15	20	25	30



Liquid Limit=	22.7

Plastic Limit		
Mass of wet soil + can (g)	17.6	18.1
Mass of dry soil + can (g)	17.2	17.5
Mass of Can (g)	13.6	13.8
Mass of dry soil (g)	4	4.3
Mass of wet soil (g)	3.6	3.7
Water Content (%)	2.3	3.4

Plastic Limit=	2.9

Plasticity Index=	19.8

Section 6 Date

ibr>8	green
6 to 8	yellow
<6	red

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT		diff
Core 1	2	223	250	9.8	27	13.5	15.8	15.3	23.7	17.8		
	2	250	252	9.9	2	1	292.0	405.3	438.0	49.0		0.1
	3	252	275	10.8	23	7.66666667	29.8	31.2	44.7	22.1		0.9
	3	275	278	10.9	3	1	292.0	405.3	438.0	49.0		0.1
	3	278	300	11.8	22	7.33333333	31.4	33.0	47.0	22.5		0.9
	3	300	320	12.6	20	6.66666667	34.9	37.2	52.3	23.4		0.8
	3	320	335	13.2	15	5	48.1	53.4	72.2	26.2		0.6
	3	335	375	14.8	40	13.3333333	16.0	15.5	24.1	17.8	*	1.6
	3	375	400	15.7	25	8.33333333	27.2	28.1	40.8	21.4		1.0
	3	400	410	16.1	10	3.33333333	75.8	89.0	113.7	30.6		0.4
	3	410	420	16.5	10	3.33333333	75.8	89.0	113.7	30.6		0.4
	3	420	425	16.7	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	425	435	17.1	10	3.33333333	75.8	89.0	113.7	30.6		0.4
	3	435	440	17.3	5	1.66666667	164.8	213.0	247.2	40.1		0.2
	3	440	450	17.7	10	3.33333333	75.8	89.0	113.7	30.6		0.4
	3	450	460	18.1	10	3.33333333	75.8	89.0	113.7	30.6		0.4
	3	460	475	18.7	15	5	48.1	53.4	72.2	26.2		0.6
	3	475	490	19.3	15	5	48.1	53.4	72.2	26.2		0.6
	3	490	505	19.9	15	5	48.1	53.4	72.2	26.2		0.6
	3	505	525	20.7	20	6.66666667	34.9	37.2	52.3	23.4		0.8
	3	525	535	21.1	10	3.33333333	75.8	89.0	113.7	30.6		0.4
	3	535	575	22.6	40	13.3333333	16.0	15.5	24.1	17.8		1.6
	3	575	635	25.0	60	20	10.2	9.3	15.3	15.2		2.4
	1	635	650	25.6	15	15	14.1	13.4	21.1	17.0		0.6
	1	650	670	26.4	20	20	10.2	9.3	15.3	15.2		0.787401575
	1	670	685	27.0	15	15	14.1	13.4	21.1	17.0		0.6
	1	685	700	27.6	15	15	14.1	13.4	21.1	17.0		0.6
	1	700	715	28.1	15	15	14.1	13.4	21.1	17.0		0.6
	1	715	725	28.5	10	10	22.2	22.3	33.2	20.0		0.4
	1	725	750	29.5	25	25	7.9	7.0	11.9	14.0		1.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 2	2	240	250	9.8	10	5.0	48.1	53.4	72.2	26.2	
	2	250	270	10.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	270	290	11.4	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	290	300	11.8	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	300	325	12.8	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	325	350	13.8	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	350	380	15.0	30	15.0	14.1	13.4	21.1	17.0	1.2
	2	380	400	15.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	400	410	16.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	410	425	16.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	425	430	16.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	430	435	17.1	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	435	440	17.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	440	450	17.7	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	450	460	18.1	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	460	465	18.3	5	1.7	164.8	213.0	247.2	40.1	0.2
	3	465	475	18.7	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	475	495	19.5	20	6.7	34.9	37.2	52.3	23.4	0.8
	3	495	520	20.5	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	520	575	22.6	55	18.3	11.2	10.4	16.9	15.8	2.2
	3	575	635	25.0	60	20.0	10.2	9.3	15.3	15.2	2.4
	3	635	700	27.6	65	21.7	9.3	8.4	14.0	14.8	2.6
	1	700	725	28.5	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	725	740	29.1	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	740	755	29.7	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	755	785	30.9	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	785	815	32.1	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	815	840	33.1	25	25.0	7.9	7.0	11.9	14.0	1.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ↔ Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 3	1	260	275	10.8	15	15.0	14.1	13.4	21.1	17.0	
	1	275	280	11.0	5	5.0	48.1	53.4	72.2	26.2	0.2
	2	280	300	11.8	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	300	315	12.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	1	315	325	12.8	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	325	335	13.2	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	335	360	14.2	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	360	375	14.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	375	428	16.9	53	26.5	7.4	6.5	11.2	13.6	2.1
	1	428	465	18.3	37	37.0	5.1	4.3	7.7	12.0	1.5
	1	465	505	19.9	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	505	525	20.7	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	525	550	21.7	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	550	575	22.6	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	575	585	23.0	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	585	600	23.6	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	600	620	24.4	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	620	635	25.0	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	635	655	25.8	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	655	675	26.6	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	675	690	27.2	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	690	710	28.0	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	710	725	28.5	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	725	735	28.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	735	750	29.5	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	750	760	29.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	760	775	30.5	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	775	785	30.9	10	10.0	22.2	22.3	33.2	20.0	0.4
	1	785	800	31.5	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	800	805	31.7	5	5.0	48.1	53.4	72.2	26.2	0.2
	1	805	815	32.1	10	10.0	22.2	22.3	33.2	20.0	0.4

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending - Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 4	1	260	275	10.8	15	15.0	14.1	13.4	21.1	17.0	
	1	275	285	11.2	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	285	295	11.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	295	310	12.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	310	325	12.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	325	335	13.2	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	335	350	13.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	350	400	15.7	50	25.0	7.9	7.0	11.9	14.0	2.0
	2	400	420	16.5	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	420	430	16.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	3	430	445	17.5	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	445	465	18.3	20	6.7	34.9	37.2	52.3	23.4	0.8
	3	465	490	19.3	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	490	500	19.7	10	3.3	75.8	89.0	113.7	30.6	0.4
	3	500	500	19.7	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0
	3	500	500	19.7	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0

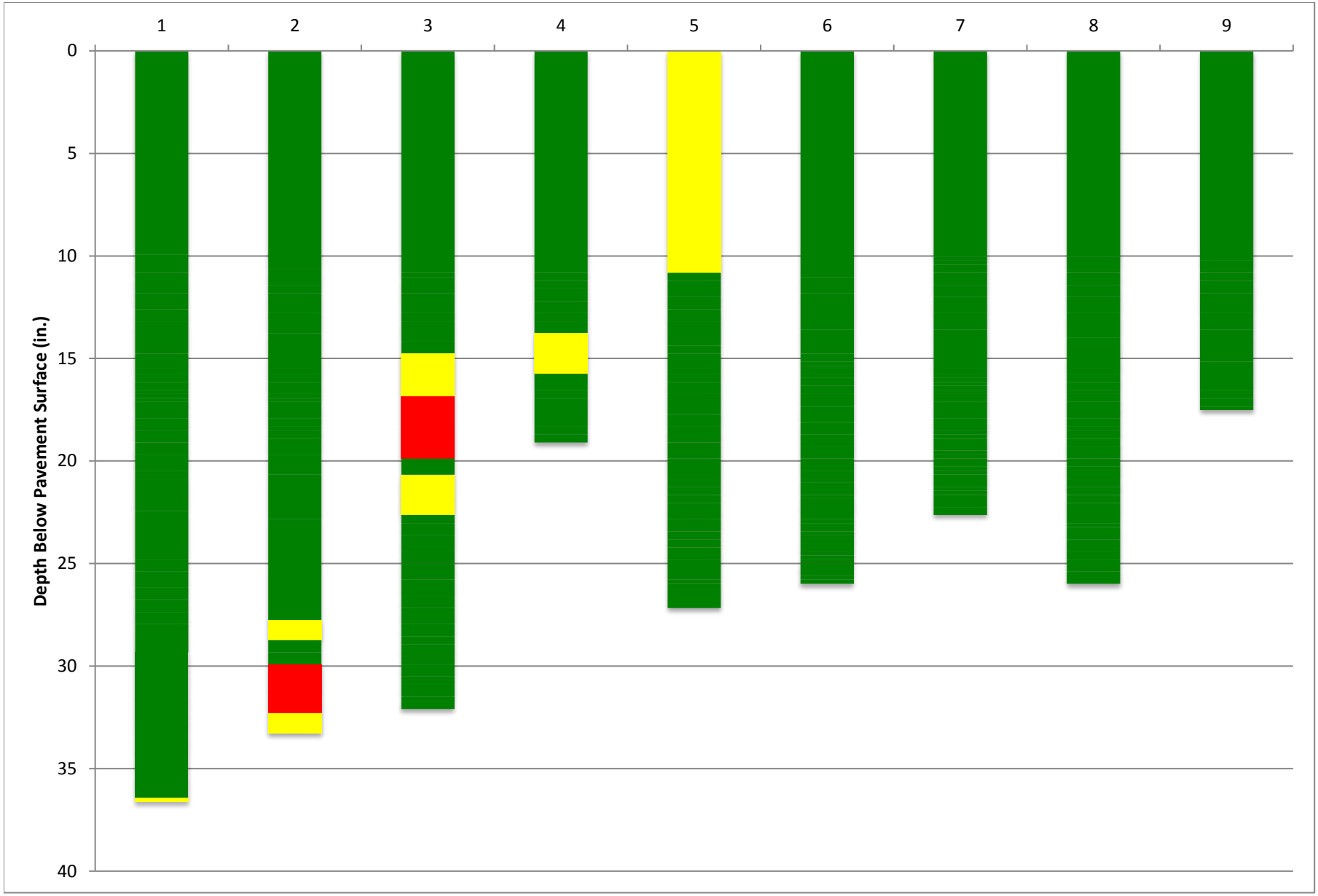
Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending - Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 5	2	225	275	10.8	50	25.0	7.9	7.0	11.9	14.0	#VALUE!
	2	275	285	11.2	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	285	305	12.0	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	305	320	12.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	320	335	13.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	335	365	14.4	30	15.0	14.1	13.4	21.1	17.0	1.2
	2	365	375	14.8	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	375	400	15.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	400	410	16.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	410	425	16.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	425	450	17.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	450	465	18.3	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	465	480	18.9	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	480	500	19.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	500	525	20.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	525	535	21.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	535	545	21.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	545	555	21.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	555	575	22.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	575	590	23.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	590	600	23.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	600	610	24.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	610	625	24.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	625	635	25.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	635	650	25.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	650	655	25.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	655	685	27.0	30	15.0	14.1	13.4	21.1	17.0	1.2
	2										

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending - Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 6	265	265	280	11.0	15	0.1	7281.1	15064.1	10921.6	150.2	
	280	280	300	11.8	20	0.1	5611.1	11239.6	8416.6	137.1	0.8
	300	300	345	13.6	45	0.2	2444.3	4416.5	3666.5	102.7	1.8
	345	345	375	14.8	30	0.1	4501.6	8774.0	6752.4	127.0	1.2
	375	375	385	15.2	10	0.0	16916.0	38858.1	25374.0	201.4	0.4
	385	385	390	15.4	5	0.0	37866.3	96132.1	56799.4	266.6	0.2
	390	390	400	15.7	10	0.0	17675.6	40825.1	26513.5	204.5	0.4
	400	400	405	15.9	5	0.0	39522.4	100871.1	59283.6	270.6	0.2
	405	405	415	16.3	10	0.0	18438.8	42811.7	27658.2	207.5	0.4
	415	415	425	16.7	10	0.0	18949.5	44146.8	28424.2	209.5	0.4
	425	425	440	17.3	15	0.0	12358.2	27303.6	18537.3	180.5	0.6
	440	440	460	18.1	20	0.0	9308.9	19855.8	13963.3	163.6	0.8
	460	460	475	18.7	15	0.0	13503.6	30164.1	20255.4	186.2	0.6
	475	475	490	19.3	15	0.0	13997.7	31407.6	20996.6	188.6	0.6
	490	490	505	19.9	15	0.0	14493.7	32661.4	21740.6	190.9	0.6
	505	505	510	20.1	5	0.0	51312.5	135274.9	76968.7	296.4	0.2
	510	510	520	20.5	10	0.0	23870.5	57227.9	35805.7	227.1	0.4
	520	520	530	20.9	10	0.0	24395.3	58644.2	36593.0	228.8	0.4
	530	530	535	21.1	5	0.0	54165.8	143759.5	81248.7	302.0	0.2
	535	535	550	21.7	15	0.0	15992.5	36481.7	23988.8	197.5	0.6
	550	550	555	21.9	5	0.0	56460.2	150622.5	84690.3	306.4	0.2
	555	555	575	22.6	20	0.0	12073.6	26597.7	18110.4	179.1	0.8
	575	575	580	22.8	5	0.0	59342.3	159292.4	89013.5	311.8	0.2
	580	580	585	23.0	5	0.0	59920.6	161038.3	89880.8	312.8	0.2
	585	585	595	23.4	10	0.0	27835.4	68018.3	41753.1	239.5	0.4
	595	595	600	23.6	5	0.0	61658.9	166299.2	92488.3	316.0	0.2
	600	600	610	24.0	10	0.0	28636.0	70221.3	42954.0	241.9	0.4
	610	610	620	24.4	10	0.0	29171.1	71698.0	43756.6	243.5	0.4
	620	620	625	24.6	5	0.0	64567.7	175143.7	96851.5	321.1	0.2
	625	625	630	24.8	5	0.0	65151.1	176923.8	97726.7	322.1	0.2
	630	630	635	25.0	5	0.0	65735.2	178707.6	98602.8	323.1	0.2
	635	635	650	25.6	15	0.0	19376.1	45265.8	29064.2	211.2	0.6
	650	650	655	25.8	5	0.0	68076.8	185879.4	102115.3	327.1	0.2
	655	655	660	26.0	5	0.0	68663.6	187681.4	102995.4	328.0	0.2
	660	660	660	26.0	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0
	660	660	660	26.0	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 7	1	245	255	10.0	10	10.00	22.2	22.3	33.2	20.0	
	1	255	260	10.2	5	5.00	48.1	53.4	72.2	26.2	0.2
	1	260	265	10.4	5	5.00	48.1	53.4	72.2	26.2	0.2
	2	265	275	10.8	10	5.00	48.1	53.4	72.2	26.2	0.4
	2	275	290	11.4	15	7.50	30.6	32.1	45.9	22.3	0.6
	2	290	305	12.0	15	7.50	30.6	32.1	45.9	22.3	0.6
	2	305	325	12.8	20	10.00	22.2	22.3	33.2	20.0	0.8
	2	325	345	13.6	20	10.00	22.2	22.3	33.2	20.0	0.8
	2	345	380	15.0	35	17.50	11.8	11.0	17.8	16.0	1.4
	1	380	400	15.7	20	20.00	10.2	9.3	15.3	15.2	0.8
	1	400	405	15.9	5	5.00	48.1	53.4	72.2	26.2	0.2
	1	405	410	16.1	5	5.00	48.1	53.4	72.2	26.2	0.2
	2	410	420	16.5	10	5.00	48.1	53.4	72.2	26.2	0.4
	1	420	425	16.7	5	5.00	48.1	53.4	72.2	26.2	0.2
	1	425	430	16.9	5	5.00	48.1	53.4	72.2	26.2	0.2
	1	430	440	17.3	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	440	450	17.7	10	10.00	22.2	22.3	33.2	20.0	0.4
	1	450	460	18.1	10	10.00	22.2	22.3	33.2	20.0	0.4
	2	460	475	18.7	15	7.50	30.6	32.1	45.9	22.3	0.6
	1	475	480	18.9	5	5.00	48.1	53.4	72.2	26.2	0.2
	1	480	485	19.1	5	5.00	48.1	53.4	72.2	26.2	0.2
	2	485	500	19.7	15	7.50	30.6	32.1	45.9	22.3	0.6
	1	500	505	19.9	5	5.00	48.1	53.4	72.2	26.2	0.2
	2	505	510	20.1	5	2.50	104.6	127.9	157.0	34.3	0.2
	1	510	515	20.3	5	5.00	48.1	53.4	72.2	26.2	0.2
	1	515	520	20.5	5	5.00	48.1	53.4	72.2	26.2	0.2
	1	520	525	20.7	5	5.00	48.1	53.4	72.2	26.2	0.2
	3	525	530	20.9	5	1.67	164.8	213.0	247.2	40.1	0.2
	3	530	545	21.5	15	5.00	48.1	53.4	72.2	26.2	0.6
	1	545	550	21.7	5	5.00	48.1	53.4	72.2	26.2	0.2
	2	550	555	21.9	5	2.50	104.6	127.9	157.0	34.3	0.2
	3	555	570	22.4	15	5.00	48.1	53.4	72.2	26.2	0.6
	3	570	580	22.8	10	3.33	75.8	89.0	113.7	30.6	0.4
	3	580	580	22.8	0	0.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 8	2	250	255	10.0	5	2.5	104.6	127.9	157.0	34.3	
	2	255	270	10.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	270	275	10.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	275	290	11.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	290	305	12.0	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	305	325	12.8	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	325	355	14.0	30	15.0	14.1	13.4	21.1	17.0	1.2
	2	355	380	15.0	25	12.5	17.3	16.9	25.9	18.3	1.0
	1	380	400	15.7	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	400	410	16.1	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	410	420	16.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	1	420	425	16.7	5	5.0	48.1	53.4	72.2	26.2	0.2
	1	425	430	16.9	5	5.0	48.1	53.4	72.2	26.2	0.2
	2	430	440	17.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	440	450	17.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	450	460	18.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	460	465	18.3	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	465	475	18.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	475	485	19.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	485	500	19.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	500	510	20.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	510	525	20.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	525	535	21.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	535	545	21.5	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	545	555	21.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	555	570	22.4	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	570	580	22.8	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	580	585	23.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	585	600	23.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	600	615	24.2	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	615	625	24.6	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	625	635	25.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	635	640	25.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	640	655	25.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	655	675	26.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	675	685	27.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	685	700	27.6	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	700	710	28.0	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	710	730	28.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	730	740	29.1	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	740	755	29.7	15	7.5	30.6	32.1	45.9	22.3	0.6
	3	755	775	30.5	20	6.7	34.9	37.2	52.3	23.4	0.8
	1	775	780	30.7	5	5.0	48.1	53.4	72.2	26.2	0.2
	2	780	785	30.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	785	795	31.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	795	800	31.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	800	805	31.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	805	810	31.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	810	830	32.7	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	830	835	32.9	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	835	840	33.1	5	2.5	104.6	127.9	157.0	34.3	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 9	1	250	260	10.2	10	10.0	22.2	22.3	33.2	20.0	
	1	260	270	10.6	10	10.0	22.2	22.3	33.2	20.0	0.4
	2	270	275	10.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	275	285	11.2	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	285	300	11.8	15	7.5	30.6	32.1	45.9	22.3	0.6
	2	300	325	12.8	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	325	345	13.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	345	385	15.2	40	20.0	10.2	9.3	15.3	15.2	1.6
	2	385	420	16.5	35	17.5	11.8	11.0	17.8	16.0	1.4
	2	420	430	16.9	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	430	440	17.3	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	440	445	17.5	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	445	450	17.7	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	450	450	17.7	0	0.0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.0


1
2
3
4
5
6
7
8
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0
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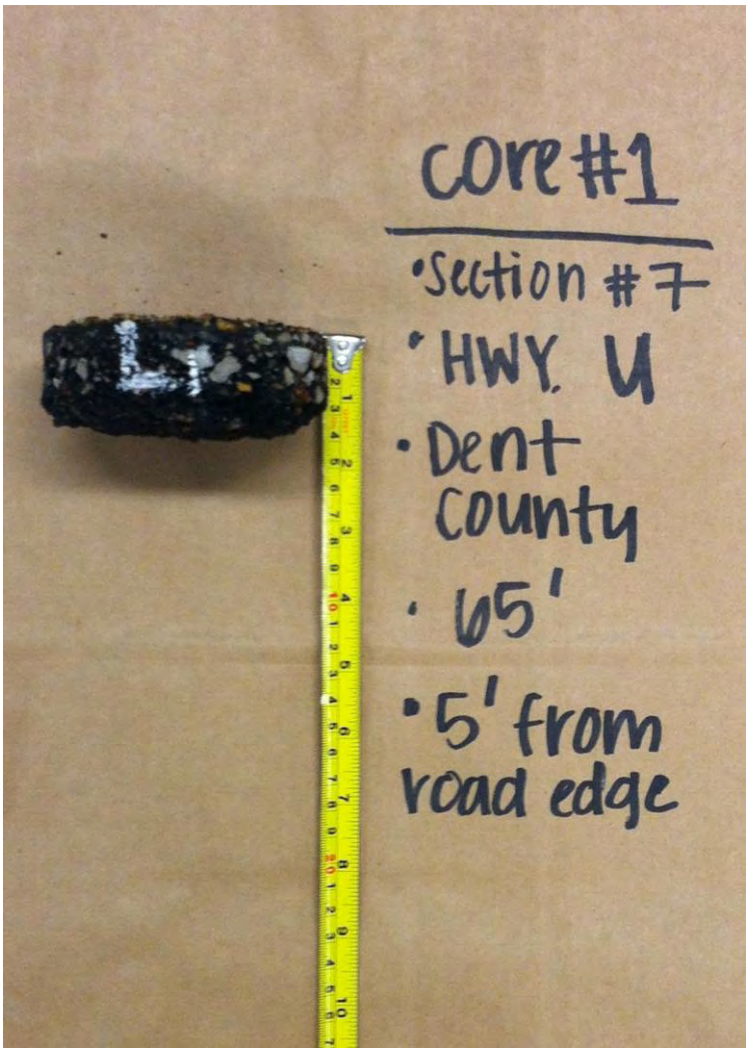
15
20
25
30
35
40
Depth Below Pavement Surface (in.)

HWY. U, Dent County
MO
Core No. 1

Extraction Date: May 5, 2013

Core No. 1	
Distance from beginning (ft)	65
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	-	1"		



Photograph No. 1
Picture of Core No. 1 extracted from pavement.

HWY. U, Dent County
MO
Core No. 2

Extraction Date: May 5, 2013

Core No. 2	
Distance from beginning (ft)	160
Distance from seam (ft)	5.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
2	1	-	1"		

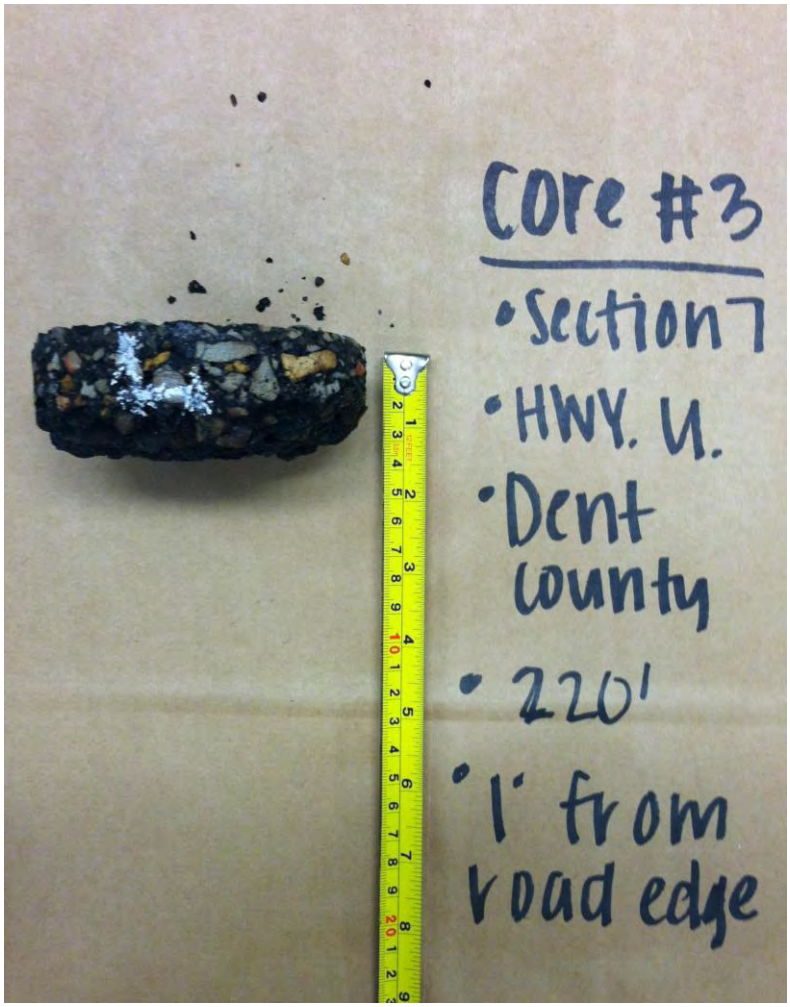
Photograph No. 3
Picture of Core No. 2 extracted from pavement.

HWY. U, Dent County
MO
Core No. 3

Extraction Date: May 5, 2013

Core No. 3	
Distance from beginning (ft)	220
Distance from seam (ft)	1.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
3	1	-	1"		



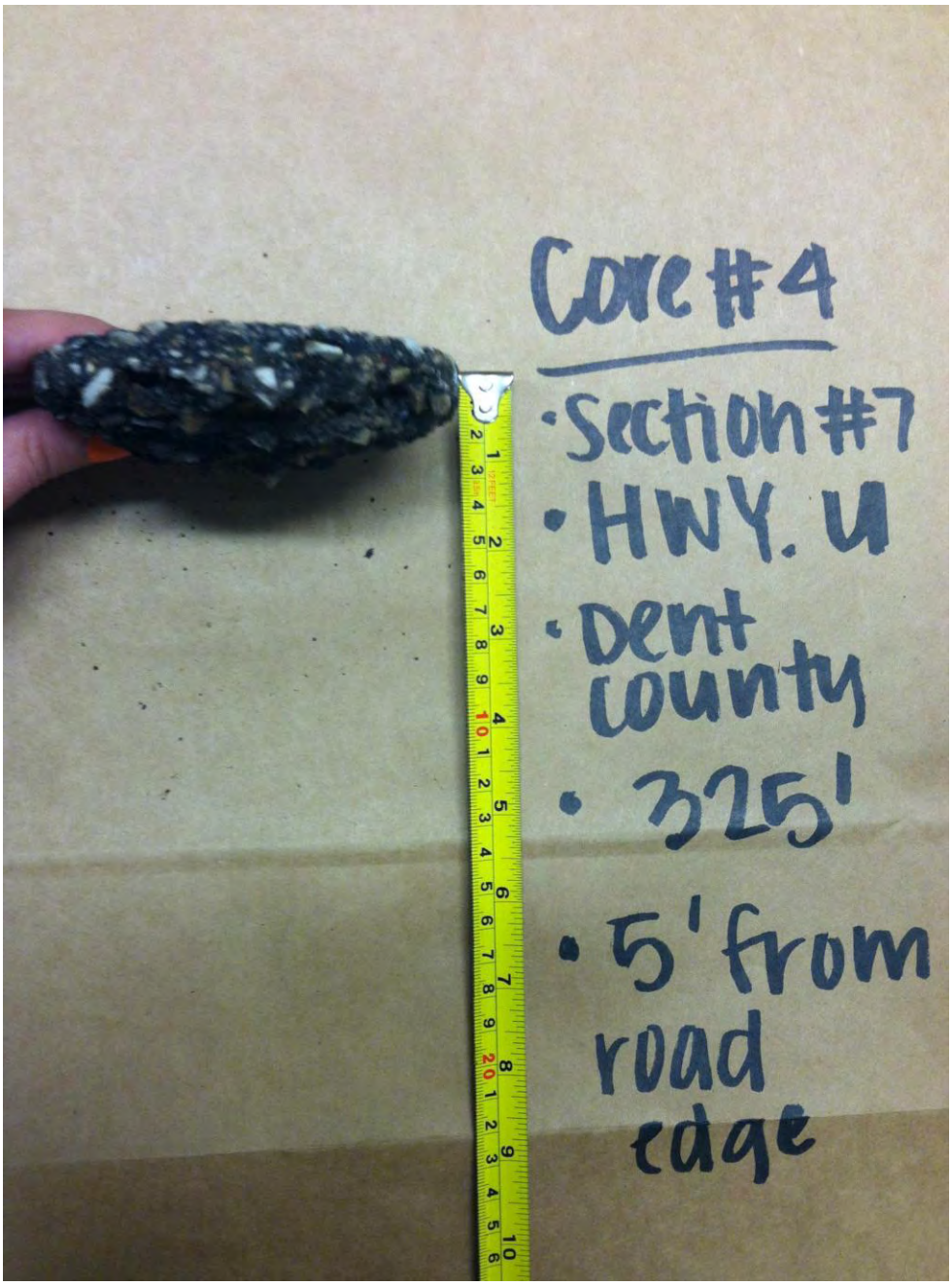
Photograph No. 5
Picture of Core No. 3 extracted from pavement.

HWY. U, Dent County
MO
Core No. 4

Extraction Date: May 5, 2013

Core No. 4	
Distance from beginning (ft)	
Distance from seam (ft)	

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	-	1/4"		



HWY. U, Dent County
MO
Core No. 5

Extraction Date: May 5, 2013

Core No. 5	
Distance from beginning (ft)	410
Distance from seam (ft)	4.5

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
5	1	-	1"		
	2	-	3"		

Photograph No. 9
Picture of Core No. 5 extracted from pavement.

HWY. U, Dent County
MO
Core No. 6

Extraction Date: May 5, 2013

Core No. 6	
Distance from beginning (ft)	510
Distance from seam (ft)	8.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
6	1	-	3/4"		
	2	-	1 3/4"		

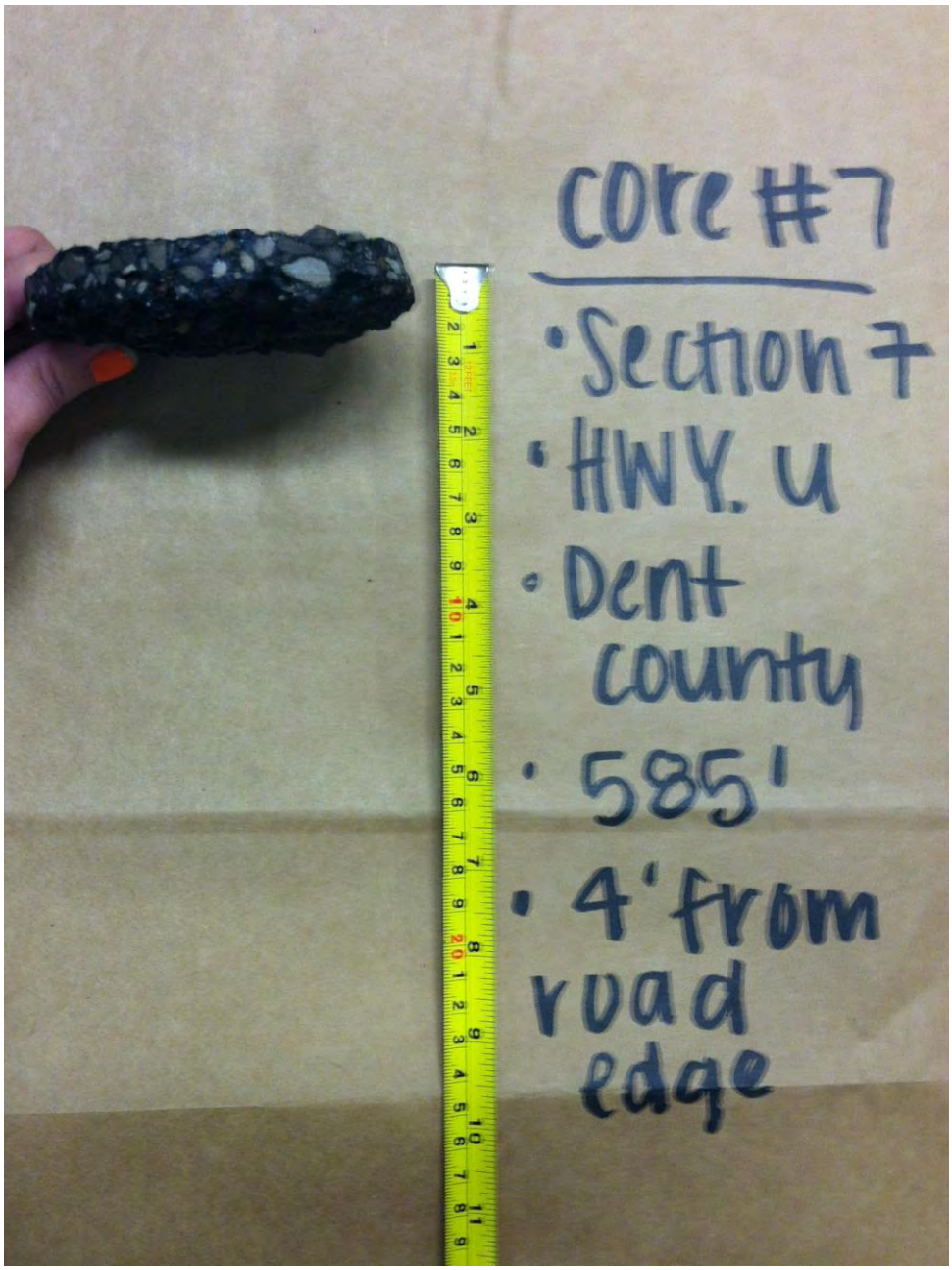
Photograph No. 11
Picture of Core No. 6 extracted from pavement.

HWY. U, Dent County
MO
Core No. 7

Extraction Date: May 5, 2013

Core No. 7	
Distance from beginning (ft)	
Distance from seam (ft)	

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
7	1	-	1/4"		

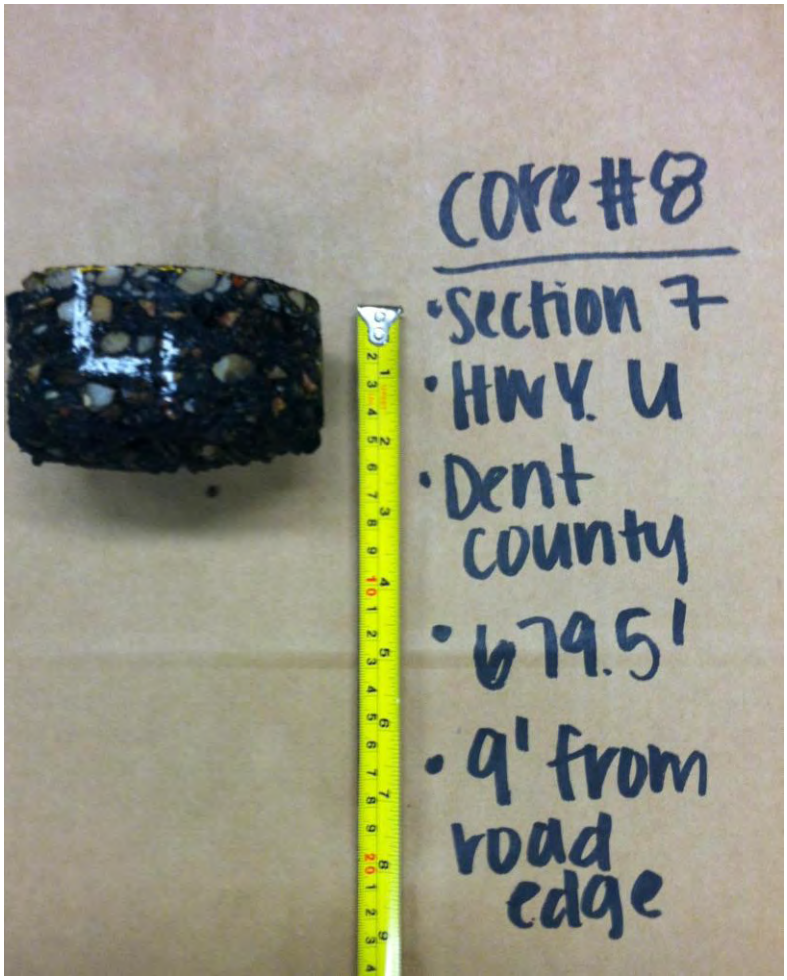


HWY. U, Dent County
MO
Core No. 8

Extraction Date: May 5, 2013

Core No. 8	
Distance from beginning (ft)	697.5
Distance from seam (ft)	9.0

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
8	1	-	2"		



Photograph No. 13
Picture of Core No. 8 extracted from pavement.

Core 1
Base

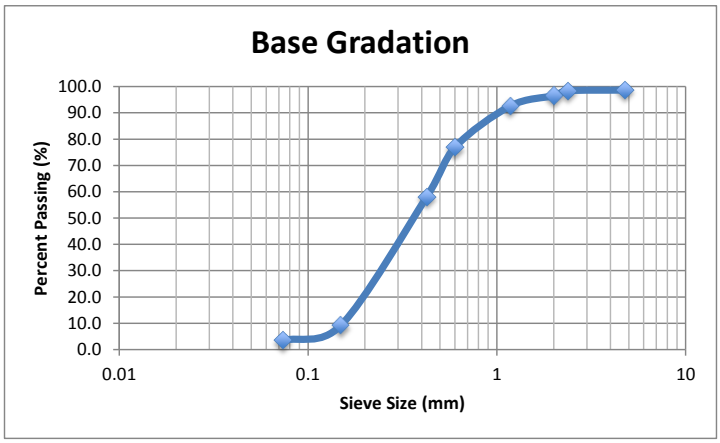
Visual Classification: HWY. U, Dent County, Reddish, silty, a lot of fines

Moisture Content:

Initial Sample + Pan (g)	1204.1
Weight of Pan (g)	533.1
Initial Weight	671
Dry Weight + Pan	1141.7
Dry Weight	608.6
Moisture Content	10.3

Gradation:

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
4	4.75	8.2	1.4	98.6
8	2.38	1.5	0.2	98.4
10	2	11.6	1.9	96.5
16	1.18	23.5	3.9	92.6
30	0.6	95.2	15.7	76.9
40	0.425	114.5	18.9	58.1
100	0.149	297	48.9	9.2
200	0.074	34.5	5.7	3.5
Pan		21.1	3.5	0.0
	Total:	607.1		



D_{10}	0.1524
D_{30}	0.24892
D_{60}	0.44196
C_u	2.88
C_c	0.91
% Gravel	1.4
% Sand	95.1
% Fines	3.5

Unified Soil Classification: SP-Poorly-Graded Sand With Gravel

Atterberg Limits:

*Non-Plastic

Core 3
Base

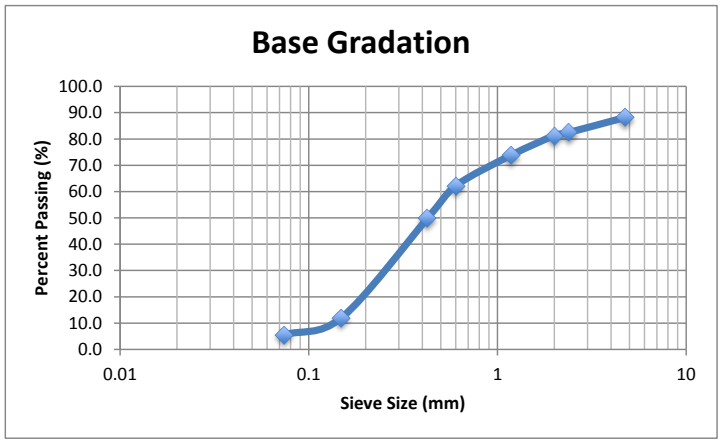
Visual Classification: HWY. U, Dent County, Reddish, clumpy, hints of black soil

Moisture Content:

Initial Sample + Pan (g)	970.5
Weight of Pan (g)	375.9
Initial Weight	594.6
Dry Weight + Pan	847.9
Dry Weight	472
Moisture Content	26.0

Gradation:

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
4	4.75	55.5	11.8	88.2
8	2.38	26.9	5.7	82.5
10	2	5.5	1.2	81.3
16	1.18	35.1	7.5	73.8
30	0.6	54.8	11.7	62.2
40	0.425	58	12.3	49.8
100	0.149	177.5	37.8	12.0
200	0.074	30.4	6.5	5.6
Pan		26.1	5.6	0.0
	Total:	469.8		



D_{10}	0.12446
D_{30}	0.26162
D_{60}	0.56642
C_u	4.59
C_c	0.98
% Gravel	11.8
% Sand	82.6
% Fines	5.6

Unified Soil Classification: SP-SM - Poorly Graded sand with silt

Atterberg Limits:

*Non-Plastic

Core 5
Base

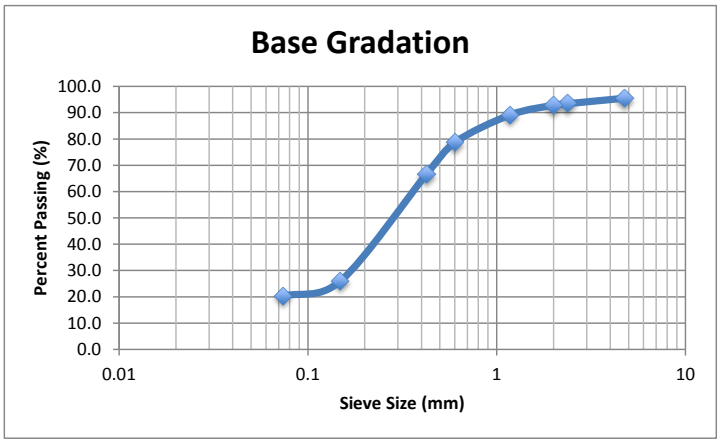
Visual Classification: HWY. U, Dent County, Very Dark Brown, Clumpy, muddy

Moisture Content:

Initial Sample + Pan (g)	1141.6
Weight of Pan (g)	365.2
Initial Weight	776.4
Dry Weight + Pan	1062.9
Dry Weight	697.7
Moisture Content	11.3

Gradation:

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
4	4.75	31.3	4.5	95.5
8	2.38	14.3	2.1	93.4
10	2	4.2	0.6	92.8
16	1.18	25.4	3.7	89.2
30	0.6	72.6	10.5	78.7
40	0.425	83.6	12.1	66.6
100	0.149	281.7	40.6	26.0
200	0.074	40.1	5.8	20.3
Pan		140.5	20.3	0.0
	Total:	693.7		



D_{10}	-
D_{30}	0.17018
D_{60}	0.37084
C_u	-
C_c	-
% Gravel	4.5
% Sand	75.2
% Fines	20.3
Unified Soil Classification:	-

Atterberg Limits:

*Non-Plastic

Core 5
Subgrade

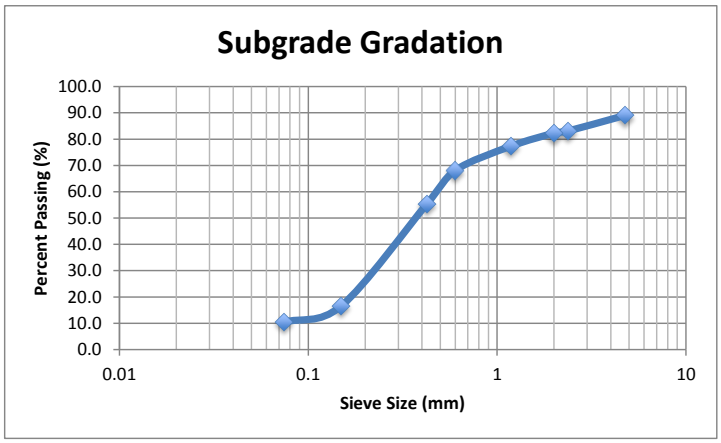
Visual Classification: HWY. U, Dent County, Light Reddish-Brown

Moisture Content:

Initial Sample + Pan (g)	1183.1
Weight of Pan (g)	524.8
Initial Weight	658.3
Dry Weight + Pan	1129.6
Dry Weight	604.8
Moisture Content	8.8

Gradation:

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
4	4.75	66.2	11.0	89.0
8	2.38	35.4	5.9	83.1
10	2	5.2	0.9	82.3
16	1.18	29.9	5.0	77.3
30	0.6	55.2	9.2	68.1
40	0.425	76.6	12.7	55.4
100	0.149	234.3	38.9	16.5
200	0.074	36.7	6.1	10.4
Pan		62.7	10.4	0.0
	Total:	602.2		



D_{10}	0.06858
D_{30}	0.2286
D_{60}	0.48514
C_u	7.05
C_c	1.56
% Gravel	11
% Sand	78.6
% Fines	10.4

Unified Soil Classification: SW-SM Well graded sand with silt

Atterberg Limits:

*Non-Plastic

Core 7
Base

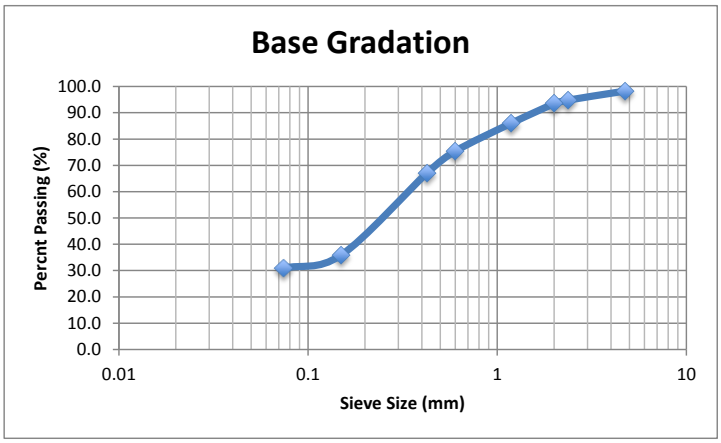
Visual Classification: HWY. U, Dent County, Very muddy, Light brown

Moisture Content:

Initial Sample + Pan (g)	1142
Weight of Pan (g)	506.7
Initial Weight	635.3
Dry Weight + Pan	1037.6
Dry Weight	530.9
Moisture Content	19.7

Gradation:

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
4	4.75	9.1	1.8	98.2
8	2.38	17.8	3.4	94.8
10	2	7.3	1.4	93.4
16	1.18	38.9	7.5	85.9
30	0.6	54.7	10.5	75.4
40	0.425	43.3	8.3	67.1
100	0.149	162.4	31.3	35.8
200	0.074	25.5	4.9	30.9
Pan		160.6	30.9	0.0
	Total:	519.6		



D_{10}	-
D_{30}	0.07112
D_{60}	0.34798
C_u	-
C_c	-
% Gravel	1.8
% Sand	67.3
% Fines	30.9
Unified Soil Classification:	-

Atterberg Limits:

*Non-Plastic

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 1	1	220	235	9.3	15	15	14.1	13.4	21.1	17.0	
	1	235	240	9.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	240	245	9.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	245	250	9.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	250	255	10.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	255	260	10.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	260	265	10.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	265	270	10.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	270	275	10.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	275	280	11.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	280	285	11.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	285	290	11.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	290	295	11.6	5	2.5	104.6	127.9	157.0	34.3	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 2	2	265	280	11.0	15	7.5	30.6	32.1	45.9	22.3	
	2	280	285	11.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	285	290	11.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	290	295	11.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	295	300	11.8	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	300	305	12.0	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	305	310	12.2	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	2	310	315	12.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	315	320	12.6	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	320	325	12.8	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	325	330	13.0	5	1.66666667	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 3	1	285	315	12.4	30	30	6.5	5.6	9.7	13.0	
	1	315	335	13.2	20	20	10.2	9.3	15.3	15.2	0.8
	2	335	345	13.6	10	5	48.1	53.4	72.2	26.2	0.4
	3	345	350	13.8	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	350	355	14.0	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	355	360	14.2	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	360	365	14.4	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	365	370	14.6	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	3	370	375	14.8	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	2	375	380	15.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	380	385	15.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	385	395	15.6	10	10	22.2	22.3	33.2	20.0	0.4
	1	395	405	15.9	10	10	22.2	22.3	33.2	20.0	0.4
	1	405	415	16.3	10	10	22.2	22.3	33.2	20.0	0.4
	2	415	420	16.5	5	2.5	104.6	127.9	157.0	34.3	0.2

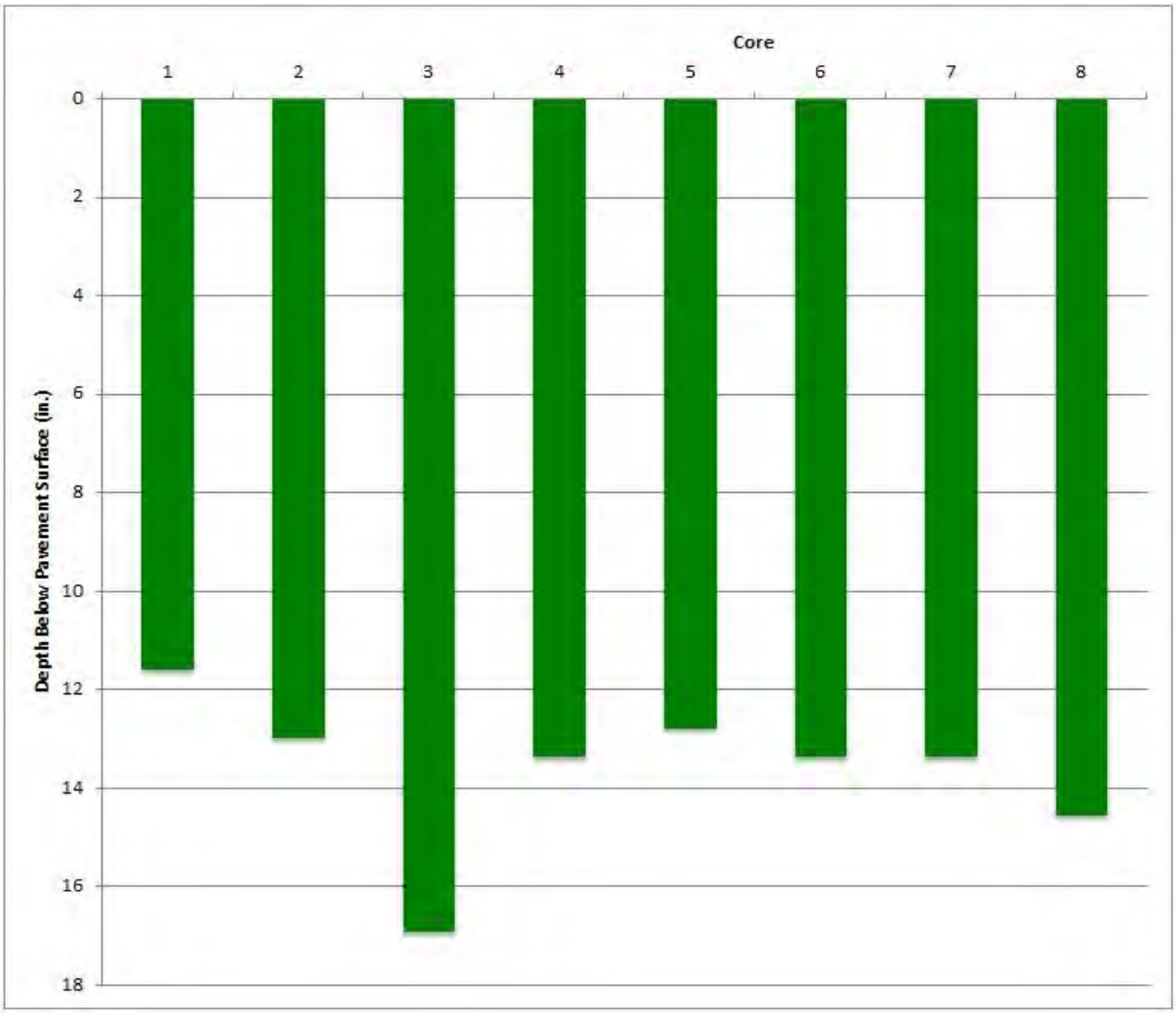
Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 4	1	240	250	9.8	10	10	22.2	22.3	33.2	20.0	
	2	250	260	10.2	10	5	48.1	53.4	72.2	26.2	0.4
	2	260	270	10.6	10	5	48.1	53.4	72.2	26.2	0.4
	1	270	275	10.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	275	280	11.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	280	285	11.2	5	5	48.1	53.4	72.2	26.2	0.2
	2	285	290	11.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	3	290	300	11.8	10	3.33333333	75.8	89.0	113.7	30.6	0.4
	2	300	305	12.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	305	310	12.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	310	320	12.6	10	5	48.1	53.4	72.2	26.2	0.4
	3	320	325	12.8	5	1.66666667	164.8	213.0	247.2	40.1	0.2
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* -- Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 5	1	240	250	9.8	10	10	22.2	22.3	33.2	20.0	
	1	250	255	10.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	255	260	10.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	260	265	10.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	265	270	10.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	270	275	10.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	275	280	11.0	5	5	48.1	53.4	72.2	26.2	0.2
	2	280	285	11.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	285	290	11.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	290	295	11.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	295	300	11.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	300	305	12.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	305	310	12.2	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	310	315	12.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	315	320	12.6	5	5	48.1	53.4	72.2	26.2	0.2
	2	320	325	12.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 6	1	230	240	9.4	10	10	22.2	22.3	33.2	20.0	
	1	240	245	9.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	245	250	9.8	5	5	48.1	53.4	72.2	26.2	0.2
	2	250	260	10.2	10	5	48.1	53.4	72.2	26.2	0.4
	2	260	265	10.4	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	265	275	10.8	10	5	48.1	53.4	72.2	26.2	0.4
	2	275	280	11.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	280	285	11.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	285	290	11.4	5	5	48.1	53.4	72.2	26.2	0.2
	2	290	295	11.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	295	300	11.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	300	305	12.0	5	5	48.1	53.4	72.2	26.2	0.2
	2	305	315	12.4	10	5	48.1	53.4	72.2	26.2	0.4
	2	315	320	12.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	320	325	12.8	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	325	330	13.0	5	2.5	104.6	127.9	157.0	34.3	0.2
	2	330	335	13.2	5	2.5	104.6	127.9	157.0	34.3	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 7	1	250	265	10.4	15	15	14.1	13.4	21.1	17.0	
	1	265	270	10.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	270	280	11.0	10	10	22.2	22.3	33.2	20.0	0.4
	1	280	285	11.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	285	290	11.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	290	295	11.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	295	305	12.0	10	10	22.2	22.3	33.2	20.0	0.4
	2	305	315	12.4	10	5	48.1	53.4	72.2	26.2	0.4
	2	315	320	12.6	5	2.5	104.6	127.9	157.0	34.3	0.2
	1	320	325	12.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	325	330	13.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	330	335	13.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	335	340	13.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	340	345	13.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	350	355	14.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	355	360	14.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	360	365	14.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	365	370	14.6	5	5	48.1	53.4	72.2	26.2	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 8	1	230	245	9.6	15	15	14.1	13.4	21.1	17.0	
	1	245	250	9.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	250	260	10.2	10	10	22.2	22.3	33.2	20.0	0.4
	1	260	265	10.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	265	270	10.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	270	275	10.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	275	280	11.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	280	285	11.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	285	295	11.6	10	10	22.2	22.3	33.2	20.0	0.4
	1	295	300	11.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	300	310	12.2	10	10	22.2	22.3	33.2	20.0	0.4
	1	310	315	12.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	315	320	12.6	5	5	48.1	53.4	72.2	26.2	0.2
	1	320	330	13.0	10	10	22.2	22.3	33.2	20.0	0.4
	1	330	335	13.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	335	345	13.6	10	10	22.2	22.3	33.2	20.0	0.4
	1	345	350	13.8	5	5	48.1	53.4	72.2	26.2	0.2
	1	350	355	14.0	5	5	48.1	53.4	72.2	26.2	0.2
	1	355	360	14.2	5	5	48.1	53.4	72.2	26.2	0.2
	1	360	365	14.4	5	5	48.1	53.4	72.2	26.2	0.2
	1	365	370	14.6	5	5	48.1	53.4	72.2	26.2	0.2


Core
1
2
3
4
5
6
7
8
0
2
4
6
8
10
12
14
16
18
Depth Below Pavement Surface (in.)

I-35, Daviees County
MO
Core No. 1

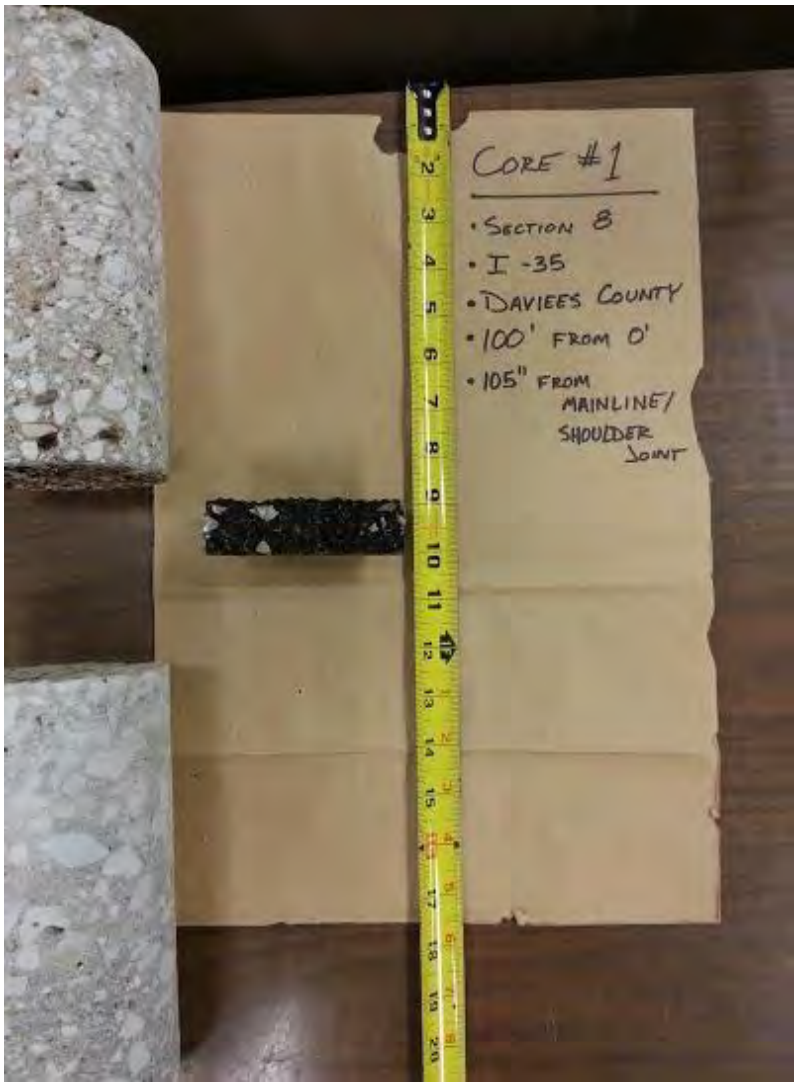
Extraction Date:

Core No. 1	
Distance from beginning (ft)	100'
Distance from pavementedge (ft)	10.5

Core No.	Lift	Mix Type		Stripping Evaluation	
				Description	Breaking Load (lbs)
1	1	Conrete	8"	-	-
	2	HMA	1"	Low	780
	3	Concrete	8 1/2"	-	-
		Total Thickness	17 1/2"		

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	Strong	522
Y	-	-

Photograph No. 1
Picture of Core No. 1 extracted from pavement.



Photograph No. 2
Picture of Core No. 1 split open to evaluate the degree of stripping occurring.

I-35 Daviees County
MO
Core No. 2

Extraction Date:

Core No. 2	
Distance from beginning (ft)	200
Distance from pavement edge (ft)	3.3

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
2	1	Conrete	7"	-	-
	2	HMA	1"	Low	130
	3	Concrete	9"	-	-
		Total Thickness	17"		

\

Z

Y

Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	-	-
Y	-	-

Photograph No. 3
Picture of Core No. 2 extracted from pavement.

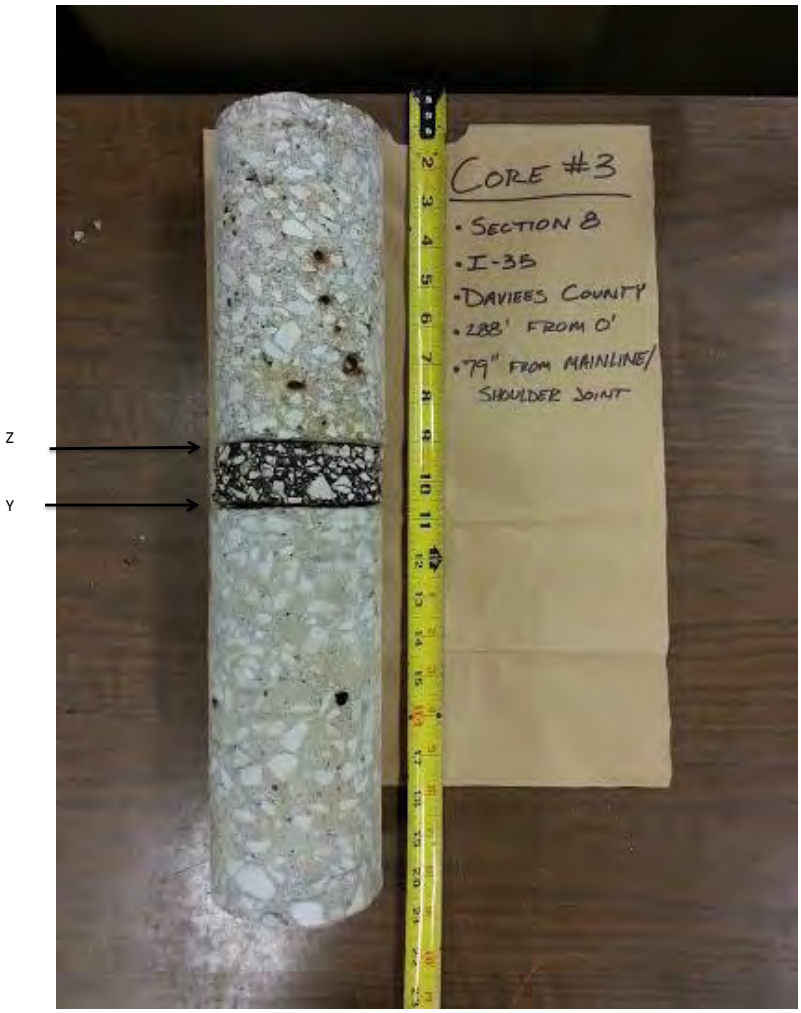
Photograph No. 4
Picture of Core No. 2 split open to evaluate the degree of stripping occurring.

I-35 Daviees County
MO
Core No. 3

Extraction Date:

Core No.	3
Distance from beginning (ft)	288
Distance from pavement edge (ft)	6.6

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	-
3	1	Conrete	7 1/2"	-	
	2	HMA	1"	Low	642
	3	Concrete	9"	-	-
		Total Thickness	17 1/2"		



Bonding Evaluation		
Contact Bond	**Description**	**Breaking Load (lbs)**
Z	-	-
Y	-	-

Photograph No. 5
Picture of Core No. 3 extracted from pavement.

Photograph No. 6
Picture of Core No. 3 split open to evaluate the degree of stripping occurring.

I-35 Daviees County
MO
Core No. 4

Extraction Date:

Core No.	4
Distance from beginning (ft)	412
Distance from pavement edge (ft)	7.5

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
4	1	Conrete	7 1/2"	-	-
	2	HMA	1 1/4"	Moderate	476
	3	Concrete	9"	-	-
		Total Thickness	17 3/4"		

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 7
Picture of Core No. 4 extracted from pavement.

Photograph No. 8
Picture of Core No. 4 split open to evaluate the degree of stripping occurring.

I-35 Daviees County
MO
Core No. 5

Extraction Date:

Core No.	5
Distance from beginning (ft)	594.5
Distance from pavement edge (ft)	3.7

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Effort (lbs)
5	1	Conrete	7"	-	-
	2	HMA	1"	Low	179
	3	Concrete	9"	-	-
		Total Thickness	17"		

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 9
Picture of Core No. 5 extracted from pavement.

Photograph No. 10

Picture of Core No. 5 split open to evaluate the degree of stripping occurring.

I-35 Daviees County
MO
Core No. 6

Extraction Date:

Core No.	6
Distance from beginning (ft)	700
Distance from pavement edge (ft)	5.3

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Break Load (lbs)
6	1	Conrete	7 1/2"	-	-
	2	HMA	1 1/2"	Low	297
	3	Concrete	8 3/4"	-	-
		Total Thickness	17 3/4"		

Z

Y

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 11
Picture of Core No. 6 extracted from pavement.

Photograph No. 12

Picture of Core No. 6 split open to evaluate the degree of stripping occurring.

I-35 Daviees County
MO
Core No. 7

Extraction Date:

Core No.	7
Distance from beginning (ft)	862
Distance from pavement edge (ft)	6.2

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
	1	Conrete	7 1/4"	-	-
	2	HMA	1"	Low	309
	3	Concrete	9"	-	-
		Total Thickness	17 1/4"		

Z

Y

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 13
Picture of Core No. 7 extracted from pavement.

Photograph No. 14
Picture of Core No. 7 split open to evaluate the degree of stripping occurring.

I-35 Daviees County
MO
Core No. 8

Extraction Date:

Core No.	8
Distance from beginning (ft)	933.5
Distance from pavement edge (ft)	5.8

Core No.	Lift	Mix Type	Thickness, in.	Stripping Evaluation	
				Description	Breaking Load (lbs)
8	1	Conrete	7"	-	-
	2	HMA	1"	Moderate	430
	3	Concrete	8 3/4"	-	-
		Total Thickness	16 3/4"		

Bonding Evaluation		
Contact Bond	Description	Breaking Load (lbs)
Z	-	-
Y	-	-

Photograph No. 15
Picture of Core No. 8 extracted from pavement.

Photograph No. 16

Picture of Core No. 8 split open to evaluate the degree of stripping occurring.

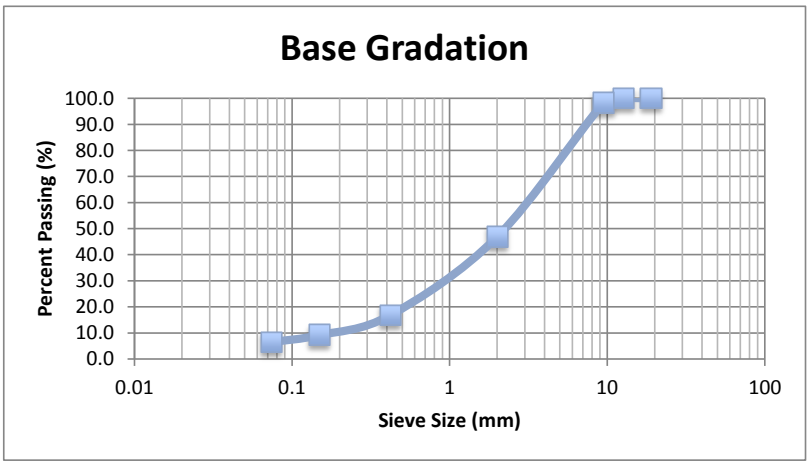
Core 1

Base

Moisture Content	
Initial Sample + Pan (g)	894.6
Weight of Pan (g)	379
Initial Weight	515.6
Dry Weight + Pan	817.4
Dry Weight	438.4
Water content	18%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0.0	0.0	100.0
1/2"	12.7	0.0	0.0	100.0
3/8"	9.51	7.3	1.7	98.3
No. 10	2	224.9	51.5	46.8
No. 40	0.42	131.0	30.0	16.8
No. 100	0.149	33.4	7.7	9.1
No. 200	0.074	11.7	2.7	6.5
Pan		28.2	6.5	0



D_{10} = 0.1753 mm

D_{30} = 0.9271 mm

D_{60} = 3.233 mm

C_u = 18.55

C_c = 1.53

% Gravel= 1.7

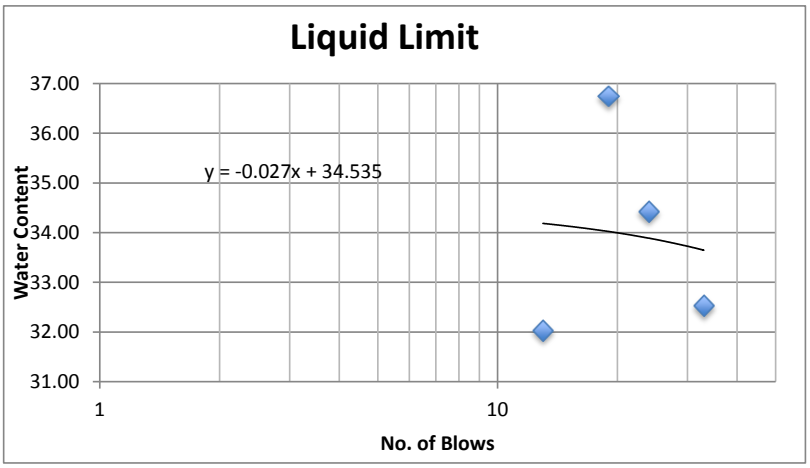
% Sand= 91.9

% Fines= 6.5

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	33.1	30.2	29.7	30.4
Mass of dry soil + can (g)	27.7	26	25.4	26.3
Mass of Can (g)	11.1	13.8	13.7	13.5
Mass of dry soil (g)	16.6	12.2	11.7	12.8
Mass of wet soil (g)	22	16.4	16	16.9
Water Content (%)	32.53	34.43	36.75	32.03
No. of Blows	33	24	19	13



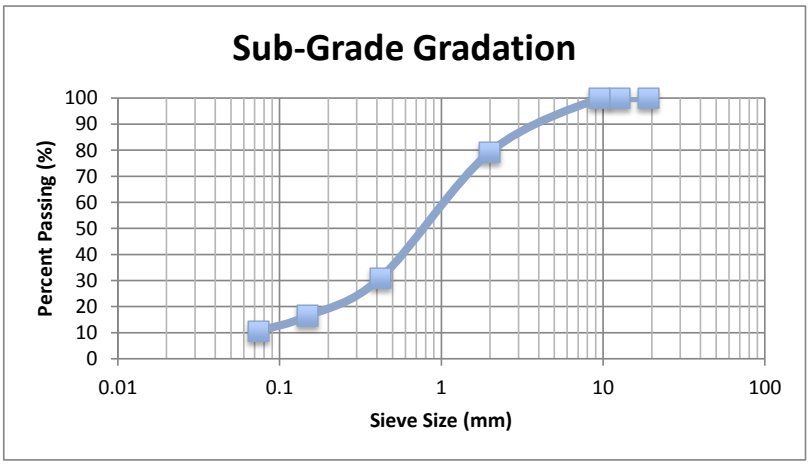
Liquid Limit=	33.86

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	894.8
Weight of Pan (g)	368.9
Initial Weight	525.9
Dry Weight + Pan	788.2
Dry Weight	419.3
Water content	25%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	0	0.0	100
No. 10	2	86.4	20.7	79.3
No. 40	0.42	201.9	48.4	30.9
No. 100	0.149	60.8	14.6	16.4
No. 200	0.074	24.4	5.8	10.5
Pan		44.0	10.5	0



D_{10} = 0.066 mm

D_{30} = 0.404 mm

D_{60} = 1.166 mm

C_u = 17.33

C_c = 2.07

% Gravel= 0.0

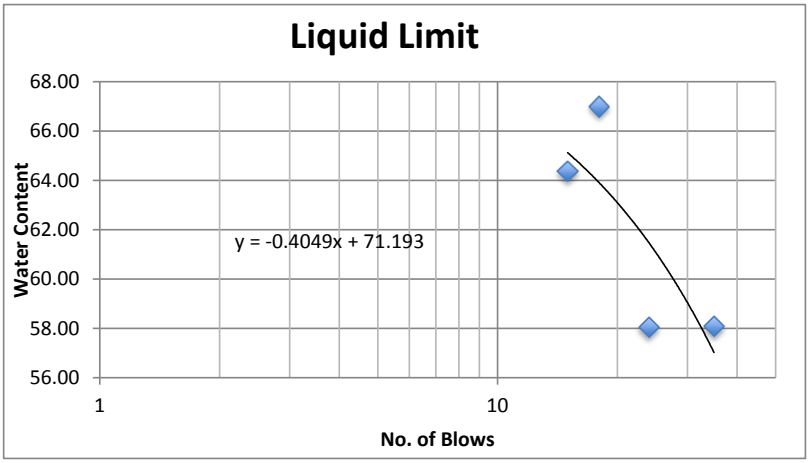
% Sand= 89.5

% Fines= 10.5

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	28.4	30.7	28	25.4
Mass of dry soil + can (g)	22.3	23.5	21.3	19.8
Mass of Can (g)	11.8	11.1	11.3	11.1
Mass of dry soil (g)	10.5	12.4	10	8.7
Mass of wet soil (g)	16.6	19.6	16.7	14.3
Water Content (%)	58.10	58.06	67.00	64.37
No. of Blows	35	24	18	15



Liquid Limit=	61.1

Plastic Limit		
Mass of wet soil + can (g)	14.9	16.5
Mass of dry soil + can (g)	14.2	15.6
Mass of Can (g)	10.7	11.4
Mass of dry soil (g)	4.2	5.1
Mass of wet soil (g)	3.5	4.2
Water Content (%)	4.9	5.8

Plastic Limit=	5.3

Plasticity Index=	55.7505959

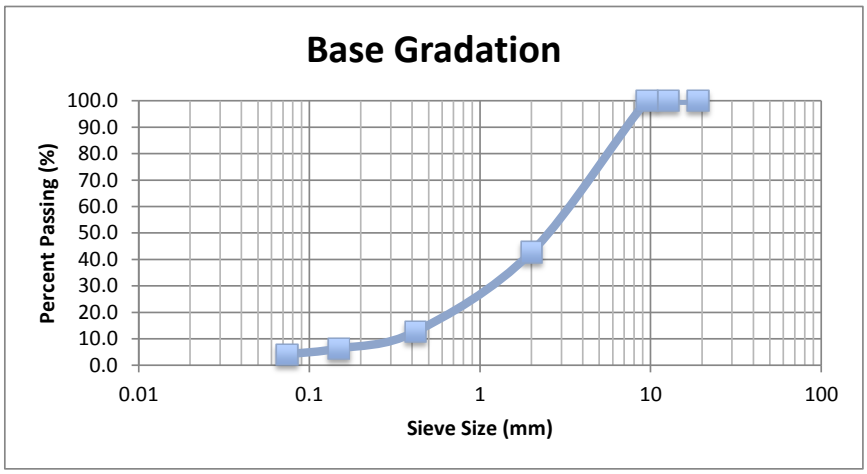
Core 3

Base

Moisture Content	
Initial Sample + Pan (g)	893.5
Weight of Pan (g)	375.8
Initial Weight	517.7
Dry Weight + Pan	824.7
Dry Weight	448.9
Water content	15%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100.0
1/2"	12.7	0	0.0	100.0
3/8"	9.51	0	0.0	100.0
No. 10	2	256.9	57.3	42.7
No. 40	0.42	134.5	30.0	12.7
No. 100	0.149	28.8	6.4	6.3
No. 200	0.074	9.8	2.2	4.1
Pan		18.5	4.1	0



D_{10} = 0.2896 mm

D_{30} = 1.128 mm

D_{60} = 3.515 mm

C_u = 12.12

C_c = 1.25

% Gravel= 0.0

% Sand= 95.9

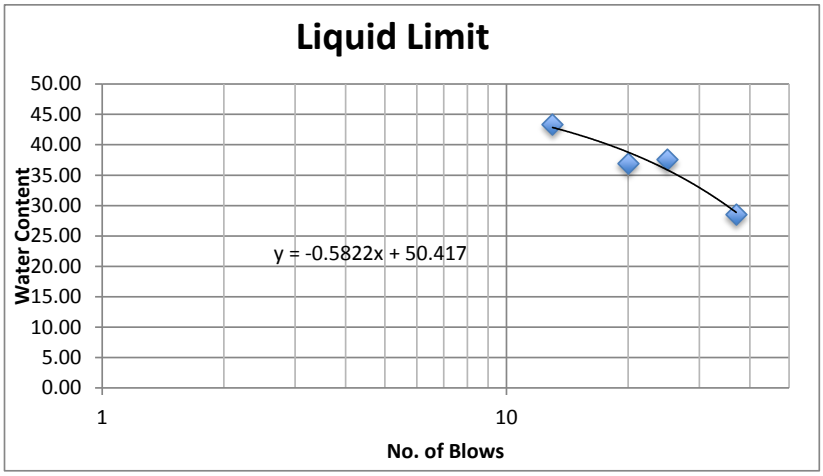
% Fines= 4.1

Unified Soil Classification: SW/SP

Atterberg Limits

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	24.5	23.1	25.6	20.8
Mass of dry soil + can (g)	21.5	19.8	21.9	17.9
Mass of Can (g)	11	11	11.9	11.2
Mass of dry soil (g)	10.5	8.8	10	6.7
Mass of wet soil (g)	13.5	12.1	13.7	9.6
Water Content (%)	28.57	37.50	37.00	43.28
No. of Blows	37	25	20	13



Liquid Limit=	35.7

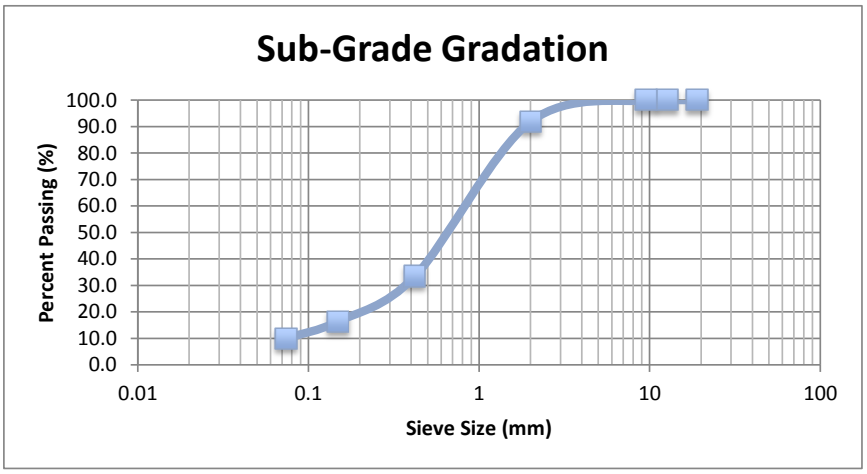
Plastic Limit	**not enough material for plastic limit

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	1062.8
Weight of Pan (g)	533.2
Initial Weight	529.6
Dry Weight + Pan	969.8
Dry Weight	436.6
Water content	21%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100.0
1/2"	12.7	0	0.0	100.0
3/8"	9.51	0.0	0.0	100.0
No. 10	2	35.9	8.2	91.8
No. 40	0.42	255.8	58.4	33.4
No. 100	0.149	74.5	17.0	16.4
No. 200	0.074	28.2	6.4	9.9
Pan		43.5	9.9	0



D_{10} = 0.0762 mm

D_{30} = 0.3581 mm

D_{60} = 0.950 mm

C_u = 12.5

C_c = 1.77

% Gravel= 0.0

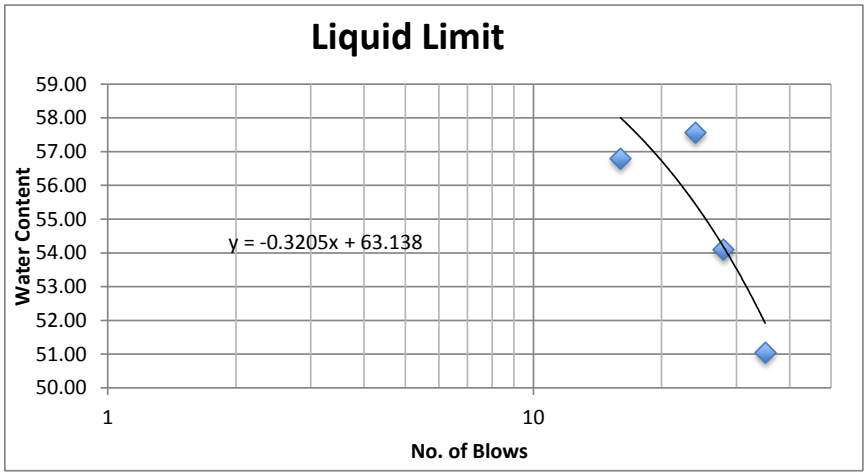
% Sand= 90.1

% Fines= 9.9

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	32.5	30.7	26.4	31.5
Mass of dry soil + can (g)	25.3	24.1	20.7	24.4
Mass of Can (g)	11.2	11.9	10.8	11.9
Mass of dry soil (g)	14.1	12.2	9.9	12.5
Mass of wet soil (g)	21.3	18.8	15.6	19.6
Water Content (%)	51.06	54.10	57.58	56.80
No. of Blows	35	28	24	16



Liquid Limit= 55.1

Plastic Limit		
Mass of wet soil + can (g)	18.2	17.5
Mass of dry soil + can (g)	17.3	17
Mass of Can (g)	14.1	13.7
Mass of dry soil (g)	4.1	3.8
Mass of wet soil (g)	3.2	3.3
Water Content (%)	5.2	2.9

Plastic Limit=	4.1

Plasticity Index=	51.0

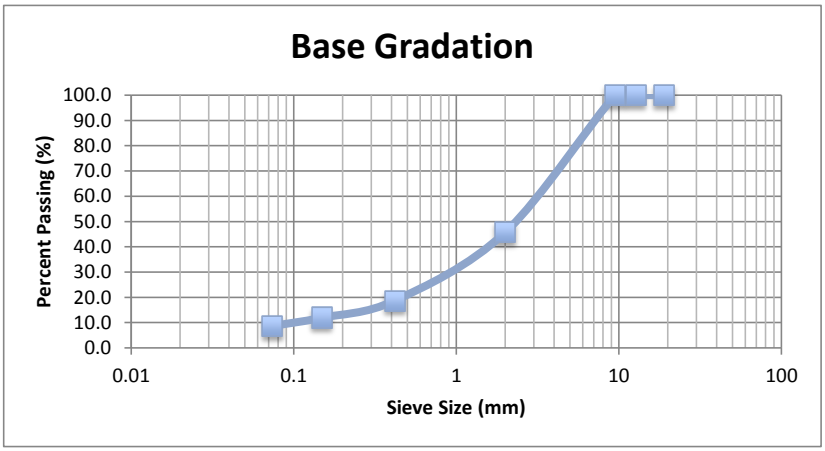
Core 5

Base

Moisture Content	
Initial Sample + Pan (g)	1041
Weight of Pan (g)	529.8
Initial Weight	511.2
Dry Weight + Pan	967.7
Dry Weight	437.9
Water content	17%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100.0
1/2"	12.7	0	0.0	100.0
3/8"	9.51	0.1	0.0	100.0
No. 10	2	236	54.3	45.7
No. 40	0.42	117.2	27.0	18.7
No. 100	0.149	29.6	6.8	11.9
No. 200	0.074	14.2	3.3	8.7
Pan		37.7	8.7	0



D_{10} = 0.1016 mm

D_{30} = 0.899 mm

D_{60} = 3.28 mm

C_u = 32.1

C_c = 2.41

% Gravel= 0.0

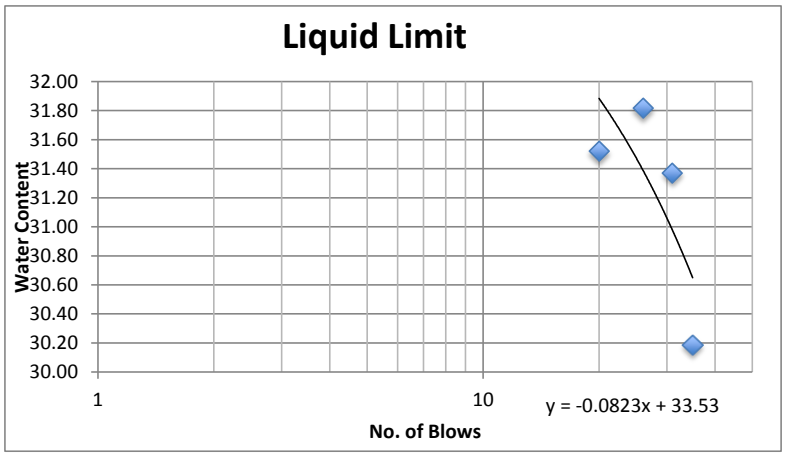
% Sand= 91.3

% Fines= 8.7

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	25	25.4	22.9	23.7
Mass of dry soil + can (g)	21.8	22.2	20.1	20.8
Mass of Can (g)	11.2	12	11.3	11.6
Mass of dry soil (g)	10.6	10.2	8.8	9.2
Mass of wet soil (g)	13.8	13.4	11.6	12.1
Water Content (%)	30.19	31.37	31.82	31.52
No. of Blows	35	31	26	20



Liquid Limit=	31.5

Plastic Limit		
Mass of wet soil + can (g)	20.5	18.9
Mass of dry soil + can (g)	17.4	16.4
Mass of Can (g)	11.4	11.8
Mass of dry soil (g)	6	4.6
Mass of wet soil (g)	9.1	7.1
Water Content (%)	15.1	13.2

Plastic Limit=	14.2

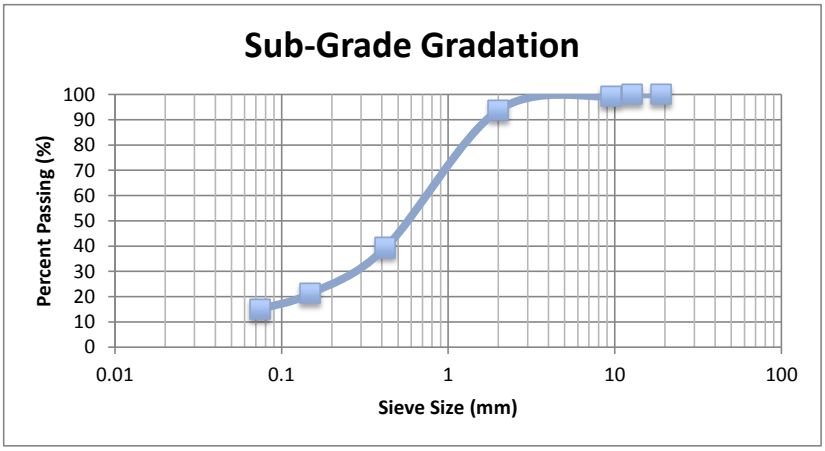
Plasticity Index=	17.3

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	994.4
Weight of Pan (g)	471.1
Initial Weight	523.3
Dry Weight + Pan	897.4
Dry Weight	426.3
Water content	23%

Gradation

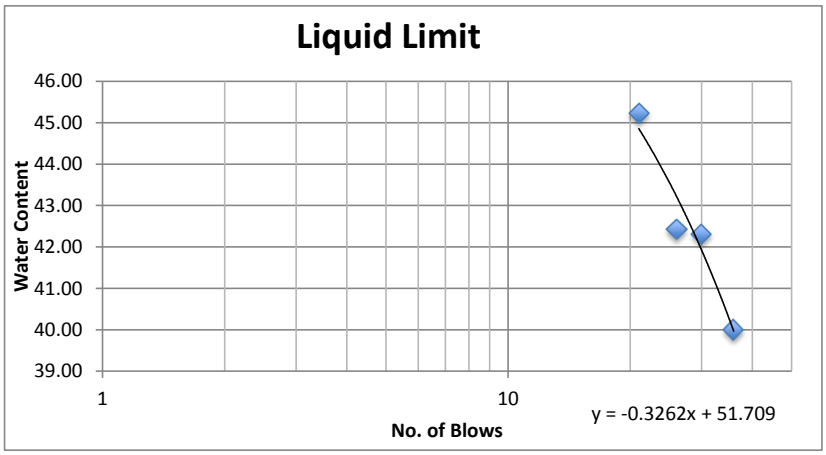
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	3	0.7	99.3
No. 10	2	23.3	5.5	93.7
No. 40	0.42	228.8	54.4	39.3
No. 100	0.149	76.2	18.1	21.2
No. 200	0.074	26.5	6.3	14.9
Pan		62.8	14.9	0



D_{10} = 0.0305 mm
D_{30} = 0.2642 mm
D_{60} = 0.846 mm
C_u = 27.4
C_c = 2.67
% Gravel= 0.7
% Sand= 84.4
% Fines= 14.9
Unified Soil Classification: SM/SC

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	32.2	29.4	30.6	29.5
Mass of dry soil + can (g)	26.2	23.9	25	23.8
Mass of Can (g)	11.2	10.9	11.8	11.2
Mass of dry soil (g)	15	13	13.2	12.6
Mass of wet soil (g)	21	18.5	18.8	18.3
Water Content (%)	40.00	42.31	42.42	45.24
No. of Blows	36	30	26	21



Liquid Limit=	43.6

Plastic Limit		
Mass of wet soil + can (g)	17.8	18.6
Mass of dry soil + can (g)	16.6	17.9
Mass of Can (g)	11.8	13.8
Mass of dry soil (g)	6	4.8
Mass of wet soil (g)	4.8	4.1
Water Content (%)	7.2	3.9

Plastic Limit=	5.6

Plasticity Index=	38.030235

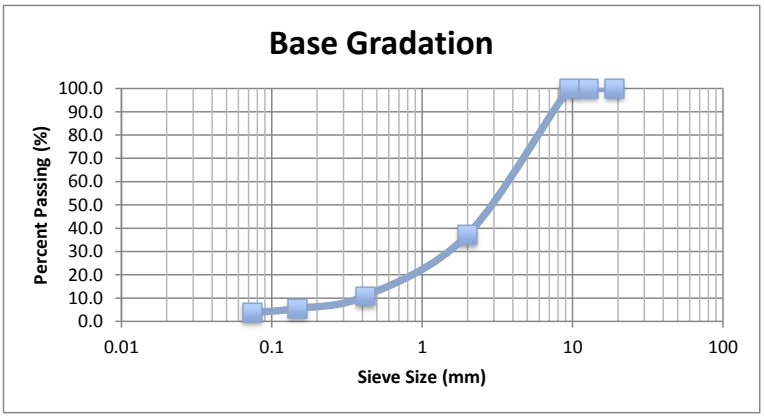
Core 7

Base

Moisture Content	
Initial Sample + Pan (g)	813.8
Weight of Pan (g)	296.5
Initial Weight	517.3
Dry Weight + Pan	732.1
Dry Weight	435.6
Water content	19%

Gradation

Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0.0	0.0	100.0
1/2"	12.7	0	0.0	100.0
3/8"	9.51	0	0.0	100.0
No. 10	2	273.6	62.8	37.2
No. 40	0.42	114.3	26.2	10.9
No. 100	0.149	23.4	5.4	5.6
No. 200	0.074	7.9	1.8	3.7
Pan		16.3	3.7	0



D_{10} = 0.3683 mm

D_{30} = 1.372 mm

D_{60} = 3.914 mm

C_u = 10.65

C_c = 1.31

% Gravel= 0.0

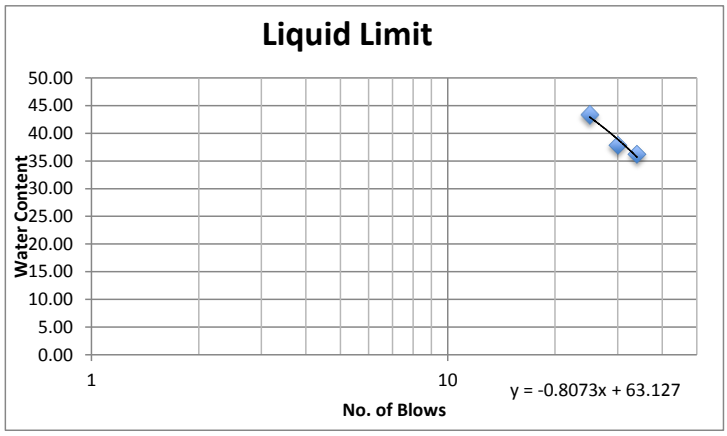
% Sand= 96.3

% Fines= 3.7

Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit			
Mass of wet soil + can (g)	25.6	21.4	22.3
Mass of dry soil + can (g)	21.9	18.6	19
Mass of Can (g)	11.7	11.2	11.4
Mass of dry soil (g)	10.2	7.4	7.6
Mass of wet soil (g)	13.9	10.2	10.9
Water Content (%)	36.27	37.84	43.42
No. of Blows	34	30	25



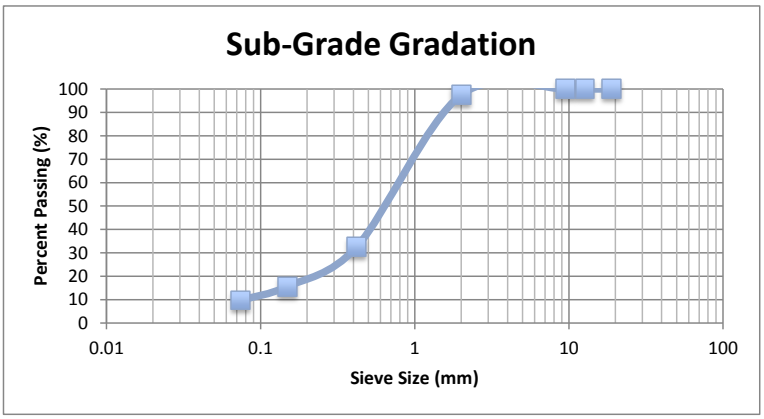
Liquid Limit= 42.9

Sub-Grade

Moisture Content	
Initial Sample + Pan (g)	687.8
Weight of Pan (g)	167.1
Initial Weight	520.7
Dry Weight + Pan	440.1
Dry Weight	273
Water content	91%

Gradation

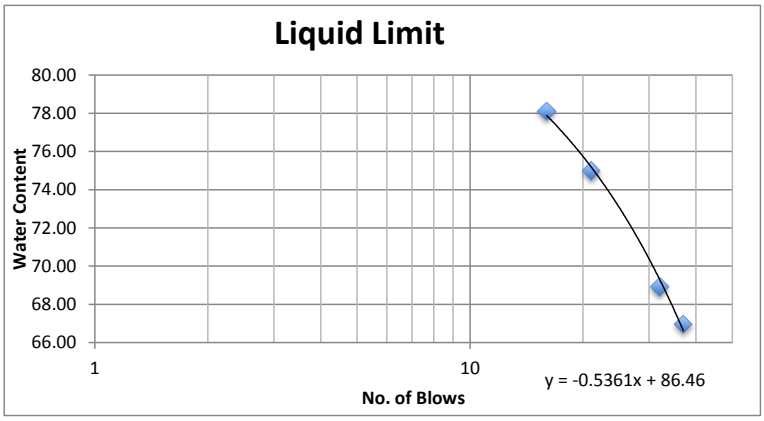
Sieve No.	Diam. (mm)	Mass Retained	% Retained	% Passing
3/4"	19	0	0.0	100
1/2"	12.7	0	0.0	100
3/8"	9.51	0	0.0	100
No. 10	2	6.8	2.5	97.5
No. 40	0.42	176.2	65.0	32.5
No. 100	0.149	45.8	16.9	15.6
No. 200	0.074	16.2	6.0	9.7
Pan		26.2	9.7	0



D_{10} = 0.0787 mm
D_{30} = 0.3734 mm
D_{60} = 0.9042 mm
C_u = 11.57
C_c = 1.98
% Gravel= 0.0
% Sand= 90.3
% Fines= 9.7
Unified Soil Classification: SW/SP

Atterberg Limits

Liquid Limit				
Mass of wet soil + can (g)	30.7	28.2	29.4	28.4
Mass of dry soil + can (g)	23	21.1	21.9	20.9
Mass of Can (g)	11.5	10.8	11.9	11.3
Mass of dry soil (g)	11.5	10.3	10	9.6
Mass of wet soil (g)	19.2	17.4	17.5	17.1
Water Content (%)	66.96	68.93	75.00	78.13
No. of Blows	37	32	21	16



Liquid Limit=	73.1

Plastic Limit		
Mass of wet soil + can (g)	15.2	14.8
Mass of dry soil + can (g)	14.5	14.1
Mass of Can (g)	11.2	11.5
Mass of dry soil (g)	4	3.3
Mass of wet soil (g)	3.3	2.6
Water Content (%)	4.8	5.0

Plastic Limit=	4.9

Plasticity Index=	68.203937

Section 1 Date

ibr>8	green
6 to 8	yellow
<6	red

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	diff
Core 1	1	505	525	20.7	20	20	10.2	9.3	15.3	15.2	
	2	525	550	21.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	1	550	575	22.6	25	25	7.9	7.0	11.9	14.0	1.0
	1	575	635	25.0	60	60	3.0	2.3	4.5	9.9	2.4
	1	635	695	27.4	60	60	3.0	2.3	4.5	9.9	2.4
	1	695	740	29.1	45	45	4.1	3.4	6.2	11.1	1.8
	1	740	780	30.7	40	40	4.7	3.9	7.0	11.6	1.6
	1	780	795	31.3	15	15	14.1	13.4	21.1	17.0	0.6
	1	795	910	35.8	115	115	1.4	1.0	2.2	7.7	4.5
	1	910	965	38.0	55	55	3.3	2.6	4.9	10.3	2.2
	1	965	1010	39.8	45	45	4.1	3.4	6.2	11.1	1.8

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 2	2	465	500	19.7	35	17.5	11.8	11.0	17.8	16.0	
	3	500	535	21.1	35	11.7	18.6	18.4	28.0	18.8	1.4
	1	535	560	22.0	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	560	620	24.4	60	60.0	3.0	2.3	4.5	9.9	2.4
	1	620	680	26.8	60	60.0	3.0	2.3	4.5	9.9	2.4
	1	680	730	28.7	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	730	785	30.9	55	55.0	3.3	2.6	4.9	10.3	2.2
	1	785	830	32.7	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	830	865	34.1	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	865	900	35.4	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	900	935	36.8	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	935	960	37.8	25	25.0	7.9	7.0	11.9	14.0	1.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 3	2	475	500	19.7	25	12.5	17.3	16.9	25.9	18.3	
	3	500	525	20.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	2	525	565	22.2	40	20.0	10.2	9.3	15.3	15.2	1.6
	1	565	590	23.2	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	590	625	24.6	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	625	675	26.6	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	675	725	28.5	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	725	770	30.3	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	770	810	31.9	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	810	850	33.5	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	850	880	34.6	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	880	910	35.8	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	910	940	37.0	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	940	950	37.4	10	10.0	22.2	22.3	33.2	20.0	0.4

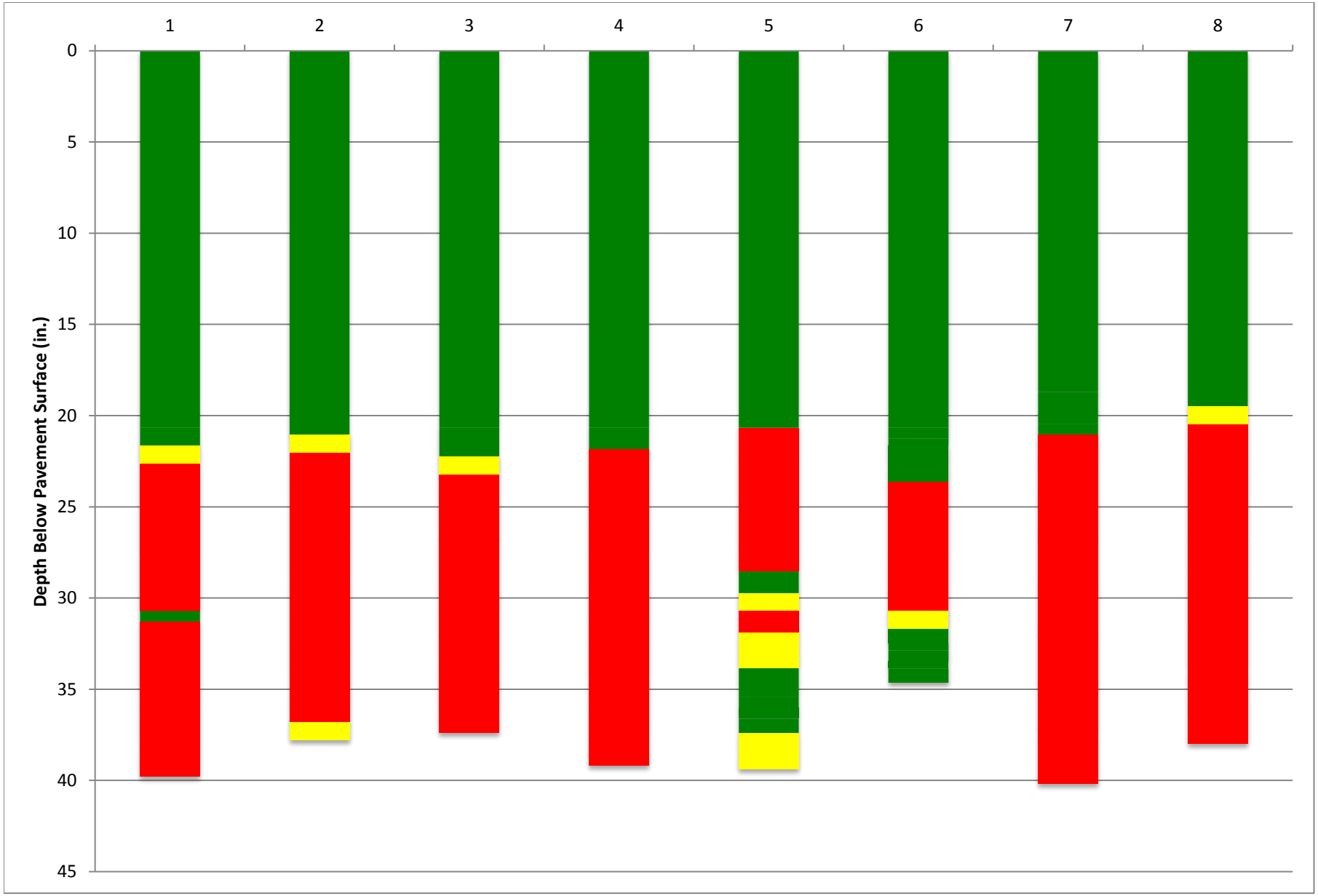
Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 4	3	470	500	19.7	30	10.0	22.2	22.3	33.2	20.0	
	2	500	525	20.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	525	555	21.9	30	15.0	14.1	13.4	21.1	17.0	1.2
	1	555	600	23.6	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	600	650	25.6	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	650	700	27.6	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	700	745	29.3	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	745	785	30.9	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	785	825	32.5	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	825	875	34.4	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	875	915	36.0	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	915	955	37.6	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	955	995	39.2	40	40.0	4.7	3.9	7.0	11.6	1.6

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 5	1	480	500	19.7	20	20.0	10.2	9.3	15.3	15.2	#VALUE!
	2	500	525	20.7	25	12.5	17.3	16.9	25.9	18.3	1.0
	1	525	565	22.2	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	565	625	24.6	60	60.0	3.0	2.3	4.5	9.9	2.4
	1	625	660	26.0	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	660	690	27.2	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	690	725	28.5	35	35.0	5.4	4.6	8.2	12.2	1.4
	2	725	755	29.7	30	15.0	14.1	13.4	21.1	17.0	1.2
	1	755	780	30.7	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	780	810	31.9	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	810	835	32.9	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	835	860	33.9	25	25.0	7.9	7.0	11.9	14.0	1.0
	2	860	900	35.4	40	20.0	10.2	9.3	15.3	15.2	1.6
	1	900	915	36.0	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	915	930	36.6	15	15.0	14.1	13.4	21.1	17.0	0.6
	1	930	950	37.4	20	20.0	10.2	9.3	15.3	15.2	0.8
	1	950	975	38.4	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	975	1000	39.4	25	25.0	7.9	7.0	11.9	14.0	1.0

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 6	3	475	500	19.7	25	8.3	27.2	28.1	40.8	21.4	
	3	500	525	20.7	25	8.3	27.2	28.1	40.8	21.4	1.0
	3	525	540	21.3	15	5.0	48.1	53.4	72.2	26.2	0.6
	2	540	550	21.7	10	5.0	48.1	53.4	72.2	26.2	0.4
	2	550	575	22.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	2	575	600	23.6	25	12.5	17.3	16.9	25.9	18.3	1.0
	1	600	635	25.0	35	35.0	5.4	4.6	8.2	12.2	1.4
	1	635	700	27.6	65	65.0	2.7	2.1	4.1	9.6	2.6
	1	700	750	29.5	50	50.0	3.7	2.9	5.5	10.7	2.0
	1	750	780	30.7	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	780	805	31.7	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	805	825	32.5	20	20.0	10.2	9.3	15.3	15.2	0.8
	5	825	835	32.9	10	2.0	134.3	169.3	201.5	37.4	0.4
	3	835	850	33.5	15	5.0	48.1	53.4	72.2	26.2	0.6
	3	850	860	33.9	10	3.3	75.8	89.0	113.7	30.6	0.4
	2	860	880	34.6	20	10.0	22.2	22.3	33.2	20.0	0.8
	2	880	900	35.4	20	10.0	22.2	22.3	33.2	20.0	#REF!
	2	900	925	36.4	25	12.5	17.3	16.9	25.9	18.3	1.0
	3	925	930	36.6	5	1.7	164.8	213.0	247.2	40.1	0.2
	3	930	935	36.8	5	1.7	164.8	213.0	247.2	40.1	0.2

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 7	1	460	475	18.7	15	15.00	14.1	13.4	21.1	17.0	
	2	475	500	19.7	25	12.50	17.3	16.9	25.9	18.3	1.0
	2	500	520	20.5	20	10.00	22.2	22.3	33.2	20.0	0.8
	1	520	535	21.1	15	15.00	14.1	13.4	21.1	17.0	0.6
	1	535	565	22.2	30	30.00	6.5	5.6	9.7	13.0	1.2
	1	565	615	24.2	50	50.00	3.7	2.9	5.5	10.7	2.0
	1	615	675	26.6	60	60.00	3.0	2.3	4.5	9.9	2.4
	1	675	740	29.1	65	65.00	2.7	2.1	4.1	9.6	2.6
	1	740	810	31.9	70	70.00	2.5	1.9	3.8	9.3	2.8
	1	810	885	34.8	75	75.00	2.3	1.8	3.5	9.1	3.0
	1	885	950	37.4	65	65.00	2.7	2.1	4.1	9.6	2.6
	1	950	1020	40.2	70	70.00	2.5	1.9	3.8	9.3	2.8

Location (Sta)	# of Blows	Beg. Read. (mm)	End. Read. (mm)	Ending* ** Read. (in)	Diff. (mm)	P.I. (mm/blow)	CBR COE	IBR IDOT	$M_{R\ (ksi)}$ AASHTO	$M_{R\ (ksi)}$ KDOT	
Core 8	1	475	495	19.5	20	20.0	10.2	9.3	15.3	15.2	
	1	495	520	20.5	25	25.0	7.9	7.0	11.9	14.0	1.0
	1	520	550	21.7	30	30.0	6.5	5.6	9.7	13.0	1.2
	1	550	590	23.2	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	590	635	25.0	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	635	675	26.6	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	675	720	28.3	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	720	760	29.9	40	40.0	4.7	3.9	7.0	11.6	1.6
	1	760	805	31.7	45	45.0	4.1	3.4	6.2	11.1	1.8
	1	805	860	33.9	55	55.0	3.3	2.6	4.9	10.3	2.2
	1	860	915	36.0	55	55.0	3.3	2.6	4.9	10.3	2.2
	1	915	965	38.0	50	50.0	3.7	2.9	5.5	10.7	2.0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