CRESTON ROAD – SOUTH RIVER ROAD TO ROLLING HILLS ROAD

RECOMMENDATIONS

Pavement Maintenance Options (Short-Term)

These options are not available for this street because of structural deficiencies and/or pavement cracking condition.

Pavement Rehabilitation Options (Long-Term)

Overlay Options

For option 1, we recommend 4 inch digouts for base failures, placing a 1/2 inch HMA leveling course, pavement fabric and a 1-3/4 inch HMA overlay.

Estimated Cost: $1,355,000 Estimated Life Expectancy: 10-12 Years

For option 2, we recommend 4 inch digouts for base failures, placing a 1/2 inch HMA leveling course and a 1-3/4 inch RHMA overlay.

Estimated Cost: $1,359,000 Estimated Life Expectancy: 10-12 Years

Recycle and Mill and Replace Options

For option 1, we recommend milling 2 inches of the existing asphalt concrete, 4 inch digouts of base failure and placing 2 inches of new HMA.

Estimated Cost: $1,296,000 Estimated Life Expectancy: 12-15 Years

For option 2, we recommend milling 1-3/4 inches of the existing asphalt concrete, 4 inches digouts of base failures and placing 1-3/4 inches of RHMA.

Estimated Cost: $1,260,000 Estimated Life Expectancy: 12-15 Years

For option 3, we recommend cold in-place recycling to a depth of 4 inches and placing a 2 inch HMA surface course.

Estimated Cost: $1,377,000 Estimated Life Expectancy: 12-15 Years

Reconstruction Options

For option 1, we recommend removing the pavement to a depth of 10 inches and placing 10 inches of new HMA. The HMA should be placed in 4 lifts.

Estimated Cost: $3,900,000 Estimated Life Expectancy: 20 Years

Only full depth HMA is recommended for reconstruction due to the thick existing aggregate base layer.

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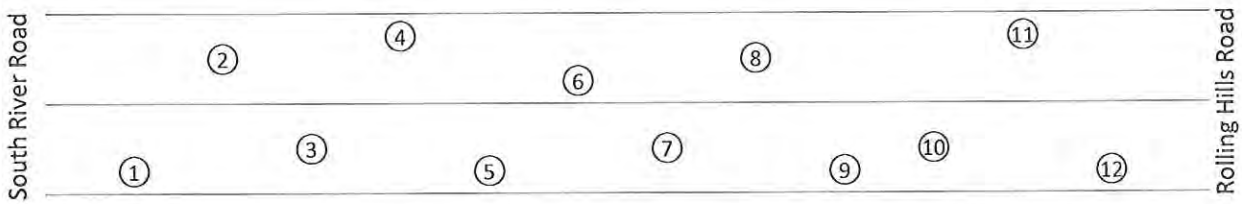

NOTES:
- NTS
- ACTUAL ROAD MAY NOT BE STRAIGHT
- NOT ALL ROADS CONNECTING TO THIS STREET ARE SHOWN
- WIDTH OF ROAD MAY VARY WITHIN THE BOUNDARY SECTION
- ALL LOCATIONS SHOWN ARE APPROXIMATED

Creston Road

[Section of Road ≈ 5900ft]

TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY

VISUAL DESCRIPTION FOR THIS SECTION OF ROAD

The pavement exhibits moderate weathering and raveling and moderate block cracking progressing to alligator cracking in the travel lanes. Areas of intermittant base failure were observed.

CORING LOG

Symbol	Location	Core Data		R-value
①	East of South River Road 450ft	AC AB	4.25" 15.00"	66
②	East of South River Road 900ft	AC AB	6.00" 15.50"	-
③	East of South River Road 1350ft	AC AB	6.00" 13.00"	11
④	East of South River Road 1800ft	AC AB	5.75" 14.00"	-
⑤	East of South River Road 2250ft	AC AB	5.50" 14.25"	7
⑥	East of South River Road 2700ft	AC AB	4.50" 13.00"	-
⑦	East of South River Road 3150ft	AC AB	5.50" 13.50"	23
⑧	East of South River Road 3600ft	AC AB	5.25" 14.25"	-
⑨	East of South River Road 4050ft	AC AB	5.75" 13.25"	65

Please refer to next page for more core data on core number 10, 11, and 12.

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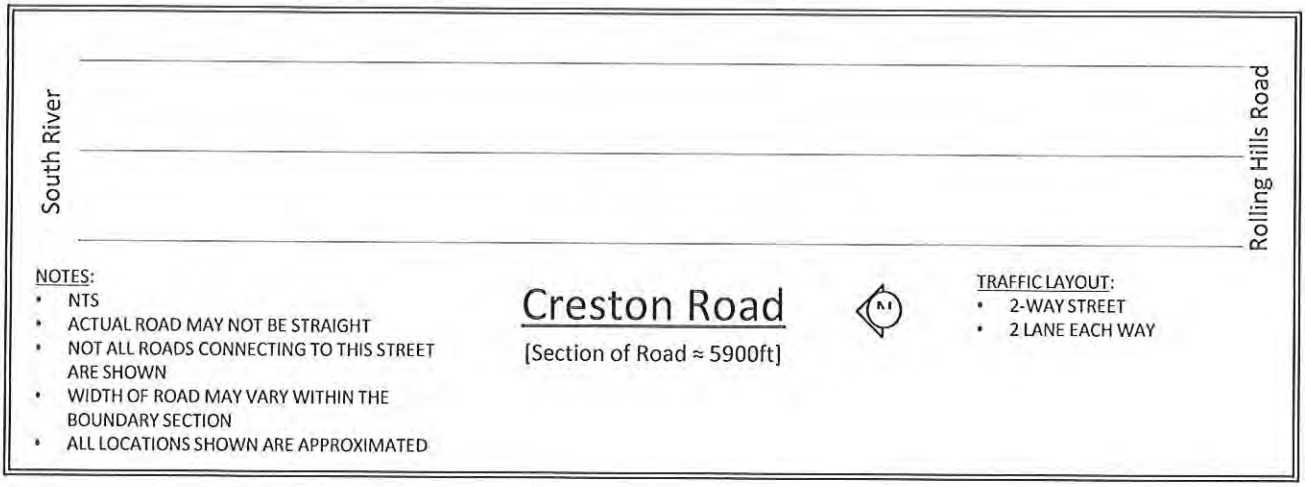

NOTES:
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TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY

CORING LOG

Symbol	Location	Core Data		R-value
10	East of South River Road 4500ft	AC AB	5.00" 13.75"	-
11	East of South River Road 4950ft	AC AB	6.50" 1350"	18
12	East of South River Road 5400ft	AC AB	5.50" 13.00"	-

Please refer to the previous page for core location of core numer 10, 11, and 12.

DEFLECTION ANALYSIS

Lane		Tolerable	TI	80th Percentile	Percent Reduction	HMA Overlay
West Bound	1	N.A.	N.A.	N.A.	N.A.	N.A. - inches
	2	18	8.0	23.3	22.76	0.96 - inches
East Bound	1	N.A.	N.A.	N.A.	N.A.	N.A. - inches
	2	18	8.0	22.36	19.52	0.72 - inches
Overlay Required by Reflective Cracking						2.50 - inches

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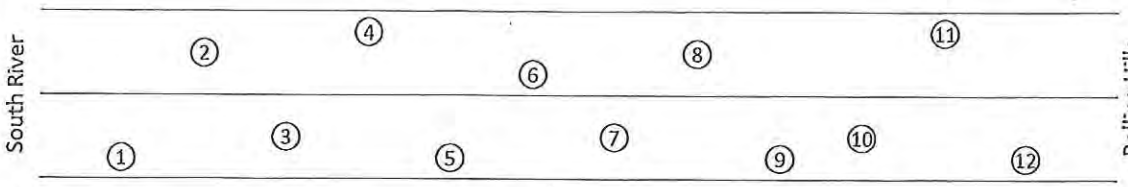

NOTES:
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- ALL LOCATIONS SHOWN ARE APPROXIMATED

Creston Road

[Section of Road ≈ 5900ft]

N

TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY

VISUAL DESCRIPTION FOR THIS SECTION OF ROAD

CORING LOG

Symbol	Location	Core Data		R-value
①	East of South River Road 450ft	AC AB	4.25" 15.00"	66
②	East of South River Road 900ft	AC AB	6.00" 15.50"	-
③	East of South River Road 1350ft	AC AB	6.00" 13.00"	11
④	East of South River Road 1800ft	AC AB	5.75" 14.00"	-
⑤	East of South River Road 2250ft	AC AB	5.50" 14.25"	7
⑥	East of South River Road 2700ft	AC AB	4.50" 13.00"	-
⑦	East of South River Road 3150ft	AC AB	5.50" 13.50"	23
⑧	East of South River Road 3600ft	AC AB	5.25" 14.25"	-
⑨	East of South River Road 4050ft	AC AB	5.75" 13.25"	65

Please refer to next page for more core data on core number 10, 11, and 12.

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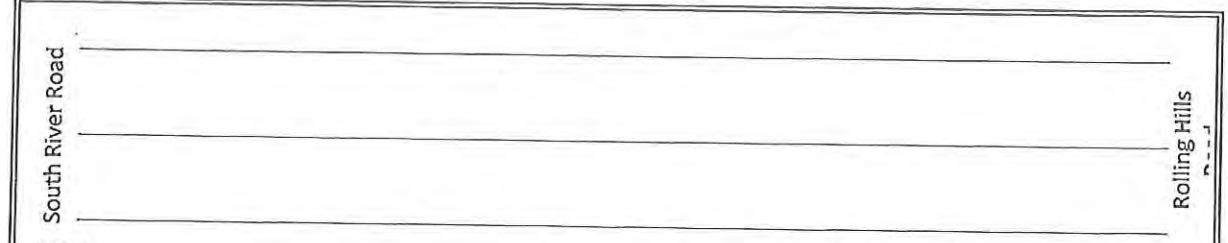

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TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY

CORING LOG

Symbol	Location	Core Data	R-value
⑩	East of South River Road 4500ft	AC 5.00" AB 13.75"	-
⑪	East of South River Road 4950ft	AC 6.50" AB 1350"	18
⑫	East of South River Road 5400ft	AC 5.50" AB 13.00"	-

Please refer to the previous page for core location of core numer 10, 11, and 12.

PHOTO LOG

Symbol	Location	Comments
Ⓐ	_____ of _____ _____ ft	
Ⓑ	_____ of _____ _____ ft	
Ⓒ	_____ of _____ _____ ft	

DEFLECTION ANALYSIS

Lane		Tolerable	TI	80th Percentile	Percent Reduction	HMA Overlay
West Bound	1	N.A.	N.A.	N.A.	N.A.	N.A. - Inches
	2	18	8.0	23.3	22.76	0.96 - Inches
East Bound	1	N.A.	N.A.	N.A.	N.A.	N.A. - Inches
	2	18	8.0	22.36	19.52	0.72 - Inches
Overlay Required by Reflective Cracking						2.50 - Inches

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City Of Pasa Robles

Road: Creston
From: South River
To: Rolling Hills
Lane/Line: E2

Survey Date: 03/13/13
Thickness: 0.46
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
59	5.85	17.60	32.17	5.67

Road Surface

Thickness	Traffic Index
0.46	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
18.00	22.36	24.86	19.52	0.11

HMA Overlay
0.06

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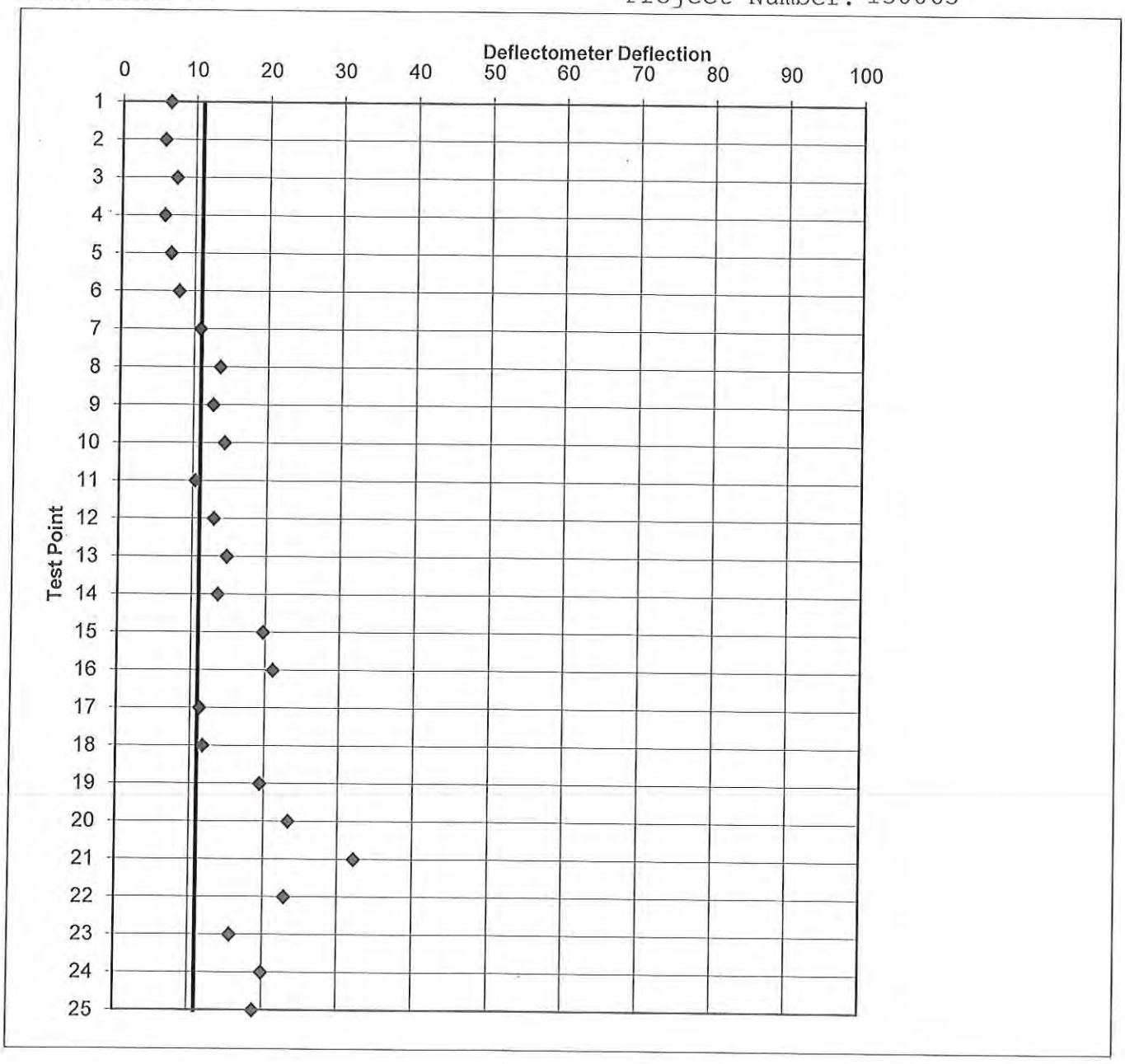
City Of Pasa Robles

Road: Creston
From: South River
To: Rolling Hills
Lane/Line: E2

Survey Date: 03/13/13
Thickness: 0.46
Traffic Index: 8.00
Project Number: 130065



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Date: 3/27/2013

Client: City Of Pasa Robles
Road: Creston
From: South River
To: Rolling Hills
Lane/Line: E2

Interval: 100
Survey Date: 3/13/13
Thickness: 0.46
Traffic Index: 8.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.31			6.533	
2	0.28			5.852	
3	0.35			7.440	
4	0.28			5.852	
5	0.32			6.760	
6	0.37		Capitol Hill	7.894	
7	0.50			10.843	
8	0.62			13.566	
9	0.58			12.658	
10	0.65			14.246	
11	0.48			10.390	
12	0.59		Ferro(W)	12.885	
13	0.67			14.700	
14	0.62			13.566	
15	0.89			19.691	
16	0.95			21.052	
17	0.52			11.297	
18	0.54		Shannon Hill	11.751	
19	0.88		Ferro(E)	19.464	
20	1.05			23.321	
21	1.44		Tanner	32.169	
22	1.03			22.867	
23	0.71			15.608	
24	0.90			19.918	
25	0.85			18.784	
26	0.78			17.196	
27	0.80		Walnut	17.649	
28	1.02		Bolen	22.640	
29	0.95			21.052	
30	0.92			20.372	
31	1.01			22.413	

32	0.83			18.330	
33	0.75		Trigo	16.515	
34	0.80			17.649	
35	1.05			23.321	
36	1.10			24.455	
37	1.08			24.002	
38	1.15			25.590	
39	1.28		Nickerson	28.539	
40	1.06			23.548	
41	0.75			16.515	
42	0.80			17.649	
43	0.82			18.103	
44	0.64		Ivy	14.019	
45	0.74			16.288	
46	0.81			17.876	
47	0.90			19.918	
48	0.83			18.330	
49	0.88			19.464	
50	0.74			16.288	
51	0.89			19.691	
52	0.93		Orchard	20.599	
53	0.99			21.960	
54	0.86			19.010	
55	0.78			17.196	
56	0.67			14.700	
57	0.90			19.918	
58	1.17		Laura	26.043	
59	1.01			22.413	

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City of Paso Robles

Road: Creston
From: Rolling Hills
To: South River
Lane/Line: W2

Survey Date: 03/14/13
Thickness: 0.46
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
59	9.71	19.30	28.31	4.77

Road Surface

Thickness	Traffic Index
0.46	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
18.00	23.30	25.40	22.76	0.15

HMA Overlay
0.08

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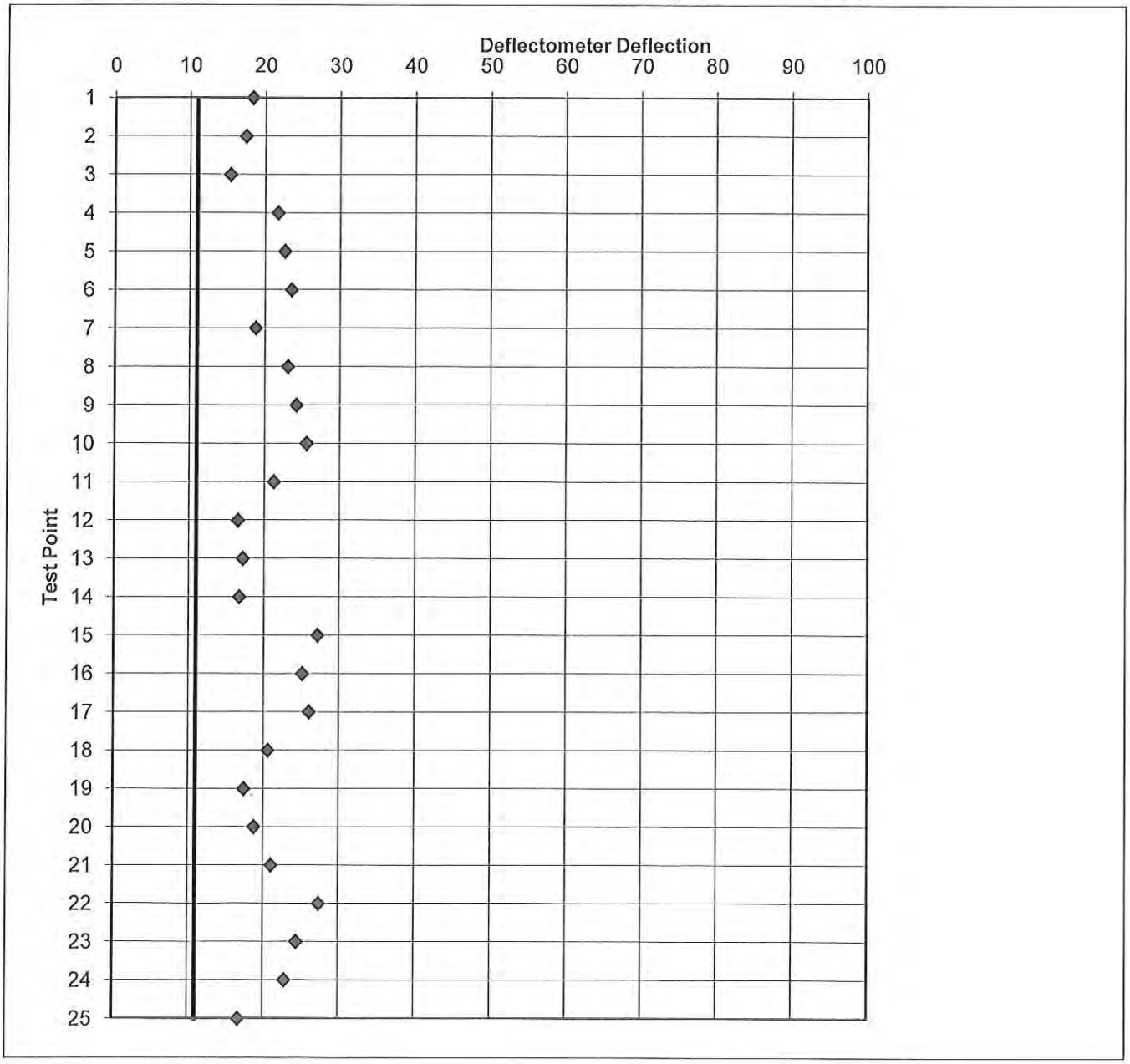
City of Paso Robles

Road: Creston
From: Rolling Hills
To: South River
Lane/Line: W2

Survey Date: 03/14/13
Thickness: 0.46
Traffic Index: 8.00
Project Number: 130065



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Date: 3/27/2013

Client:	City of Paso Robles	Interval:	100
Road:	Creston	Survey Date:	3/14/13
From:	Rolling Hills	Thickness:	0.46
To:	South River	Traffic Index:	8.00
Lane/Line:	W2	Project Number:	130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.83		Laura	18.330	
2	0.79			17.422	
3	0.70			15.381	
4	0.98			21.733	
5	1.02			22.640	
6	1.06			23.548	
7	0.85		Orchard	18.784	
8	1.04			23.094	
9	1.09			24.228	
10	1.15			25.590	
11	0.96			21.279	
12	0.75			16.515	
13	0.78			17.196	
14	0.76			16.742	
15	1.22		Ivy	27.178	
16	1.13			25.136	
17	1.17			26.043	
18	0.93			20.599	
19	0.79			17.422	
20	0.85		Nickerson	18.784	
21	0.95			21.052	
22	1.23			27.405	
23	1.10			24.455	
24	1.03			22.867	
25	0.76		Trigo	16.742	
26	0.89			19.691	
27	0.79			17.422	
28	0.67			14.700	
29	0.69			15.154	
30	0.45			9.709	
31	0.96		Bolen	21.279	

32	0.76		Walnut	16.742	
33	0.85			18.784	
34	0.73			16.061	
35	0.54			11.751	
36	0.68			14.927	
37	0.64			14.019	
38	1.23			27.405	
39	1.15			25.590	
40	1.27		Tanner	28.312	
41	0.93		Ferro(E)	20.599	
42	0.72		Shannon Hill	15.834	
43	0.91			20.145	
44	1.09			24.228	
45	1.02			22.640	
46	0.98			21.733	
47	1.15		Ferro(W)	25.590	
48	0.99			21.960	
49	0.93			20.599	
50	0.88			19.464	
51	0.92			20.372	
52	0.71			15.608	
53	0.70		Capitol Hill	15.381	
54	0.59		(Lane Split) (WB1)	12.885	
55	0.52		(WB2)	11.297	
56	0.58		(WB1)	12.658	
57	0.55		(WB2)	11.978	
58	0.64		(WB1)	14.019	
59	0.45		(WB2)	9.709	

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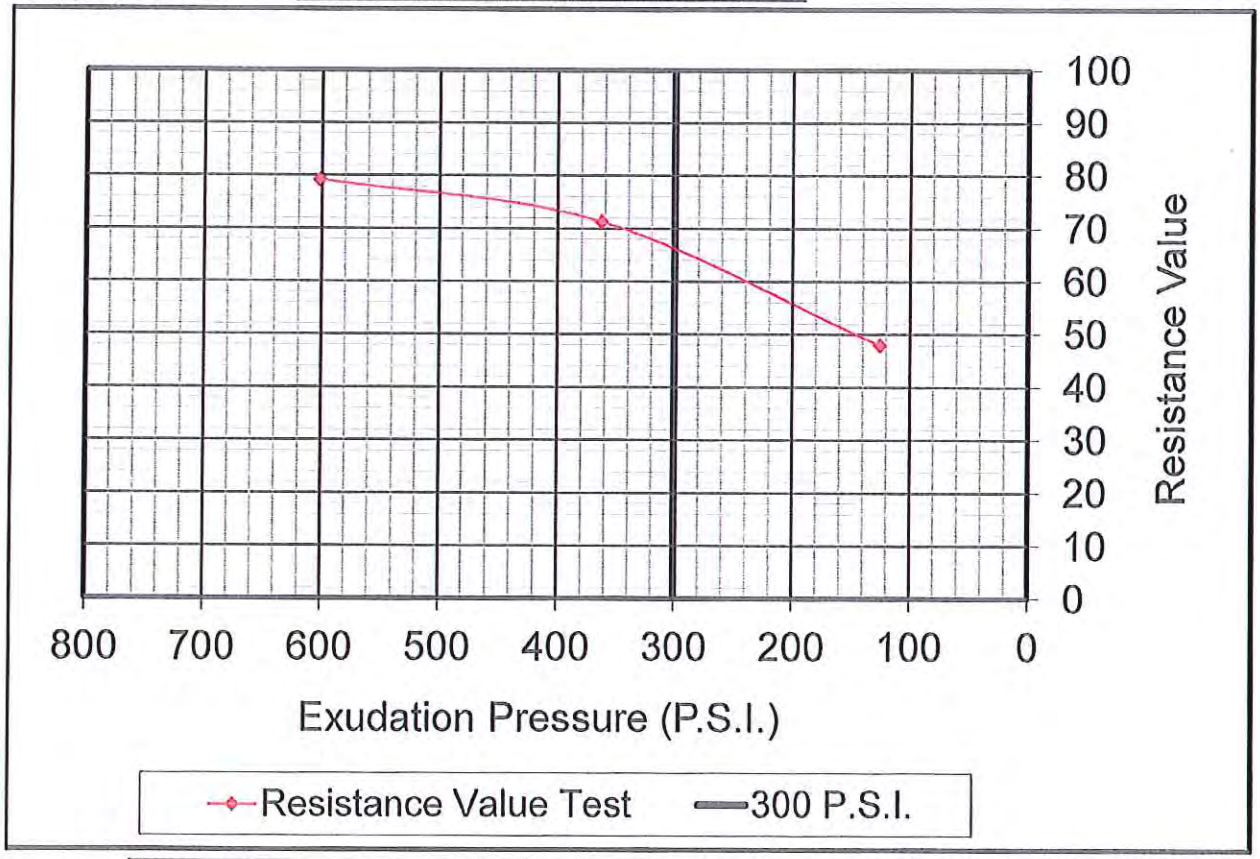
RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.:	L130083AK
Project No.:	130065
Sample Date:	March 13, 2013
Report Date:	April 9, 2013
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Dark Brown Sand with Clay and Gravel
Sample Location:	Creston Road - 450' East of South River Road



Specimen No.	1	2	3
Moisture Content (%)	10.6	11.1	11.3
Dry Density (PCF)	124.3	123.8	123.7
Resistance Value (R)	79	71	48
Exudation Pressure (PSI)	602	364	126
Expansion Pressure	0	0	0

RESISTANCE VALUE AT 300 P.S.I. 66

AAPA® AASHTO R18

Reviewed By: Craig Long
Craig W. Long
Laboratory Operations Manager

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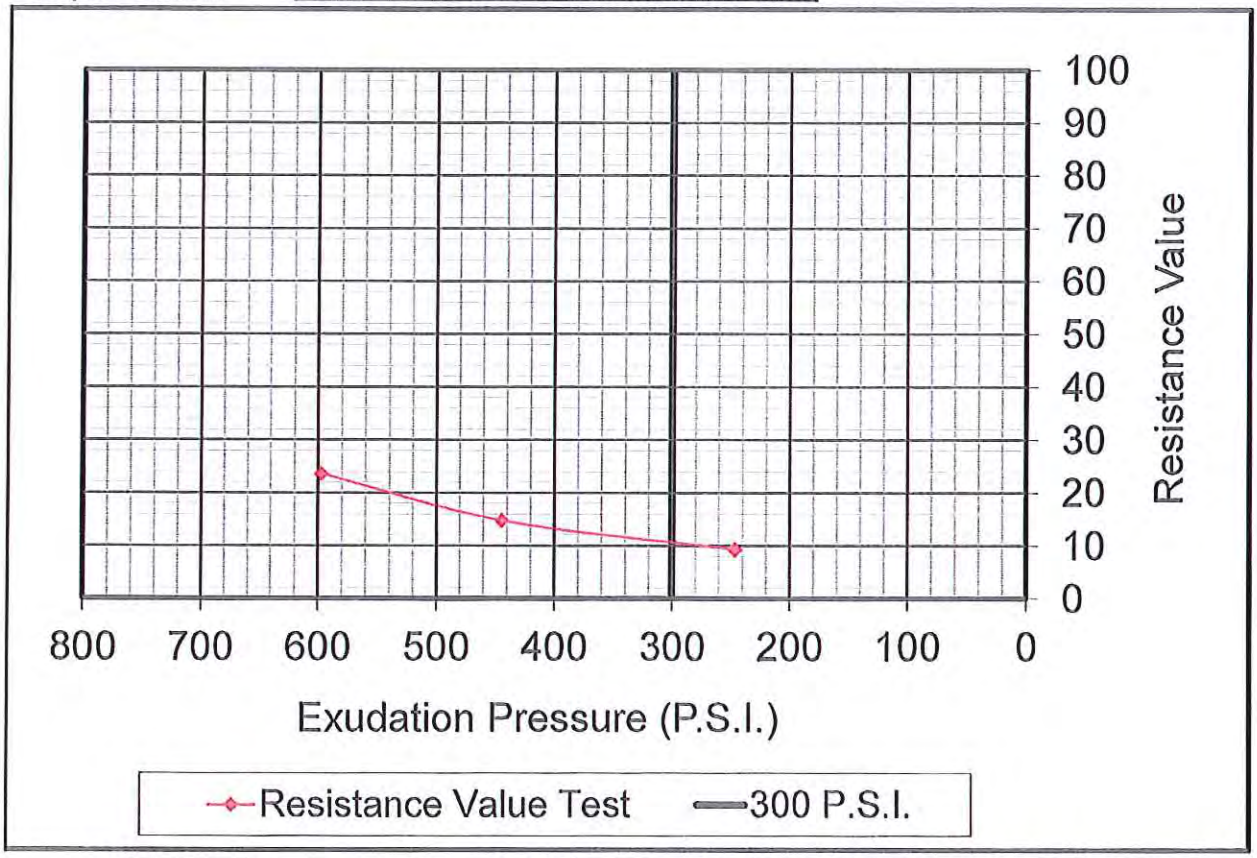
CalTrans/AMRL QC/QA ° Construction Management

RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.: L130083AX
Project No.: 130065
Sample Date: March 13, 2013
Report Date: April 11, 2013
Client: City of Paso Robles
Project Name: City of Paso Robles 2013 Pavement Analysis
Sample Description: Brown Sandy Clay
Sample Location: Creston Road - 1350' East of South River Road



Specimen No.	1	2	3
Moisture Content (%)	21.6	23.1	23.8
Dry Density (PCF)	103.8	101.7	102.5
Resistance Value (R)	24	15	9
Exudation Pressure (PSI)	598	445	247
Expansion Pressure	69	4	0

RESISTANCE VALUE AT 300 P.S.I. 11

AASHTO R18

Reviewed By: Craig Long
Craig W. Long
Laboratory Operations Manager

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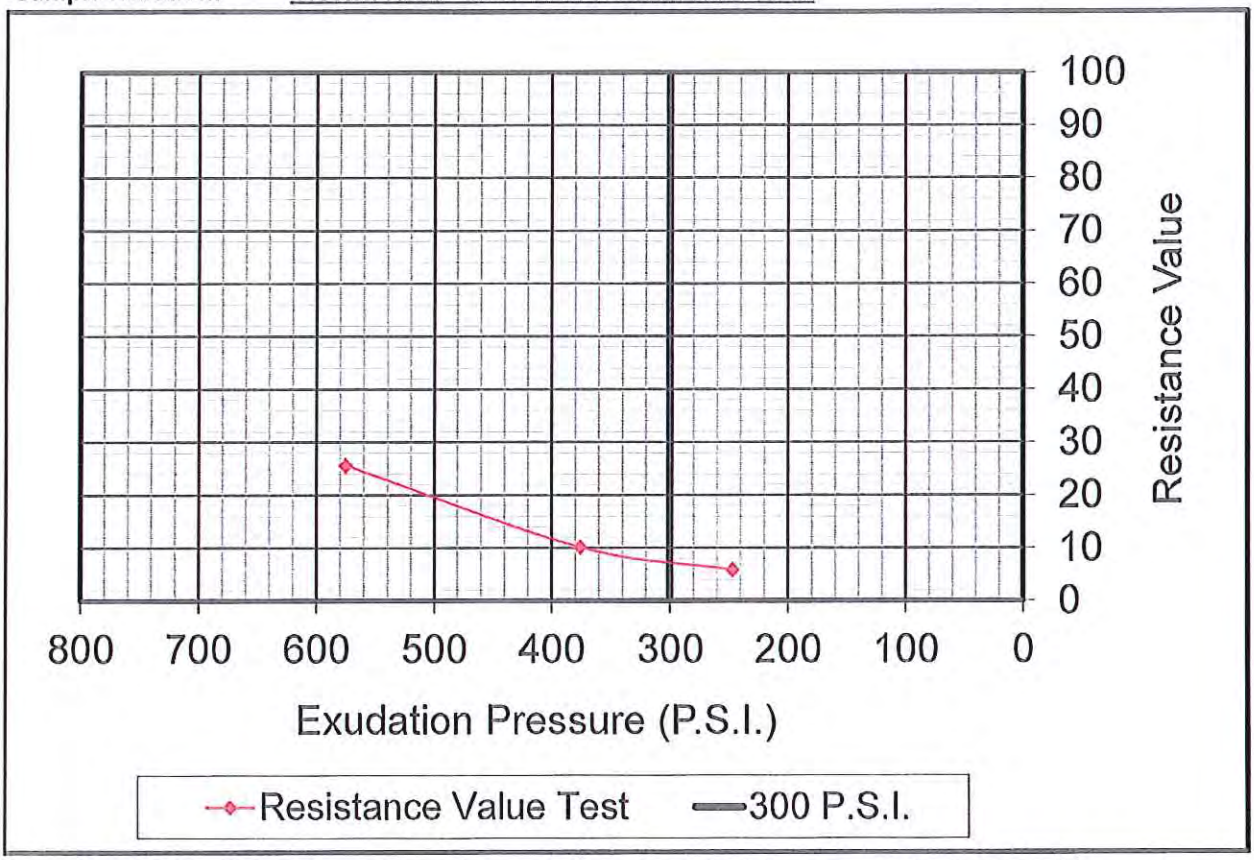
CalTrans/AMRL QC/QA ° Construction Management

RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.: L130083AU
Project No.: 130065
Sample Date: March 14, 2013
Report Date: April 11, 2013
Client: City of Paso Robles
Project Name: City of Paso Robles 2013 Pavement Analysis
Sample Description: Brown Clay with Sandy
Sample Location: Creston Road - 2250' East of South River Road



Specimen No.	1	2	3
Moisture Content (%)	18.3	19.8	17.3
Dry Density (PCF)	113.6	110.3	115.4
Resistance Value (R)	10	6	26
Exudation Pressure (PSI)	377	248	576
Expansion Pressure	0	0	48

RESISTANCE VALUE AT 300 P.S.I. 7

AASHTO R18

Reviewed By: Craig Long
Craig W. Long
Laboratory Operations Manager

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Pavement Engineering Inc.
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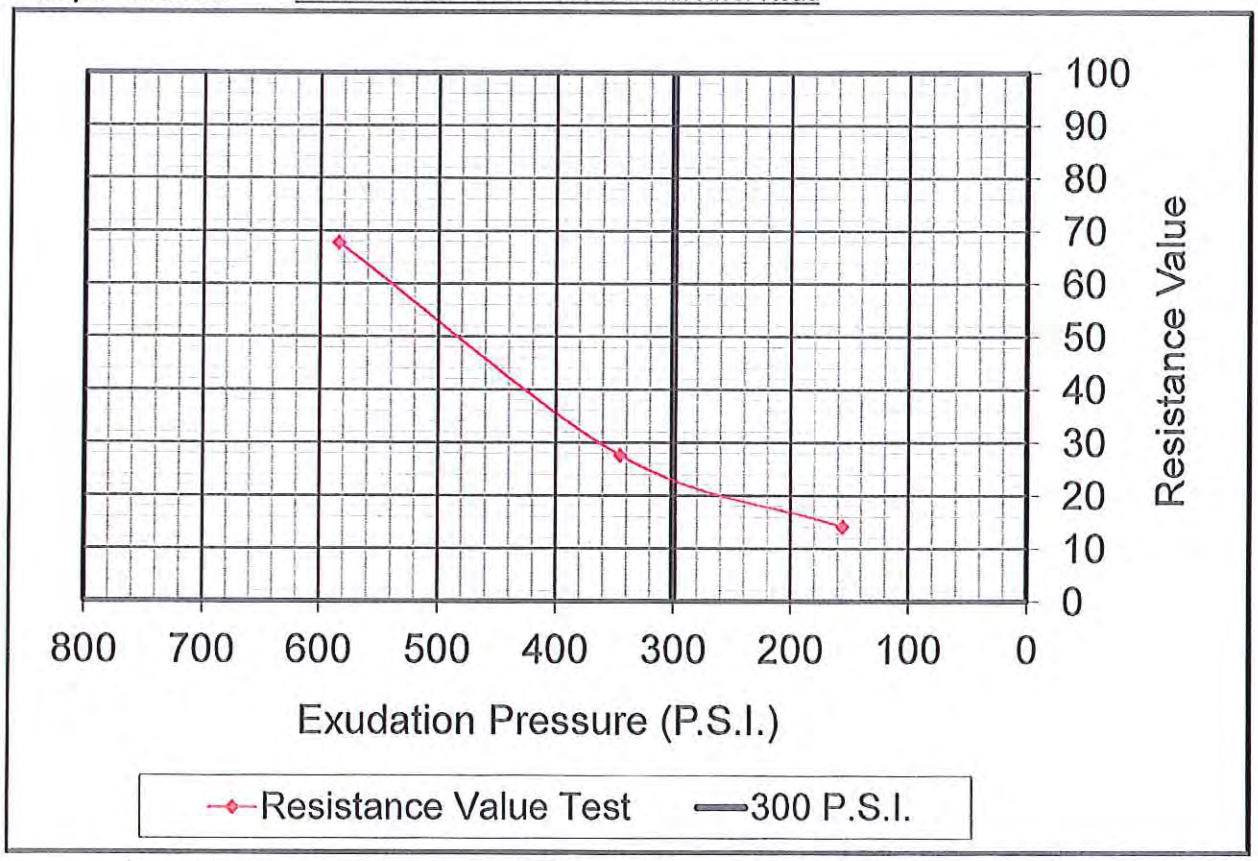
CalTrans/AMRL QC/QA ° Construction Management

RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.:	L130083BE
Project No.:	130065
Sample Date:	March 13, 2013
Report Date:	April 11, 2013
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Brown Sandy Silt
Sample Location:	Creston Road - 3150' East of South River Road



Specimen No.	1	2	3
Moisture Content (%)	14.2	15.1	13.4
Dry Density (PCF)	118.2	115.9	118.1
Resistance Value (R)	28	14	68
Exudation Pressure (PSI)	346	156	585
Expansion Pressure	0	0	0

RESISTANCE VALUE AT 300 P.S.I. 23

AAR® AASHTO R16

Reviewed By: Craig Long
Craig W. Long
Laboratory Operations Manager

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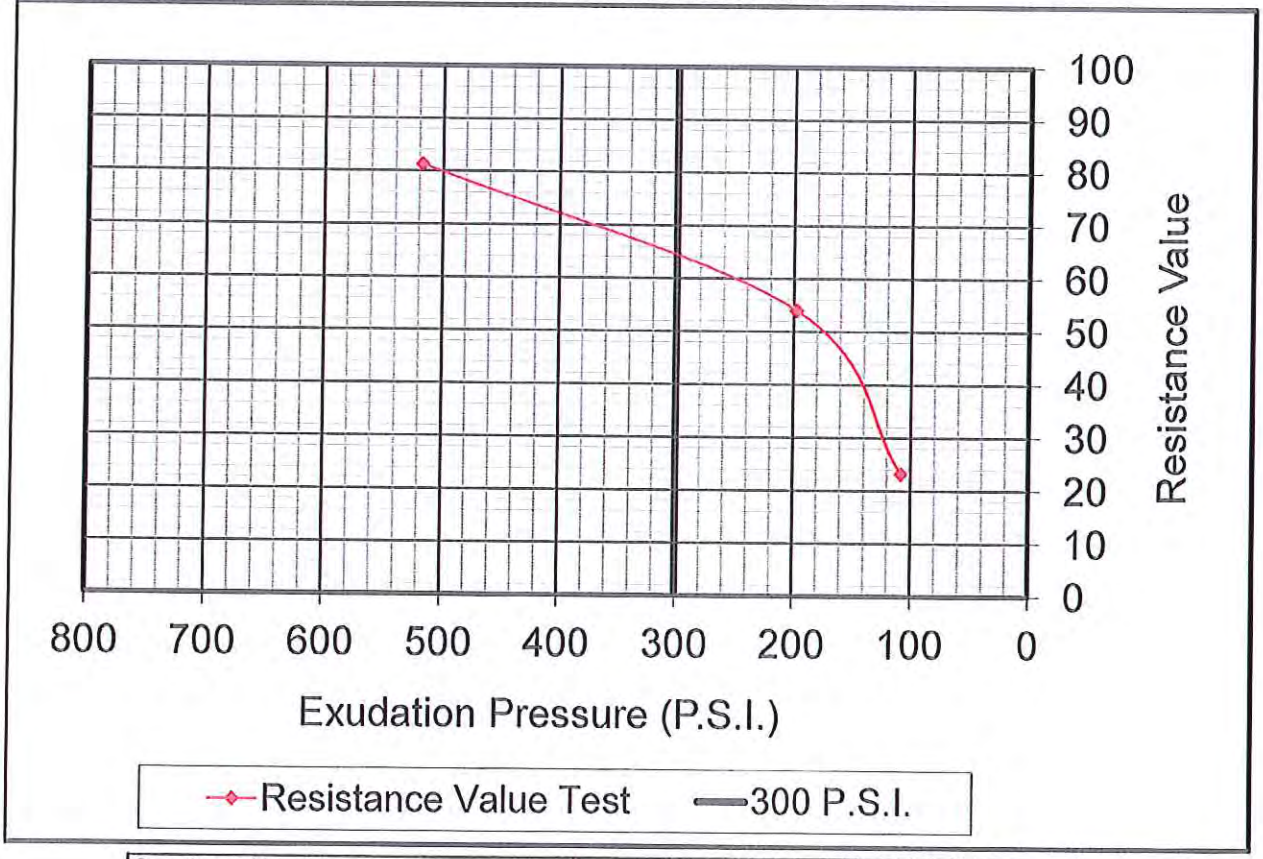
Pavement Engineering Inc.
Civil Engineering ° Landscape Architecture
CalTrans/AMRL QC/QA ° Construction Management

RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.:	L130083AI
Project No.:	130065
Sample Date:	March 13, 2013
Report Date:	April 4, 2013
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Light Tanish Clayey Sand with Gravel
Sample Location:	Creston Road - 4050' East of South River Road



Specimen No.	1	2	3
Moisture Content (%)	12.6	13.6	14.5
Dry Density (PCF)	115.2	114.1	113.2
Resistance Value (R)	81	54	23
Exudation Pressure (PSI)	518	198	109
Expansion Pressure	9	0	0

RESISTANCE VALUE AT 300 P.S.I. 65

AAP® AASHTO R18

Reviewed By: Craig Long
Craig W. Long
Laboratory Operations Manager

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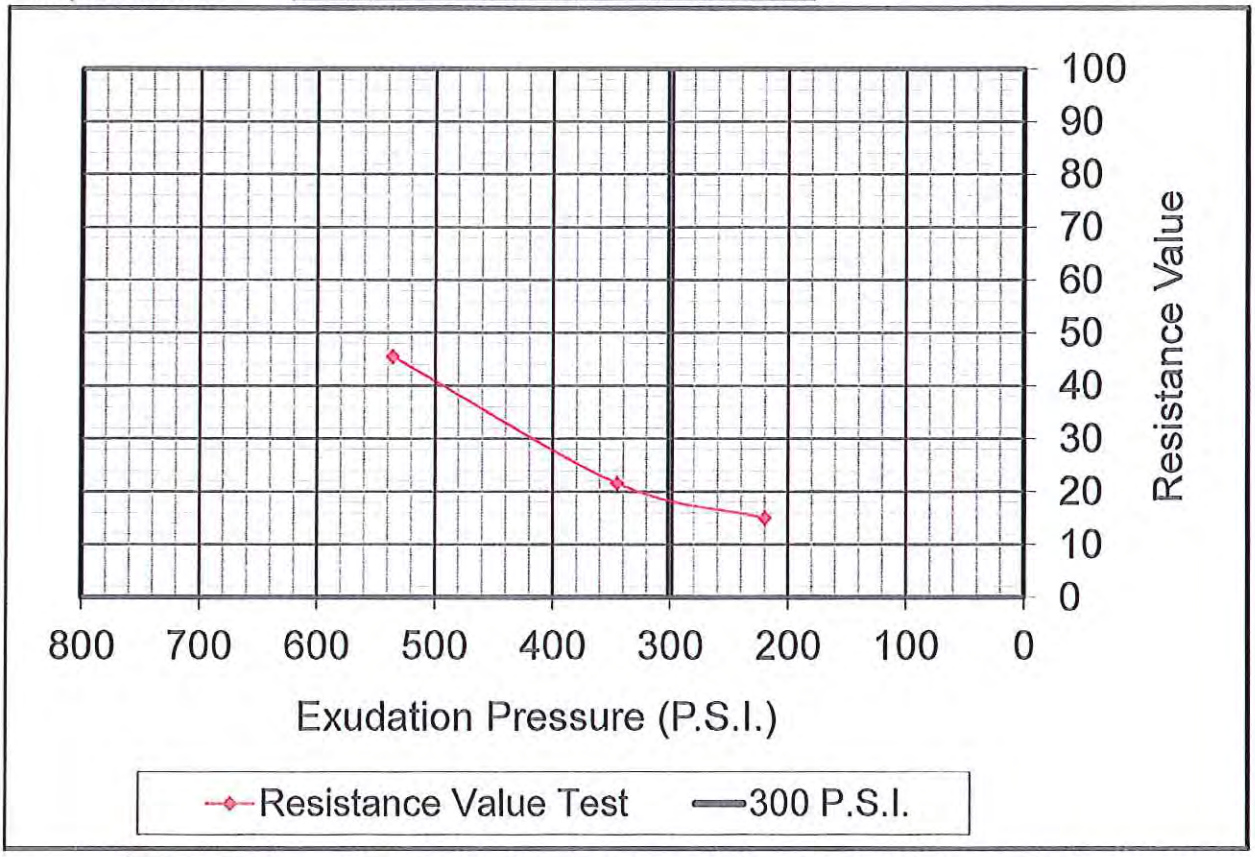
RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.:	L130083AO
Project No.:	130065
Sample Date:	March 13, 2013
Report Date:	April 11, 2013
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Brown Clayey Silt with Sand
Sample Location:	Creston Road - 4950' East of South River Road



Specimen No.	1	2	3
Moisture Content (%)	10.5	11.5	12.0
Dry Density (PCF)	126.1	124.4	123.8
Resistance Value (R)	46	22	15
Exudation Pressure (PSI)	536	346	221
Expansion Pressure	9	0	0

RESISTANCE VALUE AT 300 P.S.I. 18

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Reviewed By: Craig Long
Craig W. Long
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CRESTON ROAD – SOUTH RIVER ROAD TO ROLLING HILLS ROAD
Rolling Hills Road looking Westbound

CRESTON ROAD – SOUTH RIVER ROAD TO ROLLING HILLS ROAD
Nickerson Drive looking Westbound

CRESTON ROAD – SOUTH RIVER ROAD TO ROLLING HILLS ROAD
Tanner Drive looking Westbound

CRESTON ROAD – SOUTH RIVER ROAD TO ROLLING HILLS ROAD
North of South River Road looking Westbound