ROLLING HILLS ROAD – GOLDEN HILL ROAD TO CRESTON 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 inch HMA leveling course, pavement fabric and a 1-3/4 inch HMA overlay.

Estimated Cost: $586,000 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: $499,000 Estimated Life Expectancy: 10-12 Years

Recycle and Mill and Replace Options

These options are not available for this street because of the structural deficiencies and thin pavement layer.

Reconstruction Options

For option 1, we recommend removing the pavement to a depth of 11-1/2 inches and placing 11-1/2 inches of new HMA. The HMA should be placed in 4 lifts.

Estimated Cost: $2,129,000 Estimated Life Expectancy: 20 Years

For option 2, we recommend removing 6 inches of the existing structure, treating the native soil with lime plus cement to a depth of 13 inches and placing 6 inches of new HMA in 3 lifts.

Estimated Cost: $1,270,000 Estimated Life Expectancy: 20 Years

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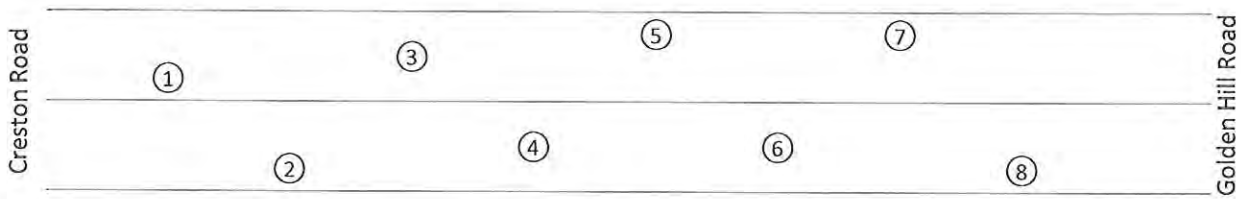

NOTES:
- NTS
- ACTUAL ROAD MAY NOT BE STRAIGHT
- NOT ALL ROADS CONNECTING TO THIS STREET ARE SHOWN
- WIDTH OF ROAD MAY VARY WITHIN THE BOUNDARY SECTION
- ALL LOCATIONS SHOWN ARE APPROXIMATED

Rolling Hills Road

[Section of Road ≈ 4300ft]

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

VISUAL DESCRIPTION FOR THIS SECTION OF ROAD

CORING LOG

Symbol	Location	Core Data		R-value
1	North of Creston Road 450ft	AC AB	3.50" 14.00"	29
2	North of Creston Road 900ft	AC AB	4.00" 4.00"	-
3	North of Creston Road 1350ft	AC AB	3.50" 11.50"	9
4	North of Creston Road 1800ft	AC AB	8.00" NO BASE	-
5	North of Creston Road 2250ft	AC AB	3.50" 4.00"	67
6	North of Creston Road 2700ft	AC AB	2.00" 10.00"	-
7	North of Creston Road 3150ft	AC AB	4.00" 24.00"+	-
8	North of Creston Road 3600ft	AC AB	4.50" 9.50"	15

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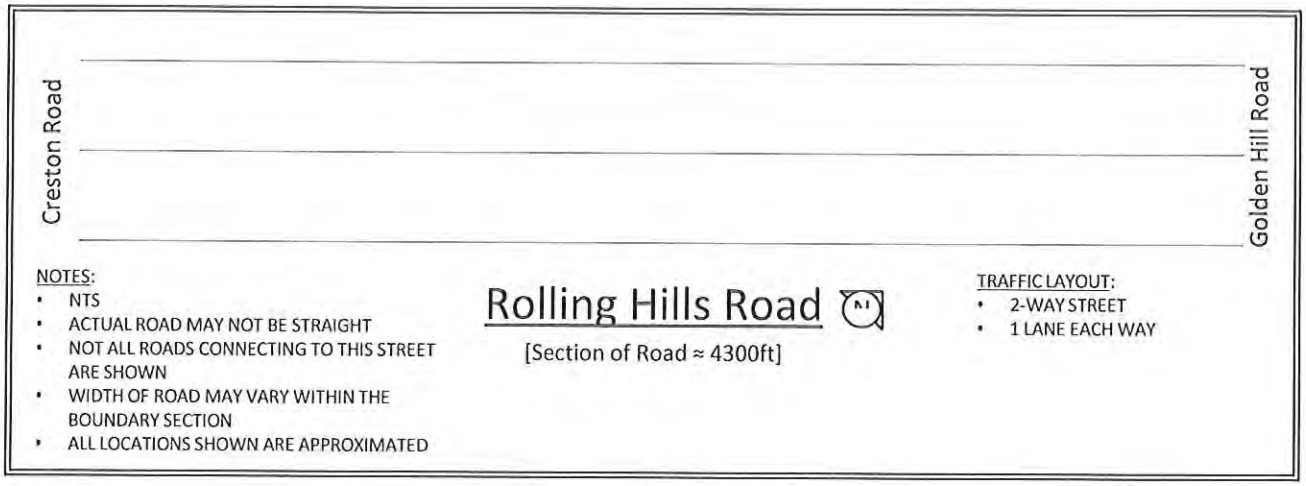

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TRAFFIC LAYOUT:
- 2-WAY STREET
- 1 LANE EACH WAY

DEFLECTION ANALYSIS					
Lane	Tolerable	TI	80th Percentile	Percent Reduction	HMA Overlay
North Bound	21	8.0	24.83	15.43	0.48 - inches
South Bound	21	8.0	34.73	39.53	2.64 - inches
				Overlay Required by Reflective Cracking	2.00 - inches

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03/27/13

City of Paso Robles

Road: Rolling Hills
From: Creston
To: Golden Hill
Lane/Line: NB

Survey Date: 03/13/13
Thickness: 0.33
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
42	10.84	20.29	33.98	5.41

Road Surface

Thickness	Traffic Index
0.33	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
21.00	24.83	27.21	15.43	0.07

HMA Overlay
0.04

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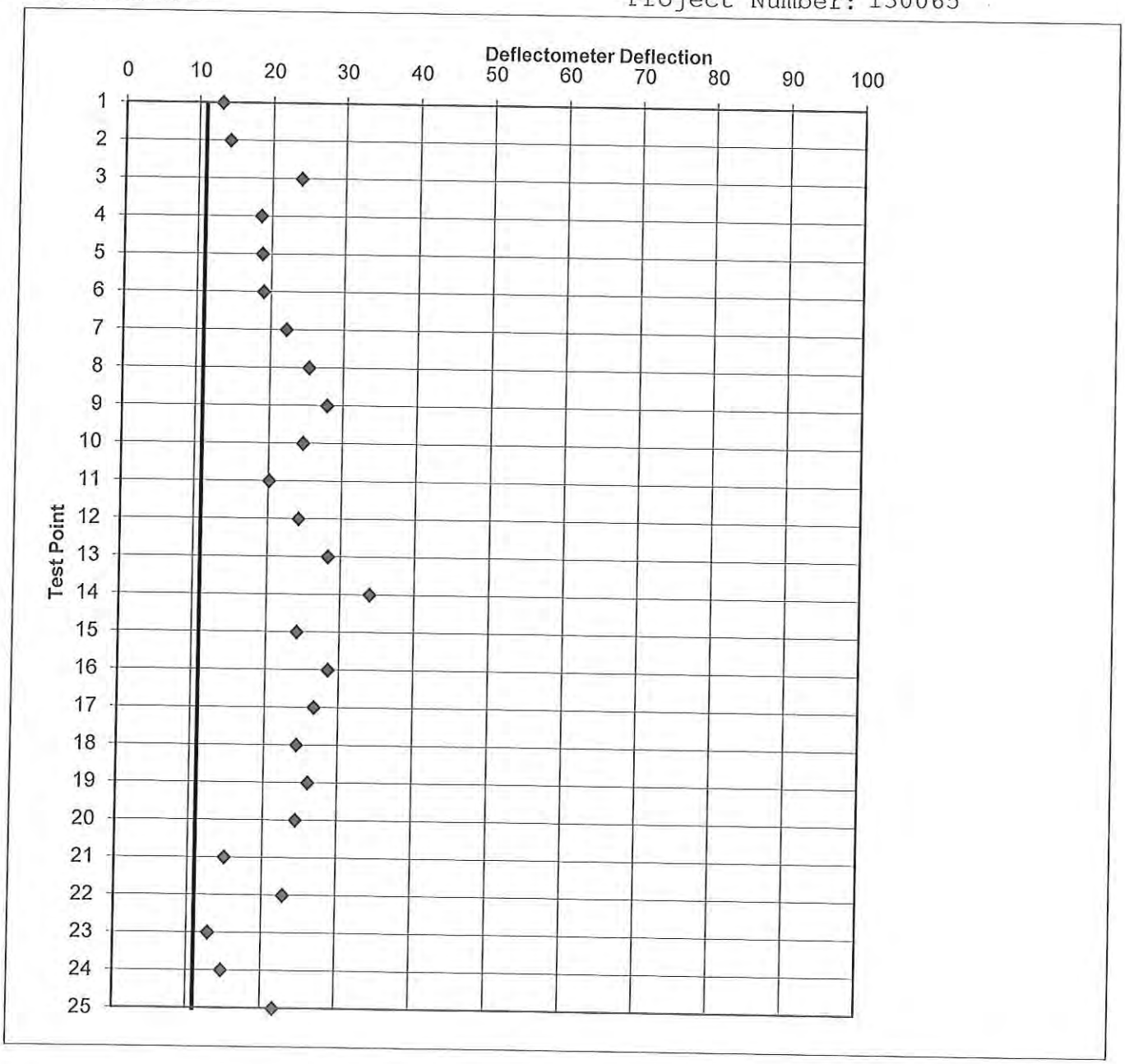
City of Paso Robles

Road: Rolling Hills
From: Creston
To: Golden Hill
Lane/Line: NB

Survey Date: 03/13/13
Thickness: 0.33
Traffic Index: 8.00
Project Number: 130065



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Date: 3/27/2013

Client: City of Paso Robles
Road: Rolling Hills
From: Creston
To: Golden Hill
Lane/Line: NB

Interval: 100
Survey Date: 3/13/13
Thickness: 0.33
Traffic Index: 8.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.60			13.112	
2	0.65			14.246	
3	1.08			24.002	
4	0.84			18.557	
5	0.85			18.784	
6	0.86			19.010	
7	1.00		Tranquil Hills	22.187	
8	1.14			25.363	
9	1.25			27.858	
10	1.11		Hacienda	24.682	
11	0.91			20.145	
12	1.09			24.228	
13	1.27		Vista Grande	28.312	
14	1.52			33.984	
15	1.09			24.228	
16	1.28			28.539	
17	1.20			26.724	
18	1.10			24.455	
19	1.17			26.043	
20	1.10			24.455	
21	0.68			14.927	
22	1.03			22.867	
23	0.59			12.885	
24	0.67			14.700	
25	0.98			21.733	
26	1.10			24.455	
27	0.50			10.843	
28	0.70			15.381	
29	0.57		Salidad El Sol	12.431	
30	0.67			14.700	
31	0.63			13.793	

32	0.82			18.103	
33	0.60			13.112	
34	0.64			14.019	
35	0.86		Summit	19.010	
36	0.95			21.052	
37	0.79			17.422	
38	0.84			18.557	
39	0.81			17.876	
40	0.90			19.918	
41	0.92			20.372	
42	1.12			24.909	

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City of Paso Robles

Road: Rolling Hills
From: Golden Hill
To: Creston
Lane/Line: SB

Survey Date: 03/14/13
Thickness: 0.33
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
42	9.71	27.15	49.64	9.02

Road Surface

Thickness	Traffic Index
0.33	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
21.00	34.73	38.70	39.53	0.41

HMA Overlay
0.22

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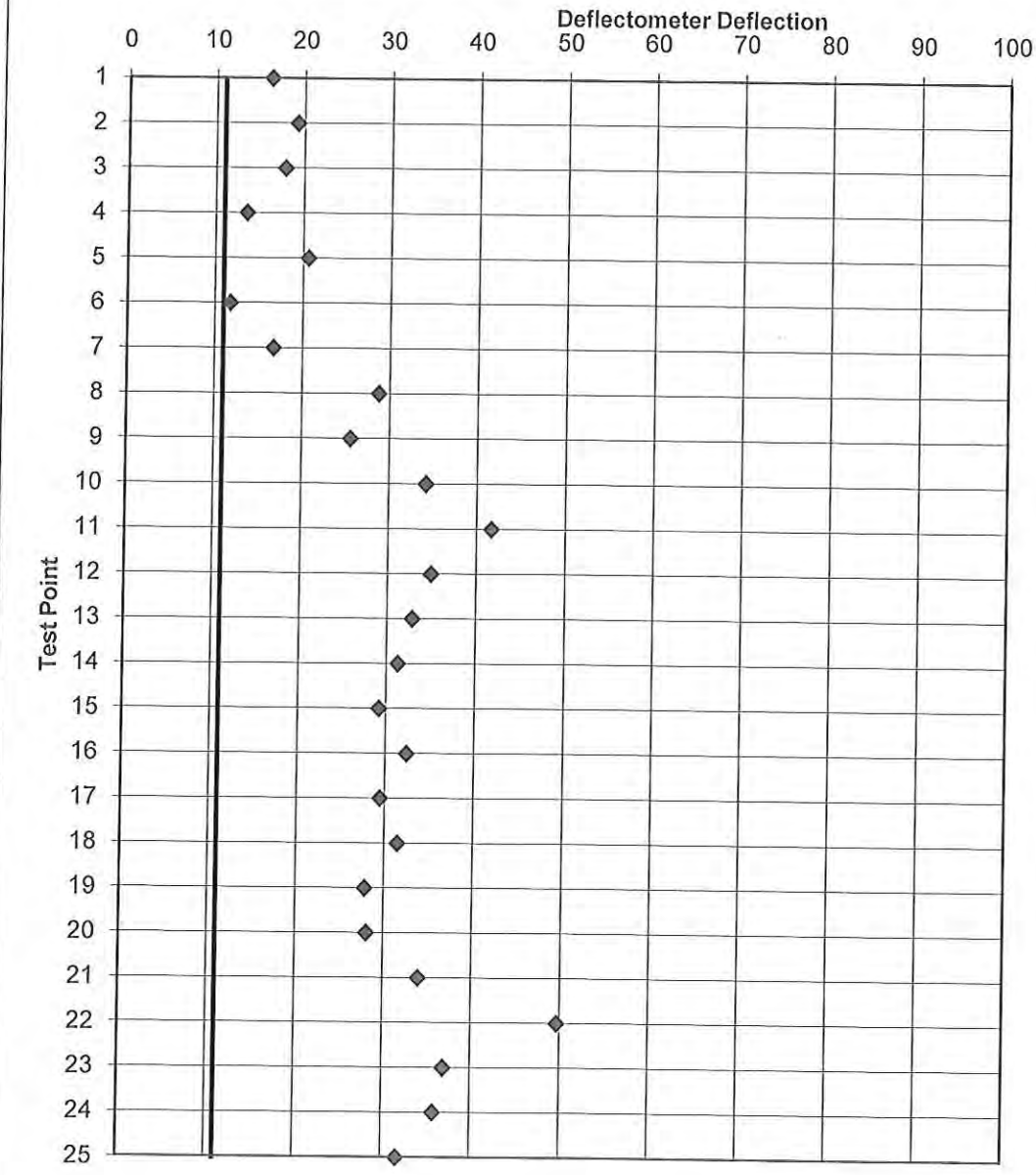
City of Paso Robles

Road: Rolling Hills
From: Golden Hill
To: Creston
Lane/Line: SB

Survey Date: 03/14/13
Thickness: 0.33
Traffic Index: 8.00
Project Number: 130065



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Date: 3/27/2013

Client: City of Paso Robles
Road: Rolling Hills
From: Golden Hill
To: Creston
Lane/Line: SB

Interval: 100
Survey Date: 3/14/13
Thickness: 0.33
Traffic Index: 8.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.74			16.288	
2	0.87			19.237	
3	0.81			17.876	
4	0.62			13.566	
5	0.93			20.599	
6	0.54			11.751	
7	0.76		Summit	16.742	
8	1.29			28.766	
9	1.15			25.590	
10	1.53			34.211	
11	1.86			41.697	
12	1.56		Salidad El Sol	34.891	
13	1.47			32.849	
14	1.40			31.261	
15	1.31			29.219	
16	1.45			32.396	
17	1.32			29.446	
18	1.41			31.488	
19	1.25			27.858	
20	1.26			28.085	
21	1.52			33.984	
22	2.21			49.637	
23	1.65			36.933	
24	1.60			35.799	
25	1.42			31.715	
26	1.45			32.396	
27	1.32			29.446	
28	1.80			40.336	
29	1.37			30.581	
30	1.30		Vista Grande	28.993	
31	1.43			31.942	

32	1.77			39.655	
33	1.12		Start Digout	24.909	
34	1.00			22.187	
35	1.05		Tranquil Hills	23.321	
36	0.58			12.658	
37	0.45			9.709	
38	1.12		Before End of Digout	24.909	
39	1.05			23.321	
40	1.10			24.455	
41	0.51			11.070	
42	0.83			18.330	

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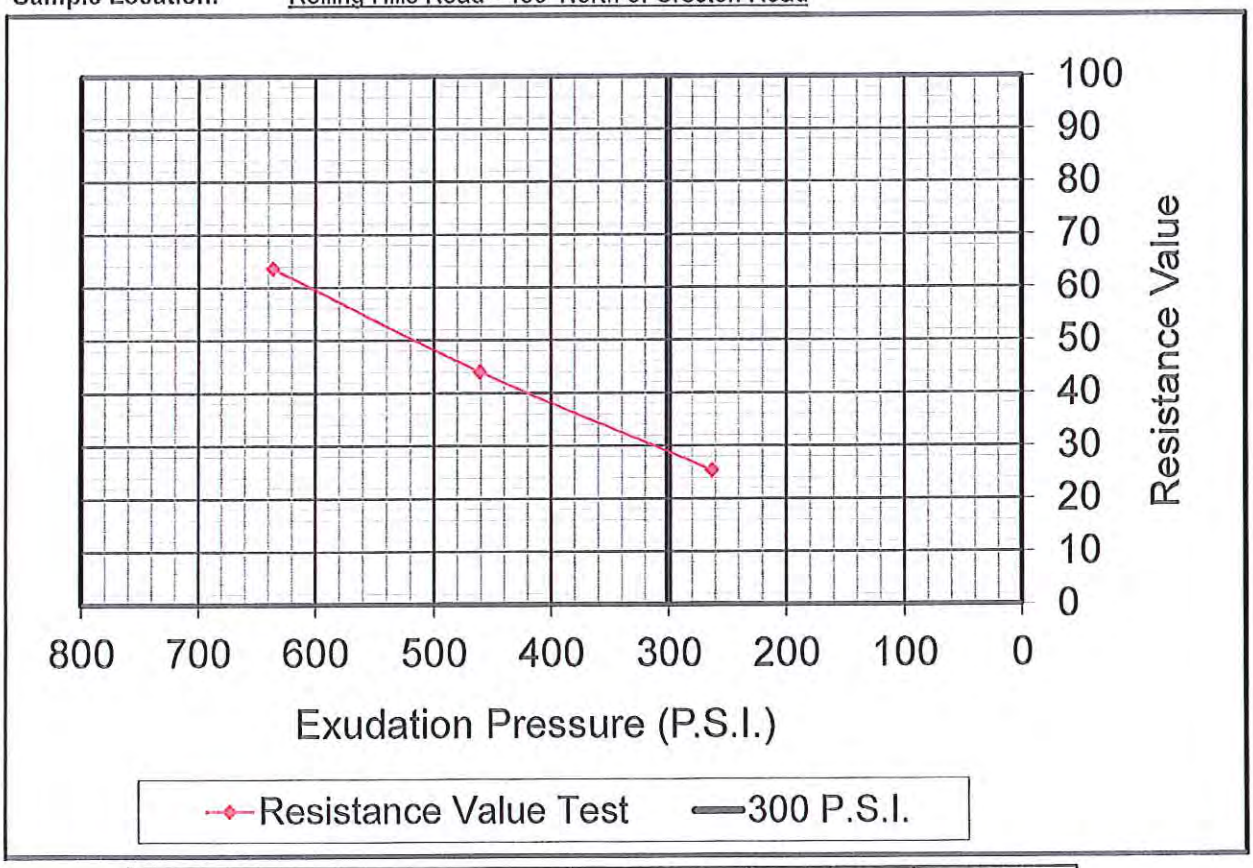
RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.:	L130083AL
Project No.:	130065
Sample Date:	March 14, 2013
Report Date:	April 10, 2011
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Dark Brown Sandy Silt
Sample Location:	Rolling Hills Road - 450' North of Creston Road



Specimen No.	1	2	3
Moisture Content (%)	22.9	23.9	24.8
Dry Density (PCF)	93.8	93.2	92.2
Resistance Value (R)	64	44	25
Exudation Pressure (PSI)	636	462	263
Expansion Pressure	0	0	0

RESISTANCE VALUE AT 300 P.S.I. 29

AASHTO R18

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

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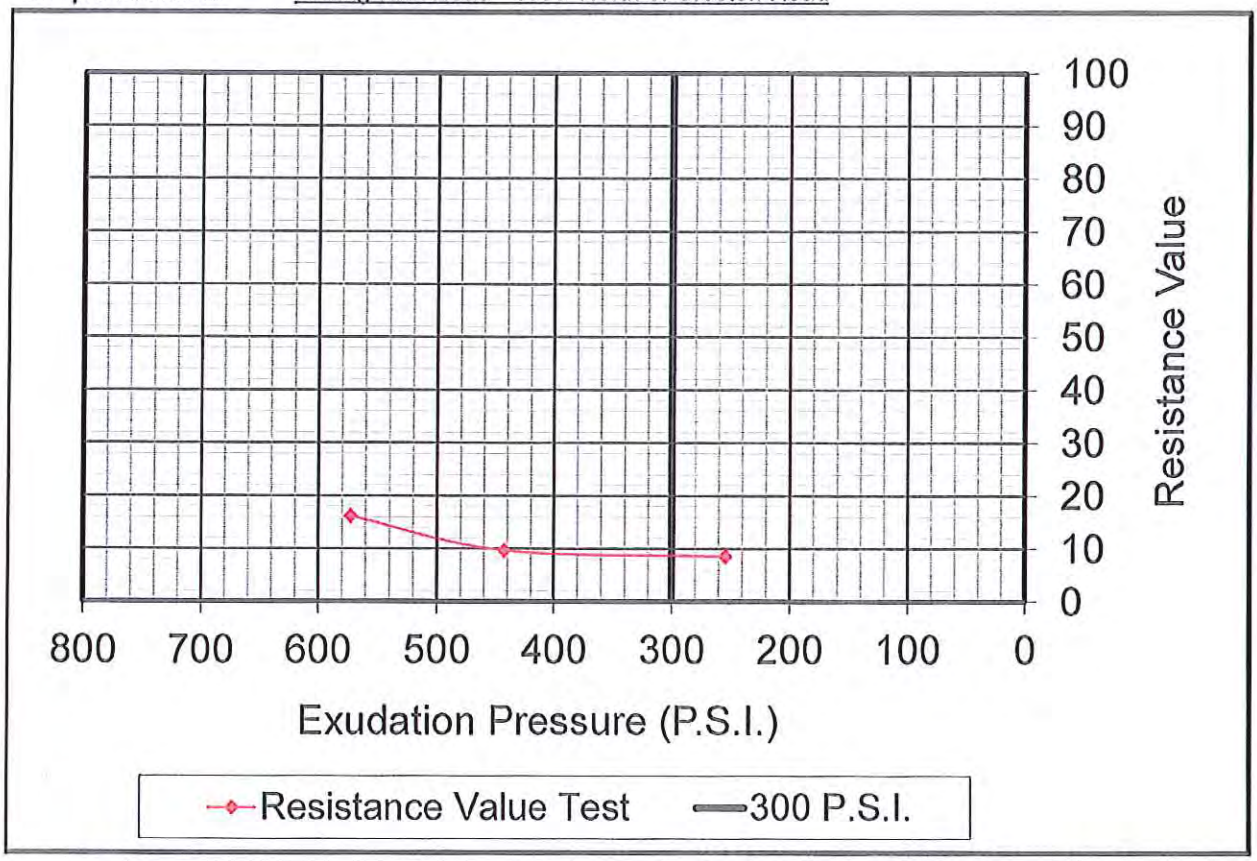
RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.:	L130083AY
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:	Rolling Hills Road - 1350' North of Creston Road



Specimen No.	1	2	3
Moisture Content (%)	18.9	20.4	21.2
Dry Density (PCF)	111.7	108.8	108.4
Resistance Value (R)	16	10	9
Exudation Pressure (PSI)	573	443	255
Expansion Pressure	130	17	13

RESISTANCE VALUE AT 300 P.S.I. 9

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Reviewed By: Craig Long

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Laboratory Operations Manager

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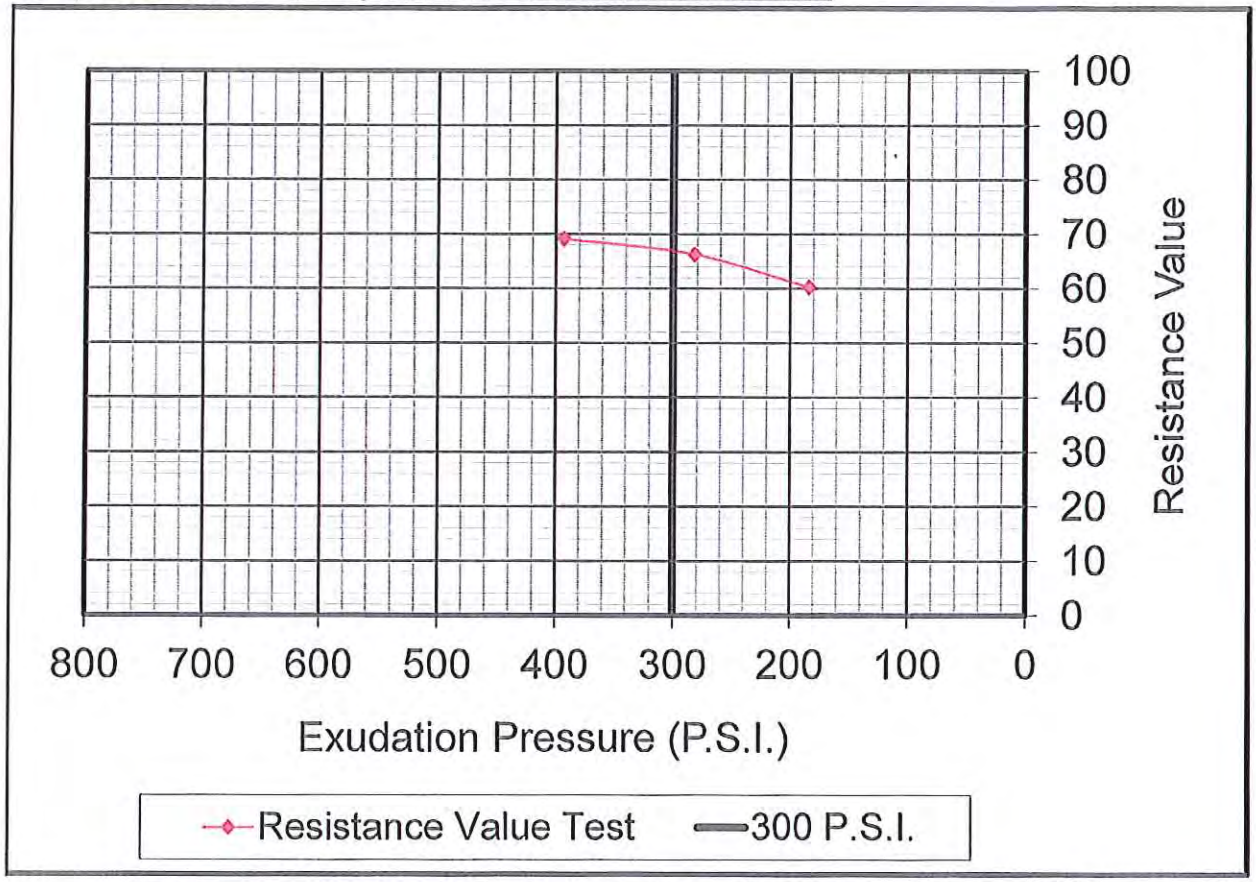
RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.:	L130083AB
Project No.:	130065
Sample Date:	March 15, 2013
Report Date:	March 25, 2013
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Light Brown Sand with Gravel
Sample Location:	Rolling Hills Road - 2250' North of Creston Road



Specimen No.	1	2	3
Moisture Content (%)	8.2	8.6	7.8
Dry Density (PCF)	129.1	128.2	129.8
Resistance Value (R)	66	60	69
Exudation Pressure (PSI)	283	184	394
Expansion Pressure	0	0	0

RESISTANCE VALUE AT 300 P.S.I. 67

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Laboratory Operations Manager

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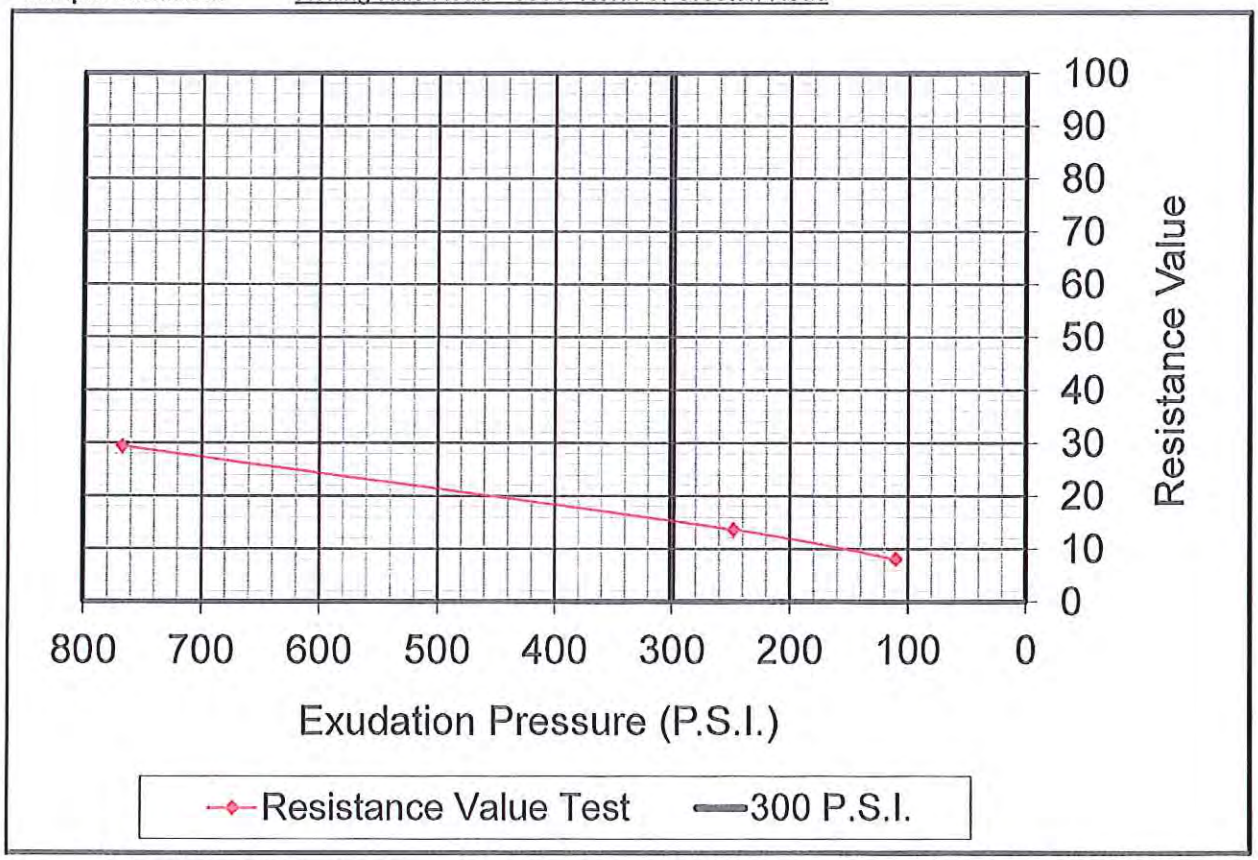
RESISTANCE (R) VALUE TEST
ASTM D 2844

Laboratory No.:	L130083AE
Project No.:	130065
Sample Date:	March 15, 2013
Report Date:	April 4, 2013
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Brown Silty Clay with Gravel
Sample Location:	Rolling Hills Road - 3600' North of Creston Road



Specimen No.	1	2	3
Moisture Content (%)	10.4	11.3	13.1
Dry Density (PCF)	125.0	121.4	115.3
Resistance Value (R)	29	14	8
Exudation Pressure (PSI)	768	249	111
Expansion Pressure	195	134	61

RESISTANCE VALUE AT 300 P.S.I. 15

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ROLLING HILLS ROAD – GOLDEN HILL ROAD TO CRESTON ROAD
Golden Hill Road looking Southbound

ROLLING HILLS ROAD – GOLDEN HILL ROAD TO CRESTON ROAD
Salida Del Sol looking Northbound

ROLLING HILLS ROAD – GOLDEN HILL ROAD TO CRESTON ROAD
Vista Grande looking Northbound

ROLLING HILLS ROAD – GOLDEN HILL ROAD TO CRESTON ROAD
Creston Road looking Northbound