CRESTON ROAD – SHERWOOD ROAD TO SCOTT STREET

RECOMMENDATIONS

Pavement Maintenance Options (Short-Term)

For Option 1, we recommend placing a 1-1/4 inch TMO (thin maintenance overlay).

Estimated Cost: $336,000 Estimated Life Expectancy: 3-5 Years

For Option 2, we recommend placing a Cape Seal.

Estimated Cost: $297,000 Estimated Life Expectancy: 3-5 Years

For Option 3, we recommend placing a 1/2 inch leveling course and a 1-1/4 inch TMO (thin maintenance overlay).

Estimated Cost: $445,000 Estimated Life Expectancy: 5-7 Years

For Option 4, we recommend placing a 1/2 inch leveling course and placing a Cape Seal.

Estimated Cost: $406,000 Estimated Life Expectancy: 5-7 Years

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: $483,000 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: $486,000 Estimated Life Expectancy: 10-12 Years

Recycle and Mill and Replace Options

For option 1, we recommend milling off 2 inches of existing asphalt concrete, 4 inch digouts of base failure, ½ inch HMA leveling course, fabric and placing 1-3/4 inches of HMA.

Estimated Cost: $542,000 Estimated Life Expectancy: 12-15 Years

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

Estimated Cost: $429,000 Estimated Life Expectancy: 12-15 Years

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

Estimated Cost: $455,000 Estimated Life Expectancy: 12-15 Years

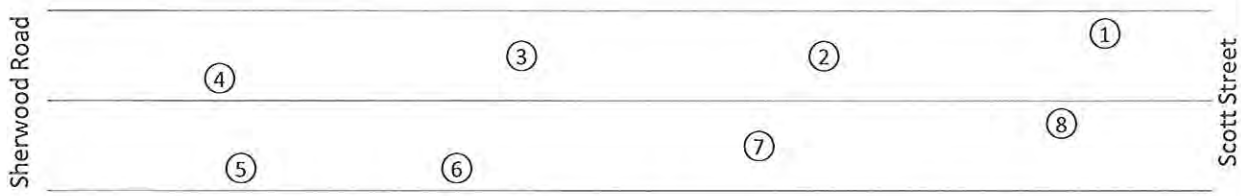
Reconstruction Options

For option 1, we recommend removing the pavement to a depth of 8 inches and placing 8 inches of new HMA. The HMA should be placed in 3 lifts.

Estimated Cost: $1,796,000 Estimated Life Expectancy: 20 Years

Full depth HMA is the only option recommended for reconstruction because of the thick existing aggregate base section.

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



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 ≈ 2700ft]

TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY WITH MIDDLE TURN LANE

VISUAL DESCRIPTION FOR THIS SECTION OF ROAD

The pavement exhibits moderate weathering and raveling, moderate block shrinkage cracking and longitudinal and transverse cracking. No previous maintanace.

CORING LOG

Symbol	Location	Core Data		R-value
1	North of Scott Street 250ft	AC AB	5.00" 17.00"	58
2	North of Scott Street 900ft	AC AB	4.25" 14.25"	12
3	North of Scott Street 1600ft	AC AB	4.00" 16.00"	24
4	North of Scott Street 2300ft	AC AB	4.25" 13.75"	-
5	South of Sherwood Road 450ft	AC AB	5.00" 18.50"	-
6	South of Sherwood Road 950ft	AC AB	7.25" 18.75"	-
7	South of Sherwood Road 1650ft	AC AB	5.00" 13.75"	-
8	South of Sherwood Road 2350ft	AC AB	8.00" 16.75"	-

3820 Cypress Drive, Suite 3 • Petaluma, CA • 94954-5613 • Tel. (707) 769-5330 • Fax (707) 769-5333
20260 Skypark Drive • Redding, CA • 96002-9221 • Tel. (530) 224-4535 • Fax (530) 224-4539
3485 Sacramento Drive, Suite A • San Luis Obispo, CA • 93401-7156 • Tel. (805) 781-2265 • Fax (805) 781-2267

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

Sherwood Road

Scott Street

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 ≈ 2700ft]

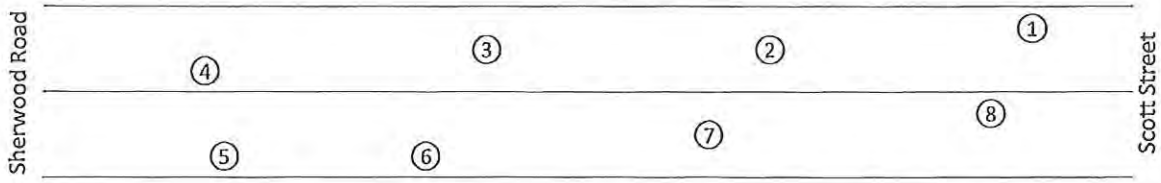
TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY WITH MIDDLE TURN LANE

DEFLECTION ANALYSIS

Lane		Tolerable	TI	80th Percentile	Percent Reduction	HMA Overlay
North	1	19	8.0	14.03	0.00	0.00 - inches
Bound	2	19	8.0	14.93	0.00	0.00 - inches
South	1	19	8.0	11.8	0.00	0.00 - inches
Bound	2	19	8.0	13.51	0.00	0.00 - inches
					Overlay Required by Reflective Cracking	2.50 - inches

3820 Cypress Drive, Suite 3 • Petaluma, CA • 94954-5613 • Tel. (707) 769-5330 • Fax (707) 769-5333
20260 Skypark Drive • Redding, CA • 96002-9221 • Tel. (530) 224-4535 • Fax (530) 224-4539
3485 Sacramento Drive, Suite A • San Luis Obispo, CA • 93401-7156 • Tel. (805) 781-2265 • Fax (805) 781-2267

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



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 ≈ 2700ft]

N

TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY WITH MIDDLE TURN LANE

VISUAL DESCRIPTION FOR THIS SECTION OF ROAD

CORING LOG

Symbol	Location	Core Data		R-value
1	North of Scott Street 250ft	AC AB	5.00" 17.00"	58
2	North of Scott Street 900ft	AC AB	4.25" 14.25"	12
3	North of Scott Street 1600ft	AC AB	4.00" 16.00"	24
4	North of Scott Street 2300ft	AC AB	4.25" 13.75"	-
5	South of Sherwood Road 450ft	AC AB	5.00" 18.50"	-
6	South of Sherwood Road 950ft	AC AB	7.25" 18.75"	-
7	South of Sherwood Road 1650ft	AC AB	5.00" 13.75"	-
8	South of Sherwood Road 2350ft	AC AB	8.00" 16.75"	-

3820 Cypress Drive, Suite 3 • Petaluma, CA • 94954-5613 • Tel. (707) 769-5330 • Fax (707) 769-5333
20260 Skypark Drive • Redding, CA • 96002-9221 • Tel. (530) 224-4535 • Fax (530) 224-4539
3485 Sacramento Drive, Suite A • San Luis Obispo, CA • 93401-7156 • Tel. (805) 781-2265 • Fax (805) 781-2267

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

Sherwood Road

Scott Street

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 ≈ 2700ft]

N

TRAFFIC LAYOUT:
- 2-WAY STREET
- 2 LANE EACH WAY WITH MIDDLE TURN LANE

PHOTO LOG

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

DEFLECTION ANALYSIS

Lane		Tolerable	TI	80th Percentile	Percent Reduction	HMA Overlay
North	1	19	8.0	14.03	0.00	0.00 - Inches
Bound	2	19	8.0	14.93	0.00	0.00 - Inches
South	1	19	8.0	11.8	0.00	0.00 - Inches
Bound	2	19	8.0	13.51	0.00	0.00 - Inches
					Overlay Required by Reflective Cracking	2.50 - Inches

3820 Cypress Drive, Suite 3 • Petaluma, CA • 94954-5613 • Tel. (707) 769-5330 • Fax (707) 769-5333
20260 Skypark Drive • Redding, CA • 96002-9221 • Tel. (530) 224-4535 • Fax (530) 224-4539
3485 Sacramento Drive, Suite A • San Luis Obispo, CA • 93401-7156 • Tel. (805) 781-2265 • Fax (805) 781-2267

PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Scott
To: Sherwood
Lane/Line: N2

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
27	8.57	13.14	19.01	2.13

Road Surface

Thickness	Traffic Index
0.42	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
19.00	14.93	15.87	0.00	0.00

HMA Overlay
0.00

PAVEMENT ENGINEERING INCORPORATED

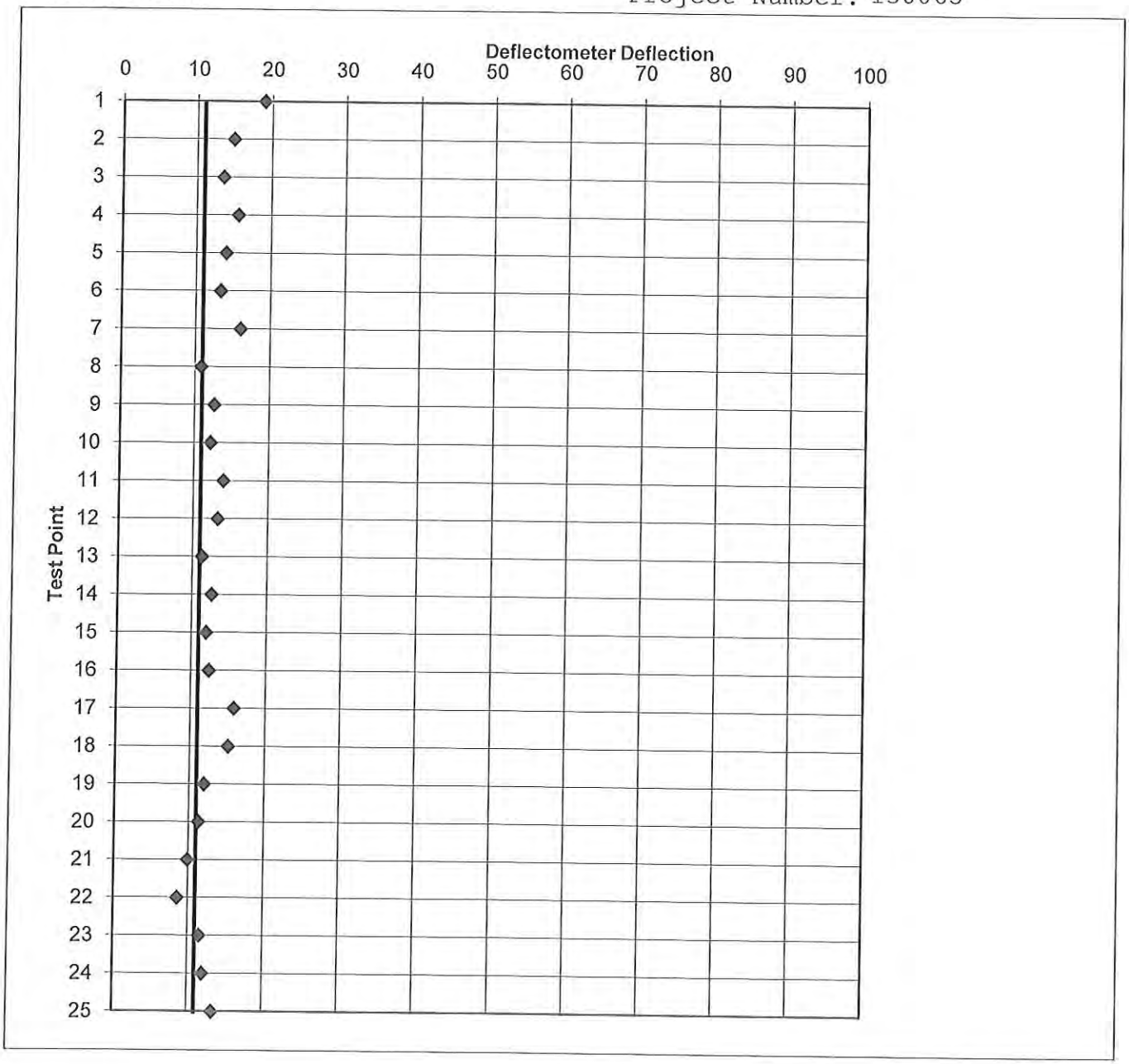
Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Scott
To: Sherwood
Lane/Line: N2

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065



PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

Date: 3/27/2013

Client: City of Paso Robles
Road: Creston
From: Scott
To: Sherwood
Lane/Line: N2

Interval: 100
Survey Date: 3/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.86			19.010	
2	0.68		Flagway	14.927	
3	0.62			13.566	
4	0.71			15.608	
5	0.64			14.019	
6	0.61			13.339	
7	0.73		Santa Ynez	16.061	
8	0.50			10.843	
9	0.58			12.658	
10	0.56			12.205	
11	0.64			14.019	
12	0.61			13.339	
13	0.52			11.297	
14	0.58			12.658	
15	0.55		Santa Ysabel	11.978	
16	0.57			12.431	
17	0.72			15.834	
18	0.69			15.154	
19	0.55			11.978	
20	0.52			11.297	
21	0.46			9.936	
22	0.40		Santa Fe	8.575	
23	0.53			11.524	
24	0.55			11.978	
25	0.61			13.339	
26	0.59			12.885	
27	0.65			14.246	

PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Sherwood
To: Scott
Lane/Line: S2

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
27	7.44	11.56	15.61	2.32

Road Surface

Thickness	Traffic Index
0.42	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
19.00	13.51	14.53	0.00	0.00

HMA Overlay
0.00

PAVEMENT ENGINEERING INCORPORATED

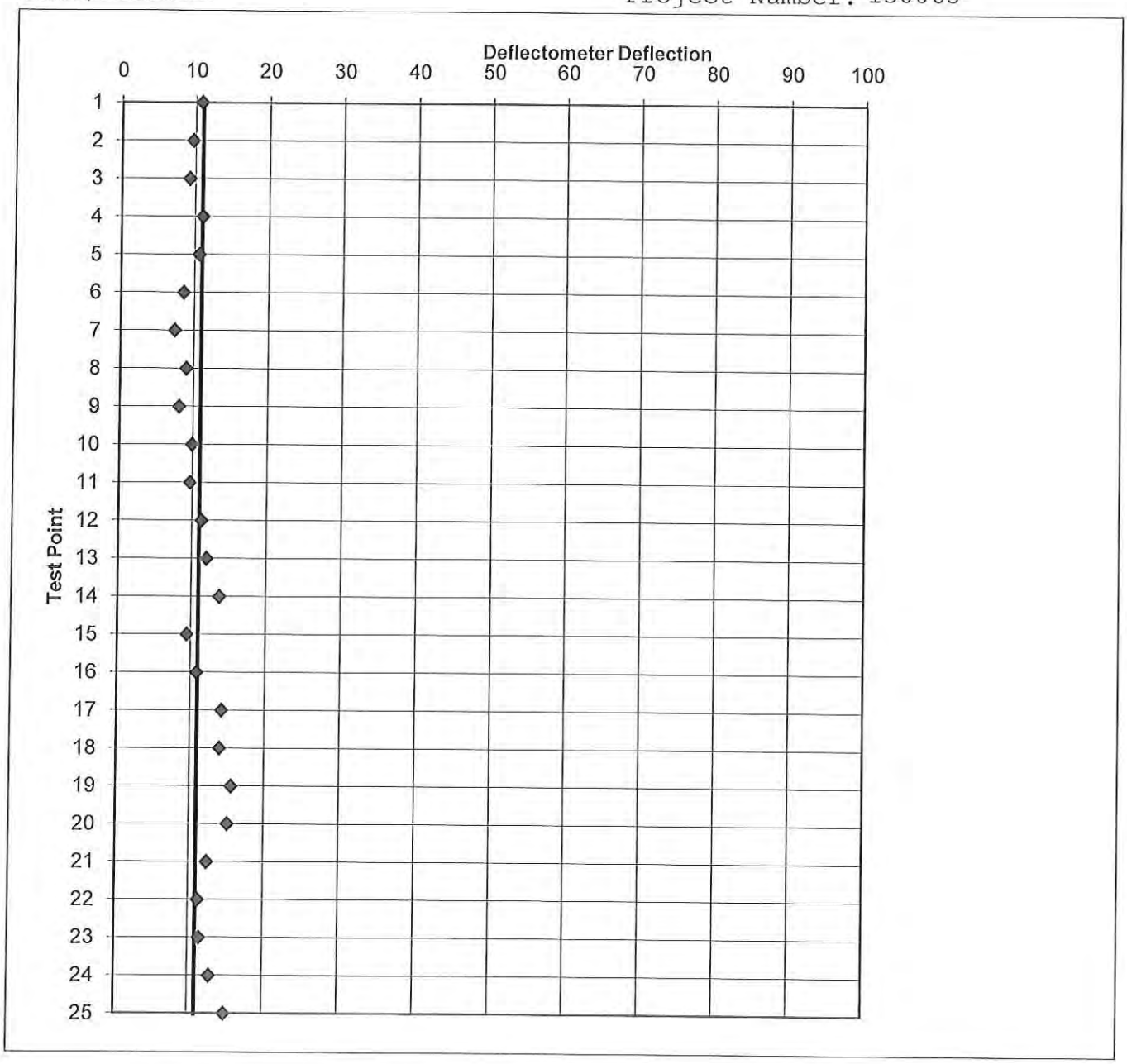
Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Sherwood
To: Scott
Lane/Line: S2

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065



PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | **Petaluma** (707) 769-5330 | **San Luis Obispo** (805) 781-2265

Date: 3/27/2013

Client: City of Paso Robles
Road: Creston
From: Sherwood
To: Scott
Lane/Line: S2

Interval: 100
Survey Date: 3/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.50			10.843	
2	0.45			9.709	
3	0.43			9.255	
4	0.51			11.070	
5	0.49		Santa Fe	10.616	
6	0.40			8.575	
7	0.35			7.440	
8	0.42			9.028	
9	0.38			8.121	
10	0.46			9.936	
11	0.45		Santa Ysabel	9.709	
12	0.52			11.297	
13	0.55			11.978	
14	0.63			13.793	
15	0.44			9.482	
16	0.50			10.843	
17	0.65			14.246	
18	0.64			14.019	
19	0.71		Santa Ynez	15.608	
20	0.69			15.154	
21	0.57			12.431	
22	0.52			11.297	
23	0.53			11.524	
24	0.59			12.885	
25	0.68		Flagway	14.927	
26	0.65			14.246	
27	0.64			14.019	

PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Scott
To: Sherwood
Lane/Line: N1

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
27	7.44	11.65	18.10	2.83

Road Surface

Thickness	Traffic Index
0.42	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
19.00	14.03	15.27	0.00	0.00

HMA Overlay
0.00

PAVEMENT ENGINEERING INCORPORATED

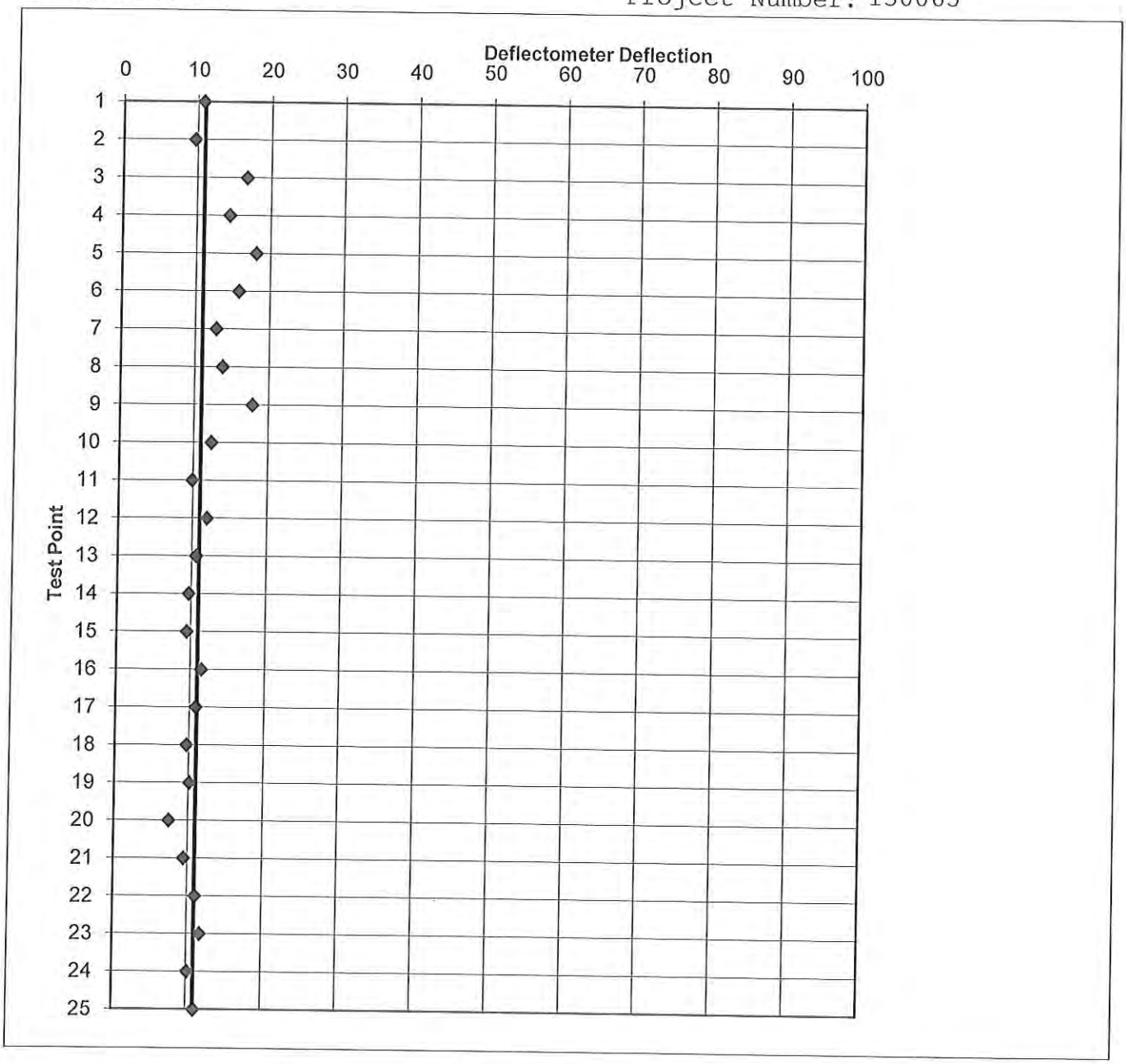
Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Scott
To: Sherwood
Lane/Line: N1

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065



PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

Date: 3/27/2013

Client: City of Paso Robles
Road: Creston
From: Scott
To: Sherwood
Lane/Line: N1

Interval: 100
Survey Date: 3/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.50		Flagway	10.843	
2	0.45			9.709	
3	0.76			16.742	
4	0.66			14.473	
5	0.82			18.103	
6	0.72		Santa Ynez	15.834	
7	0.59			12.885	
8	0.63			13.793	
9	0.81			17.876	
10	0.57			12.431	
11	0.46		Santa Ysabel	9.936	
12	0.55			11.978	
13	0.49			10.616	
14	0.45			9.709	
15	0.44			9.482	
16	0.53			11.524	
17	0.50			10.843	
18	0.45		Santa Fe	9.709	
19	0.47			10.163	
20	0.35			7.440	
21	0.44			9.482	
22	0.51			11.070	
23	0.54			11.751	
24	0.47			10.163	
25	0.51			11.070	
26	0.40			8.575	
27	0.39			8.348	

PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Sherwood
To: Scott
Lane/Line: S1

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
27	6.76	10.10	15.83	2.02

Road Surface

Thickness	Traffic Index
0.42	8.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
19.00	11.80	12.68	0.00	0.00

HMA Overlay
0.00

PAVEMENT ENGINEERING INCORPORATED

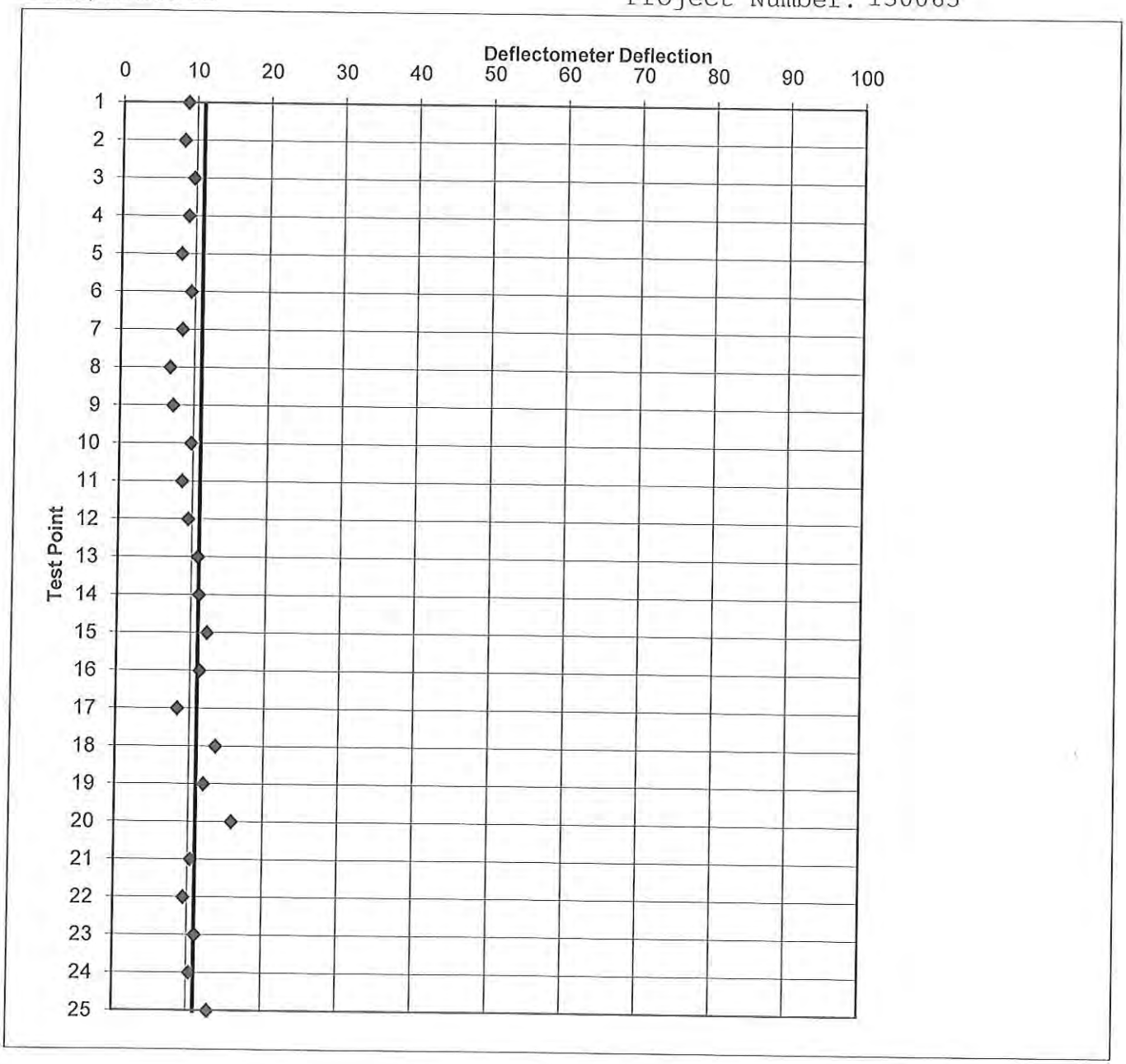
Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Creston
From: Sherwood
To: Scott
Lane/Line: S1

Survey Date: 03/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065



PAVEMENT ENGINEERING INCORPORATED

Redding (530) 224-4535 | **Petaluma** (707) 769-5330 | **San Luis Obispo** (805) 781-2265

Date: 3/27/2013

Client: City of Paso Robles
Road: Creston
From: Sherwood
To: Scott
Lane/Line: S1

Interval: 100
Survey Date: 3/13/13
Thickness: 0.42
Traffic Index: 8.00
Project Number: 130065

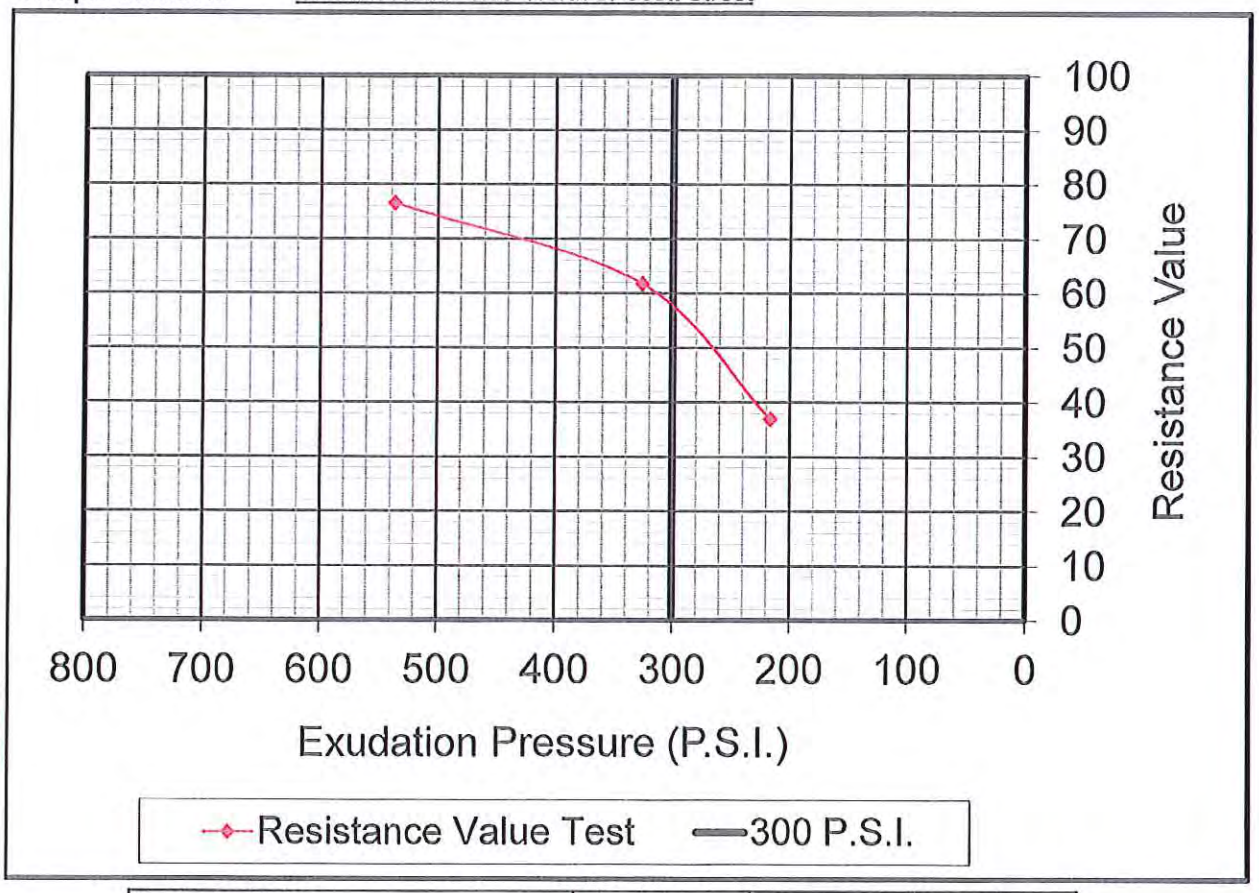
Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	0.41			8.802	
2	0.39			8.348	
3	0.45			9.709	
4	0.42			9.028	
5	0.38			8.121	
6	0.44		Santa Fe	9.482	
7	0.39			8.348	
8	0.32			6.760	
9	0.34			7.213	
10	0.45			9.709	
11	0.40		Santa Ysabel	8.575	
12	0.44			9.482	
13	0.50			10.843	
14	0.51			11.070	
15	0.56			12.205	
16	0.52			11.297	
17	0.39			8.348	
18	0.62		Santa Ynez	13.566	
19	0.55			11.978	
20	0.72			15.834	
21	0.48			10.390	
22	0.44			9.482	
23	0.51			11.070	
24	0.48			10.390	
25	0.59			12.885	
26	0.50		Flagway	10.843	
27	0.42			9.028	

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

RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.: L130083Y
Project No.: 130065
Sample Date: March 12, 2013
Report Date: March 25, 2013
Client: City of Paso Robles
Project Name: City of Paso Robles 2013 Pavement Analysis
Sample Description: Light Brown Silty Sand with Clay
Sample Location: Creston Road - 250' North of Scott Street



Specimen No.	1	2	3
Moisture Content (%)	14.2	13.2	12.3
Dry Density (PCF)	117.3	118.7	119.0
Resistance Value (R)	37	62	77
Exudation Pressure (PSI)	217	327	537
Expansion Pressure	0	56	113

RESISTANCE VALUE AT 300 P.S.I. **58**

AASHTO R18

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

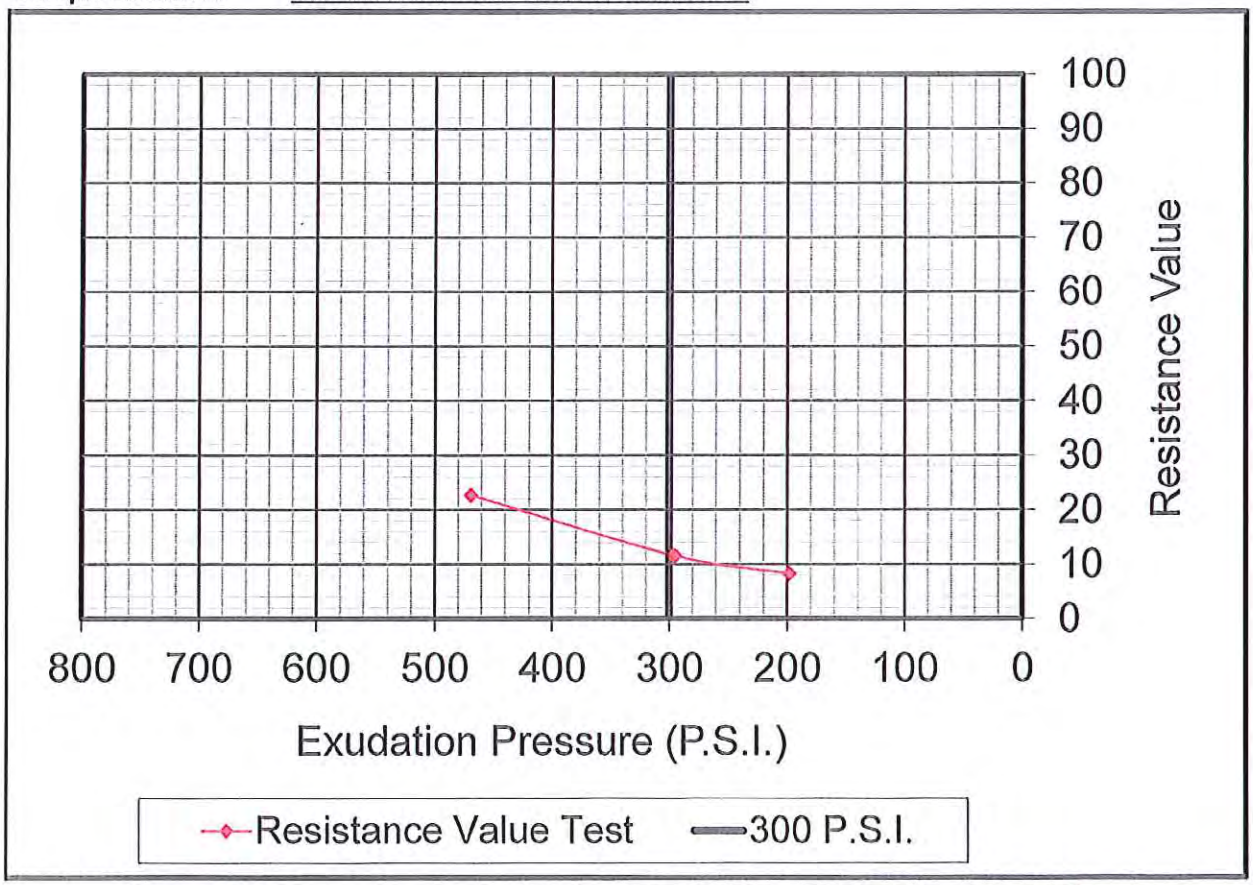
3820 Cypress Drive, Suite 3 • Petaluma, CA • 94954-5613 • Tel. (707) 769-5330 • Fax (707) 769-5333
20260 Skypark Drive • Redding, CA • 96002-9221 • Tel. (530) 224-4535 • Fax (530) 224-4539
3485 Sacramento Drive, Suite A • San Luis Obispo, CA • 93401-7156 • Tel. (805) 781-2265 • Fax (805) 781-2267

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

RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.: L130083B
Project No.: 130065
Sample Date: March 12, 2013
Report Date: March 21, 2013
Client: City of Paso Robles
Project Name: City of Paso Robles 2013 Pavement Analysis
Sample Description: Brown Sandy Clay with Gravel
Sample Location: Creston Road - 900' North of Scott Street



Specimen No.	1	2	3
Moisture Content (%)	16.6	17.7	18.2
Dry Density (PCF)	114.3	112.4	112.6
Resistance Value (R)	23	12	8
Exudation Pressure (PSI)	470	296	199
Expansion Pressure	48	30	26

RESISTANCE VALUE AT 300 P.S.I. 12

AASHTO R18

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

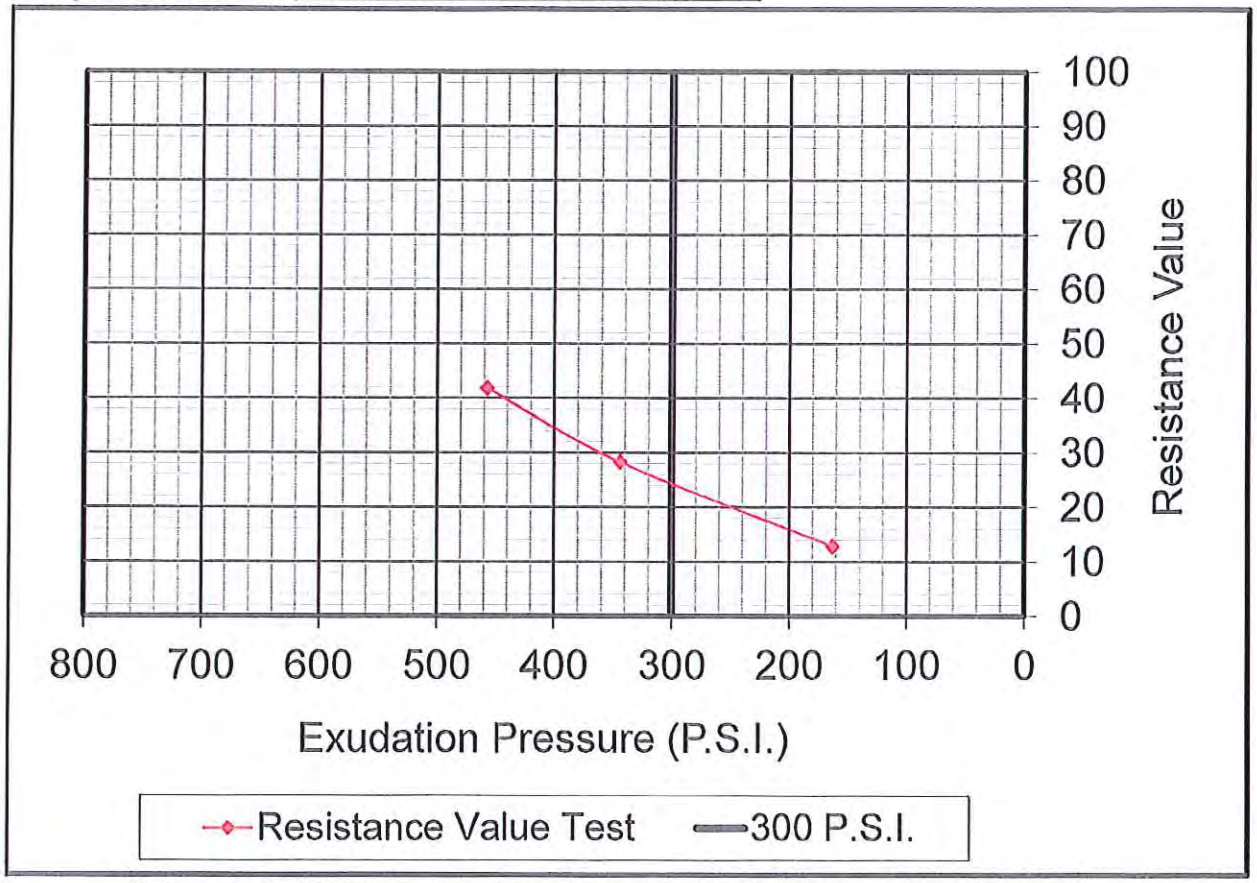
3820 Cypress Drive, Suite 3 · Petaluma, CA · 94954-5613 · Tel. (707) 769-5330 · Fax (707) 769-5333
20260 Skypark Drive · Redding, CA · 96002-9221 · Tel. (530) 224-4535 · Fax (530) 224-4539
3485 Sacramento Drive, Suite A · San Luis Obispo, CA · 93401-7156 · Tel. (805) 781-2265 · Fax (805) 781-2267

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

RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.:	L130083D
Project No.:	130065
Sample Date:	March 12, 2013
Report Date:	March 21, 2013
Client:	City of Paso Robles
Project Name:	City of Paso Robles 2013 Pavement Analysis
Sample Description:	Brown Clayey Sand with Gravel
Sample Location:	Creston Road - 1600 North of Scott Street



Specimen No.	1	2	3
Moisture Content (%)	9.9	10.8	10.5
Dry Density (PCF)	129.4	127.3	129.6
Resistance Value (R)	42	13	28
Exudation Pressure (PSI)	458	163	345
Expansion Pressure	17	0	9

RESISTANCE VALUE AT 300 P.S.I. 24

AASHTO R18

Reviewed By: Craig Long

Craig W. Long
Laboratory Operations Manager

3820 Cypress Drive, Suite 3 · Petaluma, CA · 94954-5613 · Tel. (707) 769-5330 · Fax (707) 769-5333
20260 Skypark Drive · Redding, CA · 96002-9221 · Tel. (530) 224-4535 · Fax (530) 224-4539
3485 Sacramento Drive, Suite A · San Luis Obispo, CA · 93401-7156 · Tel. (805) 781-2265 · Fax (805) 781-2267

CRESTON ROAD – SHERWOOD ROAD TO SCOTT STREET
Niblick Road looking Southbound

CRESTON ROAD – SHERWOOD ROAD TO SCOTT STREET
Santa Ynez Avenue looking Southbound

CRESTON ROAD – SHERWOOD ROAD TO SCOTT STREET
Scott Street looking Northbound

CRESTON ROAD – SHERWOOD ROAD TO SCOTT STREET
Santa Ysabel Avenue looking Northbound