OLIVE STREET – S. END TO 3RD STREET

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: $71,000 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: $72,000 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

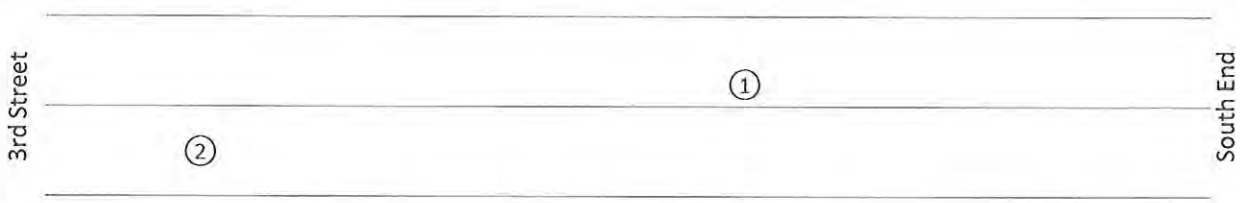
For option 1, we recommend removing the pavement to a depth of 10 inches and placing 10 inches of new HMA. The HMA should be placed in 4 lifts.

Estimated Cost: $294,000 Estimated Life Expectancy: 20 Years

For option 2, we recommend removing 4 inches of the existing structure, lime treating the native soil to a depth of 13 inches and placing 4 inches of new HMA in 2 lifts.

Estimated Cost: $143,000 Estimated Life Expectancy: 20 Years

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

Olive Street

[Section of Road ≈ 750ft]

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

VISUAL DESCRIPTION FOR THIS SECTION OF ROAD

The pavement exhibits block shrinkage cracking and severe weathering and raveling.

CORING LOG

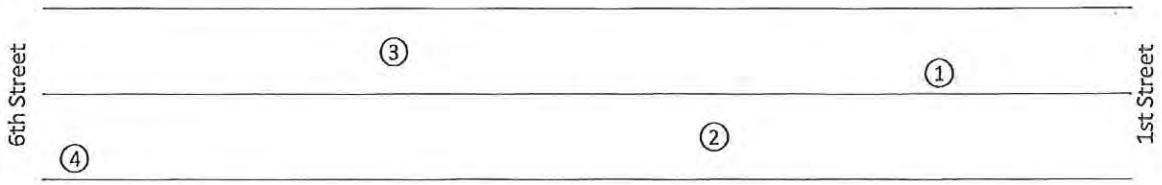
Symbol	Location	Core Data		R-value
1	South of 3rd Street 250ft	AC AB	3.00" NO BASE	8
2	South of 3rd Street 500ft	AC AB	3.00" NO BASE	-

DEFLECTION ANALYSIS

Lane	Tolerable	TI	80th Percentile	Percent Reduction	HMA Overlay
North Bound	28	7.0	42.11	33.50	1.92 - inches
South Bound	28	7.0	36.68	23.66	0.96 - inches
				Overlay Required by Reflective Cracking	1.50 - 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

Olive Street

[Section of Road ≈ 1700ft]

N

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 1st Street 300ft	AC 3.00" AB NO BASE	8
2	North of 1st Street 650ft	AC 3.00" AB NO BASE	-
3	North of 1st Street 1150ft	AC 3.50" AB NO BASE	10
4	North of 1st Street 1650ft	AC 3.25" AB NO BASE	-

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 Bound	28	7.0	42.11	33.50	1.92 - Inches
South Bound	28	7.0	36.68	23.66	0.96 - Inches
				Overlay Required by Reflective Cracking	1.75 - 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

OLIVE STREET – 4TH STREET TO 6TH STREET

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 3 inch HMA overlay.

Estimated Cost: $89,000 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: $55,000 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

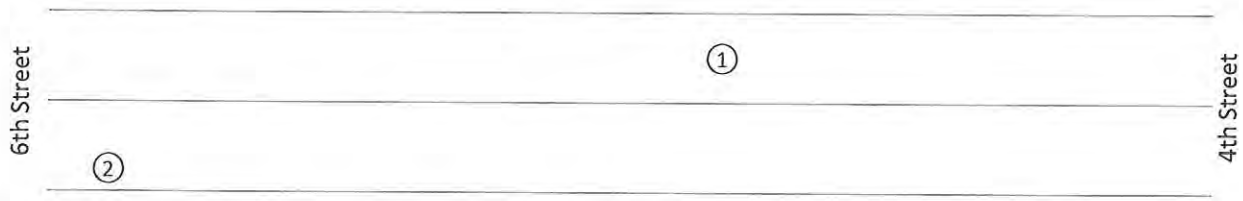
For option 1, we recommend removing the pavement to a depth of 9-3/4 inches and placing 9-3/4 inches of new HMA. The HMA should be placed in 4 lifts.

Estimated Cost: $218,000 Estimated Life Expectancy: 20 Years

For option 2, we recommend removing 4 inches of the existing structure, lime treating the native soil to a depth of 13-1/4 inches and placing 4 inches of new HMA in 2 lifts.

Estimated Cost: $109,000 Estimated Life Expectancy: 20 Years

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

Olive Street

[Section of Road ≈ 700ft]

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

VISUAL DESCRIPTION FOR THIS SECTION OF ROAD

The pavement exhibits block shrinkage cracking, weathering and ravaling and intermittant alligator cracking. The end near 4th Street is newer and exhibits only weathering. The pavement from 6th to 5th is in worse condition. There are unimproved frontages.

CORING LOG

Symbol	Location	Core Data		R-value
1	North of 4th Street 250ft	AC AB	3.50" NO BASE	10
2	North of 4th Street 500ft	AC AB	3.25" NO BASE	-

DEFLECTION ANALYSIS

Lane	Tolerable	TI	80th Percentile	Percent Reduction	HMA Overlay
North Bound	27	7.0	53.44	49.48	3.96 - inches
South Bound	27	7.0	52.66	48.73	3.84 - inches
				Overlay Required by Reflective Cracking	1.75 - 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

03/17/13

City of Paso Robles

Road: Olive
From: 3rd
To: South End
Lane/Line: SB

Survey Date: 03/14/13
Thickness: 0.25
Traffic Index: 7.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
10	18.56	28.36	50.32	9.90

Road Surface

Thickness	Traffic Index
0.25	7.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
28.00	36.68	41.03	23.66	0.16

HMA Overlay
0.08

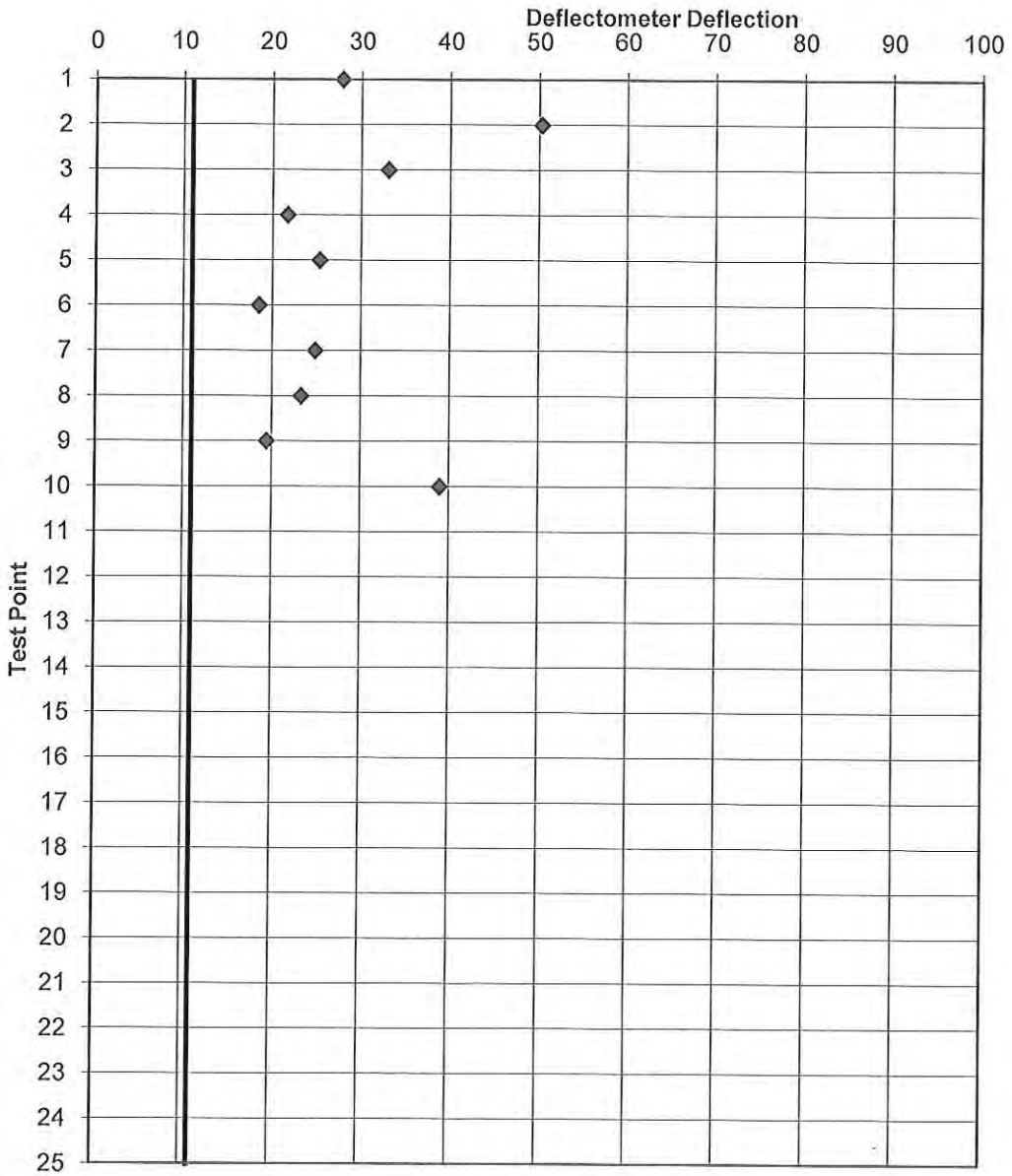
PAVEMENT ENGINEERING INCORPORATED

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

City of Paso Robles

Road: Olive
From: 3rd
To: South End
Lane/Line: SB

Survey Date: 03/14/13
Thickness: 0.25
Traffic Index: 7.00
Project Number: 130065



PAVEMENT ENGINEERING INCORPORATED

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

Date: 3/17/2013

Client: City of Paso Robles
Road: Olive
From: 3rd
To: South End
Lane/Line: SB

Interval: 60
Survey Date: 3/14/13
Thickness: 0.25
Traffic Index: 7.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	1.25			27.858	
2	2.24			50.318	
3	1.48			33.076	
4	0.98			21.733	
5	1.14			25.363	
6	0.84			18.557	
7	1.12			24.909	
8	1.05			23.321	
9	0.88			19.464	
10	1.74			38.975	

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: Olive
From: South End
To: 3rd
Lane/Line: NB

Survey Date: 03/14/13
Thickness: 0.25
Traffic Index: 7.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
10	19.24	32.94	48.05	10.91

Road Surface

Thickness	Traffic Index
0.25	7.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
28.00	42.11	46.91	33.50	0.30

HMA Overlay
0.16

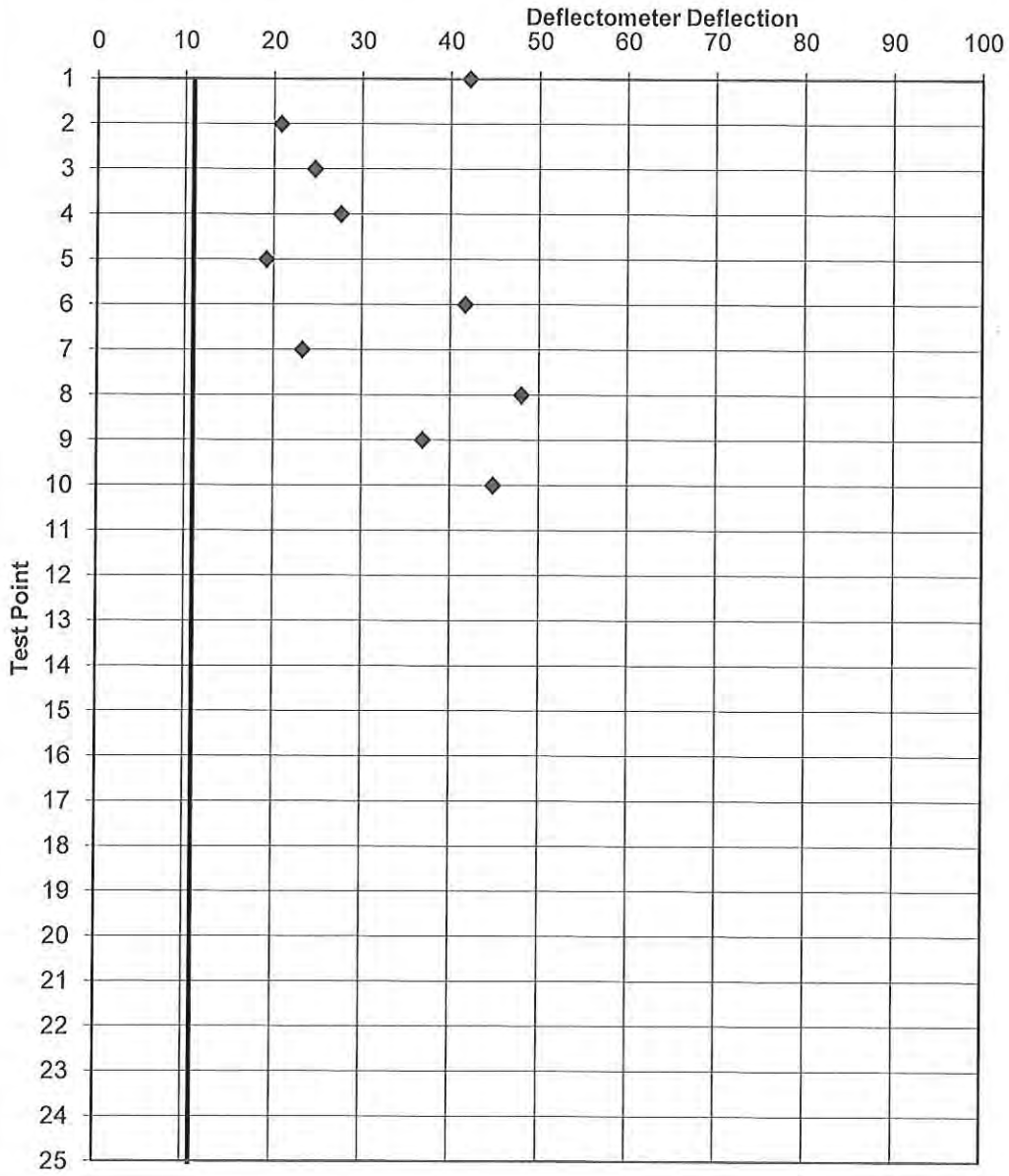
PAVEMENT ENGINEERING INCORPORATED

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

City of Paso Robles

Road: Olive
From: South End
To: 3rd
Lane/Line: NB

Survey Date: 03/14/13
Thickness: 0.25
Traffic Index: 7.00
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: Olive
From: South End
To: 3rd
Lane/Line: NB

Interval: 60
Survey Date: 3/14/13
Thickness: 0.25
Traffic Index: 7.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	1.88			42.151	
2	0.94		Orcutt	20.825	
3	1.11			24.682	
4	1.24			27.631	
5	0.87		2nd	19.237	
6	1.86			41.697	
7	1.05			23.321	
8	2.14			48.049	
9	1.65			36.933	
10	2.00			44.873	

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: Olive Street
From: 4th
To: 6th
Lane/Line: NB

Survey Date: 03/14/13
Thickness: 0.30
Traffic Index: 7.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
10	21.05	36.14	76.86	19.67

Road Surface

Thickness	Traffic Index
0.30	7.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
27.00	52.66	61.31	48.73	0.61

HMA Overlay
0.32

PAVEMENT ENGINEERING INCORPORATED

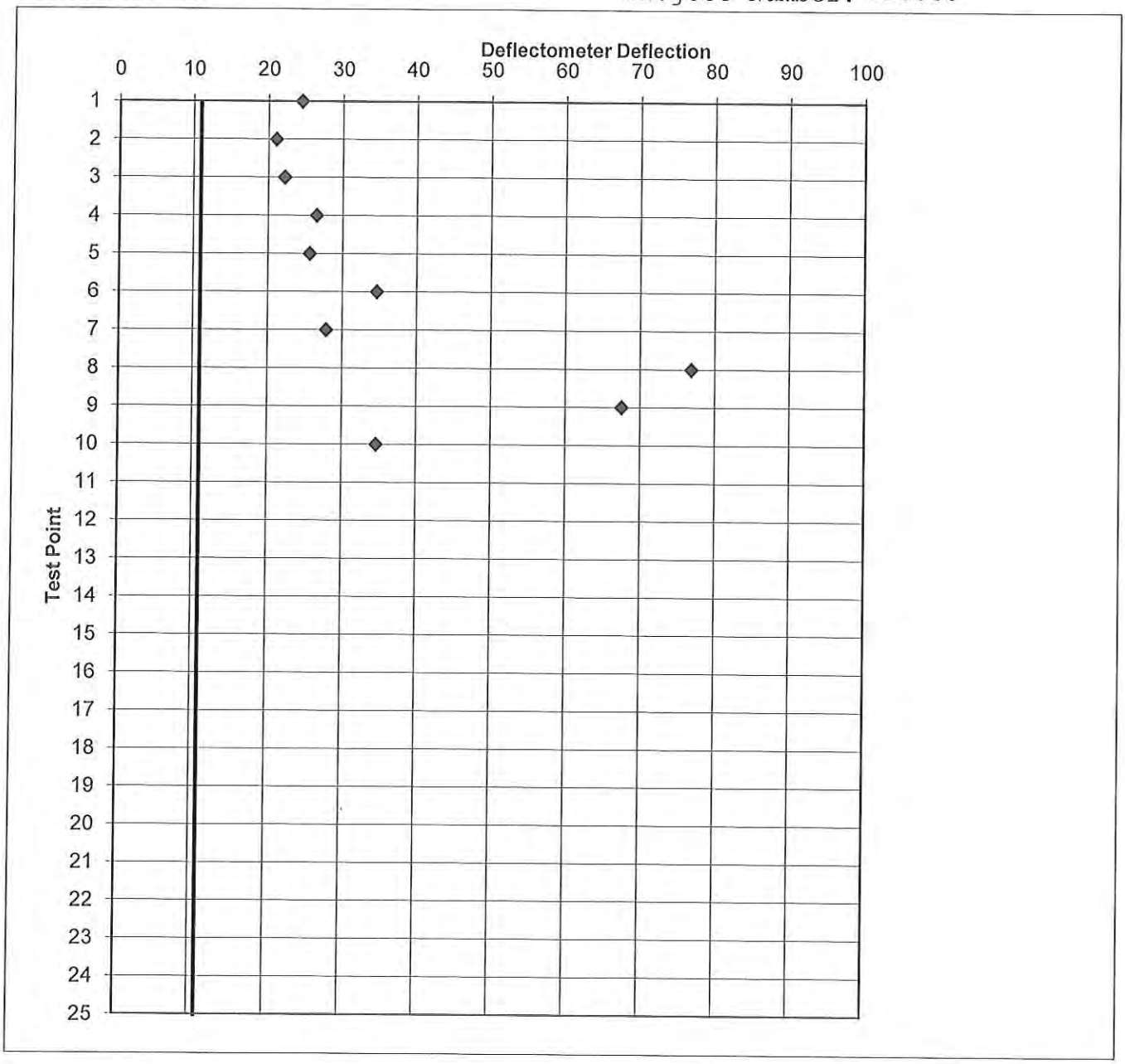
Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Olive Street
From: 4th
To: 6th
Lane/Line: NB

Survey Date: 03/14/13
Thickness: 0.30
Traffic Index: 7.00
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: Olive Street
From: 4th
To: 6th
Lane/Line: NB

Interval: 60
Survey Date: 3/14/13
Thickness: 0.30
Traffic Index: 7.00
Project Number: 130065

Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	1.10			24.455	
2	0.95			21.052	
3	1.00			22.187	
4	1.19			26.497	
5	1.15			25.590	
6	1.55		5th	34.664	
7	1.25			27.858	
8	3.41			76.861	
9	3.00			67.560	
10	1.55			34.664	

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: Olive Street
From: 6th
To: 4th
Lane/Line: SB

Survey Date: 03/14/13
Thickness: 0.30
Traffic Index: 7.00
Project Number: 130065

Deflection Data Analysis

Deflection Readings (Equivalent Deflectometer Units)

No. of Tests	Low	Mean	High	Std. Dev.
10	16.29	36.62	73.23	20.03

Road Surface

Thickness	Traffic Index
0.30	7.00

Structural Design

Tolerable	80th Percentile	90th Percentile	% Reduction	GE Deficient
27.00	53.44	62.26	49.48	0.62

HMA Overlay
0.33

PAVEMENT ENGINEERING INCORPORATED

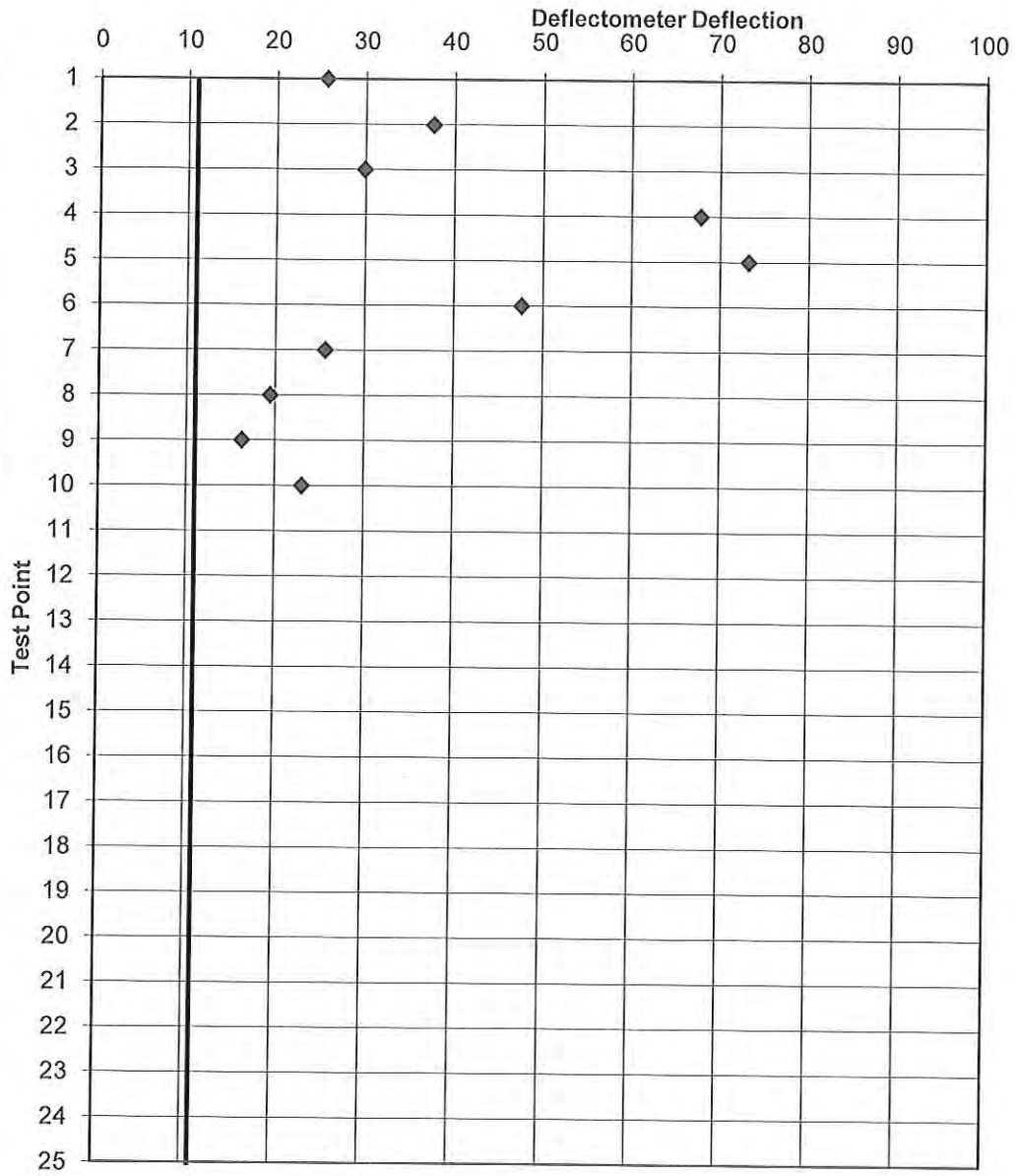
Redding (530) 224-4535 | Petaluma (707) 769-5330 | San Luis Obispo (805) 781-2265

03/27/13

City of Paso Robles

Road: Olive Street
From: 6th
To: 4th
Lane/Line: SB

Survey Date: 03/14/13
Thickness: 0.30
Traffic Index: 7.00
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: Olive Street
From: 6th
To: 4th
Lane/Line: SB

Interval: 60
Survey Date: 3/14/13
Thickness: 0.30
Traffic Index: 7.00
Project Number: 130065

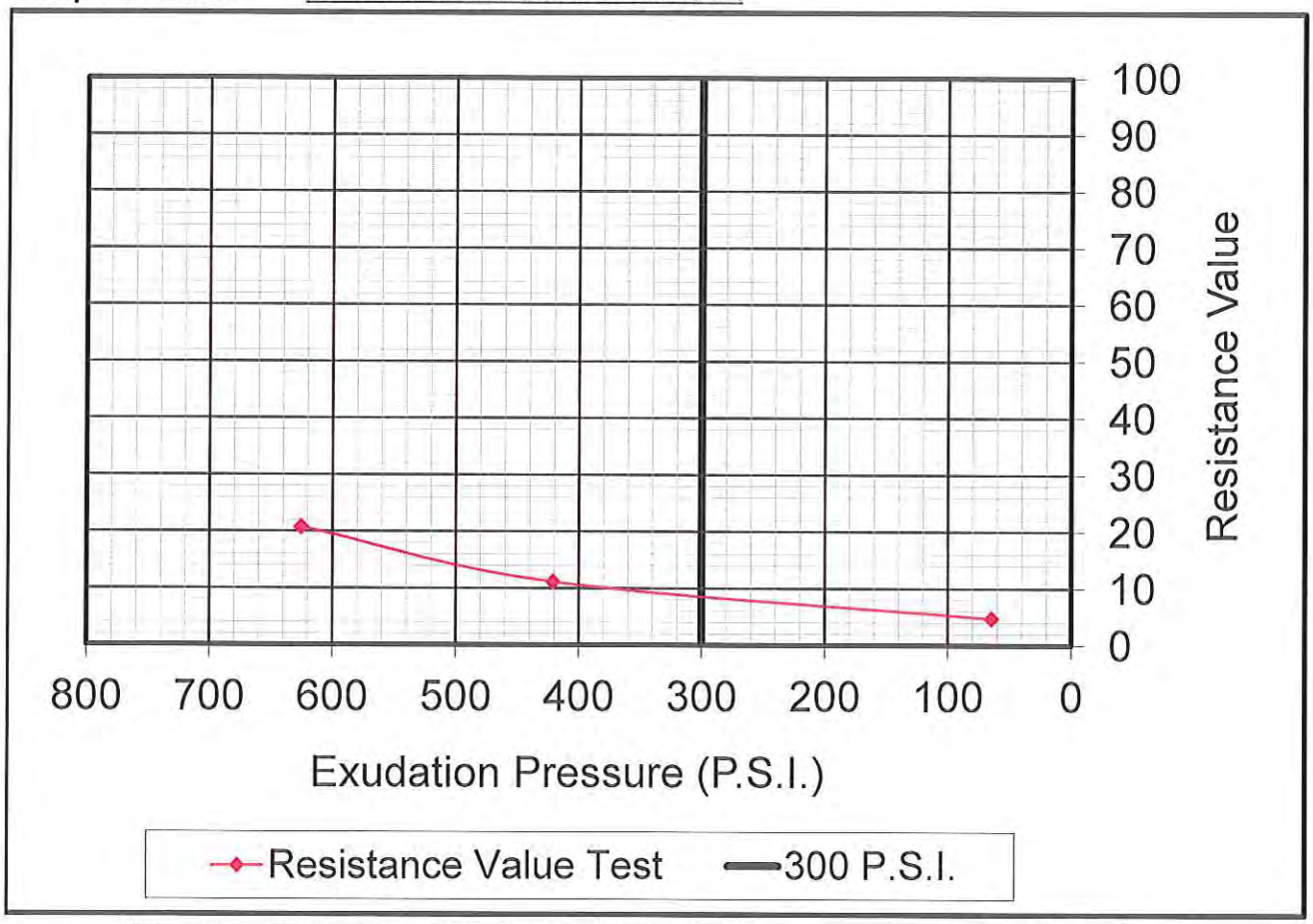
Test Points	Dynaflect	Conditions	Comments	Deflection	Exclude
1	1.15			25.590	
2	1.68			37.613	
3	1.34			29.900	
4	3.01			67.787	
5	3.25			73.231	
6	2.12		5th	47.596	
7	1.15	digout/COP		25.590	
8	0.88			19.464	
9	0.74			16.288	
10	1.04			23.094	

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

RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.: L130083AA
Project No.: 130065
Sample Date: March 14, 2013
Report Date: March 25, 2013
Client: City of Paso Robles
Project Name: City of Paso Robles 2013 Pavement Analysis
Sample Description: Dark Brown Clay
Sample Location: Olive Street - 250' South of 3rd Street



Specimen No.	1	2	3
Moisture Content (%)	23.9	25.9	27.9
Dry Density (PCF)	99.0	95.7	92.4
Resistance Value (R)	21	11	5
Exudation Pressure (PSI)	625	421	65
Expansion Pressure	35	0	0

RESISTANCE VALUE AT 300 P.S.I. 8

AASHTO R18

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

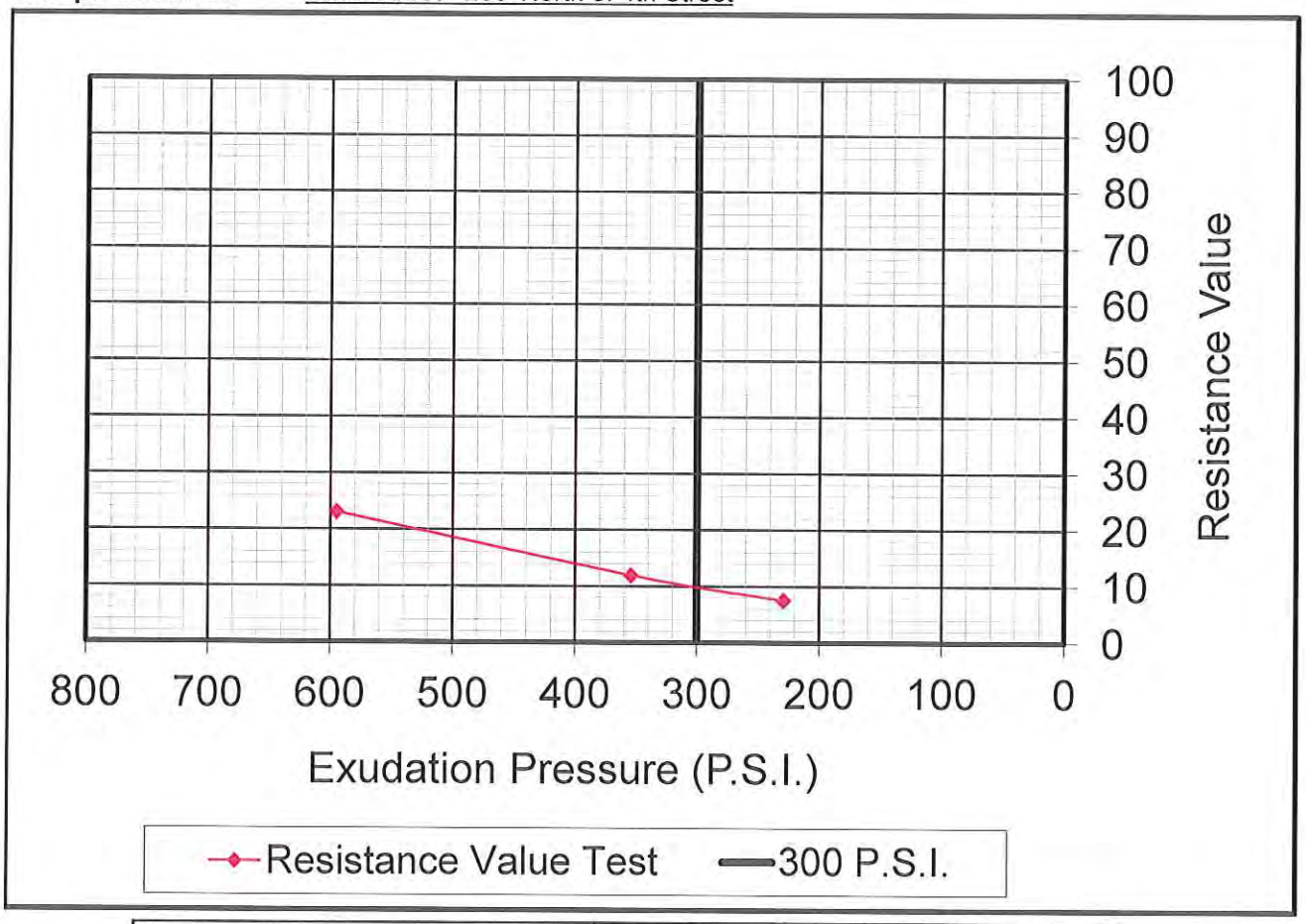
3820 Cypress Drive, Suite 3 • Petaluma, CA • 94954-5613 • Tel. (707) 769-5330 • Fax (707) 769-5333
20260 Skypark Drive • Redding, CA • 96002-9221 • Tel. (530) 224-4535 • Fax (530) 224-4539
3485 Sacramento Drive, Suite A • San Luis Obispo, CA • 93401-7156 • Tel. (805) 781-2265 • Fax (805) 781-2267

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

RESISTANCE (R) VALUE TEST

ASTM D 2844

Laboratory No.: L130083I
Project No.: 130065
Sample Date: March 14, 2013
Report Date: March 25, 2013
Client: City of Paso Robles
Project Name: City of Paso Robles 2013 Pavement Analysis
Sample Description: Dark Brown Silty Clay
Sample Location: Olive Street - 250' North of 4th Street



Specimen No.	1	2	3
Moisture Content (%)	11.6	12.7	10.8
Dry Density (PCF)	106.7	103.8	107.6
Resistance Value (R)	12	8	23
Exudation Pressure (PSI)	354	229	595
Expansion Pressure	9	0	17

RESISTANCE VALUE AT 300 P.S.I. **10**

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

OLIVE STREET – 6TH STREET TO 4TH STREET
6th Street looking Southbound

OLIVE STREET – 6TH STREET TO 4TH STREET
4th Street looking Northbound

OLIVE STREET – 3RD STREET TO S. END
3rd Street looking Southbound

OLIVE STREET – 3RD STREET TO S. END
End looking Northbound