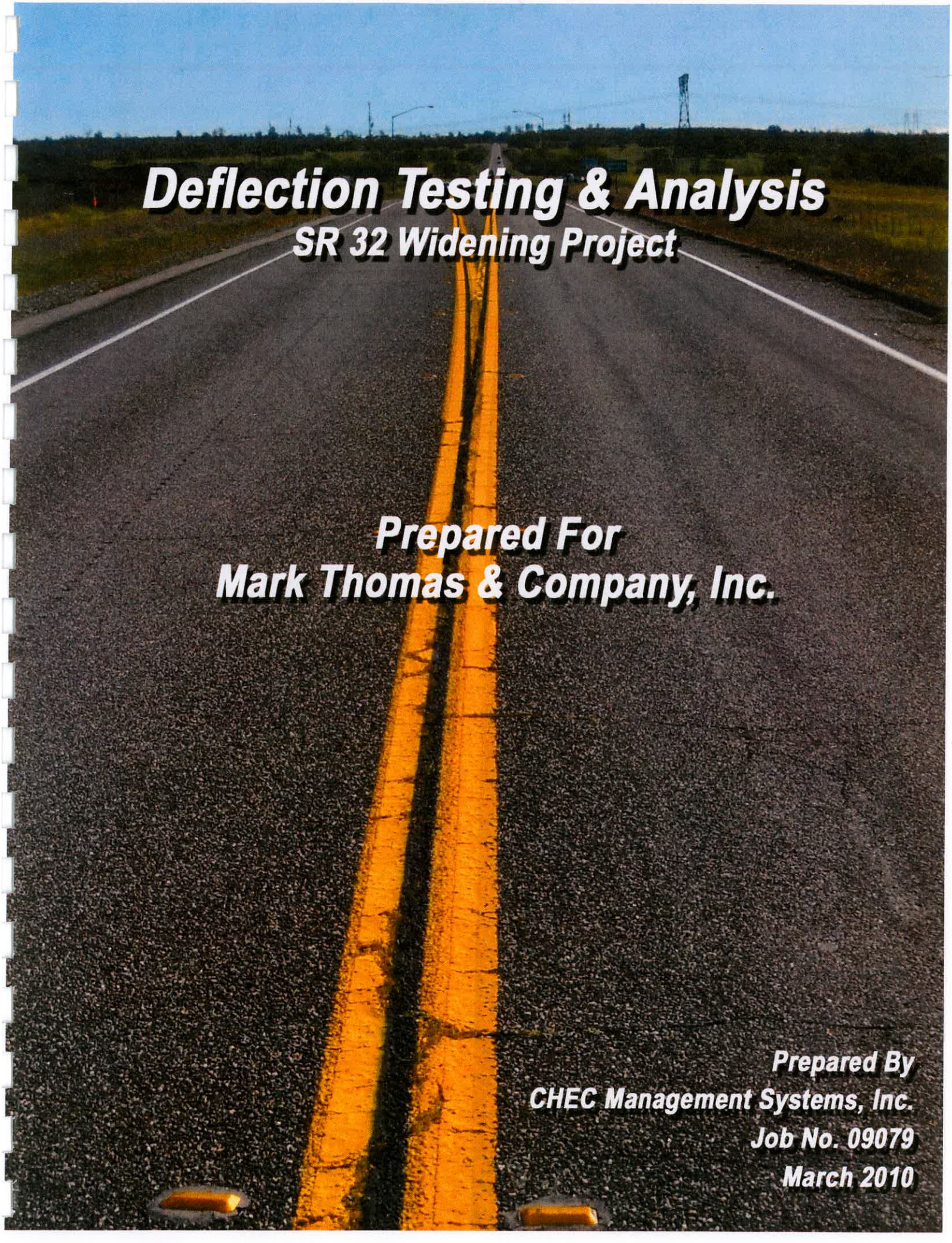

Deflection Testing & Analysis

SR 32 Widening Project

Prepared For
Mark Thomas & Company, Inc.

Prepared By
CHEC Management Systems, Inc.
Job No. 09079
March 2010

CHEC
MANAGEMENT SYSTEMS INC.

Pavement Engineering
Pavement Management
Asset Management
GIS Linkage & Mapping
Visual Condition Rating
Deflection Testing

March 17, 2010

Job No.: 09079

Mark Thomas & Company, Inc.
7300 Folsom Blvd.,
Suite 203
Sacramento, CA 95826

Attn: Mr. James Pangburn
Project Engineer

Subject: SR 32 Widening Project

Gentlemen:

We have completed our analysis for the subject project. In this report, CHEC has included the structural overlay requirements based on California Test Method 356, our recommendations, graphs, and color photographs for the project.

The Appendix of this report contains all data to support our findings. If you have any questions regarding this information, please contact CHEC at 800-523-2124.

Very truly yours,
MANAGEMENT SYSTEMS, INC.

James B. Curtis
President

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
Charles Alan Curtis
No. 23,326
CIVIL
STATE OF CALIFORNIA

Alan Curtis, P. E.
Vice President
CA C. E. #23326

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BACKGROUND

CHEC Management Systems, Inc. was hired by Mark Thomas and Company, Inc. to provide a structural adequacy determination for Highway 32 within the City Limits of Chico, CA and to provide our design recommendations for the various sections based on our analysis.

The limits of deflection testing and Traffic Index were provided by Mark Thomas and Company, Inc. We have prepared this report, which provides a measure of the structural adequacy of each pavement section and our recommendation of current repair technique.

On the evening of March 4th, 2010, Mr. Bob Freeman performed deflection testing and Mr. Gary McGuire collected 9 core samples, one for each test section, for the proposed road. Previously Mr. Bob Freeman and Mr. Ian Anderson were able to complete two sections of testing before CALTRANS shut the project down due to traffic control issues. In all 11 different pavement test sections were established with testing and coring being completed on each test section. Highway Technologies, Inc. provided traffic control on March 4th, where full lane closures were required. Figure 1 of this report provide a pictorial representation of each test section location, the existing AC thickness and the corresponding CTM 356 overlay recommendation.

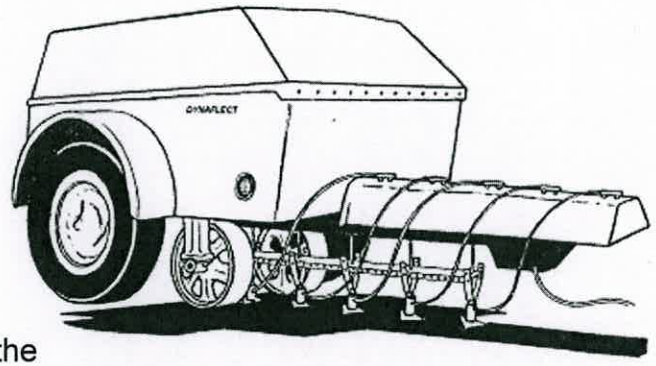
Upon arrival at the CHEC office, all field notes were provided to the engineer, core data was provided to the draftsman, and engineering deflection graphs were printed for analysis. The engineer has provided his analysis within this bound report.

This report provides overlay requirements, to protect the existing street investment for a 10-year service life. Alternative design methods were utilized, as needed, to look at the most cost effective or feasible approach while still providing a 10-year design life.

DEFLECTION TESTING AND ANALYSIS

TESTING AND ANALYSIS PROCEDURE

California Test Method 356



The image above provides a schematic of a dvnaflect.

Testing was performed using the DYNAFLECT nondestructive pavement testing device. The device places a 1000-lb. oscillatory load on the pavement surface. Motion sensing geophones (sensors) placed on the pavement surface "read" the pavement deflection resulting from the load. A strong pavement will deflect less than a weak pavement under the same loading. A single sensor was used for this analysis. The testing equipment and analysis procedure is based on California Test Method (CTM) 356 (using a DYNAFLECT and the Caltrans Rehabilitation Design Manual dated 2001).

Design Analysis

1. The procedure is basically a fatigue analysis. The measured maximum deflection is the amplitude of pavement bending for each repetition of a load. (The design number of load repetitions is indicated by the Traffic Index - T.I.) If the existing pavement is fairly thick, the tolerable deflection to prevent fatigue failure is lower than for a comparable thinner pavement. Thus, a thicker pavement requires a thicker overlay to reduce the deflection. In the State of California, all rehabilitation designs are given a 10-year life. This is mainly because of the reflective crack control issues.

2. The second half of the analysis is based on the need to retard reflective cracking, or the propagation of old cracks in the underlying pavement through the new overlay. The overlay should be at least half the thickness of the existing pavement to retard reflective cracking. A fabric interlayer may be substituted for 0.10 ft. of AC for crack

control purposes only. The structural needs of the pavement must first be satisfied before reflective crack retardation is considered.

DESIGNER'S GENERAL NOTES

The following notes are provided to assist the design engineer in developing the plans and specifications for this project. Some of these guidelines are reflected in the recommendations found within this report.

1. All specified thicknesses in this report are design minimums and do not include construction tolerances

2. With asphalt overlays, wedge cutting is recommended at all conforms to provide a smooth taper and transition.

3. Prior to an overlay, an adequate application of a tack coat is required for a proper bond. The type and application rates are to be determined by the design engineer.

4. All areas of moderate to severe alligator cracking and/or bleeding should be removed and replaced with full-depth AC repairs. The thickness of the repairs may vary, but should never be less than the thickness of the existing AC section, and preferably one to two inches below the existing AC surface layer.

5. All transverse and longitudinal cracks wider than 1/4 of an inch should be sealed with an emulsified crack seal.

6. Paving Fabric - We highly recommend a paving fabric, such as TruPave, to be utilized to help retard reflective cracking. The TruPave fabric is recommended because of the recycling capabilities, and the fact that disposal of the asphalt with TruPave fabric does not have an increase in cost over asphalt alone.

SUMMARY OF FINDINGS

From the testing completed, CHEC Management Systems, Inc. was able to identify different pavement design sections. When performing the engineering analysis CHEC Management Systems, Inc. tried to provide a design that would be applicable for both directions of travel. From our analysis the project can be broken into six (6) different pavement design areas. Each design recommendation is discussed in detail within the section "CHEC'S FINDINGS AND RECOMMENDATIONS".

In general the engineering analysis shows the existing pavement need between 2 ½ inches and 5 ½ inches of new AC per CTM 256 and the CALTRANS Flexible Pavement Rehabilitation Design Manual – June 2001. Alternate Designs were produced where the thickness of the overlay was greater than 4 inches. The alternate designs ranges from Milling 3 ½ inches of existing AC and place 4 ½ inches of new AC, to milling only 2 ½ inches of the existing AC and placing 6 inches of new AC. By utilizing a mill and overlay technique the maximum vertical elevation change is 3 ½ inches. This is less than the 5 ½ inches required by the conventional AC overlay design.

Because all of the overlay requirements have a thickness that is at least half of the existing AC thickness, paving fabric is not required as part of the overall designs. The recommended designs take into account the different existing asphalt layer thicknesses with respect to the recommended milling depths.

The designs ranged from the need of a simple AC overlay, to the need of major rehabilitation or reconstruction. The summary table, Table 1 provides a quick look at the limits and design recommendation of each pavement section. Figures 1 and 2 of this report, found in the Appendix, provide a pictorial view of the design recommendations and location of each test section and their limits. A detailed look at each test section can be found in the section titled "CHEC'S FINDINGS AND RECOMMENDATIONS".

Table 1

Summary of Findings

Road Name	From	To	CTM Structural Requirement	CHEC's Design Recommendations
SR Hwy 32 Chico	WB 0 ft. (City Limit)	WB 4,280 ft. (Bruce Rd)	**T.I. 10.5** **WB: 2,076 - 4,280** 0.10 ft. AC Overlay **EB: 10,219 – 12,295** 0.20 ft. AC Overlay	**EB Lanes + WB Lanes** 1. 2 ½" AC Overlay w/Fabric
SR Hwy 32 Chico	WB: 4,280 ft. (Bruce Rd).	WB: 7,822 ft. (Forest Ave)	**T.I. 10.5** **WB: 5,760 – 6,383** 0.40 ft. AC Overlay **WB: 7,702 – 7,822** 0.45 ft. AC Overlay **EB: 4,557 – 5,876** 0.30 ft. AC Overlay **EB: 6,499 – 7,979** 0.40 ft. AC Overlay	**EB & WB Travel Lanes** 1. Mill 3.0" / 6 ½" AC Overlay 2. 5 ½" AC Overlay
SR Hwy 32 Chico	WB: 7,822 ft. (Forest Ave)	WB: 10,119 ft. (Lane Split)	**T.I. 10.5** **EB: 2,140 – 4,437** 0.40 ft. AC Overlay	**EB & WB Travel Lanes** 1. Mill 3 ½" / 4 ½" AC Overlay 2. 5.0" AC Overlay
SR Hwy 32 Chico	WB: 10,119 ft. (Lane Split)	WB: 12,363 ft. (SR Hwy 99).	**T.I. 10.5** **WB2: 10,119 – 11,984** 0.45 ft. AC Overlay **WB1: 11,984 – 12,363** 0.30 ft. AC Overlay	**WB Travel Lanes** 1. Mill 2 ¾" / 6.0" AC Overlay 2. 5 ½ AC Overlay

Table 1 (continued)

Road Name	From	To	CTM Structural Requirement	CHEC's Design Recommendations
SR Hwy 32 Chico (EB Lanes)	WB: 10,119 ft. (Lane Split)	WB: 11,984 ft. (Fir St).	**T.I. 10.5 EB: 479 – 2,140** 0.35 ft. AC Overlay	**EB Travel Lane** 1. Mill 3.0" / 5.0" AC Overlay 2. 4 ½" AC Overlay
SR Hwy 32 Chico (EB Lanes)	WB: 11,984 ft. (Fir St).	WB: 12,363 ft. (Hwy 99).	**T.I. 10.5 EB: 0 – 479** 0.45 ft. AC Overlay	**EB Travel Lanes** 1. Mill 4.0" / 7 ½" AC Overlay 2. 5 ½" AC Overlay

Note: Figures 1 and 2 of this report show the project sections as described in the table above.

PROCEDURE

The structural overlay requirement was determined using California Test Method 356 and the Caltrans Rehabilitation Manual (2001), which is based on a 10-year design. CHEC's design recommendations are for a 10-year service life. CHEC Management Systems, Inc. evaluated the different sections of SR Hwy 32 in Chico, California, utilizing a Traffic Index factor of 10.5, which was provided to CHEC Management Systems, Inc. from Mark Thomas and Company, Inc.

Deflection testing was performed in the outer wheel path of each lane to reflect the pavement's worst case condition. Segments were selected based on pavement type and visual defects present in the road. The testing occurred in both directions in each block section of the roadway, and tests were taken at an interval that provided at least 20 points per segment. The actual interval used is stated on the deflection graphs located in the Appendix.

The next step in our field work was to note the existing visible defects and take color photographs. Coring data was taken and recorded during the testing process to determine the existing thickness of asphalt concrete (AC), which aided in segmentation of the roadway. From the coring and the visual examination, we established that some of the blocks have more than one structural section, and appropriate test segments were created and analyzed. In all, eleven different test sections were created over the project area.

The following section describes the test sections CHEC analyzed in detail, giving our primary and alternate design recommendations.

CHEC'S FINDINGS AND RECOMMENDATIONS

SR Hwy 32, Chico, CA
City Limit on East to Bruce Road
(WB: 0 to 4,280 ft.)

Section Limits: (Approx.)	WB: 0 to 4,280 Ft.	**Current Structural Section**	WB: 3 ½ inches of AC EB: 5.0 inches of AC
Direction Tested	WB and EB Lanes	**CTM 356 – T.I. 10.5**	WB: 0.10 feet AC Overlay EB: 0.20 feet AC Overlay
CHEC Primary Recommendation	WB and EB Lanes 2 ½" AC Overlay with Fabric	**CHEC Alternate Recommendations**	NONE

This section of highway starts at the Chico City Limit in the east and continues west approximately 4,280 feet to Bruce Road and consists of 5.0 inches of asphalt concrete in the eastbound lane and 3 ½ inches of asphalt concrete in the westbound lane. This section of highway has alligator, longitudinal and transverse cracking present with a few intermittent potholes. Testing was completed in both directions of travel. The photo shows the condition of the road on the day of testing.

CHEC's Design Recommendation

For this section of road, to satisfy both the structural and reflective cracking requirements of the design procedure, we recommend:

Because the structural overlay thickness requirement for this section of street varies between 1 ½ and 2 ½ inches depending on direction of travel, the eastbound lane is the controlling design lane for this pavement section. Full depth AC repairs will need to be completed prior to the placement of the design recommendation.

CHEC Management Systems, Inc. recommends overlaying this section of highway with a 2.5 inch AC overlay with paving fabric. This overlay will have a total elevation change of 2 ½ inches higher than the existing surface elevation. Proper crowns and slopes should be able to be maintained to facilitate proper drainage. Shoulder backing may be required as part of the overall design.

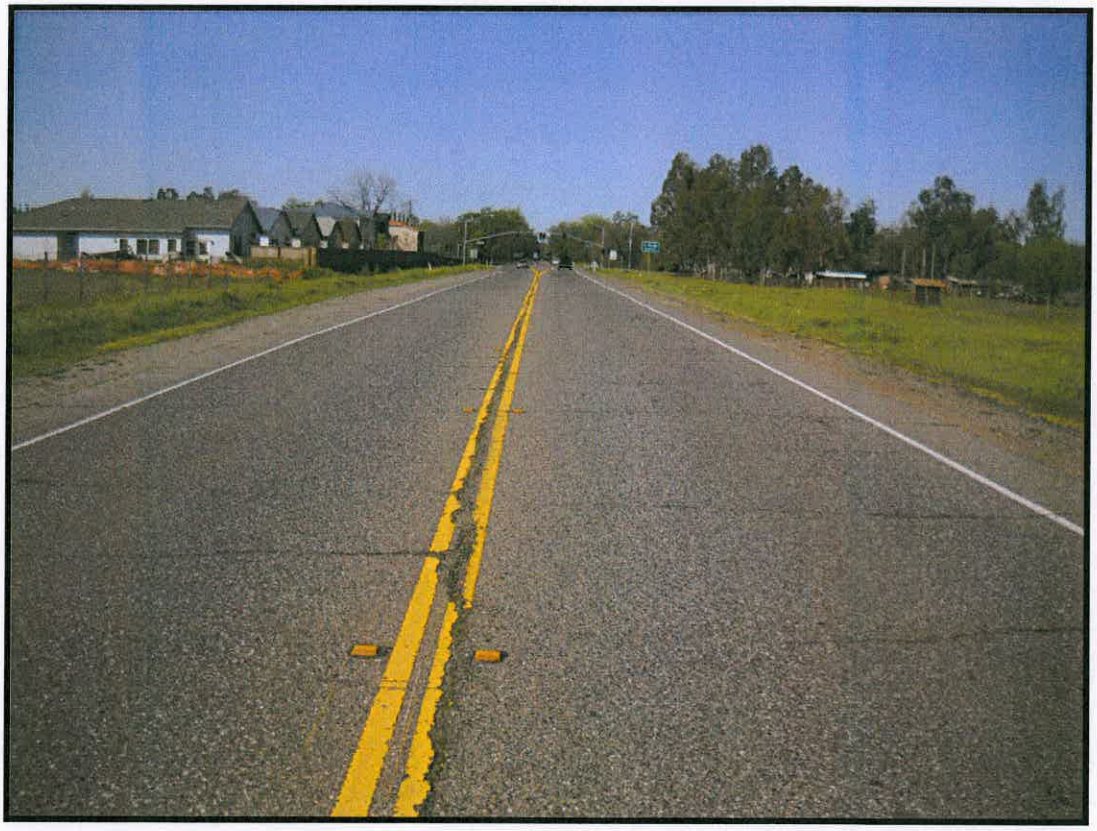
Currently structural requirement for these street sections is 0.20 feet of AC overlay in the eastbound direction and 0.10 feet AC overlay in the westbound direction. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

Figure 1 of this report shows the approximate location of each test section with the primary and alternate design recommendations.

CHEC's Alternate Design

For this section of highway there is not an alternate design alternative.

SR Hwy 32, Chico, CA
Bruce Road to Forest Avenue
(WB: 4,280 ft. to 7,822 ft.)



Section Limits: (Approx.)	Bruce Road to Forest Ave. (WB: 4,280 ft. to 7,822 ft.)	**Current Structural Section (both directions)**	WB: 5 to 7 inches AC EB: 6 to 8 inches AC
Direction Tested	WB Lanes and EB Lanes	**CTM 356 – T.I. 10.5**	WB: 0.45 ft. AC Overlay EB: 0.40 ft. AC Overlay
CHEC Primary Recommendation	Mill 3.0" / 6 ½" AC Overlay	**CHEC Alternate Recommendations**	5 ½" AC Overlay

This section of highway starts at Bruce Road and continues west approximately 3,542 feet to Forest Avenue. The structural section consists of an asphalt surface that is between 6 and 8 inches thick in the eastbound direction. Cores were also taken in the westbound lane and the thicknesses were measured at 5 and 7 inches thick.

This project area was broken into four different test section based on the visual changes to the pavement condition. Each area was cored and tested separately. When the analysis was completed a design was developed that will meet the need of all four test sections. These pavement sections have alligator, longitudinal and transverse cracking present. The photo shows the general condition of the pavement sections on the day of testing.

From the deflection testing and analysis completed, currently structural requirement for these street sections is 0.30 feet to 0.40 feet of AC overlay in the eastbound direction and 0.40 to 0.45 feet AC overlay in the westbound direction.

CHEC's Design Recommendation

Because of the high deflections measured, there is only a few feasible pavement rehabilitation designs possible for this section of street. For this section of road to satisfy both the structural and reflective cracking requirements of the design procedure, we recommend:

Primary Design

Mill the existing pavement surface 3.0 inches and overlay the remaining pavement with a 6 ½ inches of AC. The pavement thickness after milling will be between 2 inches and 5 inches thick. With the recommended overlay thickness being greater than half the remaining pavement thickness after milling, a paving fabric is not required to prevent reflective cracking. The overall elevation change for these pavement sections will be 3 ½ inches higher than the existing surface elevation.

Based on CTM 356 analysis, the current structural requirement for these street sections is 0.40 feet of AC overlay in the eastbound direction and 0.45 feet AC overlay in the westbound direction. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the

alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

Figure 1 of this report shows the existing pavement thickness for each test section, the CTM 356 overlay requirement, and the approximate location of each test section. Figure 2 of this report shows the primary design recommendations for each section of pavement.

Alternate Design Recommendation

CHEC Management Systems, Inc. recommends overlaying this section of highway with 5 ½ inches of AC. This overlay will have a total elevation change of 5 ½ inches higher than the existing surface elevation. Shoulder backing may be required as part of the overall design.

Currently structural requirement for these street sections is 0.40 feet of AC overlay in the eastbound direction and 0.45 feet AC overlay in the westbound direction. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

SR Hwy 32, Chico, CA
Forest Avenue west to directional Lane Split
(WB: 7,822 ft. to 10,119 ft.)

Section Limits: (Approx.)	Forest Avenue west 2,297 ft. (WB: 10,119 ft. to 7,822 ft.)	**Current Structural Section (northbound)**	EB: 6.0 inches
Direction Tested	EB Lane	**CTM 356 – T.I. 10.5** **EB: 2,140 – 4,437**	0.40 ft. AC Overlay
CHEC Primary Recommendation	Mill 3 ½" / 4 ½" AC Overlay	**CHEC Alternate Recommendations**	5" AC Overlay

This section of highway starts at Forest Avenue and continues 2,297 feet west of Forest Avenue towards SR Hwy 99. The structural section measured consists of an asphalt surface that is 6.0 inches thick in eastbound lane.

The lane has alligator cracking, longitudinal and transverse cracking. Coring was completed, and the existing pavement thickness was measured to be 6.0 inches in the eastbound lane. This thickness was utilized for all analysis performed. The photograph shows the existing condition of the pavement on the day of testing.

Figure 1 of this report shows the existing pavement thickness for each test section, the CTM 356 overlay requirement, and the approximate location of each test section. Figure 2 of this report shows the primary design recommendations for each section of pavement.

CHEC's Design Recommendation

For this section of road to satisfy both the structural and reflective cracking requirements of the design procedure, we recommend:

Primary Design

Mill the existing pavement surface 3 ½ inches and overlay the remaining pavement with 4 ½ inches of AC. The pavement thickness after milling will be 2 ½ inches thick. With the recommended overlay thickness being greater than half the remaining pavement thickness after milling, a paving fabric is not required to prevent reflective cracking. The overall elevation change for these pavement sections will be one inch higher than the existing surface elevation.

Based on CTM 356 analysis, the current structural requirement for these street sections is 0.40 feet of AC overlay in the eastbound direction. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

Figure 1 of this report shows the existing pavement thickness for each test section, the CTM 356 overlay requirement, and the approximate location of each test section.

Figure 2 of this report shows the primary design recommendations for each section of pavement.

Alternate Design Recommendation

CHEC Management Systems, Inc. recommends overlaying this section of highway with 5.0 inches of AC. This overlay will have a total elevation change of 5 .0 inches higher than the existing surface elevation. Shoulder backing may be required as part of the overall design.

Currently structural requirement for these street sections is 0.40 feet of AC overlay in the eastbound direction. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

SR Hwy 32, Chico, CA
2,297 Ft. West of Forrest Avenue to SR Hwy 99 North On-Ramp
Westbound Direction
(WB: 10,119 ft. to 12,363 ft.)

Section Limits: (Approx.)	2,297 ft west of Forrest Ave to SR Hwy 99 N. On-Ramp (WB: 10,119 to 12,363 ft.)	**Current Structural Section**	WB1: 4 ½ inches of AC WB2: 4 ¾ inches of AC
Direction Tested	**WB Directions of Travel** WB #1 and WB #2	**CTM 356 – T.I. 10.5**	WB1: 0.30 ft. AC Overlay WB2: 0.45 ft. AC Overlay
CHEC Primary Recommendation	Mill 2 ¾" / 6.0" AC Overlay	**CHEC Alternate Recommendations**	5 ½" AC Overlay

This section of highway starts approximately 2,297 feet west of Forrest Avenue and continues west to the On-Ramps to northbound SR Hwy 99. The structural section consists of an asphalt surface that is 4 ½ inches thick in the westbound #1 lane, and 4 ¾ inches thick in the westbound #2 lane, with no fabric being found below the existing surface. The photograph above shows the condition of the road on the day of testing.

This section of highway has alligator, longitudinal, and transverse cracking present. Full-Depth AC repairs will be required as part of the overall pavement rehabilitation process and design. Refer to the "Designer Notes" section of this report to understand all associated design requirements and recommendations.

CHEC's Design Recommendation

For this section of road to satisfy both the structural and reflective cracking requirements of the design procedure, we recommend:

Primary Design

Mill the existing pavement surface 2 ¾ inches and overlay the remaining pavement with a 6.0 inch AC overlay. The pavement thickness after milling will be 1 ¾ inches thick. With the recommended overlay thickness being greater than half the remaining pavement thickness after milling, a paving fabric is not required to prevent reflective cracking. The overall elevation change for these pavement sections will be 3 ¼ inch higher than the existing surface elevation.

Based on CTM 356 analysis, the current structural requirement for these street sections is 0.30 feet of AC overlay in the westbound #1 lane, and 0.45 feet AC Overlay in the westbound #2 lane. The westbound #2 lane is the controlling design factor for this section of highway. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

Figure 1 of this report shows the existing pavement thickness for each test section, the CTM 356 overlay requirement, and the approximate location of each test section. Figure 2 of this report shows the primary design recommendations for each section of pavement.

Alternate Design Recommendation

CHEC Management Systems, Inc. recommends overlaying this section of highway with 5 ½ inches of AC. This overlay will have a total elevation change of 5 ½ inches higher than the existing surface elevation. Shoulder backing may be required as part of the overall design.

Currently structural requirement for these street sections is 0.45 feet of AC overlay in the westbound #2 lane, which is the controlling design lane. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

SR Hwy 32, Chico, CA
Directional Pavement Lane Split to Fir Street
(Eastbound Driection of Travel)
(WB: 10,119 to 11,984 Ft.)

Section Limits: (Approx.)	Directional Split to Fir Street EASTBOUND Direction (WB: 10,119 to 11,984 ft.)	**Current Structural Section**	EB2: 5.0 inches of AC
Direction Tested	Eastbound Lanes	**CTM 356 – T.I. 10.5**	0.35 ft. AC Overlay
CHEC Primary Recommendation	Mill 3.0" / 5.0" AC Overlay	**CHEC Alternate Recommendations**	4 ½" AC Overlay

This section of highway starts at the directional lane split of the highway and continues west to Fir Street. The structural section of the street in this section consists of an asphalt surface that is 5.0 inches thick and was measured in the eastbound number two lane. The pavement thickness was taken at the location where deflection testing was completed. The photo shows the condition of the road on the day of testing.

This section of street has alligator, longitudinal and transverse cracking. The alligator cracking has signs of spauling. This means that the pavement has a high degree of movement, which was also verified by the deflections taken.

The following recommendation is based off the deflection testing completed. Reflective crack control played a part in the development of the overall final designs.

CHEC's Design Recommendation

For this section of road to satisfy both the structural and reflective cracking requirements of the design procedure, we recommend:

The structural requirement for this section of street is 0.35 feet of AC overlay. By milling the existing pavement 3.0 inches and placing a 5.0 inch AC overlay over the milled surface, it will satisfy the structural requirements and the reflective crack control requirements. The total elevation change for this design will be 2.0 inches higher than the existing pavement surface elevation. Special consideration will need to be taken to match, or transition, this design with the rehabilitation design of the adjacent project/test section.

Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

Figure 1 of this report shows the existing pavement thickness for each test section, the CTM 356 overlay requirement, and the approximate location of each test section. Figure 2 of this report shows the primary design recommendations for each section of pavement.

Alternate Design Recommendation

CHEC Management Systems, Inc. recommends overlaying this section of highway with 4 ½ inches of AC. This overlay will have a total elevation change of 4 ½ inches higher than the existing surface elevation. Shoulder backing may be required as part of the overall design.

Currently structural requirement for these street sections is 0.35 feet of AC overlay in the eastbound #2 lane, which is the controlling design lane. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

SR Hwy 32, Chico, CA
Fir Street to NB Off-Ram of Hwy 99
EASTBOUND DIRECTION
(WB: 11,984 ft. to 12,363 ft.)

Section Limits: (Approx.)	Fir Street to Off-Ramp of NB Hwy 99 (Eastbound Direction) WB: 11,984 to 12,363 ft.	**Current Structural Section**	EB1: 8.0 inches of AC
Direction Tested	Easatbound Lane	**CTM 356 – T.I. 10.5**	EB1: 0.45 ft. AC Overlay
CHEC Primary Recommendation	Mill 4" / 7 ½" AC Overlay	**CHEC Alternate Recommendations**	5 ½" AC Overlay

This section of highway starts at Fir Street and continues west to NB Off-Ramp of highway 99 North. This section of street has alligator, longitudinal and transverse cracking. The structural section of the street in this section consists of an asphalt surface that is 8.0 inches thick and was measured in the eastbound #1 lane. The pavement thickness was taken at the location where deflection testing was completed. The photo shows the condition of the road on the day of testing.

The following recommendation is based off the deflection testing completed. Reflective crack control played a part in the development of the overall final designs.

CHEC's Design Recommendation

For this section of road to satisfy both the structural and reflective cracking requirements of the design procedure, we recommend:

Primary Design

Mill the existing pavement surface 4.0 inches and overlay the remaining pavement with a 7 ½ inch AC overlay. The pavement thickness after milling will be 4.0 inches thick. With the recommended overlay thickness being greater than ½ the remaining pavement thickness after milling, a paving fabric is not required to prevent reflective cracking. The overall elevation change for these pavement sections will be 3 ½ inches higher than the existing surface elevation.

Based on CTM 356 analysis, the current structural requirement for these street sections is 0.45 feet of AC overlay in the eastbound #1 lane. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

Figure 1 of this report shows the existing pavement thickness for each test section, the CTM 356 overlay requirement, and the approximate location of each test section. Figure 2 of this report shows the primary design recommendations for each section of pavement.

Alternate Design Recommendation

CHEC Management Systems, Inc. recommends overlaying this section of highway with 5 ½ inches of AC. This overlay will have a total elevation change of 5 ½ inches higher

than the existing surface elevation. Shoulder backing may be required as part of the overall design.

Currently structural requirement for these street sections is 0.45 feet of AC overlay in the eastbound #1 lane which is the controlling design lane. Full-depth AC repairs should be completed in areas that have moderate to severe alligator cracking and areas where rutting and/or pumping of the alligator cracking or pavement is occurring. All full-depth AC repairs should extend at least 2 inches below the existing AC layer.

APPENDIX

Figures 1 & 2
Deflection Plots & Graph
Additional Photographs

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32
2.34 MILES E - HWY 99W
WB: 2076 - 4280

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	20	22	17	8	25

STRUCTURAL DATA Thickness: 3.50 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	20	15	25	0.10

ROAD: Hwy 32
2.34 MILES E - HWY 99E
WB: 5760 - 6383

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	28	31	24	13	31

STRUCTURAL DATA Thickness: 5.00 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	28	13	54	0.40

ROAD: Hwy 32
2.34 MILES E - HWY 99E
WB: 7702 - 7822

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	26	28	22	15	31

STRUCTURAL DATA Thickness: 7.00 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	26	11	57	0.45

ROAD: Hwy 32
2.34 MILES E - HWY 99E
WB: 10119 - 11984

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	33	34	29	23	38

STRUCTURAL DATA Thickness: 4.75 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	33	13	60	0.45

ROAD: Hwy 32
2.34 MILES E - HWY 99E
WB: 11984 - 12363

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	24	26	21	14	28

STRUCTURAL DATA Thickness: 4.50 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	24	13	47	0.30

Dynaflect Analysis

Engineering Services Dept.
CHEC Management Systems, Inc.

ROAD: Hwy 32
HWY 99W - 2.34 MILES E
EB2: 0 - 479

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	25	29	18	6	36

STRUCTURAL DATA Thickness: 8.00 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	25	11	56	0.45

ROAD: Hwy 32
HWY 99E - 2.34 MILES E
EB2: 479 - 2140

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	26	27	23	17	28

STRUCTURAL DATA Thickness: 5.00 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	26	13	49	0.35

ROAD: Hwy 32
HWY 99E - 2.34 MILES E
EB: 2140 - 4437

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	23	25	19	12	31

STRUCTURAL DATA Thickness: 6.00 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	23	11	52	0.40

ROAD: Hwy 32
HWY 99E - 2.34 MILES E
EB: 4557 - 5876

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	20	21	17	11	26

STRUCTURAL DATA Thickness: 8.00 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	20	11	44	0.30

ROAD: Hwy 32
HWY 99E - 2.34 MILES E
EB: 6499 - 7979

STATISTICAL ANALYSIS	80th %	90th %	Mean	Min	Max
	24	26	18	11	35

STRUCTURAL DATA Thickness: 6.00 TI: 10.5

STRUCTURAL DESIGN	Deflec	Toler	% Reduction	Overlay
	24	11	53	0.40

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

HWY 99E - 2.34 MILES E

EB: 10219 - 12295

STATISTICAL ANALYSIS

80th %	90th %	Mean	Min	Max
20	21	17	11	27

STRUCTURAL DATA

Thickness: 5.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
20	13	34	0.20

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

2.34 MILES E - HWY 99W ...x|....

WB: 2076 - 4280	Reading	Plot	Comment
Interval 2076	72.00	16	
Interval 2126	73.00	16	
Interval 2176	78.00	17	
Interval 2226	74.00	16	
Interval 2276	83.00	18	
Interval 2326	89.00	19	
Interval 2376	85.00	18	
Interval 2426	77.00	17	
Interval 2476	88.00	19	
Interval 2526	76.00	16	
Interval 2576	70.00	15	
Interval 2626	76.00	16	
Interval 2676	75.00	16	
Interval 2726	66.00	14	
Interval 2776	81.00	17	
Interval 2826	37.00	8	
Interval 2876	59.00	13	
Interval 2926	56.00	12	
Interval 2976	69.00	15	
Interval 3026	56.00	12	
Interval 3076	50.00	11	
Interval 3126	55.00	12	
Interval 3176	71.00	15	
Interval 3226	94.00	20	
Interval 3276	76.00	16	
Interval 3326	85.00	18	
Interval 3376	77.00	17	
Interval 3426	96.00	21	
Interval 3476	88.00	19	
Interval 3526	93.00	20	
Interval 3576	83.00	18	
Interval 3626	97.00	21	
Interval 3676	95.00	20	
Interval 3726	106.00	23	
Interval 3776	78.00	17	
Interval 3826	72.00	16	
Interval 3876	64.00	14	
Interval 3926	66.00	14	
Interval 3976	90.00	19	
Interval 4026	102.00	22	
Interval 4076	88.00	19	
Interval 4126	95.00	20	
Interval 4176	116.00	25	
Interval 4226	96.00	21	
Interval 4276	109.00	24	

STATISTICAL ANALYSIS

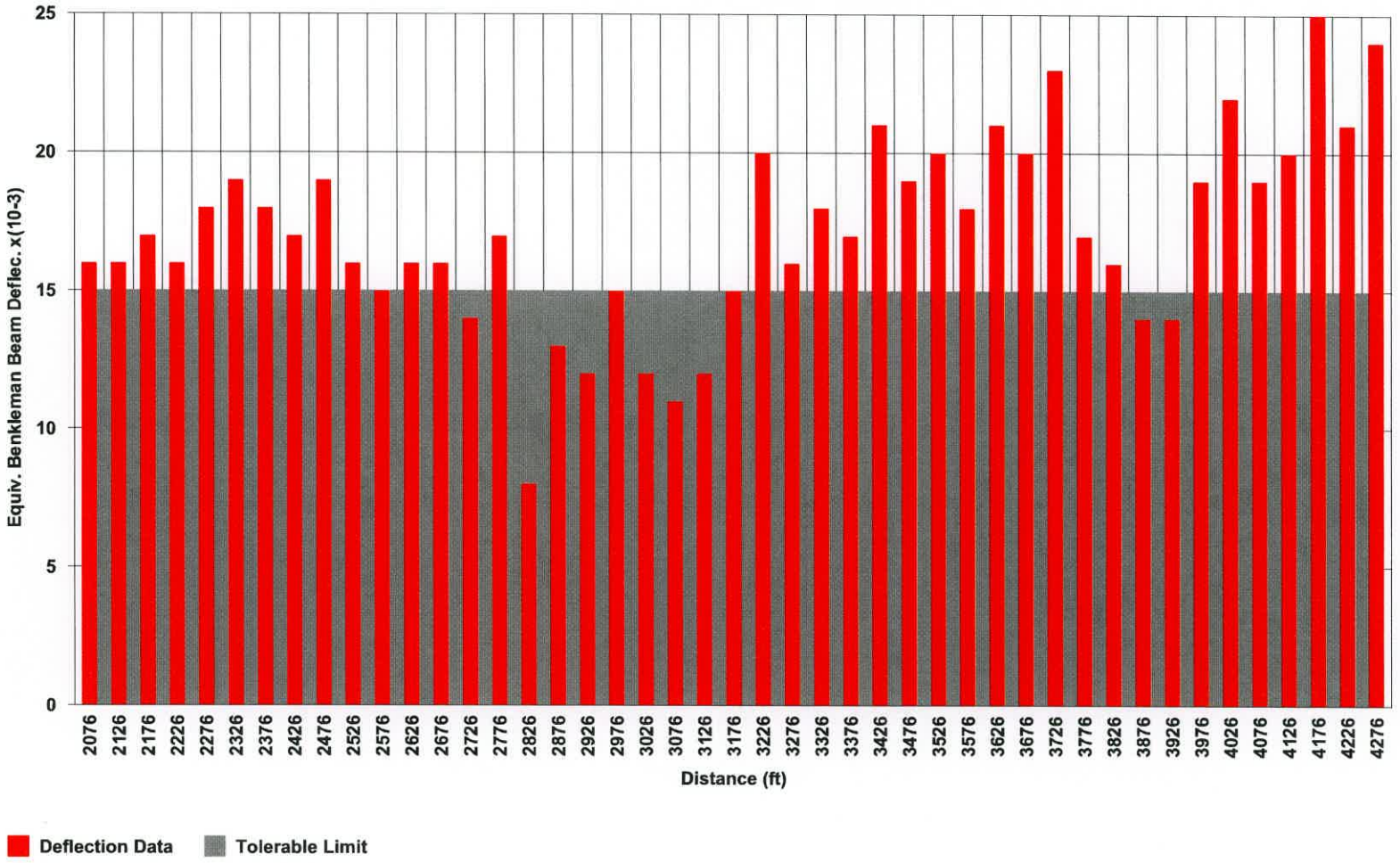
80th %	90th %	Mean	Min	Max
20	22	17	8	25

STRUCTURAL DATA Thickness: 3.50 TI: 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
20	15	25	0.10

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 Direction: W(...x|....) Start: 2076 Interval: 50 ft
Road Number: WB: 2076 - 4280 From: 2.34 MILES E To: HWY 99W

STATISTICAL ANALYSIS AS TESTED 80th %: 20 90th %: 22 Mean: 17 Min: 8 Max: 25

STRUCTURAL DATA Thickness: 3.50 TI: 10.5

STRUCTURAL DESIGN AS TESTED Deflection: 20 Tolerable: 15 % Reduction: 25 Overlay: 0.10 ft

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

2.34 MILES E - HWY 99E ...x|....

WB: 5760 - 6383	Reading	Plot	Comment
Interval 5760	134.00	29	
Interval 5810	121.00	26	
Interval 5860	146.00	31	
Interval 5910	136.00	29	
Interval 5960	116.00	25	
Interval 6010	122.00	26	
Interval 6060	115.00	25	
Interval 6110	104.00	22	
Interval 6160	103.00	22	
Interval 6210	120.00	26	
Interval 6260	132.00	28	
Interval 6310	97.00	21	
Interval 6360	101.00	22	
Interval 6410	78.00	17	
Interval 6460	58.00	13	

STATISTICAL ANALYSIS

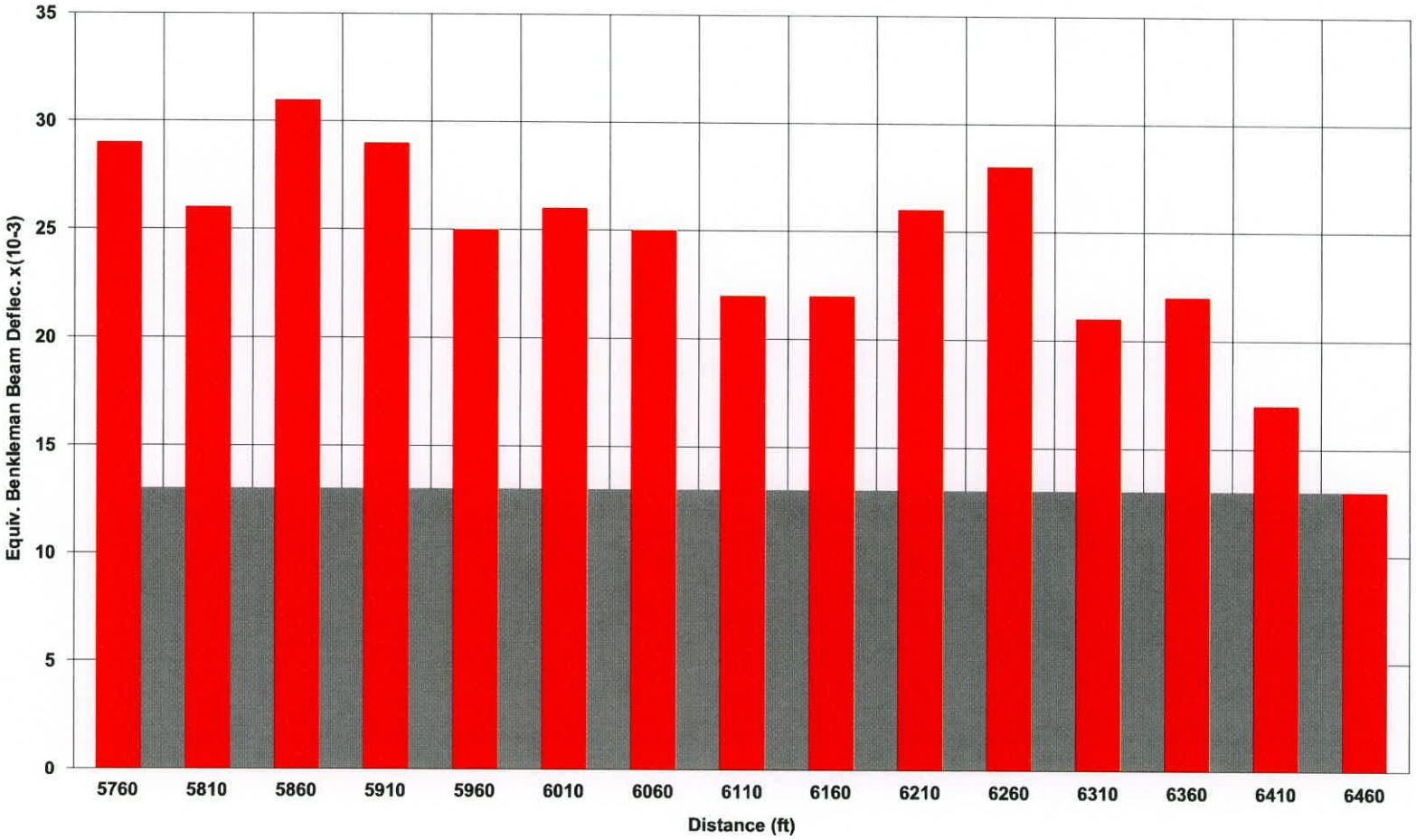
80th %	90th %	Mean	Min	Max
28	31	24	13	31

STRUCTURAL DATA **Thickness:** 5.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
28	13	54	0.40

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 Direction: W(...x|....) Start: 5760 Interval: 50 ft
Road Number: WB: 5760 - 6383 From: 2.34 MILES E To: HWY 99W

STATISTICAL ANALYSIS AS TESTED 80th %: 28 90th %: 31 Mean: 24 Min: 13 Max: 31

STRUCTURAL DATA Thickness: 5.00 TI: 10.5

STRUCTURAL DESIGN AS TESTED Deflection: 28 Tolerable: 13 % Reduction: 54 Overlay: 0.40 ft

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

2.34 MILES E - HWY 99E ...x|....

WB: 7702 - 7822	Reading	Plot	Comment
Interval 7702	116.00	25	
Interval 7752	70.00	15	
Interval 7802	135.00	29	
Interval 7852	144.00	31	
Interval 7902	111.00	24	
Interval 7952	93.00	20	
Interval 8002	78.00	17	
Interval 8052	78.00	17	
Interval 8102	81.00	17	
Interval 8152	137.00	30	
Interval 8202	91.00	20	
Interval 8252	89.00	19	
Interval 8302	82.00	18	
Interval 8352	97.00	21	
Interval 8402	113.00	24	
Interval 8452	81.00	17	

STATISTICAL ANALYSIS

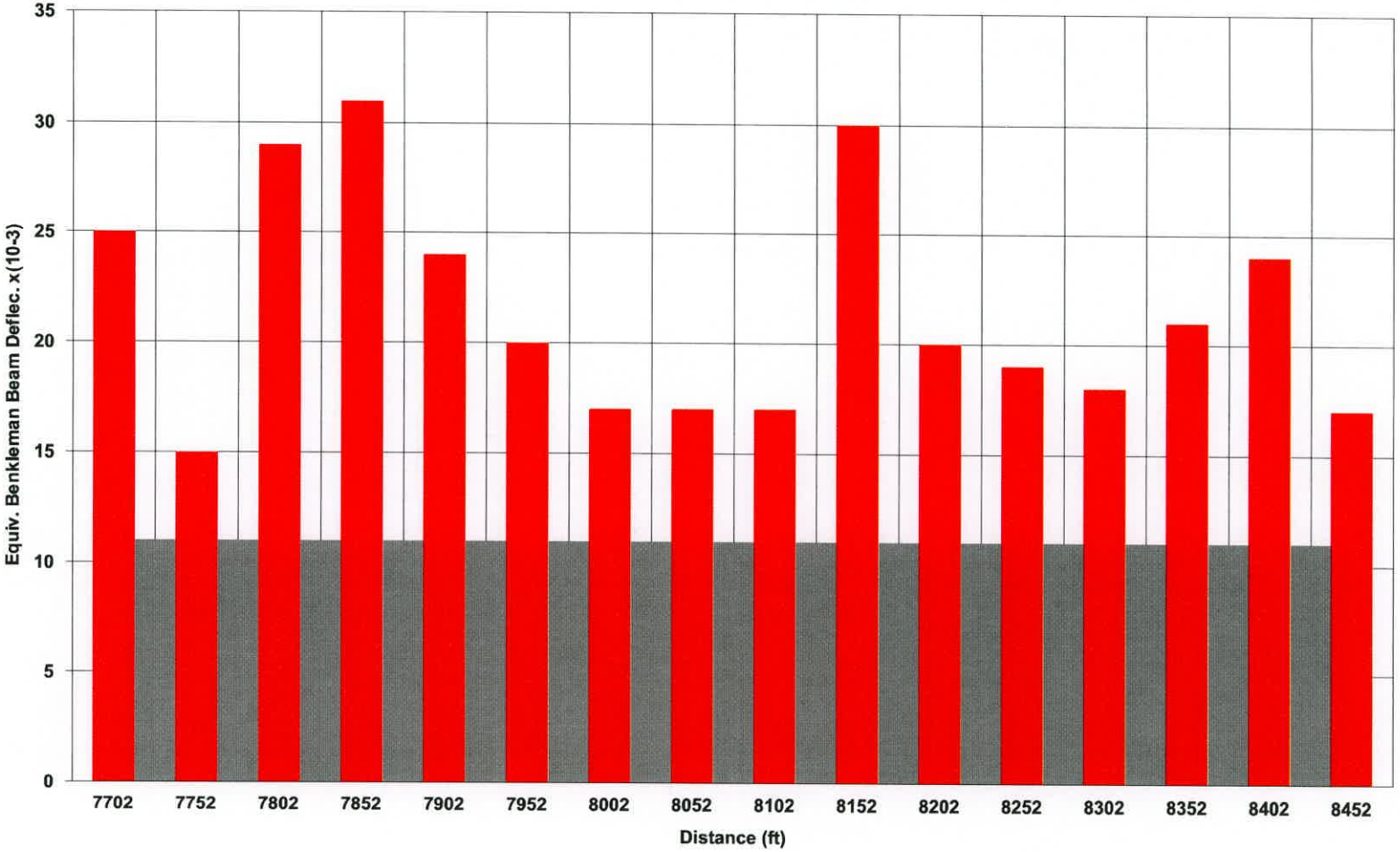
80th %	90th %	Mean	Min	Max
26	28	22	15	31

STRUCTURAL DATA **Thickness:** 7.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
26	11	57	0.45

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 Direction: W(...x|....) Start: 7702 Interval: 50 ft
Road Number: WB: 7702 - 7822 From: 2.34 MILES E To: HWY 99W

STATISTICAL ANALYSIS AS TESTED 80th %: 26 90th %: 28 Mean: 22 Min: 15 Max: 31

STRUCTURAL DATA Thickness: 7.00 TI: 10.5

STRUCTURAL DESIGN AS TESTED Deflection: 26 Tolerable: 11 % Reduction: 57 Overlay: 0.45 ft

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

2.34 MILES E - HWY 99E ...x|....

WB: 10119 - 11984	Reading	Plot	Comment
Interval 10119	130.00	28	
Interval 10169	111.00	24	
Interval 10219	109.00	24	
Interval 10269	143.00	31	
Interval 10319	108.00	23	
Interval 10369	123.00	27	
Interval 10419	140.00	30	
Interval 10469	146.00	31	
Interval 10519	120.00	26	
Interval 10569	123.00	27	
Interval 10619	117.00	25	
Interval 10669	134.00	29	
Interval 10719	108.00	23	
Interval 10769	129.00	28	
Interval 10819	122.00	26	
Interval 10869	131.00	28	
Interval 10919	128.00	28	
Interval 10969	156.00	34	
Interval 11019	137.00	30	
Interval 11069	136.00	29	
Interval 11119	146.00	31	
Interval 11169	144.00	31	
Interval 11219	174.00	38	
Interval 11269	111.00	24	
Interval 11319	138.00	30	
Interval 11369	140.00	30	
Interval 11419	157.00	34	
Interval 11469	165.00	36	
Interval 11519	171.00	37	
Interval 11569	154.00	33	
Interval 11619	150.00	32	
Interval 11669	158.00	34	
Interval 11719	150.00	32	
Interval 11769	125.00	27	
Interval 11819	130.00	0	
Interval 11869	132.00	28	
Interval 11919		0	

STATISTICAL ANALYSIS

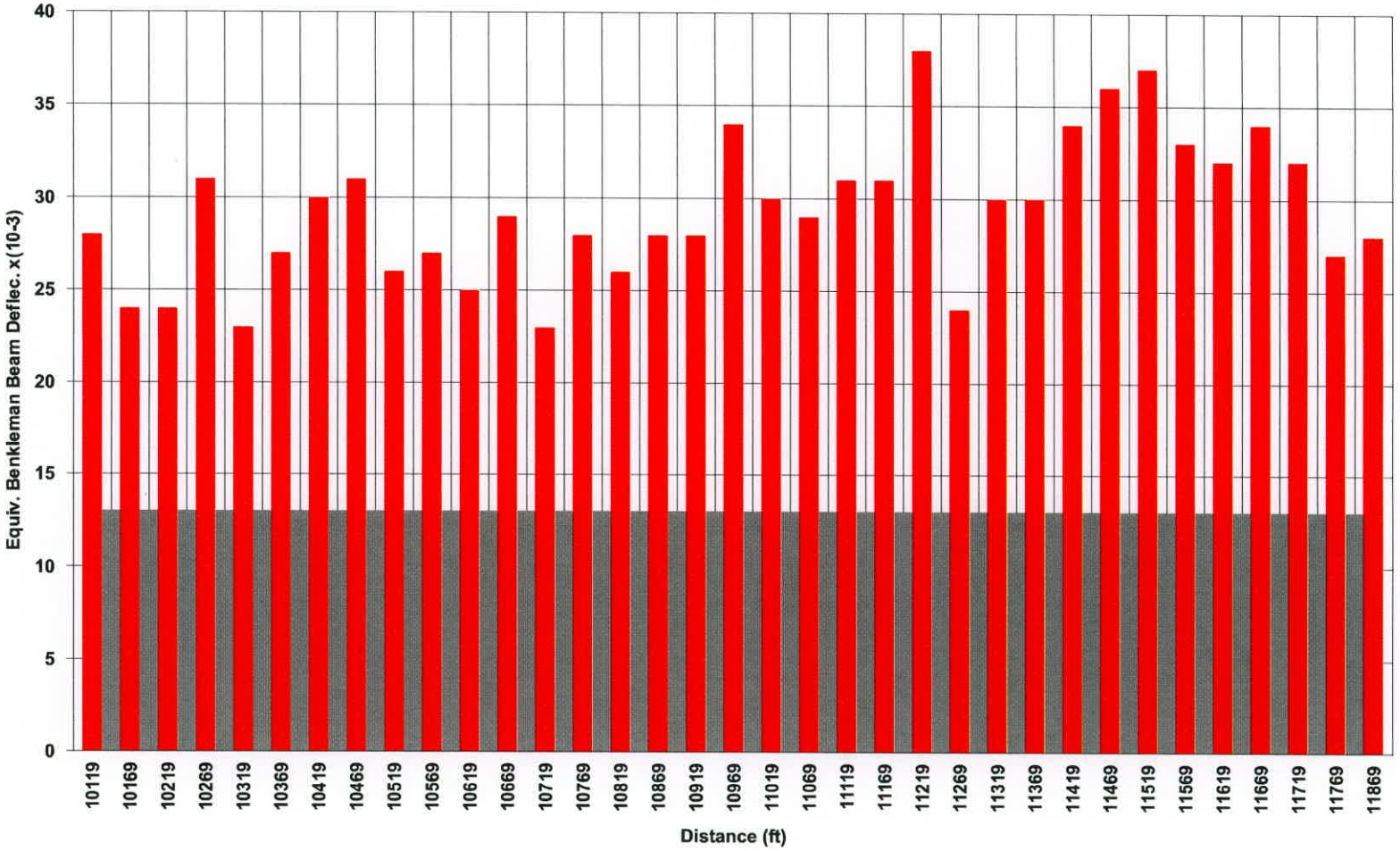
80th %	90th %	Mean	Min	Max
33	34	29	23	38

STRUCTURAL DATA Thickness: 4.75 TI: 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
33	13	60	0.45

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 **Direction: W(...x|....)** **Start: 10119** **Interval: 50 ft**
Road Number: WB: 10119 - 11984 **From: 2.34 MILES E** **To: HWY 99W**

STATISTICAL ANALYSIS AS TESTED **80th %: 33** **90th %: 34** **Mean: 29** **Min: 23** **Max: 38**

STRUCTURAL DATA **Thickness: 4.75** **TI: 10.5**

STRUCTURAL DESIGN AS TESTED **Deflection: 33** **Tolerable: 13** **% Reduction: 60** **Overlay: 0.45 ft**

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

2.34 MILES E - HWY 99E ...x|....

WB: 11984 - 12363	Reading	Plot	Comment
Interval 11984	131.00	28	
Interval 12003	127.00	27	
Interval 12022	95.00	20	
Interval 12041	66.00	14	
Interval 12060	123.00	27	
Interval 12079	96.00	21	
Interval 12098	85.00	18	
Interval 12117	94.00	20	
Interval 12136	102.00	22	
Interval 12155	110.00	24	
Interval 12174	105.00	23	
Interval 12193	121.00	26	
Interval 12212	105.00	23	
Interval 12231	115.00	25	
Interval 12250	103.00	22	
Interval 12269	105.00	23	
Interval 12288	113.00	24	
Interval 12307	75.00	16	
Interval 12326	89.00	19	
Interval 12345	85.00	18	
Interval 12364	88.00	19	
Interval 12383	77.00	17	
Interval 12402	76.00	16	
Interval 12421	77.00	17	

STATISTICAL ANALYSIS

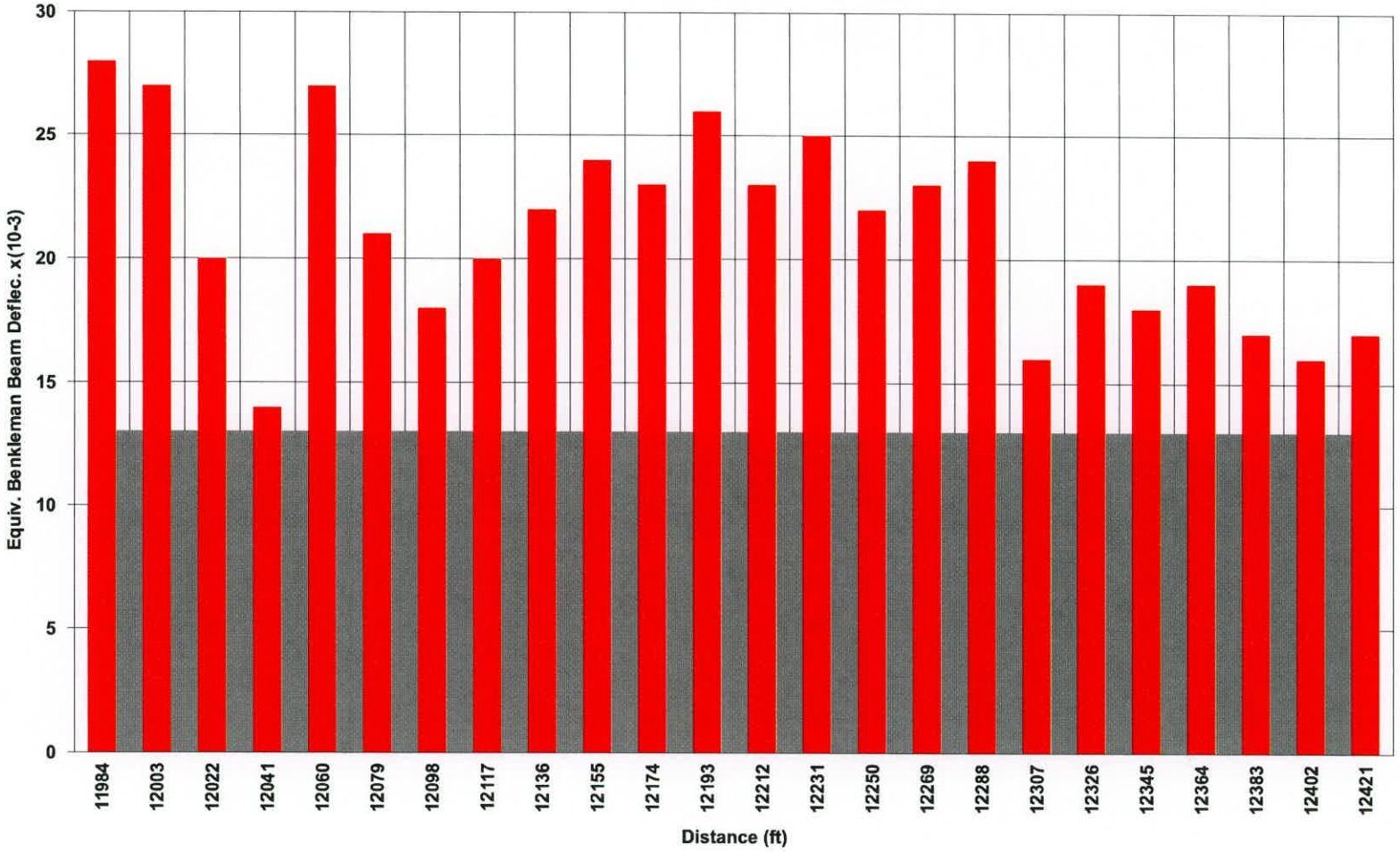
80th %	90th %	Mean	Min	Max
24	26	21	14	28

STRUCTURAL DATA **Thickness:** 4.50 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
24	13	47	0.30

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Deflection Data Tolerable Limit

Road Name: Hwy 32 Direction: W(...x|....) Start: 11984 Interval: 19 ft
Road Number: WB: 11984 - 12363 From: 2.34 MILES E To: HWY 99W

STATISTICAL ANALYSIS AS TESTED 80th %: 24 90th %: 26 Mean: 21 Min: 14 Max: 28

STRUCTURAL DATA Thickness: 4.50 TI: 10.5

STRUCTURAL DESIGN AS TESTED Deflection: 24 Tolerable: 13 % Reduction: 47 Overlay: 0.30 ft

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

HWY 99W - 2.34 MILES E ....|x...

EB2: 0 - 479	Reading	Plot	Comment
Interval 79	166.00	36	
Interval 95	134.00	29	
Interval 111	144.00	31	
Interval 127	112.00	24	
Interval 143	132.00	28	
Interval 159	122.00	26	
Interval 175	134.00	29	
Interval 191	134.00	29	
Interval 207	127.00	27	
Interval 223	105.00	23	
Interval 239	118.00	25	
Interval 255	98.00	21	
Interval 271	102.00	22	
Interval 287	77.00	17	
Interval 303	64.00	14	
Interval 319	67.00	14	
Interval 335	55.00	12	
Interval 351	54.00	12	
Interval 367	37.00	8	
Interval 383	43.00	9	
Interval 399	30.00	6	
Interval 415	45.00	10	
Interval 431	41.00	9	
Interval 447	40.00	9	
Interval 463	39.00	8	
Interval 479	53.00	11	
Interval 495	69.00	15	
Interval 511	73.00	16	
Interval 527	77.00	17	
Interval 543	71.00	15	
Interval 559	61.00	13	
Interval 575	61.00	13	

STATISTICAL ANALYSIS

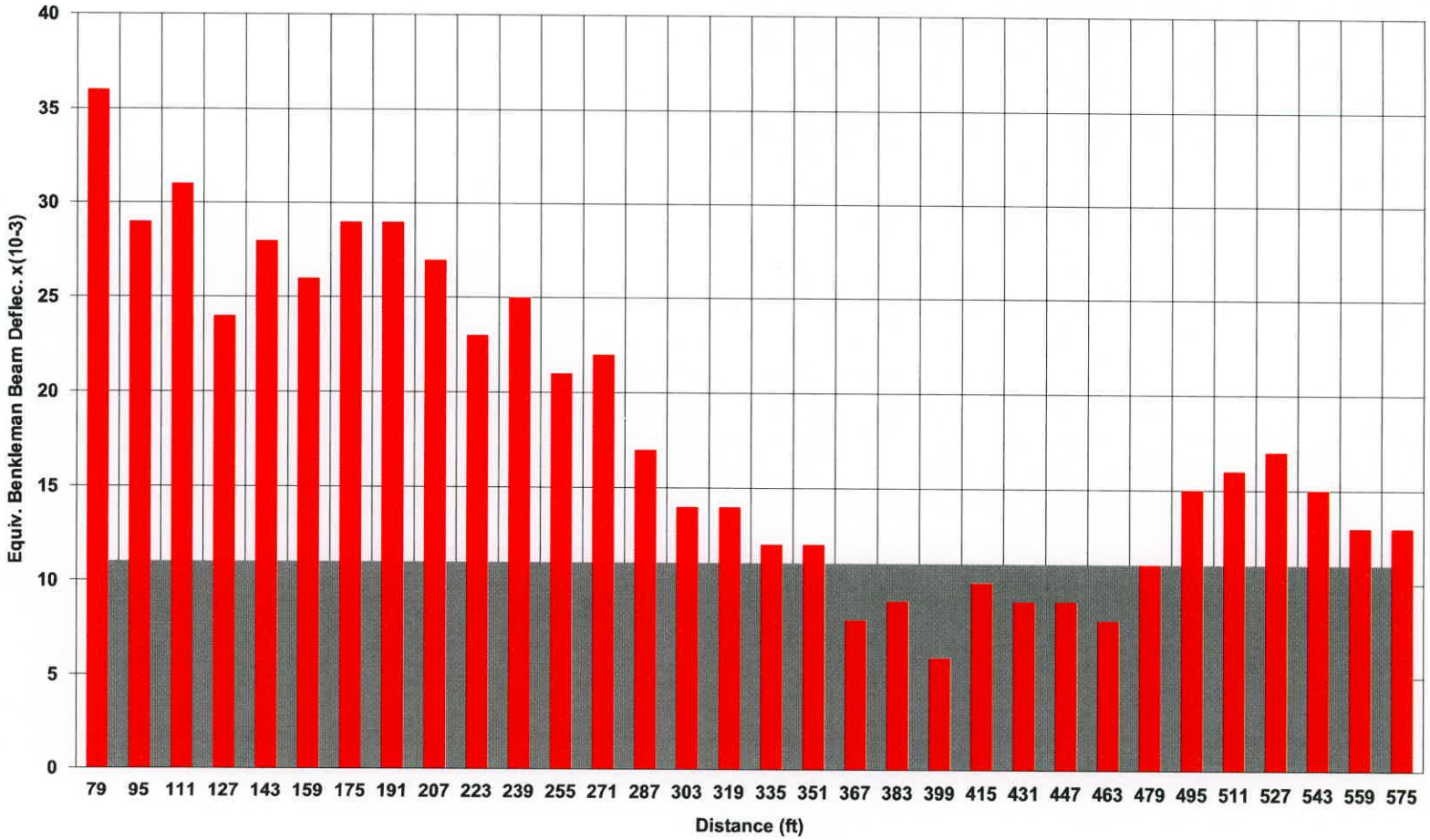
80th %	90th %	Mean	Min	Max
25	29	18	6	36

STRUCTURAL DATA **Thickness:** 8.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
25	11	56	0.45

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Deflection Data Tolerable Limit

Road Name: Hwy 32 Direction: E(....|x...) Start: 79 Interval: 16 ft
Road Number: EB2: 0 - 479 From: HWY 99W To: 2.34 MILES E

STATISTICAL ANALYSIS AS TESTED 80th %: 25 90th %: 29 Mean: 18 Min: 6 Max: 36

STRUCTURAL DATA Thickness: 8.00 TI: 10.5

STRUCTURAL DESIGN AS TESTED Deflection: 25 Tolerable: 11 % Reduction: 56 Overlay: 0.45 ft

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

HWY 99E - 2.34 MILES E ....|.x..

EB2: 479 - 2140	Reading	Plot	Comment
Interval 479	80.00	17	
Interval 529	88.00	19	
Interval 579	110.00	24	A
Interval 629	109.00	24	A
Interval 679	115.00	25	A
Interval 729	114.00	25	A
Interval 779	114.00	25	A
Interval 829	118.00	25	A
Interval 879	126.00	27	A
Interval 929	109.00	24	A
Interval 979	113.00	24	A
Interval 1029	91.00	20	A
Interval 1079	116.00	25	A
Interval 1129	119.00	26	A
Interval 1179	81.00	17	A
Interval 1229	82.00	18	A
Interval 1279	77.00	17	A
Interval 1329	118.00	25	
Interval 1379	100.00	22	
Interval 1429	100.00	22	
Interval 1479	99.00	21	
Interval 1529	110.00	24	
Interval 1579	120.00	26	
Interval 1629	110.00	24	
Interval 1679	130.00	28	
Interval 1729	106.00	23	
Interval 1779	123.00	27	
Interval 1829	105.00	23	
Interval 1879	104.00	22	
Interval 1929	98.00	21	
Interval 1979	106.00	23	
Interval 2029	93.00	20	
Interval 2079	107.00	23	
Interval 2129	130.00	28	

STATISTICAL ANALYSIS

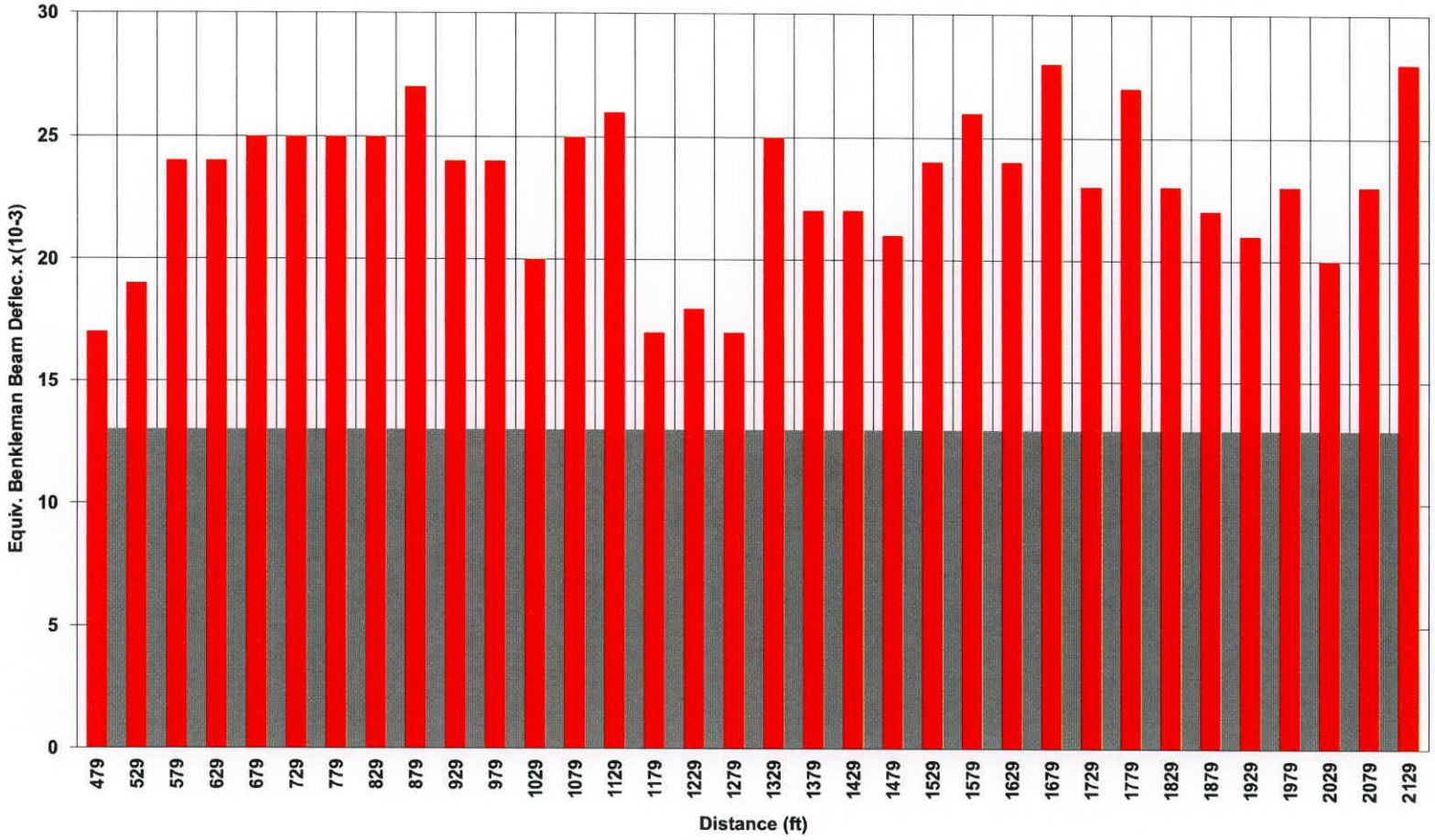
80th %	90th %	Mean	Min	Max
26	27	23	17	28

STRUCTURAL DATA **Thickness:** 5.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
26	13	49	0.35

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 **Direction: E(....|.x..)** **Start: 479** **Interval: 50 ft**
Road Number: EB2: 479 - 2140 **From: HWY 99W** **To: 2.34 MILES E**

STATISTICAL ANALYSIS AS TESTED **80th %: 26** **90th %: 27** **Mean: 23** **Min: 17** **Max: 28**

STRUCTURAL DATA **Thickness: 5.00** **TI: 10.5**

STRUCTURAL DESIGN AS TESTED **Deflection: 26** **Tolerable: 13** **% Reduction: 49** **Overlay: 0.35 ft**

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

HWY 99E - 2.34 MILES E ....|x...

EB: 2140 - 4437	Reading	Plot	Comment
Interval 2140	110.00	24	
Interval 2190	131.00	28	
Interval 2240	111.00	24	
Interval 2290	88.00	19	
Interval 2340	80.00	17	
Interval 2390	101.00	22	
Interval 2440	93.00	20	
Interval 2490	106.00	23	
Interval 2540	91.00	20	
Interval 2590	97.00	21	
Interval 2640	144.00	31	
Interval 2690	113.00	24	
Interval 2740	103.00	22	
Interval 2790	100.00	22	
Interval 2840	91.00	20	
Interval 2890	98.00	21	
Interval 2940	107.00	23	
Interval 2990	123.00	27	
Interval 3040	103.00	22	
Interval 3090	105.00	23	
Interval 3140	106.00	23	
Interval 3190	112.00	24	
Interval 3240	97.00	21	
Interval 3290	75.00	16	
Interval 3340	71.00	15	
Interval 3390	70.00	15	
Interval 3440	72.00	16	
Interval 3490	74.00	16	
Interval 3540	90.00	19	
Interval 3590	83.00	18	
Interval 3640	72.00	16	
Interval 3690	89.00	19	
Interval 3740	64.00	14	
Interval 3790	75.00	16	
Interval 3840	66.00	14	
Interval 3890	74.00	16	
Interval 3940	65.00	14	
Interval 3990	92.00	20	
Interval 4040	56.00	12	
Interval 4090	57.00	12	
Interval 4140	54.00	12	
Interval 4284	55.00	12	
Interval 4240	66.00	14	
Interval 4290	61.00	13	
Interval 4340	119.00	26	

STATISTICAL ANALYSIS

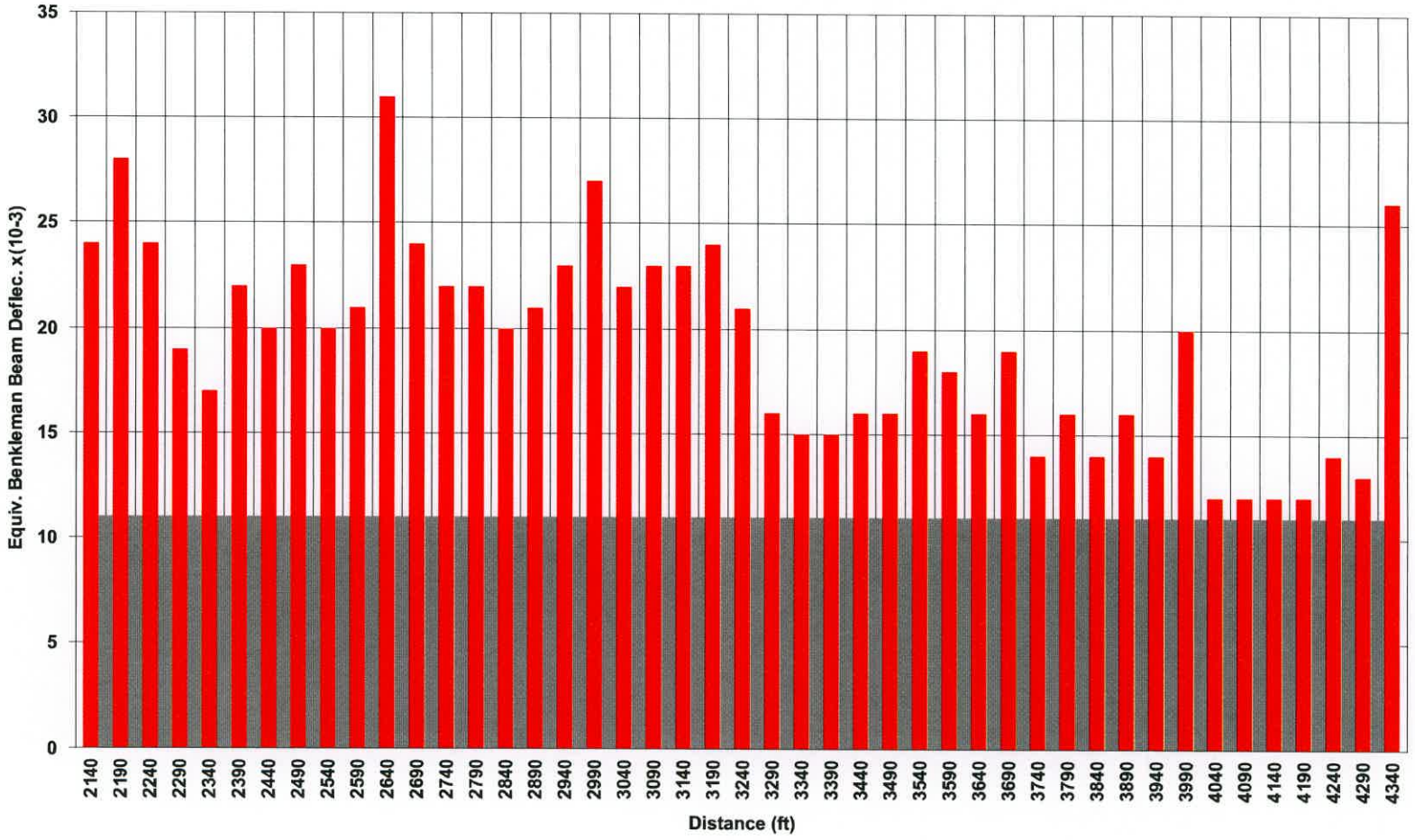
80th %	90th %	Mean	Min	Max
23	25	19	12	31

STRUCTURAL DATA **Thickness:** 6.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
23	11	52	0.40

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 **Direction: E(....|x...)** **Start: 2140** **Interval: 50 ft**
Road Number: EB: 2140 - 4437 **From: HWY 99W** **To: 2.34 MILES E**

STATISTICAL ANALYSIS AS TESTED **80th %: 23** **90th %: 25** **Mean: 19** **Min: 12** **Max: 31**

STRUCTURAL DATA **Thickness: 6.00** **TI: 10.5**

STRUCTURAL DESIGN AS TESTED **Deflection: 23** **Tolerable: 11** **% Reduction: 52** **Overlay: 0.40 ft**

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

HWY 99E - 2.34 MILES E ....|x...

EB: 4557 - 5876	Reading	Plot	Comment
Interval 4557	90.00	19	
Interval 4607	103.00	22	
Interval 4657	85.00	18	
Interval 4707	85.00	18	
Interval 4757	94.00	20	
Interval 4807	83.00	18	
Interval 4857	77.00	17	
Interval 4907	68.00	15	
Interval 4957	63.00	14	
Interval 5007	52.00	11	
Interval 5057	63.00	14	
Interval 5107	84.00	18	
Interval 5157	74.00	16	
Interval 5207	88.00	19	
Interval 5257	97.00	21	
Interval 5307	87.00	19	
Interval 5357	82.00	18	
Interval 5407	86.00	19	
Interval 5457	55.00	12	
Interval 5507	56.00	12	
Interval 5557	78.00	17	
Interval 5607	64.00	14	
Interval 5657	57.00	12	
Interval 5707	60.00	13	
Interval 5757	77.00	17	
Interval 5807	61.00	13	
Interval 5857	120.00	26	

STATISTICAL ANALYSIS

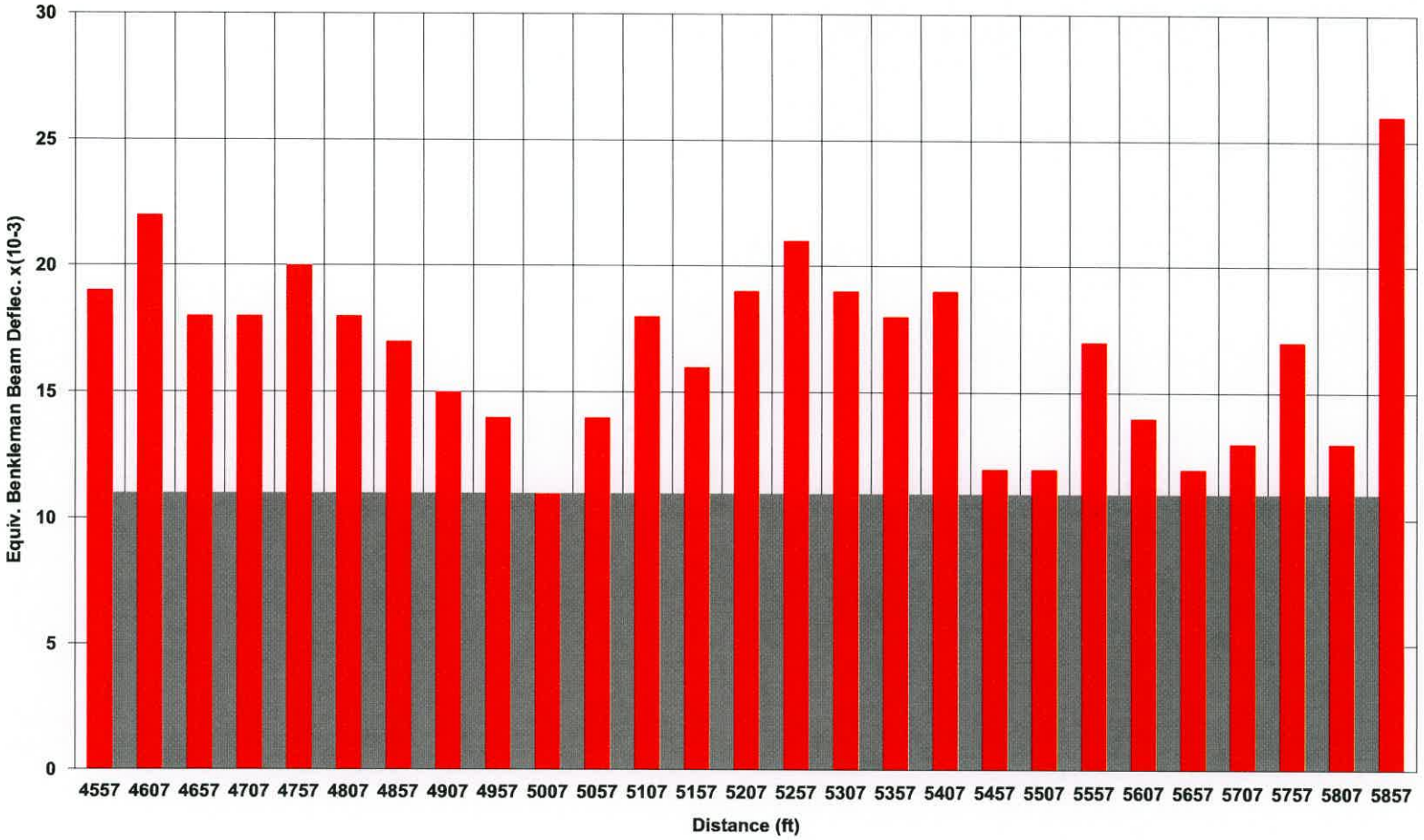
80th %	90th %	Mean	Min	Max
20	21	17	11	26

STRUCTURAL DATA **Thickness:** 8.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
20	11	44	0.30

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 **Direction: E(....|x...)** **Start: 4557** **Interval: 50 ft**
Road Number: EB: 4557 - 5876 **From: HWY 99W** **To: 2.34 MILES E**

STATISTICAL ANALYSIS AS TESTED **80th %: 20** **90th %: 21** **Mean: 17** **Min: 11** **Max: 26**

STRUCTURAL DATA **Thickness: 8.00** **TI: 10.5**

STRUCTURAL DESIGN AS TESTED **Deflection: 20** **Tolerable: 11** **% Reduction: 44** **Overlay: 0.30 ft**

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

HWY 99E - 2.34 MILES E ....|x...

EB: 6499 - 7979	Reading	Plot	Comment
Interval 6499	91.00	20	
Interval 6549	89.00	19	
Interval 6599	145.00	31	
Interval 6649	163.00	35	
Interval 6699	94.00	20	
Interval 6749	77.00	17	
Interval 6799	97.00	21	
Interval 6849	67.00	14	
Interval 6899	64.00	14	
Interval 6949	66.00	14	
Interval 6999	70.00	15	
Interval 7049	74.00	16	
Interval 7099	83.00	18	
Interval 7149	92.00	20	
Interval 7199	72.00	16	
Interval 7249	59.00	13	
Interval 7299	52.00	11	
Interval 7349	55.00	12	
Interval 7399	59.00	13	
Interval 7449	119.00	26	
Interval 7499	74.00	16	
Interval 7549	80.00	17	
Interval 7599	124.00	27	
Interval 7649	82.00	18	
Interval 7699	59.00	13	
Interval 7749	57.00	12	
Interval 7799	58.00	13	
Interval 7849	71.00	15	
Interval 7899	69.00	15	
Interval 7949	157.00	34	

STATISTICAL ANALYSIS

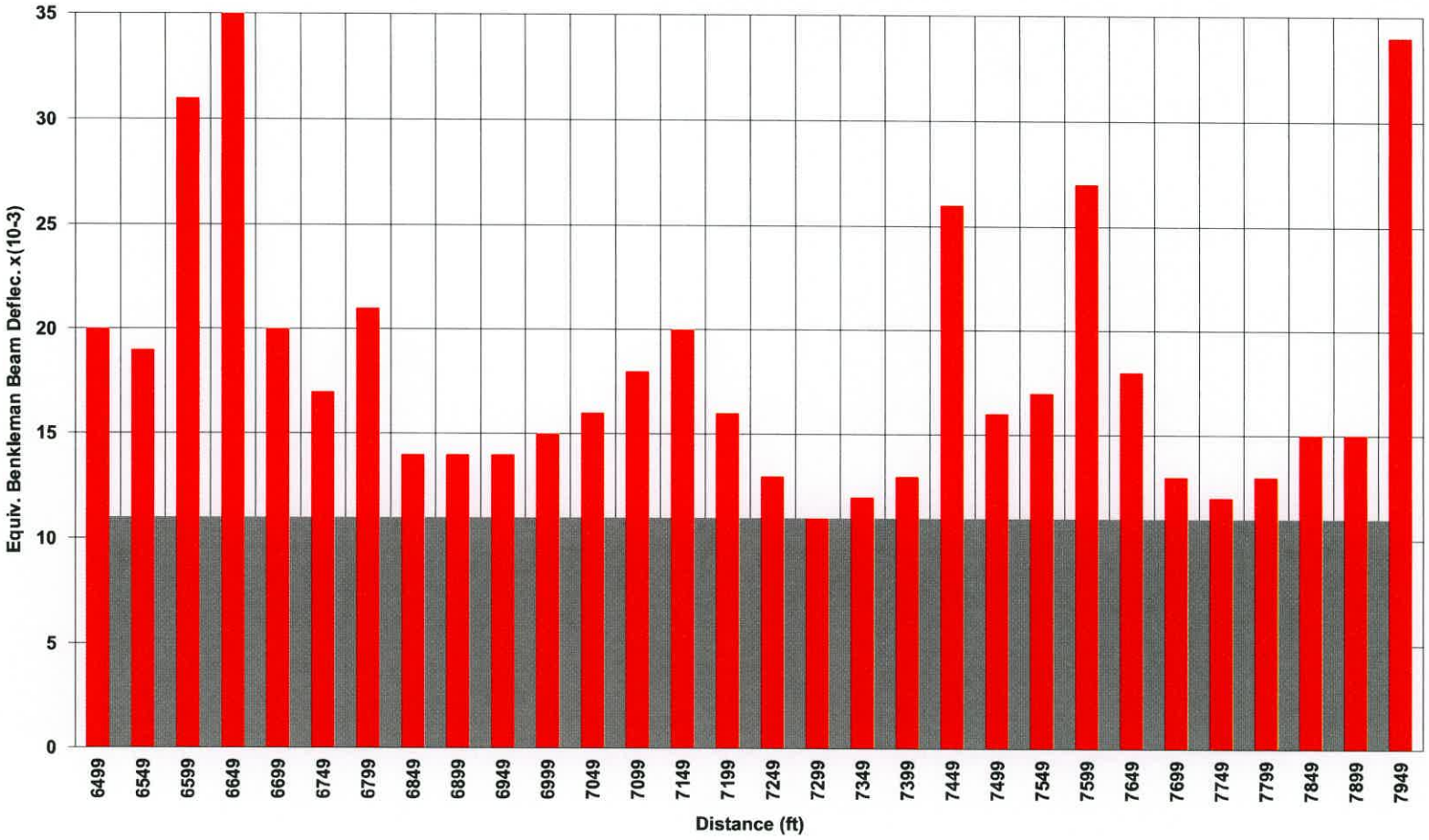
80th %	90th %	Mean	Min	Max
24	26	18	11	35

STRUCTURAL DATA **Thickness:** 6.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
24	11	53	0.40

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 **Direction:** E(....|x...) **Start:** 6499 **Interval:** 50 ft
Road Number: EB: 6499 - 7979 **From:** HWY 99W **To:** 2.34 MILES E

STATISTICAL ANALYSIS AS TESTED 80th %: 24 90th %: 26 Mean: 18 Min: 11 Max: 35

STRUCTURAL DATA Thickness: 6.00 TI: 10.5

STRUCTURAL DESIGN AS TESTED Deflection: 24 Tolerable: 11 % Reduction: 53 Overlay: 0.40 ft

Dynaflect Analysis

Engineering Services Dept.

CHEC Management Systems, Inc.

ROAD: Hwy 32

HWY 99E - 2.34 MILES E ....|x...

EB: 10219 - 12295	Reading	Plot	Comment
Interval 10219	123.00	27	
Interval 10269	66.00	14	
Interval 10319	67.00	14	
Interval 10369	88.00	19	
Interval 10419	97.00	21	
Interval 10469	69.00	15	
Interval 10519	83.00	18	
Interval 10569	84.00	18	
Interval 10619	93.00	20	
Interval 10669	80.00	17	
Interval 10719	77.00	17	
Interval 10769	62.00	13	
Interval 10819	61.00	13	
Interval 10869	65.00	14	
Interval 10919	74.00	16	
Interval 10969	73.00	16	
Interval 11019	72.00	16	
Interval 11069	122.00	26	
Interval 11119	75.00	16	
Interval 11169	76.00	16	
Interval 11219	82.00	18	
Interval 11269	83.00	18	
Interval 11319	71.00	15	
Interval 11369	75.00	16	
Interval 11419	53.00	11	
Interval 11469	77.00	17	
Interval 11519	90.00	19	
Interval 11569	88.00	19	
Interval 11619	94.00	20	
Interval 11669	83.00	18	
Interval 11719	81.00	17	
Interval 11769	88.00	19	
Interval 11819	75.00	16	
Interval 11869	80.00	17	
Interval 11919	93.00	20	
Interval 11969	74.00	16	
Interval 12019	82.00	18	
Interval 12069	79.00	17	
Interval 12119	84.00	18	
Interval 12169	89.00	19	
Interval 12219	76.00	16	
Interval 12269	81.00	17	

STATISTICAL ANALYSIS

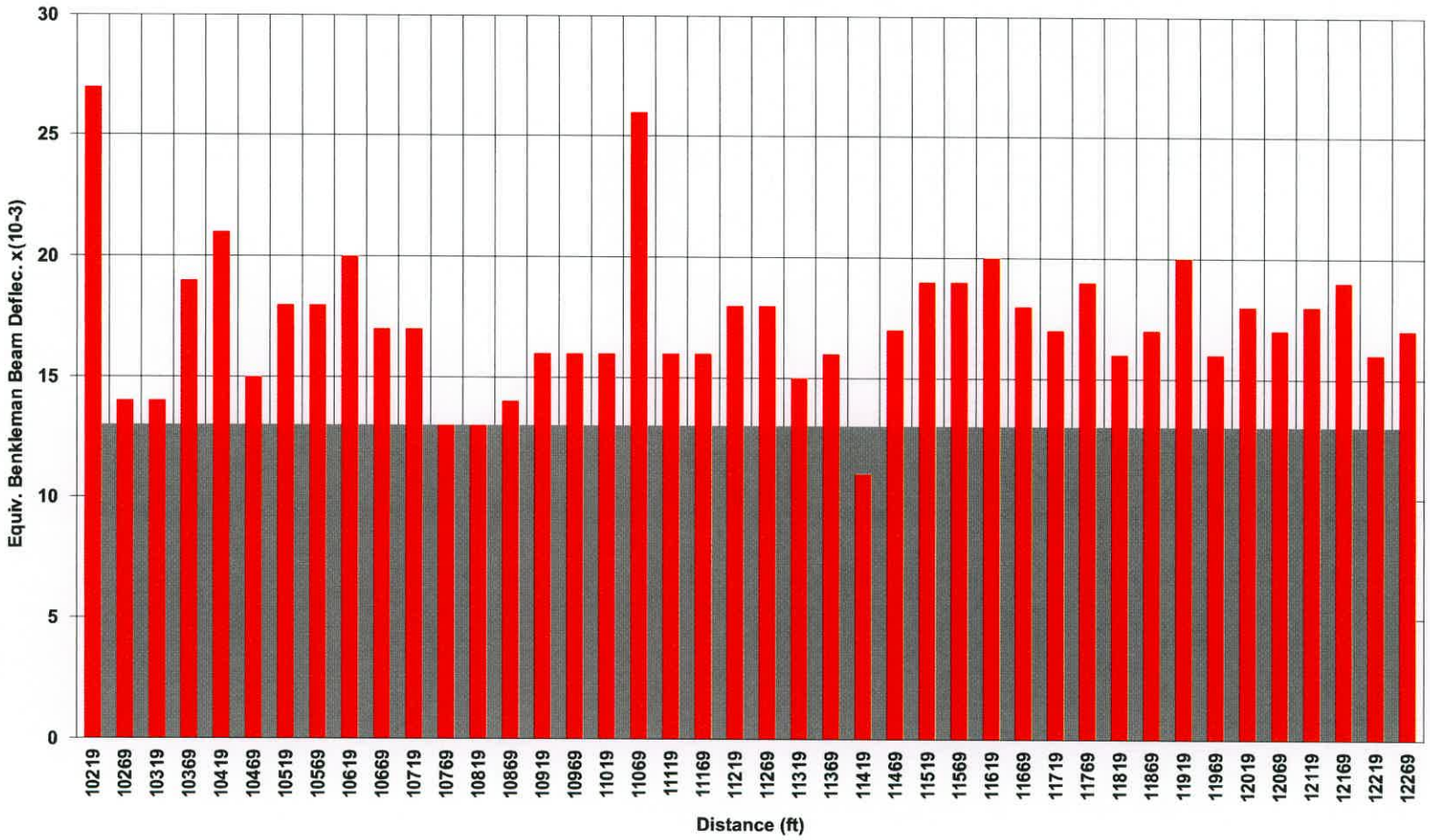
80th %	90th %	Mean	Min	Max
20	21	17	11	27

STRUCTURAL DATA **Thickness:** 5.00 **TI:** 10.5

STRUCTURAL DESIGN

Deflec	Toler	% Reduction	Overlay
20	13	34	0.20

Dynaflect Analysis
CHEC Management Systems, Inc.
Engineering Services Dept.



Road Name: Hwy 32 **Direction: E(....|x...)** **Start: 10219** **Interval: 50 ft**
Road Number: EB: 10219 - 12295 **From: HWY 99W** **To: 2.34 MILES E**

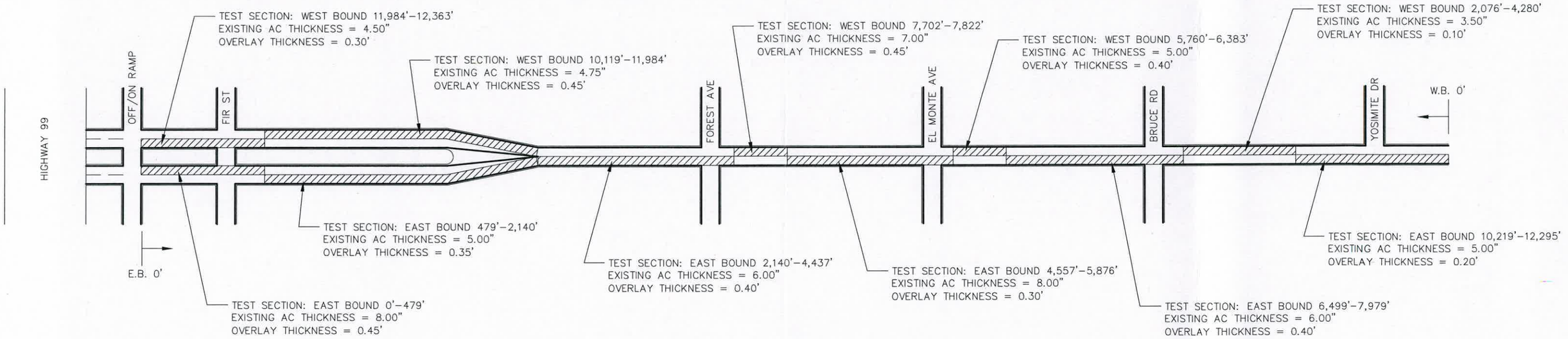
STATISTICAL ANALYSIS AS TESTED **80th %: 20** **90th %: 21** **Mean: 17** **Min: 11** **Max: 27**

STRUCTURAL DATA **Thickness: 5.00** **TI: 10.5**

STRUCTURAL DESIGN AS TESTED **Deflection: 20** **Tolerable: 13** **% Reduction: 34** **Overlay: 0.20 ft**

HIGHWAY 32 - CHICO, CA

ESTIMATED TESTING LOCATIONS



N

MAP NOT TO SCALE

CHEC MANAGEMENT SYSTEMS INC

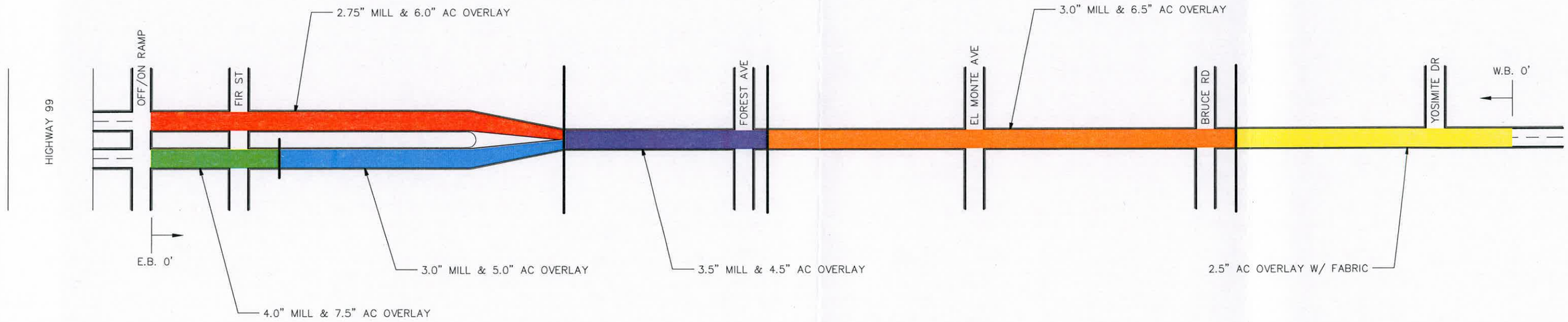
CHEC Management Systems, Inc.
20202 Charlanne Drive
Redding, CA 96002
(530) 222-3116

FIGURE 1

ENGINEER: JC
DWG2009\09079

HIGHWAY 32 - CHICO, CA

DESIGN RECOMMENDATIONS



N

MAP NOT TO SCALE

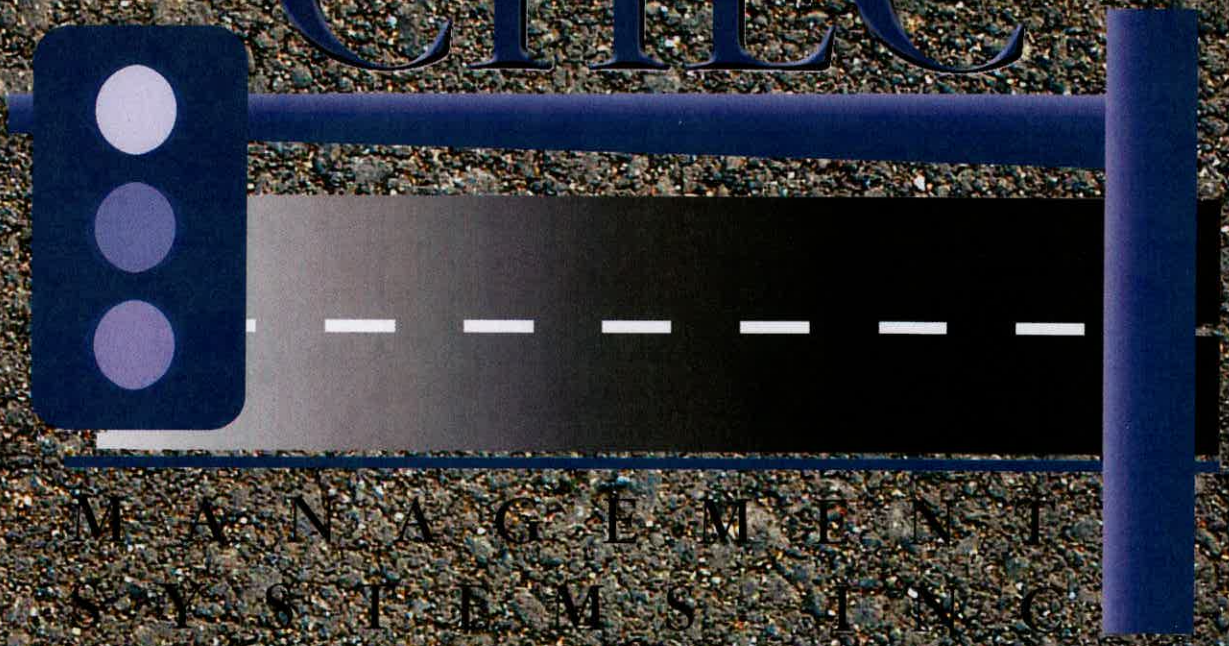
CHEC MANAGEMENT SYSTEMS INC

CHEC Management Systems, Inc.
20202 Charlanne Drive
Redding, CA 96002
(530) 222-3116

FIGURE 2

ENGINEER: JC
DWG2009\09079

CHEC



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S Y S T E M S I N C

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