Improving Concrete Overlay Construction

Final Report
March 2010

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Institute for Transportation

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16. Abstract

Several road construction projects involving concrete overlays at the state and county levels in Iowa in 2009 were studied for construction techniques and methods. The projects that were evaluated consisted of sites in four Iowa counties: Osceola, Worth, Poweshiek, and Johnson counties. The construction techniques and methods that were studied included concrete overlays and material usage. By evaluating these methods, highway agencies can explore different ways of making road construction less costly and can minimize the amount of time that the traveling public is exposed to road construction.

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IMPROVING CONCRETE OVERLAY CONSTRUCTION

Final Report
March 2010

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The research team expresses its thanks to the staff members from the Poweshiek County and Johnson County Engineers' Offices; the Resident Construction Engineers and their staff members from the Britt and Cherokee Offices; Iowa Department of Transportation (DOT) Districts 2 and 3 offices; and the central Iowa DOT Offices of Design, Construction, and Materials for their participation in this effort to move portland cement concrete (PCC) overlays forward in Iowa and the nation. A special thanks goes out to Manatts., Inc, The Flynn Co., Inc., Streb Construction Co., Inc., Leica Corp., Bolton and Menk, Inc., Clappsaddle-Garber Associates, Inc., and the Iowa Concrete Paving Association (ICPA) for their patience and sharing of ideas on how to advance the overlay paving technology and allow researchers to be a part of their operations. The work could not have happened without the personal support and effort of representatives from the Gomaco Corportation and Guntert & Zimmerman Construction Division, Inc., who took the challenge to modify slipform pavers and associated equipment to meet this new technology. We also thank the Star Equipment Co. for going the extra mile in equipment development. Logan Contractors Supply, Inc., and Quick Supply, Inc., made some great efforts to supply the fabric materials for the bond breaker tests.

Without the help of each of the members noted above, this type of research would not be possible. It is what sets Iowa apart from many other parts of the country. It is great to do research where all parties understand and work toward a common goal together.

INTRODUCTION

Background

As our highway system ages and available funding shrinks, agencies are looking for efficient methods to preserve and extend the service life of existing pavements. In addition, the highway agencies are being asked to minimize the time of exposure to construction and inconvenience to the traveling public.

The movement to preservation activities calls for the use of overlays to strengthen the pavement and/or add a better driving surface. High oil prices have brought highway designers to look at concrete overlays as a viable alternative. Construction techniques for concrete overlays need to be improved in order to provide efficient answers to the preservation problems. Critical construction elements include developing means to address concerns about concrete yield, minimizing pavement train width, traffic control, opening-strength staging to meet traffic and concrete delivery demands, including cost-effective approaches, and surface preparation for the existing pavement. In addition, the use of innovative materials as bond breakers on unbonded overlays will be considered.

Despite the completion of hundreds of concrete overlay projects, some highway agencies are reluctant to use concrete overlays. Some agencies believe that concrete overlays are expensive, difficult to build and remove, and only to be used in limited applications. Because of these beliefs, it is important that efficient construction methods be developed to meet the public's need for mobility, safety, and access to property.

The Iowa Department of Transportation (Iowa DOT) and Iowa counties and cities have successfully completed a multitude of projects that range from thin bonded overlays (i.e., 2–4 inches) to thicker unbonded overlays (greater than 4 inches). About 1,000 miles of overlay are in use throughout Iowa.

RESEARCH OBJECTIVES

Research Program Activity #1

- Evaluate machine control systems to minimize paving train width
- Reduce quantity overrun concerns with global positioning system (GPS) mapping of the proposed project
- Reduce construction survey time with GPS mapping and evaluate GPS and 3D construction equipment control (e.g., milling machine, slipform paver, and cure cart)
- Develop ways to establish the profile grades and machine control before or immediately after the contract letting by the highway agency so that construction is not impacted

Research Program Activity #2

- Develop innovative ways to guide the longitudinal joint forming operation to match the underlying joint alignment
- Evaluate the use of GPS to control longitudinal joint sawing

Research Program Activity #3

- Determine the best way to establish the level of need and timing of milling for existing asphalt surface preparation
- Evaluate milling by the standard practice of stringline control and by GPS control

Research Program Activity #4

- Evaluate the use of innovative materials, such as geotextile layers, for use as bond separator layers

Research Program Activity #5

- Determine innovative ways of handling traffic control for the construction of single-lane overlays as part of a multi-lane overlay
- Evaluate the impact of haul road selection on road opening time

Research Program Activity #6

- Investigate potential solutions of using both existing and new paving train components to minimize the time of construction operation

Research Program Activity #7

- Determine the appropriate opening strength that is required of the concrete for local traffic use and through trucks and construction traffic, for depths of concrete of less than 6 inches.

In order to address the concerns noted above, in Iowa and across the country, a project was undertaken by the National Concrete Pavement Technology Center at Iowa State University to develop a guide document to assist engineers in concrete overlay design and construction. The original guide was published in January of 2007, and in September of 2008 the *Guide to Concrete Overlays* was completed.

Several more detailed elements related to concrete overlays are needed in the *Guide* to enhance concrete overlay design and construction and alleviate the concerns over the use of concrete overlays.

The research activities included in this project were established to address some of the gaps in the guide's information and to provide additional guidance to designers and contractors through additions to the guide. The overall goal is to make implementation of concrete overlay projects as straight forward and economical as possible.

Technical Advisory Committee

The research team identified a technical advisory committee (TAC) to provide review and guidance of the research from plan to execution in each of the construction projects. The advisory committee was made up of Brian Keierleber, Buchannan County Engineer; John Goode, Monroe County Engineer; Lyle Brehm, Tama-Poweshiek County Engineer; Chris Brakke, Iowa DOT Pavement Design Engineer; Kevin Merryman, Iowa DOT Portland Cement Concrete (PCC) Construction Engineer; Todd Hanson, Iowa DOT PCC Materials Engineer; Shane Tymkowicz, Iowa DOT Assistant District Engineer; Roy Gelhaus, Iowa DOT Resident Construction Engineer; and Gordon Smith, President of the ICPA.

The TAC was involved in the development of the various sections of the research proposal and met to discuss the details of the work plan prior to any of the construction. Members of the TAC visited some of the projects during construction. This group also provided a review of the materials placed in this report.

RESEARCH PLAN

Project Selection

The projects selected for this research were identified through a matrix process. The matrix consisted of first identifying the research objectives and comparing those to available projects that were slated for overlay (i.e., asphalt or portland cement concrete) construction in 2009. Projects were sought for consideration from both state and local road projects.

Final candidate projects were subjected to both visual reviews and record searches to determine their condition and to ensure that the project would provide a suitable base for a PCC overlay. State and local officials in charge of the rehabilitation decisions for each considered pavement were contacted to obtain their concurrence with the research that was being considered.

The first phase of the selection process was a visual evaluation of each pavement. Joints were assessed to ensure that transverse joints were turned down, indicating a relatively sound underlying joint with minor deterioration and only potential faulting.

Second, historical project files were used to determine the materials that were included in the existing layers to assess their long-term durability under an overlay. Projects with underlying pavements that exhibited materials-related distress were not considered to be a wise choice for thin PCC overlays. These materials would continue to show surface distress regardless of the choice of overlay materials. The materials are best rehabilitated through total reconstruction of the pavement structure.

Historical "as-built" plans and associated files were consulted to determine the materials used in each of the existing pavement layers and the type of binders and construction methods employed. One must understand the existing pavement characteristics prior to the design and construction of the new overlay for best performance results.

The selection process resulted in the identification of four active overlay projects that were already under development by the Iowa DOT and Osceola, Poweshiek Worth, and Johnson counties. The projects include the following:

Iowa Highway 9 in Osceola County—from relocated Iowa Highway 60 east 8.8 miles to the east junction of County Road L-58

The existing pavement consisted of a composite section of 4.5 inches of hot-mix asphalt (HMA) and an 18-foot-wide (10-7-10 section) PCC pavement with a 3-foot by 10-inch PCC widening unit. The Iowa DOT designed a 5.5-inch PCC overlay of the existing 24-foot-wide pavement and added a 9.5-inch-deep by 2-foot widening unit on each side of the existing pavement. The jointing of the overlay consisted of longitudinal joints at 4.5 and 9.0 feet from the centerline and transverse joints at 5 foot intervals. Reinforcement was to be placed over both widening joints and a single joint sawed at the original widening joint between the original 18-foot pavement and the first 3-foot widening. The project was let in February 2009. The road was built under closed road conditions, with through traffic using a detour. The typical construction cross-section and overlay jointing notes for the Osceola County project are shown in Figure 1.

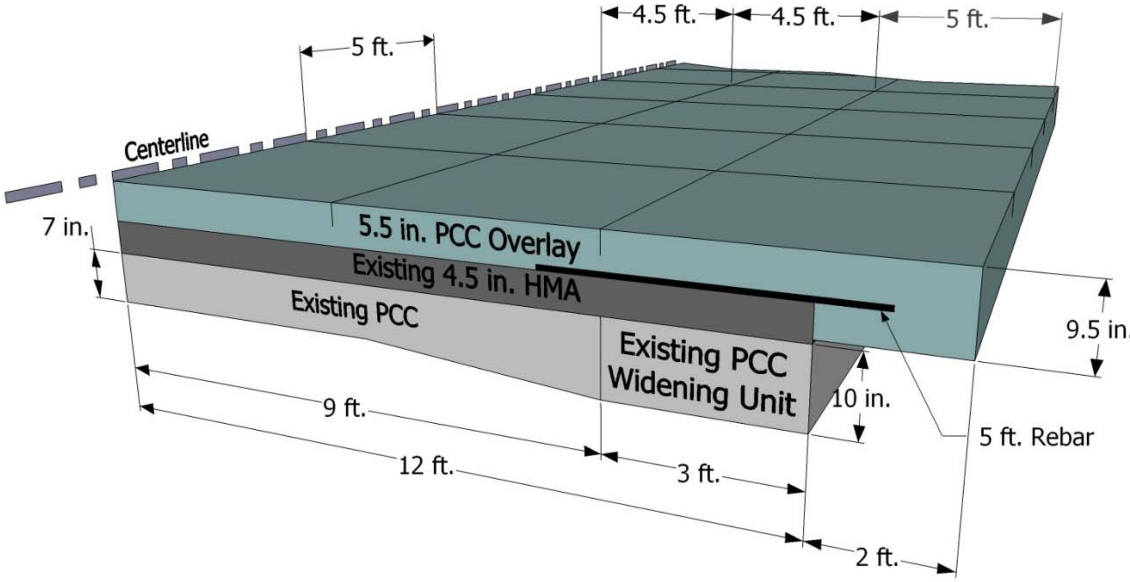

Figure 1. Osceola County typical construction cross-section and overlay

US 65 in Worth County—from Manly north 10.51 miles to the southern corporate limits of Northwood, Iowa

The existing pavement consisted of a composite section that had 5 inches of HMA over 7.5 inches PCC equivalent (10-7-10 section) with a 3-foot by 10-inch-deep PCC widening unit. The Iowa DOT designed a 5.0 inch PCC overlay of the existing 24-foot-wide pavement and the addition of an 8-inch deep by 4-foot widening unit on each side of the existing pavement. The jointing of the overlay consisted of longitudinal joints at 4.5 and 9.0 feet from the centerline, transverse joints at 5.0 foot intervals in the mainline, and 10 foot intervals in the turn lane areas. Reinforcement was to be placed over both widening joints. The project was let in January 2009. The road was to be built under closed road conditions with a detour for through traffic. The typical overlay construction cross-section and overlay jointing pattern for the Worth County project are shown in Figures 2 and 3. The length of tie-bar shown in Figure 1 was field-modified from 60 to 72 inches in length to allow for 18 inches of embedment into the new widening unit and onto the existing 18-foot pavement section.

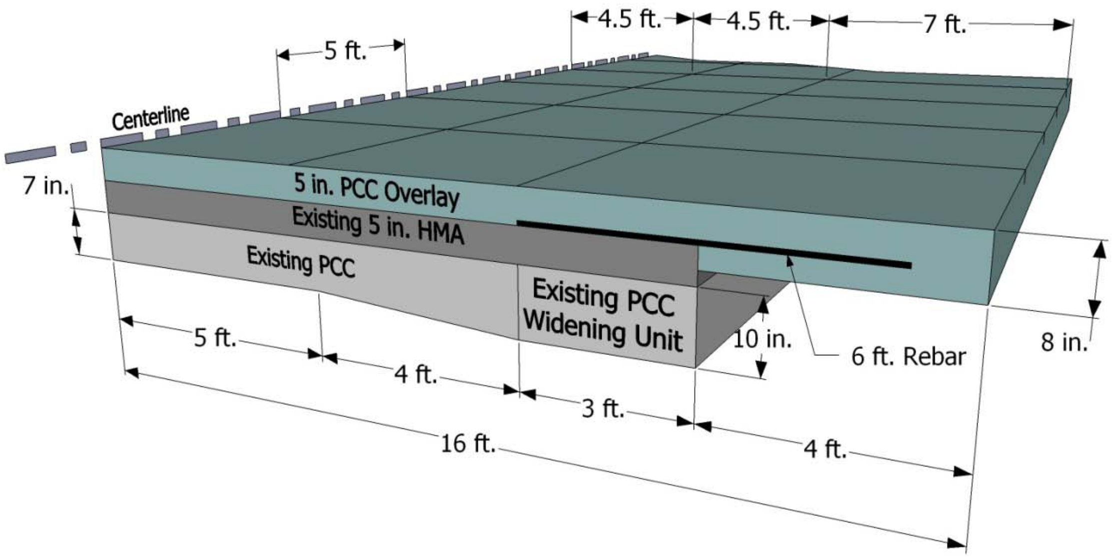

Figure 2. Worth County typical construction overlay cross-section

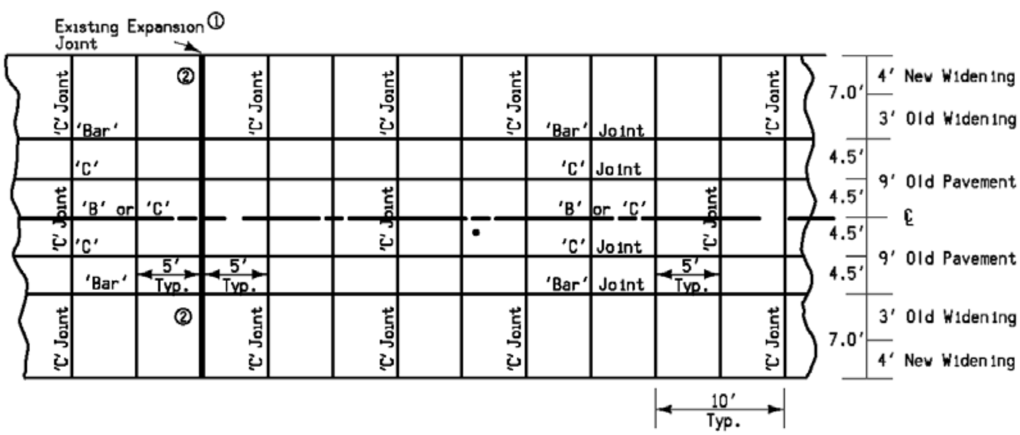

Figure 3. Worth County overlay jointing pattern

County Road V18 in Poweshiek County—from Iowa 85 north 9.58 miles to the southern corporate limits of Brooklyn, Iowa

The existing pavement was a 7-inch by 22-foot PCC pavement, built 30–35 years ago and was experiencing some joint deterioration. A 6-inch PCC unbonded overlay was planned for this project. Transverse joints were designed for 12-foot joint spacings. The project was let in November 2008. It was built with detour and full-width paving. The existing road was closed to through traffic, and a detour was used for through traffic. The typical overlay construction cross-section for the Poweshiek County project is shown in Figure 4.

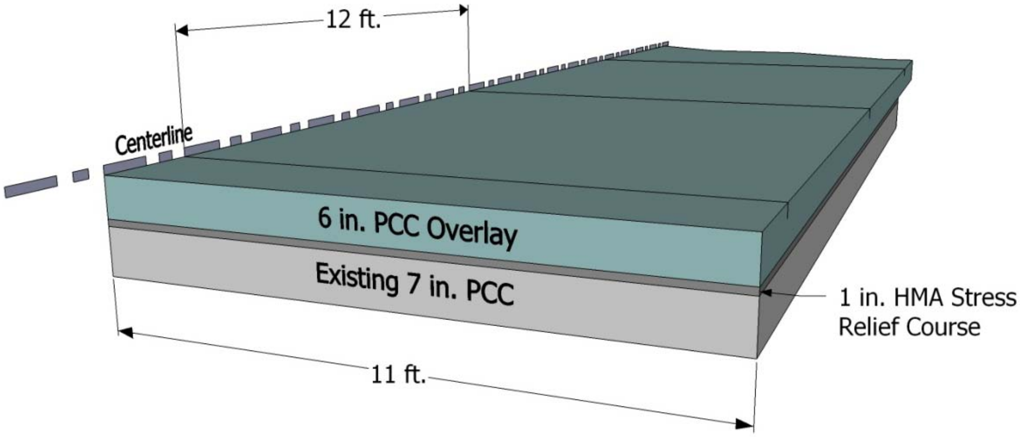

Figure 4. Poweshiek County typical overlay construction cross-section

County Road W-62 (Oak Crest Hill Road) in Johnson County—from a point one-half mile south of the town of Hills, north 4.69 miles to the Iowa Highway 921 connection with US 218 (Avenue of the Saints)

The existing pavement consisted of an 18-foot-wide, 1929 PCC pavement with lip curbs. The pavement was resurfaced with HMA to fill the height of the curbs and extend a 3-inch depth of HMA to a width of 24 feet. The county designed a 5.5-inch PCC overlay of the existing 18-foot pavement and an 8-inch by 8-foot PCC widening unit. The new pavement contained longitudinal joints 9 feet from the centerline and transverse joints at 12 foot intervals. All this construction was contained in an existing 66-foot right of way. The project was let in June of 2009. The roadway was closed to through traffic, and local traffic was allowed to use the second lane in only one direction. The typical overlay construction cross-section for the Johnson County project is shown in Figure 5.

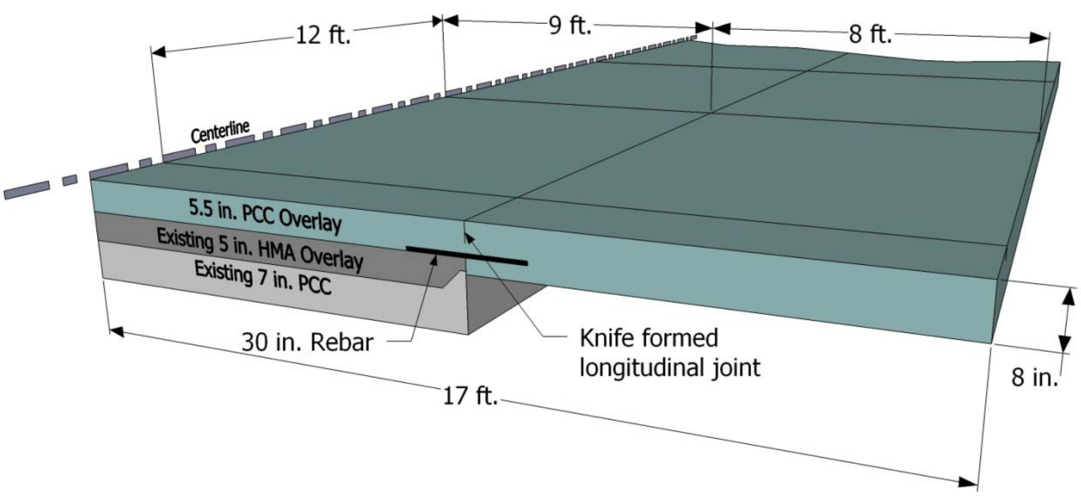

Figure 5. Johnson County typical overlay construction cross-section

RESEARCH GOAL RELATIONSHIP

It was not possible to attain results from each of the seven research objectives within these four projects. The project team was able to evaluate various parts of the individual goals as shown specifically below for the selected projects.

The workplan for each activity was broken into two parts: proposed and actual. The "proposed" workplan identifies what the research team originally set out to accomplish on each project. The projects only represent part of the larger national activity points. The "actual" workplan elements for each activity area represent what the research team was able to accomplish within the budget limits and through negotiation with the contracting agencies and contractors for each project. These items were not contract bid items and therefore could not be enforced by the research team for any of the projects. The project budget for maturity meters was based on two projects that were being simultaneously constructed and not three, as was true in 2009.

Research Program Activity #1

Two goals were to develop ways to establish the profile grades and machine control before or immediately after the contract letting from the highway agency and to evaluate machine control systems to minimize paving train width. The project team used the following techniques:

- Used GPS to plan the grades with various runs at edges, wheel paths, quarter points and centerline, prior to or after letting and prior to construction to determine profile grades and the expected concrete yield
- Used machine control systems (i.e., GPS or 3D) to evaluate the ability to construct a quality project without stringline control

Proposed Workplan

Iowa Highway 9 in Osceola County

The workplan for the Iowa Highway 9 project was to utilize a GPS-equipped all-terrain vehicle (ATV) to profile the edges, wheel paths, lane quarter points, and centerline in fall 2008 or spring 2009 just prior to construction. This technique would be used to establish final pavement grades, consider milling depths, and estimate the quantities of concrete to be used. This project was to be built with stringline control.

US 65 in Worth County

The project proposed utilizing a GPS-equipped ATV to profile the edges, wheel paths, lane quarter points, and centerline in fall 2008 or spring 2009 just prior to construction. This technique would be used to establish final pavement grades, consider milling depths, and estimate the quantities of concrete to be used. In this case, the quantities and grades could be compared to the current control work being done by conventional survey methods in terms of time, cost, and changes over the winter months. Machine control system information on paving train components was to be provided to eliminate the need for stringline control. It was recommended that the contractor utilize machine control of his choosing to guide the slipform paver and associated equipment.

County Road V-18 in Poweshiek County

The project proposed utilizing a GPS-equipped ATV to profile the edges, wheel paths, lane quarter points, and centerline in fall 2008 or spring 2009 just prior to construction of the bond breaker, after the bond breaker placement, and after concrete placement. This technique was to be used to establish final pavement grades, verify bond breaker placement depths, estimate the quantities of concrete to be used, and verify pavement overlay depths versus coring. Machine control system information on paving train components was to be provided to eliminate the need for stringline control. It was recommended that the contractor utilize machine control of his choosing to guide the slipform paver and associated equipment.

County Road W-62 in Johnson County

No GPS profiling was done on this project. Conventional and topographic surveys were used to identify the existing pavement surface elevations and conditions prior to construction.

Actual Workplan

Iowa Highway 9 in Osceola County

A GPS-equipped ATV was equipped with a laser profiler and GPS rover unit to profile the edges, wheel paths, lane quarter points, and centerline in fall 2008 and spring 2009 just prior to construction. An after-overlay construction GPS/laser survey of the project was suspended due to GPS equipment problems.

Information from spring 2009 was provided to the contract surveyor to aid in the establishment of paving grades and quantities. No milling was done on the project and conventional stringline paving was used for construction. The data were used in a very limited manner by the contract surveyor to check for potential thin concrete depths between the gradeline and the existing pavement surface.

US 65 in Worth County

A GPS-equipped ATV was equipped with a laser profiler and GPS rover unit to profile the edges, wheel paths, lane quarter points, and centerline in fall 2008 and spring 2009 just prior to construction. An after-overlay construction GPS/laser survey of the project was suspended due to GPS equipment problems.

Another run was made on only the edges and centerline of the roadway. This was done after the HMA milling and before the PCC overlay construction. This run was made at 5 mph, and data were obtained at 25-foot intervals. The GPS data were supplemented by the use of a manual survey with total stations to collect data at the same locations and intervals. Both the GPS and total-station survey were used to assist the contract surveyor in establishing the final pavement grades, considering milling depths, and estimating the quantities of concrete to be used.

In this case, the quantities and grades were compared to the current control work being done with conventional survey methods in terms of time, cost, and changes over the winter months. Machine control of the slipform paver and associated equipment was required on this project.

County Road V-18 in Poweshiek County

The same GPS-equipped ATV was used to profile the edges, wheel paths, lane quarter points, and centerline in fall 2008 and spring 2009 just prior to construction of the bond breaker and after the bond breaker placement. An after-construction GPS/laser survey of the project was suspended due to GPS equipment problems.

The after-bond breaker placement data were used to assist the contract surveyor in establishing the final pavement grades, verifying bond breaker placement depths, and estimating the quantities of concrete to be used. The data were intended for use in verifying pavement overlay depths versus coring but were not accurate enough for this work. Machine control of the slipform paver was required on this project.

County Road W-62 in Johnson County

No GPS profiling was done on this project. Conventional topographic surveys were used to identify the existing pavement surface elevations and conditions prior to construction.

Research Program Activity #2

One of the goals for activity 2 was to develop innovative ways to guide the longitudinal joint forming operation to match the underlying joint alignment. The project team used the following techniques:

- Used GPS to locate the existing centerline locations and changes in direction and attached the GPS to the saw to recreate that line in the finished surface
- Considered using physical measurements from the edge of the pavement to the centerline prior to and after the overlay to establish the centerline joint locations
- Considered using the "knife" for the centerline again for a portion of the project. Representatives of the National CP Tech Center are credited with the development of a device referred to as the “knife,” which was used to develop longitudinal joints in plastic concrete. Its goal was to eliminate the need for sawing of longitudinal joints. It was used on some 60+ projects in Iowa and adopted by other states as an alternative

joint forming method. Premature cracking in some Iowa projects has caused the knife to be banned in Iowa at this time.

- Used cores at the centerline to measure the location of the old versus the new centerline
- Considered using a wire in the joint of the underlying pavement that could be located after the overlay was placed

Proposed Workplan

Iowa Highway 9 in Osceola County

The plans called for sawing the longitudinal joint after pavement construction by splitting the slab width. The slab-splitting centerline location for all paving methods was to be used. The distance from the paving line hub to the centerline prior to paving was also to be measured. The location of the final longitudinal joints under conventional saw control in the paving with nine random centerline cores, GPS measurements, and measurements from the hubs was also to be verified.

US 65 in Worth County

The plans called for sawing the longitudinal joint after pavement construction by splitting the slab width. The slab-splitting centerline location for all paving was to be used. The location of the final longitudinal joints (under GPS saw control) in the paving with three cores and measurements from the hubs was to be verified. The district office was interested in considering using the “knife” in one day’s operation at the centerline only.

County Road V-18 in Poweshiek County

It was suggested that the county consider the use of the GPS-controlled centerline saw for at least one-third of the project with cores used to verify the accuracy of the operation. The county did not desire to use the “knife” at this time.

County Road W-62 in Johnson County

A project involving a bonded overlay was not identified at the local or state level for this project. The widening proposed for the project allowed for the use of the “knife” for the formation of the joint between the existing pavement and the paved shoulders.

Actual Workplan

Iowa Highway 9 in Osceola County

The longitudinal joint location was manually identified after pavement construction by splitting the slab width. This joint location was identified by the location of the original pavement design centerline, which was offset to a hub line for paver guidance and a reference back from the hub to the edge of the overlay and centerline. Three random centerline cores were drilled instead of the nine suggested to verify the conventional method of centerline development. GPS data and hub measurements were not verified due to the loss of the hubs immediately after paving.

US 65 in Worth County

The plans called for sawing the longitudinal joint after pavement construction by splitting the slab width. The distance from the paving line hub to the centerline prior to paving was also to be measured. The location of the final longitudinal joints under the GPS saw control in the paving was to be verified with three cores and measurements from the hubs. The district office also considered using the "knife" in one day's operation at the centerline only. The decision to allow one-lane paving negated the GPS sawing and coring activity on this objective.

County Road V-18 in Poweshiek County

Construction and saw manufacturer schedules did not support the use of a GPS-controlled centerline saw for at least one-third of the project. Instead, three 500-foot areas were established for this purpose. The first area utilized the GPS centerline surveys at 10-foot intervals to map the existing centerline prior to the PCC overlay. Those points were re-established by the GPS rover unit after the overlay construction and after a conventional saw moved along the line created by these points. Three cores were used to verify the accuracy of the operation. Cores were also used here to verify geotextile–bond breaker interaction.

In the second case, the GPS file was collected in the same manner as at the first site. When the data failed to replicate after the overlay construction, an adjoining section employing slab splitting was used as a default value to test the GPS ability to saw a given line. The underlying pavement centerline could not be traced in the surface. Three cores were obtained from an adjacent area immediately preceding area number two. By splitting the slab width and taking the cores, the research team was able to get a default value associated with conventional means of matching the underlying and overlay centerline joint.

A third area was cored at three centerline locations to both measure the centerline location and verify geotextile–bond breaker interaction.

County Road W-62 in Johnson County

This project was designed as an unbounded overlay. The widening that was proposed for the project allowed for the use of the "knife" for the formation of the joint between the existing pavement and the paved shoulders. One-lane construction did not allow for an analysis of the centerline location in the various layers.

Research Program Activity #3

One of the goals for this activity was to determine the best way to establish the level of need and timing of milling for existing asphalt surface preparation. The following are techniques for establishing the level of need and timing for this preparation:

- Mill half of the project length for cross-slope only (pave one-quarter with stringline and one-quarter with machine control)
- Do not mill any of the other half of the project length (pave one-quarter with stringline and one-quarter with machine control)
- Compare the predicted yield versus the actual yield on concrete in each of the quarter-length sections
- Compare shear bond strength in the four portions of the project
- Compare the finished profile elevation to the planned profile in the four sections

Proposed Workplan

Iowa Highway 9 in Osceola County

The district office considered automated machine control of the miller/slipform paver. The office chose not to mill any of the existing surface and chose to use conventional stringline control of the slipform paver.

US 65 in Worth County

The district office chose to mill a half-inch nominal and to make some profile corrections in the original pavement. The contract did not include milling to a given profile.

County Road V-18 in Poweshiek County

No milling was required on this project.

County Road W-62 in Johnson County

No milling was required on this project.

Actual Workplan

Iowa Highway 9 in Osceola County

No changes were made to the proposed workplan.

US 65 in Worth County

The district office chose to mill a half-inch nominal depth at the centerline and provide for a 2% cross-slope in the milling. The contract did not include milling to a given profile.

County Road V-18 in Poweshiek County

No changes were made to the proposed workplan.

County Road W-62 in Johnson County

No changes were made to the proposed workplan.

Research Program Activity #4

The goal for this program was to evaluate the use of innovative materials, such as geotextile layers, for use as bond separator layers. The following describes techniques that were used for the evaluation of such materials:

- Use geotextile bond breakers at intersection locations where the existing asphalt must be totally removed to maintain crossroad grades
- Use geotextile bond breakers over concrete surface patches

Proposed Workplan

Iowa Highway 9 in Osceola County

The asphalt bond breaker layer was in place in the as-built condition. The patched surfaces were to be sealed with emulsion and covered with sand.

US 65 in Worth County

The asphalt bond breaker layer was in place in the as-built condition. The patched surfaces were to be sealed with emulsion and covered with sand.

County Road V-18 in Poweshiek County

The existing bare pavement was to be overlaid with an asphalt bond breaker. The research team suggested that the county consider using a short stretch (i.e., 300 or 600 feet) of the geotextile bond breaker in three locations on the project. The research team provided eight rolls of one brand of geotextile material and the nails to fasten the material to the pavement. Each roll was 15 feet by 300 feet in length. The contractor was asked to install the material. No patching was required on this project.

County Road W-62 in Johnson County

The asphalt bond breaker layer was in place in the as-built condition.

Actual Workplan

Iowa Highway 9 in Osceola County

No changes were made to the proposed workplan.

US 65 in Worth County

No changes were made to the proposed workplan.

County Road V-18 in Poweshiek County

Four sites were identified for using geotextile in place of the 1-inch nominal depth HMA. Three sites were identified prior to the construction of the HMA layer, and one was selected to correct a construction problem. The research team provided eight rolls of geotextile material and fasteners for use on Sites 1, 2, and 4. A separate geotextile manufacturer provided the materials for Site 3. The contractor applied the materials at each of the four sites.

County Road W-62 in Johnson County

No changes were made to the proposed workplan.

Research Program Activity #5

One of the goals for this program was to determine innovative ways of handling traffic control for the construction of single-lane overlays as part of a two-lane or multi-lane overlay. The following were considerations made by the project team to determine these innovative techniques:

- Consider the leap-frog operation that uses one slipform and cure machine and maintains two days of run separation from the end of the first slab to the beginning of the second lane slab
- Consider two plants and two pavers operating from opposite directions and lanes
- Consider two plants and two pavers operating in the same direction and gapping two-mile segments between placements to maintain full operation
- Consider lateral minimum clearance pavers to maintain traffic on a shoulder and opposing or completed lane
- Evaluate worker success and response to working on the shoulder side of the pavement

Proposed Workplan

Iowa Highway 9 in Osceola County

The use of detours and full-width paving would not require the inclusion of special equipment and methods of placement or one-lane paving.

US 65 in Worth County

The use of detours and full-width paving would not require the inclusion of special equipment and methods of placement or one-lane paving.

County Road V-18 in Poweshiek County

The use of detours and full-width paving would not require the inclusion of special equipment and methods of placement or one-lane paving.

County Road W-62 in Johnson County

The project location was selected to provide for one lane of paving and different elements of traffic control, paver control, and paving train length.

Actual Workplan

Iowa Highway 9 in Osceola County

No changes were made to the proposed workplan.

US 65 in Worth County

The contractor's decision to use one-lane paving under closed road/detour conditions changed the construction procedures for this project. Through traffic was discouraged by the removal of core-outs at each end of the project and the replacement of bridge approaches at three bridges along the project length. Persons living along the project were allowed to use the nonpaved lane during each work phase, and their home access was usually disturbed for less than 30 hours during pavement strength gain periods. Traffic was allowed to cross the project at three locations throughout the construction period.

County Road V-18 in Poweshiek County

No changes were made to the proposed workplan.

County Road W-62 in Johnson County

No changes were made to the proposed workplan.

Research Program Activity #6

The program goal was to investigate potential ways of using both existing and new paving train components so that the length of time of the construction operation was minimized.The following includes techniques of using these components to minimize operation time:

- Consider ways to reduce the time between the texture machine/joint sawing and the completion of the shouldering operation and striping
- Consider alternate haul roads to speed up shoulder construction and opening time

Proposed Workplan

Iowa Highway 9 in Osceola County

The combination of the maturity measurements and the haul road selection relative to paving direction and contractor/shoulder subcontractor coordination would be monitored to determine the best way to reduce the time from the curing machine passage to striping time and opening. A pre-job conference or notification to the contractor to use a haul road plan that would fit the shouldering operation directly behind the paver and not after the project was complete was to be utilized. Shouldering would proceed when construction traffic strength was attained on the slab.

US 65 in Worth County

The combination of the maturity measurements and the haul road selection relative to paving direction and contractor/shoulder subcontractor coordination would be monitored to determine the best way to reduce the time from the curing machine passage to striping time and opening. A pre-job conference or notification to the contractor to use a haul road plan that would fit the shouldering operation directly behind the paver and not after the project was complete was to be utilized. Shouldering would proceed when construction traffic strength was attained on the slab.

County Road V-18 in Poweshiek County

The combination of the maturity measurements and the haul road selection relative to paving direction and contractor/shoulder subcontractor coordination would be monitored to determine the best way to reduce the time from the curing machine passage to striping time and opening. The county would consider utilizing a pre-job conference or notification to the contractor to use a haul road plan that would fit the shouldering operation directly behind the paver and not after the project was complete. Shouldering would proceed when construction traffic strength was attained on the slab.

County Road W-62 in Johnson County

The research team would monitor the various activities in the paving train to look at ways to reduce the time of road closure for construction of one-lane paving

Actual Workplan

No changes were made to any of the proposed workplans for this activity.

Research Program Activity #7

The goal for this program was to determine the appropriate opening strength that is required of the concrete for use by local traffic and through truck and construction traffic for depths of concrete of less than six inches. The following includes techniques for determining the appropriate opening strength:

- Use maturity probes at 500-foot or closer intervals
- Use shear strength tests, pull-off tests, or other tests to determine the bond strength at opening
- Use engineering judgement and shoulder construction equipment to determine how closely one can operate to the paving operation versus the potential for cracking (e.g., corner, longitudinal, or transverse) and limit cracking to 1 % of the slabs for the day
- Evaluate saw cutting to determine if a relationship to opening strength can be established

Proposed Workplan

Iowa Highway 9 in Osceola County

The research team suggested that the contractor employ a pickup truck at the beginning of each day and at midday to determine the point at which the tires begin to indent the concrete to a depth of a quarter-inch and correlate it to the estimated maturity of the concrete strength at that location. Testing would be done in each lane every one-half day in a longitudinal location that straddled the centerline so as not to impact the profile measurements. A method to tie the sawing window to strength would be evaluated.

US 65 in Worth County

The research team suggested that the contractor employ a pickup truck at the beginning of each day and at midday to determine the point at which the tires begin to indent the concrete to a depth of a quarter-inch and correlate it to the estimated maturity of the concrete strength at that location. Testing would be done in each lane every one-half day in a longitudinal location that straddled the centerline so as not to impact the profile measurements. A method to tie the sawing window to strength would be evaluated.

County Road V-18 in Poweshiek County

Maturity measurements were to be made to each 500-foot section of pavement and correlated to the contractor/county judgment on how close to bring the construction equipment for shoulder and joint sealing work. The documentation of the strength at the time of joint sawing would be noted.

County Road W-62 in Johnson County

Maturity measurements were to be made to each 500-foot section of pavement and correlated to the contractor/county judgment on how close to bring the construction equipment for shoulder and joint sealing work. The documentation of the strength at the time of joint sawing would be noted.

Actual Workplan

All work plans were followed in terms of the identified activities, with two exceptions. One exception was that no contracting authorities would allow the pickup truck test method for determining the traffic opening strength. This had to be done in correlation to other construction activities such as maturity testing.

The other exception was that, because three of the four projects were under construction at the same time instead of the two projects that were expected in the budgeting, the maturity device installation interval was extended to 1,000 feet from the original 500 feet.

Added Research Program Activities

The research team has been working to develop a design program for use by highway agencies in the development of trial and design overlay thicknesses. The program is based on the work done by American Concrete Pavement Association (ACPA), CTL Group, and the Colorado Department of Transportation (Cable et. al, 2005). Those groups developed the thickness design methodologies but let the user develop much of the inputs. One of those inputs is the measurement of the structural adequacy of the existing pavement layers. The design program looks to reduce deflections in the final surface and extend the life of the pavement. Currently, it is centered around the single existing layer of pavement theory. Previous graduate work at Iowa State University (ISU) has provided a framework for handling multi-layer or composite pavements and for states to use their falling weight deflectometer (FWD) to provide the necessary overlay design information on pavement structural adequacy.

FWD testing was conducted on Iowa Highway 9 in Osceola County, US 65 in Worth County, and County Road V-18 in Poweshiek County before and after PCC overlay construction. The work utilized the ISU KUAB trailer-mounted FWD. Testing was accomplished at 0.1 mile increments in both lanes for the length of each project.

OVERLAY CONSTRUCTION

Iowa Highway 9 in Osceola County

Mainline Paving

Mainline paving for Iowa Highway 9 in Osceola County began on July 2, 2009 and ended August 4, 2009. Handpours for the turn lanes, bridge approaches, and gaps at US 59 were completed August 22, 2009. Mainline paving was accomplished with use of a Guntert & Zimmerman slipform paver and burlap drag, work-bridge with burlap drag, and a Gomaco cure/texture machine, shown in Figure 6. Hand-floating and mopping of the surface was accomplished between the slipform and the work-bridge.

Figure 6. Osceola County paving train

The slipform was fed by a fleet of dump trucks and a central drum mix plant located approximately 3 miles southeast of the end of the project (EOP) or 12 miles from the beginning of the project (BOP).

Workers also installed deformed, epoxy-coated Number 4 rebars on 30-inch centers across the old and new widening joints. These bars were 60 inches in length and were nailed to the existing asphalt surface with no less than three nails for each bar. It was important to know that the orientation of the bar nails must be such to resist movement of the roll of concrete in front of the slipform paver, as shown in Figure 7. The finished overlay product for the Osceola County project can be seen in Figure 8.

Figure 7. Osceola County tie bars

Figure 8. Osceola County finished pavement

Shoulder Construction

Due to the lack of quality stone materials in this area, the material that was removed to accommodate the 2-foot widening was stockpiled at the concrete plant site for application to the new shoulders after paving was complete. A 4-foot-wide milling head machine was used to remove a portion of the existing shoulders to a depth of 3 inches below the existing pavement surface.

Shoulder construction consisted of two-lift construction, and both lifts were placed between September 8 and 11, 2009. The stone was hauled from pits owned by the shouldering contractor in Minnesota. The materials were stockpiled in an Iowa DOT stockpile site near the US 59/Iowa Highway 9 intersection by semi-bottom dump trucks. End dump trucks were later used to move the materials to the construction areas. Due to an exceptionally heavy rain and the contractor's method of finishing the stone shoulder surface, a third lift was required for additional stone in driveway fillets and storm-damaged areas. This work was completed on September 22. Haul distance was a critical factor in this shouldering effort.

Special Construction Concerns

A large number of longitudinal subdrains were added to this project but accounted for less than one week of construction prior to the paving. In addition, a number of full-depth concrete patches were placed prior to the paving. Some contractor issues caused this activity to take multiple weeks, when only one week was required to complete the task. The project required 1,379 square yards of full-depth concrete patches and 153 surfaces patches of asphalt to repair transverse joint locations in the existing pavement. The general condition of the surface was good due to the maintenance practices of the local Iowa DOT authorities, as shown in Figure 9.

Figure 9. Osceola County original pavement

The slipform paver was guided by stringlines on this project. This work required a concentrated effort on the part of the contract surveyor to map the existing surface, develop the new overlay profiles, and do the field staking at 25-foot intervals. Multiple survey crews were required to do these activities and stay ahead of the paving operation.

Throughout the construction process of Highway 9, it was observed that there were numerous "stops and starts" throughout each day due to the lack of continuous delivery of concrete trucks. This was affected by the number of available hauling units and the planned haul routes. This type of occurrence was controlled by the contractor and his overall plan for execution of the project and the associated smoothness of the completed surface. Some slipform pavers such as the

Guntert & Zimmerman used on this project resulted in only minor changes in ride due to stops during paving. Concrete delivery route selection, such as eliminating city street routes where possible, can aid in reduced travel time and increased production on sites such as this one.

The cure/texture machine followed the slipform at various distances throughout the project. At some points, the cart was approximately 400 to 500 feet back from the paver; at other times, the cart was immediately behind the burlap. The timing of texturing and curing is an art, and it was determined by a hand touch test to assure that the surface was dry enough to obtain the correct tining depth. Some difficulty was experienced in keeping the curing nozzles clean and applying an adequate amount of cure on the sides and top of the slab. The operator corrected this as the project proceeded east.

Random transverse cracking outside of the transverse joints occurred between Stations 304+25 and 342+75. This happened on the same day that the pavement construction reached its maximum length on the entire project. There were approximately 30–40 cracks that were angled from the joints on about 3,850 feet of the project. A meeting was held with the research team, Iowa DOT representatives, and supervisors from the contractor. It was suggested and agreed upon that the cracks were the result of late sawing of the individual joints. The contractor agreed to saw the initial relief joints at every fifth rather than every tenth joint, and the saw crew was encouraged to stay closer to the paving so that the concrete was more “green” when it was sawed on days when the paving moved rapidly and when the temperature swing from morning to noon to evening, coupled with wind, caused the thin overlay to rapidly set. No further cracking of this type was evidenced on the project.

Contract Administration and Traffic Control

This contract called for construction of an overlay on the existing 24-foot-wide pavement and widening to 28 feet to be accomplished, under closed road conditions. The road was closed only after patching and installation of additional subdrains on June 15, 2009 and reopened to the public on September 29, 2009.

A total of 100 working days were allowed for the contract, and 93 working days were charged for the work. Rain was the main contributor to the length of time that was required for the project.

US 65 in Worth County

Mainline Paving

Mainline paving for US Highway 65 in Worth County began on August 27, 2009 and ended October 22, 2009. Handpours for the turn lanes, bridge approaches, and medians at two channelized intersections were completed October 30, 2009. Mainline paving was accomplished with the use of a Guntert & Zimmerman slipform paver and burlap drag, work-bridge with burlap drag, and a Gomaco cure/texture machine, shown in Figure 10. Hand-floating and mopping of the surface was accomplished between the slipform paver and the work-bridge.

Figure 10. Mainline paving

The slipform was fed by a fleet of dump trucks and a central drum mix plant located approximately 0.5 miles east of the project and 2 miles south of the EOP or approximately 8.5 miles from the BOP. Concrete was dumped directly onto the existing pavement in front of the slipform for both lanes. A view of the finished two lanes of the overlay in Worth County can be seen in Figure 11.

Figure 11. Worth County finished pavement

Workers also installed deformed, epoxy-coated number 4 rebars on 30-inch centers across the old and new widening joints. These bars were 72 inches in length and were nailed to the surface with no less than three nails for each bar. It was important to know that the orientation of the bar nails must be such to resist movement of the roll of concrete in front of the slipform paver. The layout of the bars for the Worth County work is shown in Figure 12.

Figure 12. Worth County bar layout

This project was let to be built under a closed road with a detour traffic control plan. At the preconstruction conference, the contractor requested and was allowed to build the roadway one lane at a time while the road remained closed to through traffic. He chose this method for the following reasons:

- One-lane paving allowed for the use of the other lane as part of a two-lane haul road for concrete.
- The method allowed for the use of one slipform setup of a 16-foot width to pave all of the mainline, including the two channelized intersections.
- The project called for the use of stringless paving control. One-lane construction allowed for remediation of the first lane surface for ride problems prior to the paving of the second lane, if the need arose.

The requirement for stringless paving called for two items not found in conventional stringline controlled operations. The first item was the establishment of vertical control points 250 feet along the roadway and on alternating sides of the roadway. This was provided by a contract surveyor to supplement the existing set of control points that were set by the State of Iowa at 1,000 foot intervals along the east side of the existing pavement on the foreslope. This kept the paving equipment (i.e., slipform and trucks) from interfering with the line of sight between the total stations and at least three of the known vertical control points at any given location along the roadway. The project location was relatively flat but contained several horizontal curves that posed sight distance problems as crops reached maturity height along the roadway. This also contributed to the need for the 250-foot spacing of control points.

The second requirement for the stringless paving operation was the addition of the electronic/hydraulic controls on the slipform paver. This was accomplished during the week of August 24–27, 2009. Contractor employees went through a five-day course that covered the operation of the total stations, radios, and operation of the slipform paver appurtenances in the week prior to the field installation.

Construction time was longer than what would be expected for a project of this nature. The extended time was attributed to the weather during the second lane placement. The month of October included a majority of lost time due to the threat of rain.

The contractor staff, contract surveyor, and the research team worked together on this project to provide a better model of the existing pavement that aided in the development of the surface model and the guidance of the slipform paver. Once paving began, there were no lost days due to model construction and application.

Shoulder Construction

Due to the widening requirements for this project, a 4-foot-wide milling head machine was used to remove a portion of the existing shoulders to a depth of 3 inches below the existing pavement surface. The material was hauled to two places. The first portion of the material was sent to an Iowa DOT garage approximately 11 miles from the project to replace stone that had been placed on these shoulders the previous year. The remaining portion was stockpiled at the concrete plant site for application to new shoulders after paving was complete.

Shouldering operations began on September 30, 2009 on the northern 2 miles of the project with the application of the salvaged shoulder materials in the first lift. Materials were placed by a shouldering machine that was fed by contractor trucks that were not needed for the short concrete hauls at this stage of the project. When mainline placement of concrete was complete, additional trucks were used to place the shoulder stone on the remaining portions of the project. All material was placed in two lifts due to the depth of the shoulders, and virgin aggregate from the same quarry site that housed the concrete plant was used to finish the work on November 4, 2009. The salvaged materials and the virgin shoulder materials were obtained from the same location as the concrete plant. One-lane paving could have made shoulder placement available during the construction.

Special Construction Concerns

In general, the pavement surface was well maintained and in good condition, as shown in Figure 13. The existing surface friction course was exhibiting signs of localized delamination, and the Iowa DOT decided to remove it by milling. The final surface after milling is shown in Figure 14.

Figure 13. Worth County before milling

Figure 14. Worth County existing condition after milling

Full-depth repairs of the existing surface prior to overlay changed from a minimal number of joint repairs to over 400 transverse joints that were given a full-depth repair with Portland cement concrete techniques. This work served to basically remove any longitudinal stresses in the existing pavement and should enhance the performance of the overlay.

This work was done at the same time that the additional longitudinal subdrains were installed. Both operations were accomplished before the road was closed to through traffic. These operations seemed to work well together.

The Iowa DOT chose to mill the existing HMA surface to achieve a 2% cross-slope in each lane and reduce the amount of PCC overlay overrun due to wheel ruts. The Iowa DOT also wanted to remove much of a bituminous surface sealcoat that showed large areas of surface loss. There was a concern about the bonding capability of this layer. Milling was accomplished by using a 12-foot-wide milling machine, shown in Figure 15. Grade was established by setting the mill to scratch the surface at the centerline and mill to the 2% cross-slope across the driving lane in each direction. In super-elevated curves, the mill was set to follow the existing rate of the cross-slope.

Figure 15. A 12-foot-wide milling machine

Paving train length usually did not exceed 500 feet from the delivery point in front of the slipform paver to the cure/texture machine in the rear. This distance could be reduced to 250 feet on days with hot, winding conditions. It was controlled by the rate of set in the concrete. Cool, overcast days did not allow the pavement to set quickly for either cure/texturing or joint sawing.

Shoulder construction was slowed by a combination of factors that were present in this project. The first involved the decision to mill out only 4 feet of the 8 foot shoulder surface in preparation for the widening. This area had to be drained in some way to provide a good base for the widening concrete and stable base for the shoulder stone when it was applied. One could not assume there would be no rain between the removal and replacement of the shoulder stone. Second, the removed shoulder stone contained an excess of fine materials that did not compact well when dry or when dampened due to rain or pug-milling. If the shouldering had followed directly behind the paving, some of these problems could have been averted. Contractor decisions to use their own equipment for this process slowed the operations.

The centerline joint was hand tooled for both lanes of paving, shown in Figure 16. Three early entry saws were used to cut the transverse joints. The first saw cut every fifth joint to a depth of T/3, and the other two saws cut the intermediate joints to a depth of T/4. The paving of the 16-foot-width did not exceed three-quarters of a mile per day on this project. No premature cracking was noted on this project.

Figure 16. Hand tooling of the center line

Surface model building was enhanced on this project over the Poweshiek project in the following ways:

- Communication between the contracting authority, contractor, and model builder were used to identify each group's goals prior to the start of construction. A pre-pour type meeting greatly aided in this communication.
- The model base information for the existing surface was improved with more attention to data collection by the research team and the contract surveyor. This work was done between the time of surface milling and the time of overlay placement.
- The contract surveyor had the advantage of learning from the Poweshiek project what to consider in the model development.
- With a more proactive research team and contract surveyor, the model was completed in time for the owner and contractor to review the profiles for several days before paving. In the future, this should also allow all parties to identify minor deviations in alignment or profile days in advance of the questionable data and allow for corrections.

Contract Administration and Traffic Control

This contract called for the construction of an overlay for the existing 24-foot-wide pavement and a widening to 32 feet to be accomplished under closed road conditions. The road was closed only after patching and installation of additional subdrains on July 18, 2009 and reopened to the public on November 18, 2009.

One-hundred working days were allowed for the contract, and 96 working days were charged for the work as of November 30, 2009. Seeding of disturbed areas remains to be done in spring 2010 during the seeding period.

The project also had a secondary set of working days for a detour on the south portion of the project. Sixty working days were allowed for this portion of the paving, and 60 days were utilized.

This project also required the contractor to maintain traffic through at least one of the intersections in the City of Kensett at all times and not close two consecutive rural intersections at the same time.

Rain was the main contributor to the length of time that was required for the project. The application of one-lane paving did not seem to affect the rate of paving on this project. One is still limited by the ability to produce the material, haul and place material, and saw joints each day. The rural nature of this project did not create any access problems for landowners with the one-lane construction. It did create problems for the quarry operation and a wind farm materials equipment site. Two-lane construction could have reduced those locations' down time or detour usage.

V-18 in Poweshiek County

Mainline Paving

This contract called for the placement of a nominal 1 inch of HMA concrete. This was placed to serve as a bond breaker between the original PCC pavement and the PCC overlay. Three areas were chosen by the research team to substitute a geotextile fabric for the asphaltic concrete in an effort to measure the differences in cost and performance compared to the bond breaker. The road was closed prior to the placement of the bond breaker. The HMA layer was placed between May 19 and May 21, 2009. The asphalt was placed one lane at a time under closed road conditions.

After placing the bond breaker asphalt, the contractor chose to place a portion of the shoulder stone before the overlay construction. This served to develop a uniform pad line for the slipform paver operation on this route under the new stringless paving specification. The fabric bond breaker was placed immediately in front of the PCC paving operation.

The requirement for stringless paving called for two items not found on conventional stringline-controlled operations. The first was the establishment of vertical control points 250 feet along the roadway and on alternating sides of the roadway. Due to these control points, paving equipment would not interfere with the line of sight between the total stations and at least three of the known vertical control points at any given location along the roadway. Large elevation changes in the existing roadway profile also contributed to the need for the 250-foot spacing.

The second requirement for the stringless paving operation was the addition of electronic/hydraulic controls on the slipform paver. This was accomplished during the week of June 13–19, 2009. Contractor employees went through a five-day course that covered the operation of the total stations, radios, and operation of the slipform paver appurtenances in the week prior to the field installation.

Mainline paving began June 26^{t} and was completed July 22. Handwork at intersections was completed July 23, 2009. The construction time was longer than would be expected for a project of this nature. The extended time included work by the contractor, contract surveyor, and the research team to understand the modeling process and relate it to the field surveys done prior to the modeling process. Other contractor-committed work also accounted for 2–3 days within that time frame.

The paving train consisted of a Gomaco 2800 Commander slipform paver with V float, hand finishers, burlap drag bridge, and Gomaco cure/texture cart, as shown in Figure 17. In this case, the contractor also chose to use the Gomaco GSI profiler, shown in Figure 18, to measure the profile at various points across the slab and continuously along the pavement for the length of the project. This was used as a research project for Gomaco and to help the contractor evaluate the operation of the stringless technology and the slipform paver, which was a new machine for the contractor.

Figure 17. Gomaco 2800 Commander slipform paver

Figure 18. Gomaco GSI profiler

This project proceeded well on paving days, with 10–19 transit mix trucks delivering the concrete from a plant that was located at the north end of the project. The plant was about 10 miles from the beginning of the project. The operation allowed constant and consistent movement of the paving train. Delivery was very good, and at times the contractor was able to achieve speeds of 10–20 feet per minute due to the discharge of two trucks that delivered the concrete side by side.

A view of the finished Poweshiek County pavement can be seen in Figure 19.

Figure 19. Poweshiek final slab

Geotextile Bond Breaker Construction

Geotextile bond breaker material was specified for three locations on this construction project. In each case, the material was placed on both lanes of the pavement surface. Those sites included the following locations: Stations 20+00 to 22+94 (flat or tangent grade), Stations 384+00 to 389+91 (negative grade), and Stations 36+00 to 38+94 (positive grade). The intent of the location selections was to evaluate the interaction between the paving equipment and concrete and the fabric placement and overlay constructability. Due to an overlay construction problem, a need for a fourth fabric site was identified at Stations 34+05 to 37+05 (entry to horizontal curve).

Two separate material suppliers were used for this project. The first material, HATE B 500-PP was supplied by Huesker of Charlotte, North Carolina. The alternative material, Tencate Mirafi, 1450 BB was supplied by Tencate Geosynthetics of North America. Both materials met the same material specifications outlined in a special report done by the Transtec Group **(**Rasmussen and Garber, 2009) and were supplied in rolls, 15 feet in width by 300 foot in length. The Huesker material was utilized on Sites 1, 2, and 4, while the Tencate Mirafi material was used on Site 3.

Installation instructions were the same for both materials. A copy of the installation instructions can be found in Appendix A. The materials were to be overlapped no more than 6 inches at centerline, and the excess width was to be laid flat on the road shoulder to act as a wick drain for any moisture between the pavement layers after construction, shown in Figure 20. The test areas were gapped during the placement of the 1-inch nominal HMA bond breaker. Fabric roll placement began 3 feet before the HMA gap to allow for overlap of the two materials and ended 3 feet on the HMA at the terminus of the test area, as shown in Figure 21.

Figure 20. The gap in the HMA bond breaker where the geotextile material was placed

Figure 21. Fabric roll placement

The materials were attached to the existing pavement with nails, shown in Figure 22, from Hilti ramset-type guns. They were nailed in an approximate 5.25-foot transversely by 5-foot longitudinal grid pattern with one row of nails 3 inches from each pavement edge, one at the centerline, and one at each midpanel location. The material was difficult to keep straight under this type of construction and developed small bubbles in the surface. These bubbles were folded forward, and an additional nail was added to place them in a horizontal position prior to concrete placement. The intent was to have no bubbles under the material and no more than three layers of fabric between the concrete layers. It was permissible to cut such a bubble and make a two-layer overlap but this technique was not employed on this project.

Figure 22. Nailing pattern for the geotextile materials to the existing pavement

At the first location, no prior instructions were given to the contractor as to how to place the material. The contractor chose to use hand labor to unroll two rolls of material at the same time. He accomplished this in the small area between the concrete delivery trucks and the slipform paver. The use of ready-mix concrete delivery trucks made this possible. The operation can be seen in Figure 23. It required that the material also be nailed to the existing surface in the workspace between the rolls and the concrete placement area. This required approximately four people to unroll the fabric, three people nailing the material to the existing surface, and close coordination with the person directing the concrete placement.

Figure 23. Unrolling and nailing the material to the existing pavement

Site 4 was the next placement area. In this case, the contractor placed the entire length of fabric in both lanes prior to any concrete placement. The same number of crew were utilized for placement. Concrete delivery trucks were directed to back into the slipform paver by using the middle of the roadway surface. This required some turning of the trucks due to the horizontal curve location. No particular problems were noted in this fabric or concrete placement. The use of “street pads” on the slipform paver and the control of the concrete “head” in front of the paver removed any problem with the slipform trying to pull the fabric toward the paving operation, as shown in Figure 24.

Figure 24. Streetpads

The downgrade nature of Site 2 resulted in a different approach to the material placement. In this case, the first roll was placed prior to any concrete placement. Delivery trucks backing up the grade used the non-fabric-covered lane until they got closer to the paving operation and then deposited concrete over the second lane roll, as shown in Figure 25. This allowed the trucks to not maneuver on the fabric.

Figure 25. Non fabric-covered lane

At Site 3, both rolls of fabric were placed prior to concrete placement, and all delivery trucks used the center of the fabric-covered slab to get to the paving operation, as shown in Figure 26. The up, or positive, grade at this location caused some small movements in the fabric due to truck front-braking systems. Again, no fabric ruptures were noted at any of the locations and fabric bubbles were treated with extra nails to secure them to the surface prior to concrete placement.

Figure 26. Fabric and concrete placement

Shoulder Construction

Actual shoulder stone placement began July 22, 2009 south of Interstate 80 and was completed August 4, 2009. Due to the depth of the pavement overlay, the shoulder stone was placed in two lifts on top of the pre-paving materials. The shoulder stone was placed with a shouldering machine, and as many as ten trucks supplied the material. It was compacted with the use of pneumatic and steel rollers. The first lift was placed beginning at Interstate 80moving south and then proceeded counterclockwise (working with traffic) around the project. The second lift was placed in the same manner.

The source of the shoulder stone was north and west of Malcom 1.5 miles and northwest of the project site. This provided direct access to US 63 and Iowa 85 as a haul road to the south end of the project while the paving proceeded north. The materials were hauled by a combination of private and company trucks, depending on availability.

Special Construction Concerns

The existing pavement on this project was in good condition. The surface was uneven at the joints from years of vertical movement during spring thaws and subgrade clays that did not drain well. There was some evidence of random joint faulting, but in general travel was not impacted by the amount or severity of faulting. A view of the existing pavement prior to the placement of the bond breaker layer is shown in Figure 27.

Figure 27. Poweshiek existing pavement

This project contained 37 existing transverse joints that were exhibiting vertical movement and damage from expansion of the pavement in a longitudinal direction. The contracting authority had experienced this type of problem on other county projects and had developed a working rehabilitation technique. The technique consists of using a rock saw to cut along the joint at a width of 6 inches. The void was filled with hot mix asphaltic concrete. This work was done before the overlay operation and allowed the concrete delivery trucks to compact the asphalt during paving operations, as shown in Figure 28.

Figure 28. Rehabilitation technique for damaged transverse joints

Available trucks were a problem on the shouldering operation. Contractor trucks were not available during much of the paving time period. This, coupled with lack of available manpower for the shouldering equipment, slowed the operation.

The contractor was able to use three early-entry saws to cut the transverse joints and one additional saw for the longitudinal joint on this project. The 6-inch overlay depth resulted in the contractor saw crew being able to start and stay within sight distance of the paving operation with the joint development.

The construction of the computer model for the paving proved to be a learning experience on this project. All parties involved in the work learned on-site because this type of construction was the first of its kind in Iowa. The Leica, Inc., personnel were on site to advise the contract surveyor, research team, and contractor about ways of improving the model construction and its application. This project identified the need for understanding the “as-built” plan survey information, accurate mapping of the existing surface, development of the model in advance of the paving, and checking of the surface to model fills during paving.

Contract Administration and Traffic Control

This contract called for construction of the overlay full width (i.e., 22 feet), under closed road conditions. The road was closed to begin the HMA bond breaker construction on May 19, 2009 and reopened to the public on July 17, 2009. The second lift of shoulder stone was applied under the “open road” conditions.

A total of 65 working days were allowed for the contract and 55 working days were charged for the work. Rain and stringless paving startup difficulties contributed to the length of time required.

County Road W-62 in Johnson County

Mainline Paving

This project was developed to be constructed one lane at time, under closed road conditions, and in stages. The contractor requested and was granted the opportunity to change the staging plan and move to the end of the project to begin paving. Paving began July 24, 2009 at the EOP and consisted of curve widening on both sides of the approach to Highway 921. Paving resumed on August 3, in the northbound lane at Freund Road to serve two major traffic generators (i.e., sand pit and precast pipe companies and a trailer court). The northbound lane was completed August 3 and the southbound lane was constructed between August 17^{t} and August 20. The time between lane paving was used to allow for strength gain on the northbound lane and to strengthen the southbound shoulder for support of the slipform paver and delivery trucks.

The paving train for this project, shown in Figure 29, consisted of a CMI slipform paver with burlap drag, hand finishers, work-bridge with burlap drag, and a Pavesaver cure/texture cart. The train was usually less than 500 feet between the slipform and the cure/texture cart. Cool, cloudy weather limited the contractor's ability to shorten that distance.

Figure 29. The project paving train

In this case, the contractor employed a variety of trucks to deliver the concrete. These included conventional single and semi-trailer dump trucks and transit mixers. The contractor had the capability to load wet batches into the transit mixers for this work. The concrete plant was located approximately 5 miles from the site in an urban area, which, along with the one-lane paving process, made delivery erratic at times.

In this case, the contractor obtained two overlay projects for the same county at the same time. Both employed one-lane paving and the same width of lanes. The contractor moved from the W-62 project to the other project due to wet subgrade and the needs of both projects in terms of time constraints.

Paving of the mainline resumed on September 3at the BOP and moved forward in the northbound lane through a major intersection (i.e., one-half mile north of BOP). The pavement was allowed to gain maturity opening strength, and then paving was reversed and proceeded south on September 8 through the BOP.

Mainline paving resumed in the northbound lane on September 11 and finished in the northbound lane on September 28. The paving train was moved back to a point approximately one-half mile north of the BOP and resumed paving on October 5 in a northbound direction in the southbound lane. Paving of the southbound lane was completed on October 15, 2009. The finished two-lane product for the Johnson County work can be seen in Figure 30.

Figure 30. Johnson County finished pavement

Shoulder Construction

Shoulder construction on this project involved the addition of a very narrow earth fill to allow for the 8-foot-wide paved shoulder and a 1–2 foot rock fillet along the edge of the paved shoulder. The existing right of way, 66 feet, made it very difficult to construct a 34-foot-wide pavement between the backslopes in some areas and on narrow fills in other areas. The rock was placed in one lift between August 10, 2009 and November 6, 2009. Shouldering stone was placed as the paving work was completed in the various areas and not in one continuous operation. The shoulder stone source was River Products, with quarries located along Interstate 80 in Iowa City. This created an approximate 12-mile haul to the north end of the project, or 16 miles to the south end of the project. The material was hauled by the contractor trucks. It was placed with the conventional shouldering machine. This was often done during times when paving was not in progress, whichallowed the use of the contractor trucks for this purpose. The one-lane construction allowed trucks to enter from either end of the project during the construction.

Special Construction Concerns

The existing pavement was in fair to good condition for its traffic load and the age of the underlying concrete pavement. As seen in Figure 31, there were many areas of delamination between the existing asphalt layers and the original concrete in the form of potholes near the centerline and across the slab in various areas. The plans called for 690 square yards of full-depth patching with concrete, and one patch by count.

Figure 31. Johnson County existing condition

Joint development was accomplished with the use of early entry saws. The use of one-lane construction, the “knife” for development of the only longitudinal joint, and conventional slab sizes greatly reduced the need for saws on this project.

This project was built using conventional stringline control of the paving train. This created a problem with the use of the alternate lane and shoulder. The stringline used approximately one-half of the existing 9-foot-wide lane and forced vehicles onto the new shoulder, which was soft from the rains and construction process and needed in the narrow right of way.

This project would have benefited from a stringless application.

Contract Administration and Traffic Control

The plans for this project called for two types of construction staging. The first type dealt with the construction sequence from the south to the north, and the second dealt with the cross-section that was to be employed for each of the construction sequences. Those plans can be found in Appendix B.

The staging plan called for a south-end portion (approximately 1 mile) in the city of Hills to be constructed first, followed by the northbound lane from Hills to Iowa 921(EOP). The third phase was to build south from Iowa 921 to provide access to a trailer park and then continue south to the city of Hills and complete the project through one-lane construction.

Large amounts of rain and soft subgrades, in addition to project agreement problems between the city of Hills and Johnson County, changed the plan completely. All paving was done one lane at a time, as planned, but the sequence was changed to accommodate the weather, the City of Hills, and subgrade conditions. Overlay construction began at the EOP and proceeded south to accommodate three major traffic generators. Second, the south end, or BOP area, was completed to allow access to Hills. Finally the center sections of the project were completed.

This contract called for the construction of an overlay for the existing 24-foot-wide pavement and a widening to 34 feet to be accomplished under closed road conditions. In addition, the plans called for the paving to be completed one lane at a time under local traffic. The traffic control consisted of a Closed Road sign and one-way traffic through the project at all times without a traffic control vehicle. No major problems were noted in the traffic control. There were some conflicts between the paving operation and property owners regarding the closing of access for the period needed for gaining pavement strength at three locations. These were gapped and closed later when traffic could be diverted to one side of the existing driveways. The road was closed only after patching and installation of additional subdrains on July 20, 2009 and reopened to the public on November 16, 2009.

A total of 60 working days were allowed for the contract, and 55 working days were charged for the work as of November 30, 2009. Seeding of disturbed areas remains to be completed in spring 2010 and will utilize most of the remaining 5 working days. Rain was the main contributor to the length of time required for this project. The construction of narrow, deep fills in areas with little or no drainage in a 66-foot-wide right of way was difficult even under dry conditions.

DATA COLLECTION

Concrete Strength

Maturity data were collected by placing thermocouples in the fresh concrete at overlay mid-depth 500 feet from the beginning and ending of the project and approximately every 1,000 feet along the project. The devices were placed approximately one foot from the edge of the pavement in the widening area. The thermocouples were placed in the concrete with a small wire taped to a 3/8-inch wooden dowel. The thermocouple wires plugged into Madgetech data recorders that recorded temperature readings inside and outside the concrete every 15 minutes. The time/temperature measurements were taken to estimate the strength gain rates of the concrete. The thermocouples were removed after approximately two to three days, or when the concrete reached an estimated 500 pounds per square inch (psi) flexural strength, as computed from a field lab test by the contractor. The resulting data were placed in an Excel file, where the time/temperature factor was calculated. The same procedure was used for each of the four construction projects.

The desired Poweshiek County maturity time/temperature factor (TTF) for the project was 1,875, which meant that a strength of 500 psi was achieved. Once the concrete reached the adequate TTF, the contractor and owner were notified that the road could be opened only for local traffic and construction traffic.

The desired maturity TTF for the Osceola County project varied over three separate maturity curves, from 978 to 996 and finally 1,354 for the remainder of the project. This meant that the strength of 500 psi was achieved. State specifications require that the contractor make a new curve any time the mix materials are changed. Once the concrete reached the adequate TTF, the contractor and owner were notified that the road could be opened only for local traffic and construction traffic

Seven different maturity curves were employed during the Worth County paving process due to changes in materials. This created the need for alternate material sources and characteristics in the mix. The desired TTF for the project ranged from 565 to 807. Each value related a TTF to an estimated strength of 500 psi. The differences in the values came from material supply problems that caused six changes in the mix design over the course of the paving. Once the concrete reached the adequate TTF, the contractor and owner were notified that the road could be opened only for local traffic and construction traffic.

The desired TTF for the Johnson County project was 1,716, which meant that strength of 500 psi was achieved. A verification curve was developed in August that provided a TTF of 1,391 for use after that date. Once the concrete reached the adequate TTF, the contractor and owner were notified that the road could be opened only for local traffic and construction traffic.

Weather Data

Weather data in the form of air temperatures, relative humidity, and wind speed/direction were gathered in two-hour intervals with handheld gages to help explain the growth in concrete strengths under various weather conditions. The same procedure was used for each of the four construction projects. Its purpose was to back up the maturity data and explain any abnormalities in that data. Due to the mild summer, the maturity meters provided all the data needed for this project.

Deflection Data

Falling weight deflectometer (FWD) data was only collected on the Poweshiek, Osceola, and Worth County projects.

In the case of Poweshiek County, initial FWD deflection data was collected after the bond breaker asphalt layer was placed and before the PCC overlay was placed. The initial runs in Osceola and Worth counties were conducted on the existing asphalt surfaces prior to construction. Data was collected on 0.1 mile increments in both directions in the right wheelpath and midpanel locations. A second round of FWC data was collected on the 0.1 mile longitudinal increments in the right wheelpath and midpanel location after the PCC overlay was placed.

No deflection testing was done on the Johnson County project.

Roadway Surface Mapping

A John Deere Gator utility vehicle was used to map the existing surface of the roadway on the Poweshiek, Osceola, and Worth County projects. It was equipped with a GPS receiver mounted on the top of the cab, shown in Figure 32, directly over the laser profiler. Data were streamed from both units to a central computer for storage, as shown in Figure 33. Data were using the Iowa real time network(RTN) system and its ability to correct for location and elevation.

Figure 32. A John Deere Gator equipped with a GPS receiver

Figure 33. GPS receiver and laser profiler located on the top of the John Deere Gator

The intent of this data collection was to determine the ability of the GPS system to map the existing pavement surface to a vertical accuracy sufficient for pavement overlay quantity estimation and control. The number of profiles was selected to determine how many of these key locations across the pavement were needed to accurately map the surface for overlay construction.

The method of data collection involved the use of a NEMA string that provided x,y,z coordinates of each point in latitude, longitude, and elevation. The data were then translated into state plane coordinates and elevation from sea level in feet by the ISU/GIS laboratory staff.

The initial GPS mapping data collection interval for Poweshiek County was determined from the travel speed of 12 mph to be 3–4 feet between data points. The site was broken into two segments: the southern 6 miles of north-south roadway and the north section that contained a curve and break for Interstate 80. The data were collected along each of the pavement edges, four wheelpaths, two midpanel locations, and centerline. Data were collected two times during the construction: once prior to the construction of the bond breaker asphalt layer and once after the construction of that layer. In the second data collection, the travel speed was reduced to 5 mph and the sample interval to 25 feet in an effort to improve on the accuracy of the measurements. In this case, profiling was only done on the edges and centerline of the asphalt pavement surface.

The GPS data from the post-bond breaker placement/pre-overlay phase data collection were passed to the contract surveyor for use in the development of the final gradelines and the calculation of concrete quantities.

Early attempts to survey the Osceola County project at 12 mph and 3–4-foot data point intervals proved not to be satisfactory in terms of elevation control. The next GPS data collection interval was determined from the travel speed of 5 mph to attain a sample interval to 25 feet for accuracy of the measurements. The site was surveyed in one continuous operation from end to end. The data were collected along each of the pavement edges, four wheelpaths, two midpanel locations, and centerline. Data were collected prior to construction of the PCC overlay.

The GPS data from the pre-overlay phase data collection were passed to the contract surveyor for use in the development of the final gradelines and the calculation of concrete quantities. In this case, the surveyor had a set of hubs on each side of the pavement and cross-sections at 25-foot intervals of the pavement edges, quarter points, and centerline as a comparison set of data.

GPS data for the Worth County project were collected in the same manner as for the Poweshiek County project. This project required milling of the HMA surface to attain a 2% cross-slope in each lane and remove as much of the half-inch microsurfacing as possible. After milling was completed, data were collected prior to construction of the PCC overlay at 25-foot intervals for accuracy of the measurements. Data were acquired on the centerline and two pavement edge profiles.

The Worth County GPS data from the pre-overlay/post milling phase data collection were passed to the contract surveyor for use in the development of the final gradelines and the calculation of concrete quantities. In this case, the surveyor was providing a computer model to guide the slipform paver and used the data to check the required design depths of the overlay.

In an effort to learn more about the potential for GPS surface mapping, a second ATV was equipped with a different GPS mounting, shown in Figure 34. This vehicle allowed the GPS receiver to be mounted on a 2-meter pole and wheel that floats freely from the vehicle in a PVC tube. This unit has been found to work best at 5 mph and sampling rates of every 25 feet longitudinally along the road. Data were gathered in the same x,y,z coordinates as with the first device and along the centerline and two edges of the pavement. This unit worked best by subdividing the project into subsections, setting a base station, and communicating by phone through the base station to the RTN closest station.

Figure 34. An ATV equipped with a GPS

GPS mapping of the original pavement surface was not done in Johnson County.

Data from the Worth County project was analyzed to look at the ability to plot in 3D and use that data for computation of the quantities of concrete, final profile review and depth assurance in the overlay. The team was successful in plotting the data in 3D format in Geopac 3D software that is used in Iowa.

DATA ANALYSIS

Roadway Surface Mapping

Using the current GPS system and the associated RTN in Iowa requires a large amount of survey and GPS training. This is not a system that can be easily and quickly learned by a contractor staff or research team. The learning begins by understanding the limitations of the system. The limitations affecting the research and potential construction of pavements include but are not limited to the following:

- A lack of telephone communication speed between the data collection or paving equipment and the RTN base stations affects the development of elevation corrections.
- Impact of dense foliage or large towers, such as water towers, near the project interfere with or block the radio signals and stop or reduce the accuracy of the data collected.
- Satellite configuration and number viewed at a given time limits the accuracy and construction time that could be employed each day.
- Still-positioning with GPS is best for the development of x,y,z coordinates, and if one is moving during data collection, slower is better.
- Establishing adequate vertical control on a paving project with GPS requires that additional control points be established on each side of the project approximately ¼ to 1 mile to the right and left of the project and at 1- to 2-mile intervals along the roadway to tied-down elevations across the pavement.

The research team began this project with the assumption that data could be collected at approximately 12 mph (i.e., the maximum vehicle-sustained speed) and stored in such a manner as to collect points approximately every 4–5 feet along a given profile route using a 5 Hz data collector. The data were collected at that speed and stored with data from a Roline laser (i.e., surface profile) on the Gator. Initial work in fall 2008 utilized the base stations that were set at known control points (x,y,z) along the project and broke the data collection into 24-mile segments.

Initial analysis of the data indicated that elevations were not being accurately calculated with this method. After conferring with other GPS users, it became apparent that the GPS system worked best for stationary measurements, occupying a given point for a given amount of time to allow the satellites to triangulate a best fix solution for a given point. This was unacceptable for the purpose of this research or the construction of a pavement.

The data collection in the spring of 2009 was done with a different approach. Based on work done by a local consultant in Iowa with the same goal in mind, the team recorded data from a machine moving 5 mph, and the associated sample rate was 25 feet plus or minus. The data was compared with static data taken manually with a total station and the Iowa DOT control network of points at 1,000-foot intervals along the project.

During the course of the research, it became apparent that it could be difficult to find easy-to-use software that Iowa highway agencies would own to plot the resulting 3D profiles and analyze against a design profile of the same area. Several attempts were made to plot profiles of the 3D data. It was eventually found that the data can be plotted in some 3D versions of AutoCAD and MicroStation. These happen to be programs that are available to many highway agencies and can be used to develop both existing and final road surface profiles along with cutting cross-sections to calculate concrete overlay quantities.

The number of profiles required for the mapping of the pavement surface depends on two things: the level of overlay material yield control the highway agency expects from their design and the surface condition of the existing pavement. At a minimum, the agency should require profiles of the two pavement edges and centerline. If the asphalt surface is rutted in the wheelpaths, the pavement quarter point elevations become important in the control of where the minimum depth of overlay will occur. The depth of the wheelpath ruts also becomes important in the quantity control. To expect good overlay yield results on the part of the owner and minimize risk on the part of the contractor, it is important to have nine profiles of the pavement.

GPS surveys of the final surfaces for the Osceola, Worth, and Poweshiek projects were planned but not carried out. Telephone connection problems and communication problems with the RTN system made it very difficult to complete. This part of the work was terminated by the field research team in lieu of working with the existing data gathered to date in the surface mapping of the Worth County project.

The research team was able to do the 3D plotting in Geopac 3D software. The consultant that designed the roadway used AutoCad CivilSoft 3D and the Leica staff used Carlson 3D software. Discussions with others involved with stringless paving outside Iowa indicated that the same plotting and design checks can be done with InRoads 3D software. Three dimensional software packages for highway are capable of both plotting the existing surface and proposed surface x,y,z coordinate data, but also can develop the final profiles and the executable file for the machine control.

During the course of the research, a system was identified that is capable of doing the intended mapping of the existing pavement surface. The AMW data collection system has been used since 1995 for highway work. It was developed for the primary purpose of mobile mapping applications. It does not use a surveyor-type collector; rather, the specialized software runs on a ruggedized PC with multiple data ports. The system commonly employs a GPS rover capable of updating on 10 hz to collect data at 10-foot intervals traveling at 35 mph. If speed or distance is an issue a 20 hz rover can be used.

AMW software also supports dual slope inclinometers for rod tip correction. The software also checks longitudinal slope by calculating slope base on elevation change in travel direction. All calculations are carried out in real time. The software also includes the ability to collect data from sonar, laser, and conductivity sensors while collecting data for topography. Practically any data source with analog or digital output can be used. This data is time stamped and added to the GPS data file. The data is then used to calculate a "best fit" center line profile for milling and paving. Horizontal and vertical curvature can be corrected as well as superelevation when edge of metal (pavement) and shoulder point profiles are included.

The same software can also be used to set control point networks if none is available. All data is calculated for use with station and cross-section reports. The software is also used for right-of-way mapping and road work staking, including slope stakes.

Concrete Quantity Development

The theoretical concrete quantities for each of the projects were developed from a template that represented the design overlay thickness across the existing slab and an additional area for widening units that were designed for in the cases of the Osceola, Worth, and Johnson County projects. The cross-slopes applied to the design surface were 1.5 to 2.0% as designated by the project engineer in each case for tangent sections. Super-elevated curve cross-slopes were adjusted to the maximum of 6% while maintaining the minimum overlay depth across the total roadway. Longitudinal centerline and edge of new pavement grades were established by the contractor representative in the Poweshiek, Osceola, and Worth projects and were reviewed and approved by the state or county owner prior to construction. In these projects, the contractor representative was encouraged to verify the existing pavement elevation at the pavement edges, quarter points, and centerline at approximately 25-foot intervals to ensure that the minimum overlay thickness was achieved. Theoretical concrete yield was calculated using the end area method with the data.

On the Osceola Iowa Highway 9 project, the contractor representatives were required to stake each side of the pavement at 25-foot intervals for the use of the slipform stringline control. Elevations of the key points across the slab were recorded during the initial survey and hub installation. They were used to ensure the minimum depth of overlay through adjustment of the vertical grades. Concrete quantities varied from the minimum depth of overlay to account for high points in the existing pavement surface.

The overlay design consultant for the Johnson County project established the grades for the single-lane paving and the theoretical concrete quantities. In this case, quantities varied from the minimum due to the quality of the subgrade in the pavement widening area. The widening rests on a newly constructed, narrow fill area that, under the best of conditions, will subside and use more than the template quantity of concrete. It is important to note that this type of widening should be properly specified in the bidding to assure that the owner and contractor risks are minimized to provide both the owner and contractor with the best unit price, using the two bid items of square yard and cubic yard.

In the cases of the Poweshiek County V-18 and Worth County US 65 projects, the contractor consultant developed a final surface with profile values at edges and centerline of pavement. The consultant utilized the as-built information for alignment and two sources of information for the elevation of the existing pavement surface. One piece of information was the GPS survey profiles that were developed at 25-foot intervals at the pavement edges, wheelpaths, quarter points, and centerline on top of the asphalt surfaces. The consultant also did his own static GPS shots at 25-foot intervals at the pavement edges, quarter points, and centerline. By comparing the three pieces of information, the consultant was able to develop a spreadsheet of quantity values that allowed for the minimum depth of overlay and corrected minor vertical curve problems in the existing alignment. This method allowed the contractor to raise or lower the profile surface model to change the concrete yield at any given location and maintain ride values on the surface. When this is done, there will most likely be a thin spot in the concrete at an isolated location.

Geotextile Bond Breaker:

The geotextile bond breakers were utilized on this project to investigate their ability to be a positive bond breaker between the pavement layers. The materials used in this project meet the suggested national interim specifications shown in Appendix A. They also offered a thinner bond breaker layer (0.1+/- inch) versus the HMA thickness of 1 inch to achieve the same long-term performance results. This can be a major factor in locations of vertical clearance in overlay projects. This can also offer the potential for lower bond breaker layer costs of construction.

The centerline cores taken on this project verified that the material acted as a bond breaker between the two layers of concrete. In each case, the geotextile adhered to the overlay concrete and did not adhere to the existing concrete in the original pavement. Photos of those cores are shown in the Results section for the GPS sawing experiment and Appendix C. This adherence would indicates that the fabric is of sufficient weave and thickness to absorb mortar from above but not let it pass through the fabric and cause bonding of the fabric to the lower concrete layer.

Long-term performance of the geotextile bond breakers cannot be determined in this study under the study timeline. Future review of the test site's concrete performance by the InTrans staff and the Poweshiek County Engineer will provide that long-term response.

The concerns of the highway industry over the use of this material center on performance and cost. The performance has been very good in Europe, and this is one of the first overlay projects in the U.S. to use the material. It has been used in Kansas for a two-lift paving project in 2009 on top of a cement-treated base in Oklahoma on Interstate 40 in 2008 and on Route D south of Kansas City, Missouri, in 2008.

The cost of constructing this type of bond breaker was estimated from the amount of labor used on the Poweshiek project. The crew consisted of seven laborers and one foreman who were usually found doing various tasks around the paving train. Since the test sites were short in length, no dedicated crew was assigned to laying out the bond breaker. In each of the four locations, four people were assigned to handle the unrolling of the material and situating to remove air bubbles from beneath the material. Three others were assigned to fasten or nail the material to the existing surface. One of those three people was retained to deal with any bubble problems that might develop during the concrete placement. The operation was supervised by the paving foreman.

In this case, the crew was able to place two 300-foot rolls and nail them down in 1.5 hours. The average cost was $0.35 per square yard for laborers, foreman, and equipment. The cost for the material itself was $1.84 per square yard for the material, including freight from North Carolina, and $0.14 per square yard for the hardware to fasten it to the slabs. This provided for a total cost of $2.33 per square yard, compared to the price of asphalt bond breaker on this project at $7.05 per square yard. When applied to a 5–10-mile paving project, the savings of $4.72 per square yard, 67% is considerable.

Maturity Values

Maturity measurements in this study were made with different goals in mind. One goal was to provide the owner with the time at which the concrete reached an estimated flexural strength of 500 psi. Current specifications allow the contractor to place construction equipment on the new surface when the concrete reaches this flexural strength. The question becomes how long it takes to achieve that strength with the project's surrounding materials and environment and how that can impact the overlay progress of the project.

Research by others (Cole and Okamoto, 1995) has indicated that construction equipment could be allowed to use the slab surface when the pavement has reached 350 psi flexural strength. The 350 psi value has been used in Iowa to allow water trucks to only use the center of the slab to feed water to concrete saws for joint development. Maturity gauges on this project were monitored through the 350 psi value and to an estimated strength of greater than 500 psi. The goal was to compare the times from pavement placement to the times of joint sawing and to the two target strengths of 350 and 500 psi.

Currently joint sawing crews use a calibrated hand or shoe test to determine when to begin sawing transverse joints in a way that will allow for the use of "early entry" saws and still not ravel the edges of the joint. Many crews begin to saw when the surface of the pavement will not scuff under a hand or movement of a shoe. The first in a series of saws is used to "skip" a number of joints and provide relief to the pavement, preventing premature transverse cracking. In conventional-depth pavements, the number of skipped joints may go as high as ten or as low as five, depending on the type of aggregate in the mix. In the case of overlays (i.e., 2–5 inches in depth), this research proved that five joints should be the maximum distance between joints sawed in the "skip" process.

The research first sought to show the contractors the relationship between the maturity value for strength and time of sawing. Second, it sought to relate the strength at sawing to that required for use of the surface by construction vehicles.

Maturity TTF values were obtained for each of the sensors placed in the four pavements. The sensor software provided the basic time and temperature readings at 15-minute intervals from the concrete placement until they were stopped by the research team (usually after the estimated strength reached 500 psi flexural). The spreadsheet for each sensor was then expanded to provide a TTF for each time period and an accumulated value column. Joint saw times at each sensor were obtained from data that the sawing crew provided in writing on the slab each day. Since multiple maturity curves were used on each project, the date and time of sensor installation was referenced to a given maturity curve and TTF target values for 350 and 500 psi. By using all parts of this information, the research team was able to develop the tables shown in Appendix D that relate the sensor number and pavement location to time from paving to joint sawing, estimated 350 and 500 psi strengths, and the estimated flexural strength at joint sawing.

All recorded values were used in the development of these tables. In the case of Johnson, Worth, and Poweshiek counties, the development of these tables resulted in one or more values of very low time and strength values at joint sawing. It is the belief of the research team that these values represent erroneous interpretation of times written on the slab.

Maturity curve values for each of the projects became specific to the concrete mix cements and coarse aggregates along with the environmental conditions at the time of concrete placement. The data from each of the projects were reviewed in terms of average and median values, maximum and minimum values, and standard deviation in values. Each of these values can help describe the strength gain characteristics of the particular mix and location.

The Poweshiek County project, which used limestone aggregate, resulted in the shortest time to joint sawing with median and mean values of five to six hours and flexural strengths of 141 to 151 psi. The 350 psi strength level was reached in less than one day and 500 psi in two to two-and-a-half days. This concrete set up quickly in the middle of the summer with very little deviation in values.

The Worth County project had time to joint sawing median and mean values of six to seven hours and strengths of 230 to 245 psi flexural strength. The 350 psi strength took nine hours, and the 500 psi value required less than 16 hours. The mix on this project proved to be a very fast strength gain material. The larger standard deviation in the values for the project can be attributed to the large changes in weather over the course of the paving. This project utilized a gravel coarse aggregate.

The use of the quartzite coarse aggregate in the Osceola County project resulted in some interesting maturity relationships. Median and mean saw time values were at seven hours, and strengths were in the 287 to 290 psi flexural range. This mix also gained strength rapidly with times of only 10 hours to 350 psi and 33 hours to 500 psi flexural strength. The combination of rapid strength gain and very strong coarse aggregate made this project a test to stay ahead of premature cracking from the strength-gain rate and still not ravel joints during sawing. This project also proved the importance of understanding the project materials when purchasing saw blades to meet the needs of the project and minimize raveling.

Maturity values taken from the Johnson County project must be considered with knowledge of the project and its timeline. The data contained several times to joint sawing that exceeded nine hours. The values that are shown are verified; however, they represent a very rainy climate that influenced rate of gain on a majority of the paving days. The contractor also was working multiple jobs with the same crew in the Iowa City area at the same time and may not have been able to saw when the concrete was ready to saw. This shows up in the mean to median values for saw times of 7.5 to 9.31 hours and associated strengths of 179 to 250 psi flexural values. This concrete mix set at a slower rate than for the other projects and required 13 to 17 hours to achieve 350 psi and 35 to 38 hours to get to 500 psi flexural strength.

Traffic Control Methods and Results

Traffic control for all of the construction projects in this study began with a closed road and used a detour for each project. In each case, the public announcement system (e.g., newspapers and radio) were used to alert local residents of the impending delays.

The detour utilized for the Poweshiek County V-18 project stretched several miles on state and county roads. In this area, the road pattern does not provide for close parallel routes. Residents living along the route utilized ATV equipment on the shoulders and ditches to get to and from the nearest county road access (i.e., less than 1 mile). They left their cars/pickups at this access for the two to four days required by the pavement to gain maturity and by the contractor to provide temporary access to the slab by granular fills. Farmers and agricultural suppliers who required special access for material supply were accommodated by adjusting the paving schedule at their site.

In the case of the Osceola County Iowa Highway 9 work, the detour was utilized for the entire construction period until the safety line painting and signing was complete and traffic could resume along the route. The contractor provided temporary access to the completed pavement for residents living along the pavement, but only after the concrete had reached maturity. For the time during and immediately after pavement construction (i.e., two to four days), residents were able to access their homes by using ATV equipment and cars/pickups on the remaining shoulder area. This project was entirely rural in nature. Farmers along the route were able to maintain animal sale deliveries and feed supply timetables by coordinating with the contractor's paving schedule near their location.

Single-lane construction under traffic and dual-lane construction with a detour had been discussed for the Worth County US 65 project during the planning phase of this project. The contractor requested and was granted the single lane with closed road and detour option. In this case, intermediate dates were established in an effort to reduce the total detour length and time. The contract also required that the contractor maintain cross traffic at three locations and deal with oversized vehicles at one site.

Johnson County officials requested that the contractor use a combination of closed road and detour for the through traffic on W-62 during construction. Single-lane construction was chosen for the paving. Due to the fact that there was a large mobile home park, two material supplier locations, and various homes along the route, continuous through movement by local traffic was also requested by the county. The contractor built and maintained One Way signing for the adjacent residents to use. Residents were asked to park across the road in most cases during the pavement construction and development of concrete strength (i.e., two to four days). The contractor stockpiled driveway stone at each access point prior to construction and thus made it easier to construct the access upon approval of the concrete strengths. Three businesses along the pavement were granted a special gap in the paving for one-half of their access to allow continuous movement during construction. Those gaps were later paved and the other half of the drive was used for temporary access.

Deflection Data Analysis

The deflection data were gathered on the three projects to provide a test validation of work being done by the research team on an overlay design procedure. The basic procedure was one developed for the Colorado DOT in previous years. It required some characterization of the existing pavement condition and its structural capacity. Many transportation departments employ the FWD as the tool of choice to measure existing structural capacity of the highway under design. This method, in combination with other information on the physical characteristics of asphalt layers in a composite pavement, allows the researcher to use the FWD to measure existing structural capacity.

The research team has been working to use the FWD data and known asphalt layer information to ease the data entry for the Colorado design program. This research offered a way to look at two parts of that effort:

1. What frequency of FWD testing is necessary for existing pavement surface and to characterize the structural capacity? Can this frequency be done effectively at 0.1-, 0.2-, 0.5-, or 1.0-mile increments in each lane?
2. Can before- and after-overlay construction testing verify that the deflection reduction correlates to the impact of the overlay thickness selected in the pre-construction design procedure?

The data from the pre- and post overlay construction for each of the three projects were first corrected for temperature at the time of data collection. All of the deflections were normalized to 70 ° F. Historical data on the asphalt layers for each project were collected and input into the design program along with the FWD data. Examples of the FWD data can be found in Appendix E.

Test runs of the design program were conducted for FWD data collected at 0.1, 0.2, 0.5, and 1.0 mile increments in both directions for the pre-construction and post-construction for each project.

The before and after PCC overlay deflection data was summarized in terms of maximum, minimum, average, and mean values for each of the three highways that were tested. The summary was developed for 0.1, 0.2, 0.5, and 1.0 mile increments by selecting values from the data set at the determined frequency. The results of the analysis for each construction project are shown in Tables 1, 2, 3, and 4, shown below by direction of testing and the combination of both directions. The data is compared only on the maximum deflection value under the load cell. That is the deflection that most design programs use to calculate overlay depths of asphalt of concrete.

Table 1. 0.1 mile pre/post Do comparison (deflection in mils)

Route:	Iowa Highway 9 in Osceola County								
Direction:	Northbound			Southbound			Both		
Interval:	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	4.6	0.1	4.6	6.3	0.1	6.3	4.6	0.1	4.6
Maximum:	14.7	0.4	14.3	14.3	0.2	14.1	14.3	0.2	14.1
Mean:	10.0	0.1	9.8	10.0	0.1	9.9	10.0	0.1	9.8

Route:	US-65 in Worth County								
Direction:	Northbound			Southbound			Both		
Interval:	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	3.3	0.7	3.2	3.6	0.1	3.6	3.3	0.7	3.2
Maximum:	14.5	0.3	14.2	15.4	0.3	15.1	14.5	0.3	14.2
Mean:	8.0	0.1	7.9	7.9	0.1	7.8	7.9	0.1	7.9

Route:	V-18 in Poweshiek County								
Direction:	Northbound			Southbound			Both		
Interval:	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile	0.1 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	5.7	0.1	5.6	6.4	0.1	6.0	5.7	0.1	5.6
Maximum:	17.1	0.7	16.4	20.4	0.6	19.8	17.1	0.6	16.5
Mean:	7.8	0.2	7.6	9.0	0.1	8.8	7.8	0.1	7.6

Table 2. 0.2 mile pre/post Do comparison (deflection in mils)

Route:	Iowa Highway 9 in Osceola County								
Direction:	Northbound			Southbound			Both		
Interval:	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	4.6	0.1	4.6	6.3	0.1	6.3	4.6	0.1	4.6
Maximum:	14.7	0.4	14.3	14.3	0.2	14.2	14.3	0.2	14.2
Mean:	10.0	0.1	9.8	10.0	0.1	9.8	10.0	0.1	9.8

Route:	US-65 in Worth County								
Direction:	Northbound			Southbound			Both		
Interval:	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	3.3	0.1	3.2	3.6	0.1	3.6	3.3	0.1	3.2
Maximum:	14.5	0.2	14.3	15.4	0.3	15.1	14.5	0.2	14.3
Mean:	8.0	0.1	7.9	7.9	0.1	7.8	7.9	0.1	7.8

Route:	V-18 in Poweshiek County								
Direction:	Northbound			Southbound			Both		
Interval:	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile	0.2 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	5.7	0.1	5.6	6.4	0.1	6.0	5.7	0.1	5.6
Maximum:	17.1	0.3	16.8	20.4	0.6	19.8	17.1	0.3	16.8
Mean:	7.8	0.2	7.7	9.0	0.1	8.8	7.8	0.1	7.7

Table 3. 0.5 mile pre/post Do comparison (deflection in mils)

Route:	Iowa Highway 9 in Osceola County								
Direction:	Northbound			Southbound			Both		
Interval:	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	7.0	0.1	6.9	6.5	0.1	6.4	6.5	0.1	6.4
Maximum:	14.5	0.2	14.3	14.1	0.2	13.9	14.1	0.2	13.9
Mean:	10.5	0.1	10.3	10.6	0.1	10.4	10.5	0.1	10.3

Route:	US-65 in Worth County								
Direction:	Northbound			Southbound			Both		
Interval:	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	4.2	0.1	4.1	4.4	0.1	4.4	4.2	0.1	4.1
Maximum:	12.8	0.2	12.6	11.7	0.3	11.5	11.7	0.2	11.5
Mean:	7.9	0.1	7.9	8.2	0.1	8.1	7.9	0.1	7.9

Route:	V-18 in Poweshiek County								
Direction:	Northbound			Southbound			Both		
Interval:	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile	0.5 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	5.9	0.1	5.8	6.5	0.1	6.4	5.9	0.1	5.8
Maximum:	11.8	0.3	11.5	11.9	0.2	11.8	11.8	0.2	11.6
Mean:	7.8	0.1	7.6	8.5	0.1	8.3	7.8	0.1	7.6

Table 4. 1.0 mile pre/post Do comparison (deflection in mils)

Route:	Iowa Highway 9 in Osceola County								
Direction:	Northbound			Southbound			Both		
Interval:	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	8.3	0.1	8.2	8.0	0.1	7.9	8.0	0.1	7.9
Maximum:	13.8	0.4	13.5	14.1	0.2	13.9	13.8	0.2	13.6
Mean:	10.7	0.2	10.5	10.6	0.1	10.5	10.6	0.1	10.5

Route:	US-65 in Worth County								
Direction:	Northbound			Southbound			Both		
Interval:	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	4.2	0.1	4.1	6.2	0.1	6.1	4.2	0.1	4.1
Maximum:	12.8	0.2	12.6	11.3	0.3	11.1	11.3	0.2	11.1
Mean:	8.4	0.1	8.3	8.4	0.1	8.2	8.4	0.1	8.2

Route:	V-18 in Poweshiek County								
Direction:	Northbound			Southbound			Both		
Interval:	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile	1.0 mile
Overlay:	Pre	Post	Reduction	Pre	Post	Reduction	Pre	Post	Reduction
Minimum:	5.9	0.1	5.8	6.5	0.1	6.4	5.9	0.1	5.8
Maximum:	9.84	0.2	9.6	11.9	0.2	11.7	9.84	0.2	9.7
Mean:	7.5	0.1	7.3	8.4	0.1	8.2	7.5	0.1	7.3

Differences in deflection can be identified in terms of direction of survey. This can be attributed to the type of traffic using each direction of the roadway. Heavy amounts of loaded trucks in one direction versus empty trucks in the opposite direction can result in increased deterioration and deflections in the loaded truck direction. This data indicates that both directions should be tested and reviewed separately and in combination for the determination of additional pavement overlay depth to accommodate the anticipated loadings in the future.

The differences noted in the summary values relative to testing frequency do not indicate a difference between the various intervals from 0.1 to 1.0 miles. This data indicates that the highway agency could use any of the testing frequencies for development of an overlay design. In practicality, each of these roads tested was uniform in condition and did not exhibit isolated areas of moderate to severe distress. If this type of distress had been noted during FWD testing, additional tests could have been performed at closer intervals to isolate the area in the data set for additional consideration in the design.

The data also indicate that nearly all of the deflection measured before the overlay placement was eliminated during construction. This is a further indication that the design overlay depth was correct to make the pavement act as a rigid but composite pavement after construction. Small amounts of deflection are usually present in any pavement structure under FWD testing. The best result that can be expected from construction is the reduction of those near zero as was the case in these tests.

Environmental Relationships

During construction, several items of information were collected to aid with the analysis of the development of the pavement flexural strengths and ways of dealing with the paving train length. The data collected included

- Wind speed and direction in two-hour increments, and
- Air temperature and relative humidity in two-hour increments

Often during the construction season, especially in the early spring or late fall, wide changes in temperature take place during the day and night. This affects the rate of concrete strength gain. The data gathered on each of these projects were designed to account for those types of changes if they occurred.

Each of the projects was built during the parts of the summer when large temperature changes did not occur. Rain was present during parts of the Worth, Johnson, and Osceola County projects, but did not happen during the initial curing of concrete. Therefore, rain was not a factor in the strength gain of the concrete overlays. Maturity measurements provided an adequate measure of the conditions in the overlay for this work.

Knife Application Data

The “knife” was redesigned by its inventor Bob Steffes and in conjunction with the contractor on the Johnson County Road W62 project. It was mounted on the bottom of the slipform paver pan and is shown in Figures 35, 36, and 37. The “knife” was connected to the front and back edges of the pan with clamps that held it rigidly in place during concrete operations. This also allowed the contractor to utilize the slipform paver on other projects during this construction and remove the “knife” within minutes for that purpose.

Figure 35. “Knife” mounted on the bottom of the slipform paver pan

Figure 36. “Knife” held in place with clamps

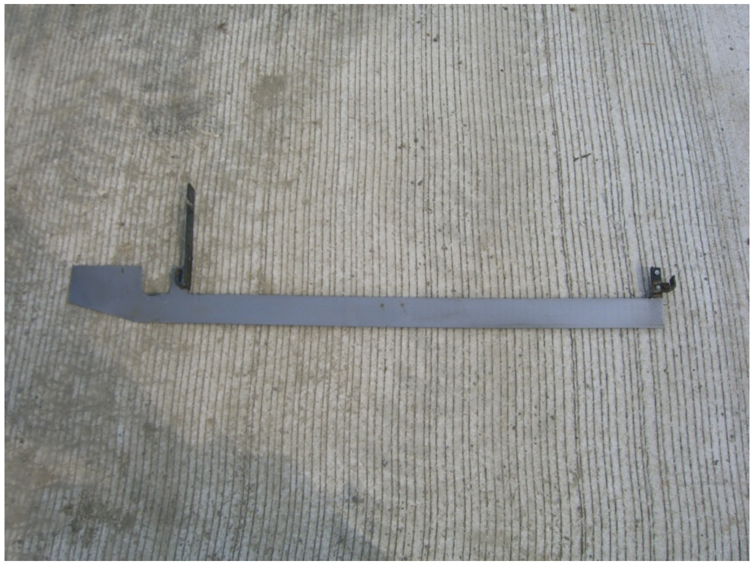

Figure 37. The “knife”

Data collection for this effort consisted of driving the finished slab approximately two weeks after the completion of the last mainline paving. Visual observations and photos were taken to verify the presence or lack of presence of the crack caused by the “knife” operation. Example photos can be found in Appendix F. At the time of this survey, the air and pavement temperatures had greatly lowered and the pavement was in a state of contraction. In all cases, the longitudinal joint appeared as an open or hairline crack and followed the proposed line or the adjacent longitudinal tining groove. There were no locations found where the crack had deviated from the intended alignment.

RESEARCH RESULTS

GPS-Controlled Longitudinal Joint Formation

The research sought to look at ways of ensuring that the placement of longitudinal joints in bonded overlays was properly aligned. In the case of the Poweshiek County project, three centerline locations of 500 feet each were identified with a GPS 2-meter pole unit. The centerline in the first site was surveyed by GPS prior to and after the overlay at intervals of 10 feet that included each transverse joint and the midpoint of the slab length throughout the 500 feet. A conventional saw was used to follow the line created by connecting the points on the overlay surface. Three centerline concrete cores were extracted from this area to verify the results. Photos of the cores (Stations 20+50, 21+00, 22+00) for the Poweshiek County project can be found in Appendix C. The centerline in the overlay surface and the underlying pavement was identical in two of the three cores and varied by 0.75 inches in the third core.

In a second location, a saw was equipped with the GPS unit and allowed to locate a line to saw from a GPS file. This site was used to demonstrate the ability of the saw to follow the GPS file points. The exact location of the original centerline could not be established as a reference for coring on this site. We were able to demonstrate the use of GPS to control the saw location by the efforts of equipment company representatives. Problems with the original GPS file caused the research team to resort to using manual methods to develop a line for the saw to follow. The line on the surface was then mapped by GPS and used as an input file for the saw, shown in Figure 38. A GPS receiver and screen were mounted on the top of a conventional early entry saw, shown in Figure 39, which was normally used by the contractor. The saw operator was given a 15 minute training session and told to keep a target type “+” on the screen lined up with a vertical line. He was able to saw the established line with no additional assistance and produced an acceptable centerline. The research team was able to estimate the cost of such a system that included a $20-25K saw and a $40K +/- GPS receiver unit for a total of $60K.

Figure 38. Saw equipped with a GPS unit

Figure 39. GPS receiver and screen

A third site included the conventional manual method of splitting the pavement surface width to establish the position of the centerline to saw. Centerline cores were taken near the second sawing demonstration location as a way of verifying centerline location using manual methods. Those cores (Stations 200+50, 372+00, and 373+00) are shown in Appendix C and yielded a distance between the overlay centerline and the original pavement centerline of 0 to 2 inches, which would be unacceptable in a bonded overlay.

Centerline concrete cores were taken from the first and third sites and one additional site (Stations 36+50, 37+00, 38+00) to measure the relative ability of each centerline identification method. In this case, the distance between the overlay centerline and the original pavement centerline varied from 1 to 1.75 inches, which would not be acceptable in a bonded overlay.

In the case of the Osceola County project, no GPS centerline identification work was done prior to the overlay placement. The overlay centerline was established by splitting the width of the new overlay slab. Centerline cores were taken (Stations 190+00, 235+00, and 340+00) and are shown in Appendix C. The distance between the overlay centerline and the original centerline varied from 0 inches to a distance greater than the core radius of 2 inches, which would not be acceptable in a bonded overlay.

GPS Pavement Surface Mapping: Pros, Cons, and Limitations

Mapping of the existing pavement surface to determine the elevations of key points across the pavement was a critical part of establishing the overlay surface design and verifying that the design would provide a minimum depth of overlay at all points. This research looked at multiple variations in GPS data collection and the use of manual surveys with total stations. Those efforts provided the following results:

- Telephone communication speed limitations between the all-data collection or paving equipment and the RTN base stations in the development of elevation corrections restricts the use of GPS technology for surface mapping or slipform paver operation.
- Dense foliage or large towers such as water towers near the project can interfere with or block the radio signals and stop or reduce the accuracy of the data collected. This would also impact the operations of the slipform paver.
- Satellite configuration changes during the day limit the accuracy of the paving product elevations.
- Still-positioning with GPS is best for the development of x,y,z coordinates, and if the operator is moving during data collection, it is best to move slowly. Moving data collection requires more equipment and training than would normally be found in highway agencies and is constrained by the phone systems.
- Establishing adequate vertical control on a paving project with GPS requires that additional control points be established on each side of the project, approximately ¼ to 1 mile to the right and left of the project and at 1- to 2- mile intervals along the roadway to tied-down elevations across the pavement.
- Data collection should be obtained at 25-foot intervals to meet ride and geometric design specifications of the pavement surface, regardless of the method used. GPS collector units should travel at less than 5 mph, and data collectors with greater than 5 Hz capability would be advised.
- The Ames Engineering Vehicle arrangement and the Gomaco smoothness indicator (GSI) device offered some potential in future mapping of the pavement surfaces for overlay designs.
- Profile mapping is possible with 3D computer software, such as AutoCAD and MicroStation, for the surface profiles of the existing road surface and the design model of the overlay surface. This information can be used to develop cross-sections, check minimum overlay depths, and calculate concrete quantities for theoretical yield purposes. This was verified with the Worth County materials.

Slipform Paver Machine Control

The special provisions for the two stringless paving projects allowed for any combination of total station, laser, and GPS control systems to be used to construct the pavement overlay to Iowa DOT standard tolerances. The results of this research centered on one stringless control system, two contractors, and two slipform paving machines.

Conflicts can arise in trying to meet Iowa DOT smoothness specifications, such as concrete yield expectations, existing or improved geometrics, and being within minimum or average overlay depth requirements.

- To meet the smoothness requirements for incentive pay, one must try to have model and machine control elevations in the 0.01–0.05-foot plus or minus range.
- Concrete yield can be achieved if the contractor can trim the existing surface and build the overlay to the same grade line and the vertical tolerances as shown above.
- Decisions must be made during design and communicated to the individual designing the overlay model profiles explaining what, if any, corrections are to be made to the existing pavement surface profiles. In some cases, the existing profiles do not meet current line, grade, and cross-slope standards for highway safety. Only the pavement owner can make the solution decisions for this type of problem, and it must be done prior to contract letting and final survey. This will also greatly affect ride and concrete yield.
- Many overlay design procedures are developed for a minimum overlay thickness throughout the entire project. Others indicate an average depth through contract concrete volume limitations. It is important that the person setting the overlay surface profile know the intent of the overlay depth when dealing with the first three criteria.
- Sensor selection for the paving equipment should be left to the discretion of the contractor based on the tolerances established in the contract documents for the concrete depth and quantities.
- Depressed areas over crossroad pipes, existing short vertical curves, and existing bridge approaches require some improved geometrics. If the design follows the existing surface with a nominal depth of concrete, a bump will be created due to the model shape. The same can happen when trying to transition into an existing bridge approach or super-elevated curve. In the event of stringline control, the string is likely adjusted by eye to achieve the desired smoothness. In the case of the model, the adjustment must be considered in the design. These are areas where minimums should be extended. Experience from the Poweshiek project with making this adjustment from 150- to 300-foot minimum length curves improved the ride and should result in the improved surface performance. Similar results were achieved in Worth County when this theory was applied.

Many of the conflicting goals shown above can be worked out if the highway owner develops the profiles prior to contract letting and asks the contractor to build the design. The success of this method is dependent on the accuracy of the data used by the owner in the design and the control (x,y,z accuracy) provided to the contractor during construction.

If the final surface profile design is left to the contractor or subcontractor, as it was in these projects, it is vital that that information get to the contractor representative as soon as the contract is signed prior to the construction. In these projects, the surveying subcontractor received the information less than two months before the anticipated construction. The contracts called for a “nominal” overlay depth and had no mention of any other limiting factors other than ride quality. Concrete for these projects was paid for by square yard for placing and by cubic yard to account for irregularities in the existing surface that could cause overruns. This type of contract resulted in overrun quantities of concrete and questions about profile grade and concrete yield. Decisions were made “in the field, on the fly” regarding those results, but future planning could avert such questions.

It is important to note that the Leica, Inc., total station system was used for the Poweshiek and Worth County projects. This system was selected due to the tight ride quality specification that was used as the target for smoothness on the project. The “zero blanking band” measurement called for the tolerance provided by total station control in conjunction with known control points at 250-foot intervals along the pavement under construction.

Specified ride quality was achieved on both projects. The Worth County project illustrated that the yield overrun could be maintained in the 100%–110% range with tight vertical control. This project also incorporated minor geometric changes to remove small vertical sag curves in the existing alignment. Much of the overrun in the Poweshiek project resulted from geometric corrections over 50-foot intervals across settlement areas at cross-road pipes in the original pavement.

The projects illustrated that the Leica, Inc., software and electronic controls worked very well for both a Gomaco and Guntert-Zimmerman slipform paver. It is important to note that these are relatively new machines that have “constant flow” hydraulic systems and up-to-date electronic controls. It is safe to say that if any slipform paver of this type and age was able to provide superior ride values using a stringline control system, it should be able to do it with the Leica, Inc., stringless system. The system is not slipform paver manufacturer specific.

It is important to note that for any control systems there are some limitations. Listed below are some limitations that apply to the Leica, Inc., system using the total stations and prisms:

- Fog or excessive dust between or on the prisms can cause the total station to shut down from not being able to center on the target.
- Prisms are located at two different heights on the slipform paver to alleviate the potential for the total station to switch targets and cause the paver to malfunction.
- Care should be taken to assure that the line of sight between the total station and the prism is maintained at all times. This means trying not to cross the line of trucks or high equipment or persons near the slipform paver.

Overlay and Stringless Paving Demonstration Openhouse

On September 2, 2009, an openhouse sponsored by the ICPA was held for this project. The openhouse was directed to showcase several overlay projects in Worth County (i.e., county and state projects) that were being constructed in 2009. Approximately 118 people from 56 public and private entities in 12 states attended the event, including representatives from DOTs, the Federal Highway Administration, county engineers, consulting engineers, and equipment suppliers. Speakers from the Flynn, Corp., Leica, Inc., Guntert-Zimmerman Construction

Division, Inc., ICPA, National CP Tech Center, and the research team gave briefings to those who were present on the various projects in the county and the stringless concept being used on the US 65 overlay.

A bus tour followed the briefings, beginning at the US 65 project to observe the stringless paving in progress and then to observe the finished overlay projects on the county system. The stringless concept was well received by those present and a very good discussion on how to make this work on their projects took place during and after the bus trip. Based on the reaction of county officials and the attendees to the open house, the future of concrete overlays and stringless technology looks very promising.

Geotextile Bond Breaker Placement

Both of the products utilized on this project offered the same constructability and demonstrated no differences in handling or performance during paving operations. Cores were taken at centerline on Sites 1 and 3 to verify the immediate performance and assist in a joint experiment. The three cores that were taken can be seen in Appendix C. In each case, the materials performed as directed. The geotextiles adhered to the overlay concrete and not to the underlying concrete surface. No tack material was recommended or used between the existing concrete surface and the bond breaker, as would be the case with the use of the HMA.

Figure 40. Concrete cores

Three advantages were found with the use of the geotextile bond breaker. The first was the reduced cost of construction. The savings of $4.72 (67%) per square yard on this project was of direct benefit to the contracting agency budget. A second benefit was that the cost would have continued to diminish if the material had been bought in large quantities and placed by machine with less labor involved. The last benefit was in the reduced thickness of the bond breaker for situations where overlay vertical clearance was a problem, such as overhead bridges or signs. The test results show that the material was acting properly as a bond breaker. The only remaining item to be monitored is its ability to drain and its long-term performance.

Concrete Opening Strength Requirement for Local Traffic Use

The goal of this research was to try to identify an opening strength for local traffic use that is separate from the specified strength for opening to normal highway traffic. Normally, the contractor might employ two or more maturity gauges per day in the overlay. For these projects, that number was increased to one maturity gauge per 1,000 feet of paving. This allowed the contractor, the owner, and the research team to monitor the differences that occurred due to mixes and weather during paving.

The results of this maturity monitoring effort on the four projects can be summarized as follows:

- The owner and contractor can use the maturity method to both manage the project activities and reduce the overall time of construction.
- Knowing the rate of strength gain for a given mix can assist the contractor in managing sawing operations to match pavement construction rates with saw crew size and method of sawing the transverse joints.
- In each of the research cases, 350 psi flexural strength was achieved in less than 24 hours after paving. This strength should allow for the construction of temporary access points for residents along the pavement one day after paving. The net result would be that residents are only inconvenienced on the day of paving instead of multiple days.
- Current mix designs represented in this study produced 500 psi concrete in less than 48 hours after construction. This can result in shoulder construction that is two days behind the paving.
- The strength at joint sawing time is related to the course aggregate characteristics and the cement utilized. It ranged from five to nine hours in the test data under current sawing methods. The use of material characteristics and saw blade materials can reduce this time to five hours or less without introducing raveling beyond specifications.

Traffic Control for One- and Two-Lane Overlay Construction

The rural nature of three of the projects in this research and the existing road system in Iowa allowed the contractors to utilize short-notice advance communications between contractor personnel and local residents to maintain adjacent access during construction. The mild weather and residents' access to ATV equipment also contributed to work moving smoothly without traffic control problems in Poweshiek, Osceola, and Worth counties.

The traffic control plan for one-lane, one-way traffic without a continuous pilot car worked in this situation. It worked primarily due to property owner patience and removal of the through traffic to a major route only one mile west of the project. A key element in this success was the well-executed coordination with local county law enforcement to ticket drivers who did not heed the local-traffic only and one-way traffic control. This also helped discourage through traffic users. The plan provided for some interesting traffic conflict points during both night and day, but there were no known reportable accidents.

The plan was well received by local residents in terms of maintaining access during construction and the contractor staff appreciated the reduction in traffic around the paving operation due to one-way-only traffic.

Deflection Data Analysis Results

Deflection testing results from testing frequencies of 0.1, 0.2, 0.5, and 1.0 miles in each direction provided very similar results in each of three county tests. This suggests that a minimum of 1.0 mile test frequencies is sufficient for overlay design surfaces if the pavement is relatively uniform. Data should be gathered in each lane or direction to account for differences in truck loadings and traffic levels. Smaller test frequencies should be considered in areas of severe pavement distress to isolated areas that require additional strengthening in the overlay design.

Overlay Construction Operation Timing

One of the goals of the national research effort was to look at ways to shorten the length of time of the paving operation. For purposes of this research, we define the construction operation time as the time in days from when the contractor first begins any project-associated work on-site, until the day all safety devices are in place and traffic has full use of the new pavement. Next, we need to understand what happens during that time-line and determine where changes might be considered.

The following list represents the research team's view of what usually happens during this time period in terms of work operations, assuming all warning signs are in place along the project length:

1. Drainage improvement outside the pavement area, such as pipe extensions or urban intake repair or replacement
2. Utility relocation, vertically or horizontally
3. Survey control establishment or review
4. Subdrain improvements along the shoulder
5. Pavement surface patching
6. Pavement surface milling
7. Bridge approach repair or replacements
8. Intersection or shoulder earthwork reconstruction or enhancements
9. Pavement widening trench and final shoulder preparation construction
10. Pavement overlay construction
11. Shoulder and access construction
12. Safety device installation (e.g., guardrail, signs, painting)

Steps 1–3 of this list describe work that is necessary to clear the way for pavement construction and ensure that it will meet specifications when completed. These steps should be done under traffic and prior to any official working day start time. Inattention to utility relocations at this time can result in large losses of time due to unexpected utility locations, low lines, or drainage facilities that cannot be relocated prior to paving. This requires an early pre-construction conference to coordinate each of these activities and requires assignment from the contractor and contracting authority of a person to oversee that this work proceeds in a timely manner.

Special traffic control in the way of signs, flaggers, and/or signals may be required for steps 4– 8. These steps should remain in the contract work day period. The pavement patching and bridge approach work can be done simultaneously. The subdrain work moves at a quick pace and usually should remain a stand-alone operation. Pavement surface milling is a very quick moving operation that works best under closed or flagged traffic control situations. If intersection reconstruction is required, the pavement removal and grading operations fit well in this time period.

Shoulder widening construction (step 9) is a relatively new step to the PCC overlay process. It requires the trenching for the widening unit and gets involved with a discussion of the quantity, quality, and final location of the existing shoulder materials. The need to consider the type material, quality, quantity, and overall future use of the excavated materials during the project planning stages is associated with trenching operations. The 2009 projects called for the removal of the trench widening materials and their deposit in highway owner stockpiles or in the final shoulder product. Conventional removal methods with a milling machine produce an aggregate product that often contains excessive amounts of fines from aggregate shoulders. This material is very difficult to place and compact in the final shoulder. If the material is to be used as replacement owner stockpile shoulder materials, the same problem will occur.

The designer should also consider the use of the remaining shoulder surface materials during construction. The open trench can become a drainage problem if it is not drained often during construction. Drainage cuts can then become areas that affect the paving machine pad line and the overall pavement smoothness. It may become cost-effective to remove the entire width of shoulder surface by milling or rolling over the shoulder to widen it. This technique can be very helpful in the case of narrow existing shoulders where pavement widening is to be included in the contract. Cost of removal, timing of removal, pad line opportunity and stability, and final shoulder construction timing and cost are affected by this decision.

The pavement overlay construction and shoulder construction steps (steps 10 and 11) should go hand in hand as a way to reduce construction time. Current overlay paving operations account for approximately 0.75 miles of single- or dual-lane pavement per day. Maturity measurements allow for joint development within hours after construction and construction traffic within 2–3 days in most cases. In these projects, maturity measures would have allowed construction equipment on the slab within 30 hours.

Shoulder construction time is one area that can reduce the time of total project construction. Currently, shouldering is not started until the paving is completed or nearly done. This is often associated with the relationship of the shoulder stone source location and the haul routes selected to transport this material to the project. A second part of this operation involves the selection of who (i.e., contractor or subcontractor) will haul and place the materials for the shoulders. By considering this operation at the time of project bidding, the contractor and suppliers can develop a plan that allows the shouldering material haul routes to access the finished product from the beginning of paving and follow the paving operation so that both operations end within days of each other.

This research effort did not identify any ways to reduce the overall time for installation of safety devices (e.g., guardrail and signing) or line painting due to the existing length of time required and the placement speed. The time saved in the shoulder stone placement can be reflected in how the highway agency or subcontractor can have the signing underway during the paving on projects of significant length.

Environmental Relationships

Rapid changes in temperature between day and night and the high degrees of humidity during the day can impact the paving that is done in the early spring or late fall in Iowa. The weather during this research remained relatively uniform and did not exhibit such swings in temperature. Weather data were used only as a backup for maturity measurements in this case.

Rain played a part in the Osceola and Worth County projects in terms of delaying construction but did not change any of the outcomes. Rain and fog do not help the stringless method used to control the slipform paver. Fog covering the prisms presents a distorted target and stops operations, as can large amounts of dust. During rain, the total stations must be covered to prevent damage.

Knife Joint Former Results

The redesigned “knife” was successful in forming the longitudinal joint between the edge of the driving lane and paved shoulder on the Johnson County W-62 project for the length of the project. In this case, the pavement was constructed one lane at a time, and this joint was near the centerline of the 17-foot width, with 9 feet on the driving lane side of the joint and 8 feet on shoulder side. Consideration was given to not overworking the joint during hand finishing operations. During the majority of the project, it was not possible to finish from both sides, and therefore finishing across the joint occurred.

RESEARCH CONCLUSIONS

This research resulted in the following conclusions:

Longitudinal Joint Formation

- A conventional saw can be guided by a GPS receiver and operator to provide a joint in the overlay that is within 1 inch horizontally from the existing joint in the underlying pavement and thus control centerline cracking in bonded concrete pavements.
- Off-the-shelf GPS equipment can be mounted on early-entry or water-cooled saws to form the longitudinal joint.
- The cost of GPS-controlled saws may be justified in the paving of bonded overlays (concrete to concrete) or other applications where matching the underlying joint is critical for crack control.
- The redesigned "knife" and its location on the slipform paver successfully formed the longitudinal joint.

GPS Mapping of Pavement Surfaces for Concrete Surface Profile and Quantity Calculations

- Moving GPS mapping can be used develop the x and y coordinates of the pavement surface. At the present time, the z accuracy is not adequate for slipform paving smoothness and quantity control when gathered with a moving device.
- Enhancements in GPS data collection equipment and associated phone systems could make this a viable system in the future for pavement construction.
- Stationary or very slow moving (i.e., less than 5 mph) GPS data collection does offer the potential for pavement surface mapping at 25-foot intervals.
- GPS data collection at speeds of up to 35 mph using proprietary software and on-site base stations has been demonstrated outside Iowa. This method has produced elevation data points within the accuracy levels required for paving machine control.

Milling

- A 12-foot-wide milling head with closely spaced teeth provided very constant cross-slope and minimized the concrete that was placed in the removed surface, thus improving the overlay concrete yield values.
- Over-width milling of the trench for the widening units can improve the drainage capabilities of the trench, allow passage of the slipform sideform, provide an improved paver pad line, and improve ride in the final overlay product.

Slipform Paver Machine Control

- The stringless paving control system performed to expectations in line, grade, and cross-slope control to match the designer model for the surface of the finished pavement overlay on each of the two test projects.

- Regardless of the brand, modern slipform pavers that have recent constant-flow hydraulic systems and up-to-date electronic controls can be outfitted with the stringless paving system from Leica, Inc.
- Success of the stringless system rests on the slipform paver controls and the ability to set very tight vertical control for the guidance system on the ground.
- The control system will replicate what the designer puts into the final surface model.
- The system that was used in this research performed equally well on one- and two-lane paving situations. In one-lane situations, the outer edge is controlled by the model on the second pass, and the centerline of the first pass is "locked" to existing elevations of the first pass.
- Designer knowledge of the existing surface alignment and surface elevations is critical to development of the final design model.
- GPS- and GPS/laser-controlled slipform operations do exist but were not evaluated in this research due to the decisions made by contractors in control equipment selection.

Geotextile Bond Breakers

- Geotextile bond breakers provided a $4.72 (67%) per square yard savings in cost over traditional asphalt bond breakers on the test project.
- Geotextile bond breakers provide a positive bond break between pavement layers.
- They are easy to place with minimal training for staff prior to construction.
- The nailing plan devised for this project worked successfully.
- Allow for approximately 25%–30% extra fasteners and powder charges to do the placement.
- Daily maintenance of the fastener propellant guns is vital to the continued placement of the geotextile materials on an extended-length project.
- Consider securing the outer edges to shoulder material in windy conditions.
- Geotextile can be a positive overlay attribute in cases of vertical clearance limitations.
- Placement can be manual or with machine, but it requires a certain level of manual labor to secure and maintain alignment of the materials
- Geotextiles can be placed prior to overlay construction or during construction.
- Geotextile bond breakers resist tearing due to normal construction traffic.
- The long-term performance of these materials was not part of this research effort.

Concrete Opening Strength Requirement for Local Traffic Use

- Maturity values can be used to manage joint sawing operations and reduce overall overlay construction timelines.
- Joint sawing times ranged from five to nine hours after construction and associated strengths that were directly associated to the coarse aggregate materials.
- Flexural strengths of 350 psi were achieved in less than 24 hours for each of the test sites.
- Flexural strengths of 500 psi were achieved in less than 48 hours for each project.
- Using maturity results, temporary access can be restored 24 hours after pavement construction, and shouldering can begin after 48 hours from this data.
- Maturity values are subject to the coarse aggregate and cement characteristics and the environment that they are subjected to.
- Maturity-measured sawing time and related concrete strengths are related to coarse aggregate characteristics and the type of saw blades utilized.

Traffic Control for One- and Two-Lane Overlay Construction

- Both single- and dual-lane pavement overlay construction provided adequate traffic control to achieve the construction objectives.
- Provided traffic detours for two-lane construction can result in shorter paving time periods over one-lane construction.
- Highway owner and contractor communications with the adjacent residents is essential to the success of either single- or dual-lane overlay construction.

Overlay Construction Operation Timing

The following list represents the research team’s view of areas where construction time can be reduced through innovative thinking and the use of technology in each major part of the overlay construction sequence:

1. Consider the following areas for construction prior to the charging of work days or starting time of the project. Utilize earlier preconstruction meetings with the entities involved to effect this part of the construction process:
    - Drainage improvement outside the pavement area, such as pipe extensions or urban intake repair or replacement
    - Utility relocation, vertically or horizontally
    - Survey control establishment or review
2. Conduct the following work items as part of the working day contract period. Proper management of subcontractors and use of flaggers can allow through traffic to access the project without total closure for these operations and minimize construction time:
    - Subdrain improvements along the shoulder
    - Pavement surface patching
    - Pavement surface milling

    - Bridge approach repair or replacements
    - Intersection or shoulder earthwork reconstruction or enhancements
3. For items requiring partial or total road closure to through traffic, total construction time can be reduced with two-lane paving and total closure over one-lane paving:
    - Pavement widening trench and final shoulder preparation construction
4. Maturity technology and project design and planning innovation can reduce times for the following operations:
    - Pavement overlay construction
    - Shoulder and access construction
5. Project coordination and subcontractor time availability are the only ways to reduce the following time separately from the shoulder construction:
    - Safety device installation (e.g., guardrail, signs, painting)

FWD Testing

- FWD testing in both pavement lanes prior to overlay design indicated that the testing frequency of 1.0 miles in each lane was adequate for design of the overlay.
- Additional testing at smaller frequencies of 0.1 to 0.5 miles can be used to identify and isolate spot locations of moderate to severe pavement distress that may require replacement or strengthening of the existing surface.
- FWD loads of 6, 9, and 12 kips are recommended for each test site. The 9 kip load related deflection is well suited for pavement overlay design purposes.

RECOMMENDATIONS

Longitudinal Joint Formation with GPS-Controlled Saws

- Contractors should consider the use of GPS-controlled saws as a way to replicate the existing centerline joint in a bonded overlay situation.
- Consider utilizing the new design of the "knife" and its location on the slipform paver in additional tests (5–10 projects) to verify the results of this test and consider reinstitution in all paving in Iowa. The tests should consider the "knife" for joints in new pavements, overlay centerlines, and widening joints.

GPS Pavement Surface Mapping

- Continue to investigate methods of mapping the existing pavement surfaces using existing manual techniques and combinations of GPS, lasers, ultrasonics, and radar.
- Investigate the application of proprietary software that allows the collection of existing surface profiles to be done accurately at speeds of up to 35 mph and be converted into concrete estimating quantities and machine control files.
- Utilize mapping equipment and profile development techniques that can be adapted to highway agency existing equipment and design methods.
- Pavement surveys should be conducted on 25-foot intervals for best results and 50 foot intervals as an alternative distance between measured elevations on the existing pavement to meet concrete yield expectations.
- At a minimum, existing surface profile information should be gathered prior to final design on the edges and centerline of the pavement, and additional surveys should be conducted at the quarter points and in each wheel path if the existing surface is badly rutted or exhibits lateral shoving.

Milling

- Consider the economic benefits of milling versus non-milling during the design phase and decide accordingly on its use.
- The researchers recommend that specifying a 12-foot head for removal of any existing surface and the number of teeth per foot of width can improve the overall cross-slope of the finished surface and affect the yield of the overlay concrete.
- Consider a mill head that is wider than the designed pavement widening unit to yield an improved paver pad line, better drainage of the excavated area, and the opportunity for improved ride in the final product.

Slipform Paver Machine Control

- Consider alternative forms of equipment that are available for both the development of vertical control and guidance of the slipform paver to continue this type of paving for overlays or full-depth pavements.
- Look at ways to improve concrete yield with prior planning of highway agency goals, mapping of the existing surface, and development of tight vertical control point systems along the pavement prior to design and construction.
- Consider the goals of milling in the design process. If milling is a requirement, the milling may be done to the same grade line that the overlay construction will use and use the same control devices, i.e. total stations.
- Consider the opportunity to demonstrate stringless controls with a combination of GPS, total stations, and lasers.
- Consider increasing the minimum length of vertical curves and transitions between tangents and super-elevated curves from 150 feet in the existing pavements to 300 feet in the overlays to improve ride and geometrics over buried pipes and transitions to bridges and horizontal curves.

Geotextile Bond Breaker

- Consider geotextile bond breakers as an alternative bond breaker between PCC layers.
- Recommend geotextile placement within one day prior to paving to reduce the potential for wind and traffic damage.
- Consider the positive economic benefits of alternative bond breaker materials to the contractor and contracting authority and the relative performance in making material selections.

Concrete Opening Strength Requirement for Local Traffic Use

- Consider using maturity measurements to manage joint sawing operations and reduce overall overlay construction timelines.
- Consider using the maturity concept to understand strength gain and potential joint raveling versus concrete saw blade selection for each mix overlay design.
- Consider using maturity measurements to open local resident access points less than 24 hours after paving with flexural strengths of 350 psi.
- Consider using maturity measurements to begin shouldering operations less than 48 hours after paving with flexural strengths of 500 psi.
- Consider the development of maturity value relationships that are specific to the coarse aggregate and cement characteristics and the environment they are subjected to.

Traffic Control for One- and Two-Lane Overlay Construction

- Consider analyzing the cost for through traffic and potential reduction in overlay construction costs associated with single- and dual-lane paving during the project planning phase.
- Require a preconstruction meeting between the contractor, highway owner and the adjacent property owners prior to construction in order to eliminate problems during construction.

Overlay Construction Operation Timing

A combination of good project management and good use of existing technology can reduce construction times, as shown in the following recommendations:

- Consider utilizing contract working day specifications to effect planning activities, such as utility relocations, drainage improvements outside the pavement area, and pavement survey activities prior to the official start of the pavement construction.
- Recommend utilizing good multi-tasking contract management and flaggers to maintain partial through traffic under charged working days to make longitudinal subdrain installations, conduct pavement patching, mill surfaces, replace bridge approaches, and build intersection or shoulder enhancements that are short of total removal and replacement.
- Consider utilizing total road closure to through traffic, detours, and two-lane versus one-lane overlay construction to minimize traffic delay time whenever possible. Traffic control creativity may be required in suburban and urban settings.
- Recommend the use of traffic cones to keep through traffic away from the pavement widening trench and final shoulder preparation construction.
- Recommend utilization of maturity technology, haul road selection tied to paving plans, and innovative management of the access re-establishment and shouldering operations to reduce overall overlay construction time.

FWD Testing

- FWD testing should be carried out on a frequency of at least 1.0 mile increments in each of the lanes being considered for an overlay.
- FWD testing frequencies of 0.1 to 0.5 miles should be used to identify and isolate specific areas of distress in a paving project for consideration of strengthening or replacement pavement options.
- Testing loadings should be applied at the midpanel location in the right wheelpath of each lane in increments of 6, 9, and 12 thousand pound loads. The 9 thousand pound load deflection values are recommended for use in design programs.
- Before and after overlay FWD testing should be done to measure the improvement in deflection reduction and verify overlay design depth adequacy.

FUTURE RESEARCH

Longitudinal Joint Formation for Bonded Overlays

- Consider manual measurements from hub lines to existing centerlines prior to overlay and re-establishment of those points on the surface prior to the centerline sawing of the overlay.

Surface Mapping

- Consider the use of Lidar, slow moving GPS units, or robotic total station work to accurately map the road surface prior to overlay design.

Surface Milling

- Investigate the amount of concrete required to fill the milled surface from a single lane with coarse or widely spaced cutting head and a narrowly spaced cutting head.
- Compare the yield in overlay concrete of a surface milled from the paving grade line to one that is independent of the paving grade line. The same comparison can be made between a milling unit using only GPS control to one with total station control.

Machine Control

- Investigate the potential for a printout of the actual pavement overlay surface elevations at the centerline and pavement edges of the finished product to ensure quality compliance with the paving model.
- Investigate the potential of using a combination of lasers and GPS for machine control of the slipform paver.
- Consider the use of the ski or moving stringline to achieve overlays and still maintain smoothness specifications.

Opening Strength

- Investigate the impact of shouldering on the durability of the overlay edges when the concrete has reached a flexural strength of 500, 400, and 350 psi.

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APPENDIX A. GEOTEXTILE SPECIFICATIONS AND FASTENING PLAN

Tolerances recommended for use in US material specifications are listed in the following table. Test standards common to the US (e.g., ASTM) are listed when applicable. The original (e.g., ISO, EN, and DIN) tests should be considered the standard, however, until full equivalency can be verified. A list of accredited laboratory facilities capable of conducting these tests can be found on The Geosynthetic Institute Web site (www.geosynthetic-institute.org).

A. Proposed Interim Specifications for Geotextile Interlayer Material

Property	Requirements[1]	Test Procedure[2]
Geotextile Type	Nonwoven, needle-punched geotextile, no thermal treatment (calendaring or IR)	EN 13249, Annex F (Manufacturer Certification of Production)
Color	Uniform/nominally same-color fibers	(Visual Inspection)[3]
Mass per unit area	≥ 450 g/m² (13.3 oz/yd²) ≤ 550 g/m² (16.2 oz/yd²)	ISO 9864 (ASTM D 5261)
Thickness under load (pressure)[4]	[a] At 2 kPa (0.29 psi): ≥ 3.0 mm (0.12 in.) [b] At 20 kPa (2.9 psi): ≥ 2.5 mm (0.10 in.) [c] At 200 kPa (29 psi): ≥ 1.0 mm (0.04 in.)	ISO 9863-1 (ASTM D 5199)
Wide-width tensile strength[5]	≥ 10 kN/m (685 lb/ft)	ISO 10319 (ASTM D 4595)
Wide-width maximum elongation[6]	≤ 130%	ISO 10319 (ASTM D 4595)
Water permeability in normal direction under load (pressure)	At 20 kPa (2.9 psi): $\geq 1\times10^{-4}$ m/s (3.3×10^{-4} ft/s)	DIN 60500-4 (mod. ASTM D 5493 or ASTM D 4491)
In-plane water permeability (transmissivity)[7] under load (pressure)	[a] At 20 kPa (2.9 psi): $\geq 5\times10^{-4}$ m/s (1.6×10^{-3} ft/s) [b] At 200 kPa (29 psi): $\geq 2\times10^{-4}$ m/s (6.6×10^{-4} ft/s)	ISO 12958 (mod. ASTM D 6574 or ASTM D 4716)
Weather resistance	Retained strength ≥ 60%	EN 12224 (ASTM D 4355 @ 500 hrs. exposure)
Alkali resistance	≥ 96% Polypropylene/Polyethylene	EN 13249, Annex B (Manufacturer Certification of Polymer)

1 Requirements must be met for 95 percent of samples, compared to minimum average roll value (MARV) requirements commonly specified for geotextiles in the United States, which require a 97.7 percent degree of confidence (see AASHTO M 288).

2 All test procedures shown in (parentheses) are tentatively suggested for U.S. practice, but their replacement of the corresponding ISO/DIN/EN specifications should be further reviewed by geosynthetic industry experts.

3 Multi-color geotextiles may possess undesirable qualities due to a lack of uniformity.

4 Old thickness requirement was ≥ 2.0 mm (0.08 in.) at 20 kPa (2.9 psi) only (ZTV Beton–StB 01).

5 Note that other measures of tensile strength commonly reported in product literature are not comparable to the results of this test procedure.

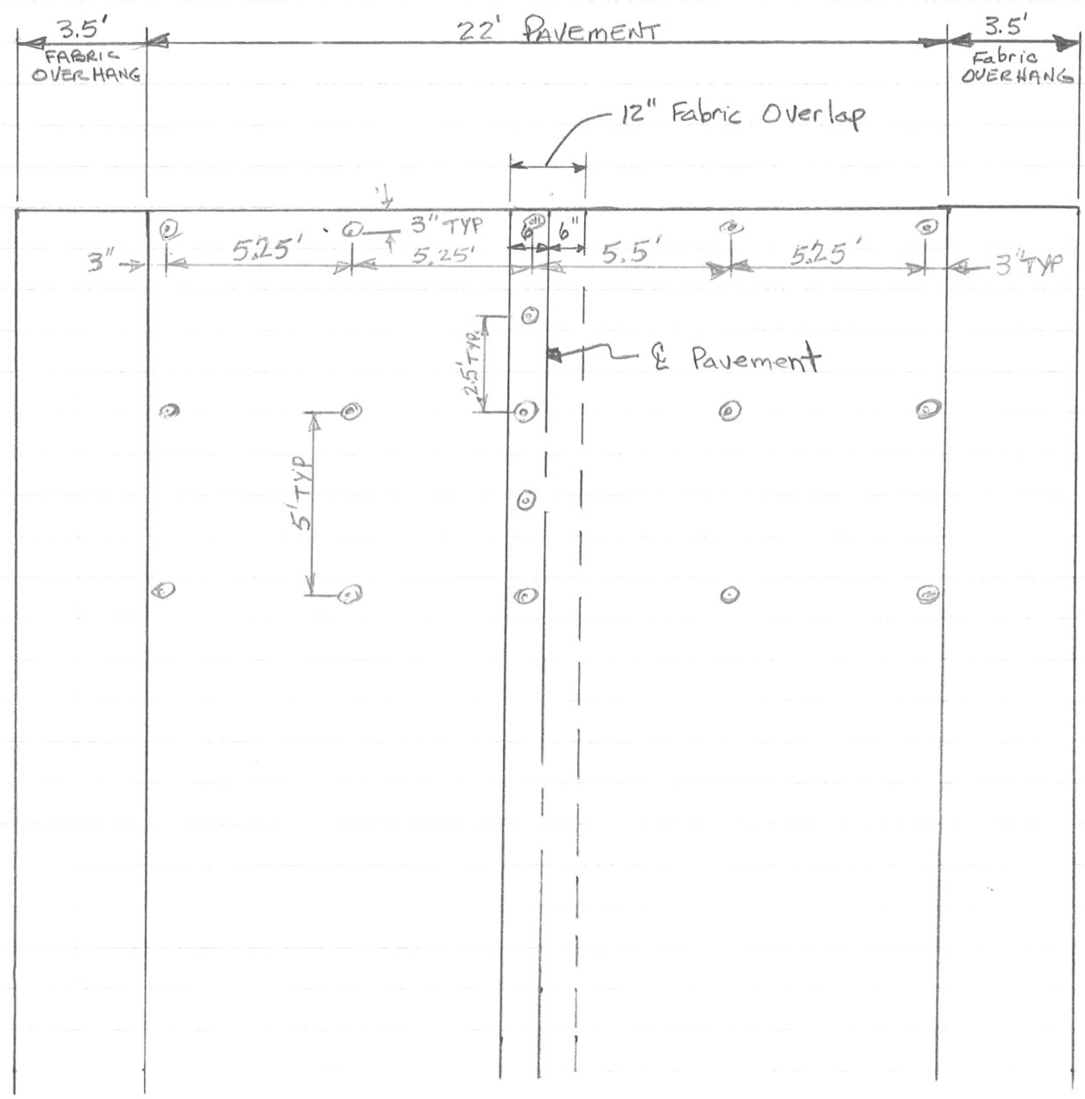
6 A maximum elongation of ≤ 60 percent is recommended as a better practice.

7 Old transmissivity requirement included only testing at 20 kPa (2.9 psi) (ZTV Beton–StB 01).

Fabric Interlayer Construction Practices

- Sweep the underlying surface to remove loose debris before applying the interlayer.
- Roll the geotextile out on the underlying layer. The geotextile should be tight and without excess wrinkles and folds. There is no specific process to roll out the layer, and numerous techniques have been used based on available equipment and labor.
- Ideally, the interlayer should be placed within 2-3 days of concrete paving to minimize damage or contamination due to weather and/or traffic.
- Driving on the interlayer should be kept to a minimum. Tight-radius turns or excessive accelerations or braking should be avoided.
- Do not place the geotextile on areas subject to excess traffic (e.g., crossovers). Installation of the geotextile should be delayed on these areas until immediately before concrete placement.
- The geotextile should be secured to underlying layer with nails punched through 2- to 2.75-in. galvanized washers/discs every 6 ft. or less.
- Additional fasteners can be used as needed to ensure that the geotextile does not shift or fold prior to concrete placement.
- Where it occurs, edges of the geotextile should overlap by no more than 12 inches.
- There should not be more than three layers of geotextile overlap at any location.
- Care should be taken to roll out the geotextile in a sequence that will facilitate good lapping practice, and that will prevent folding or tearing by construction traffic. For example, the end of a roll laid in the direction of paving should lie atop the beginning of the next roll, minimizing the potential for being disturbed by the paver.
- The free edge of the geotextile should extend beyond the edge of the new concrete and into a location that facilitates drainage.

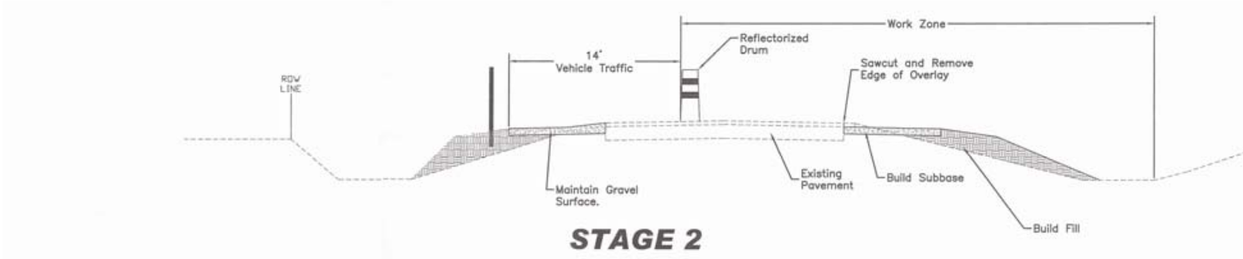
FABRIC INTERLAYER LAYOUT



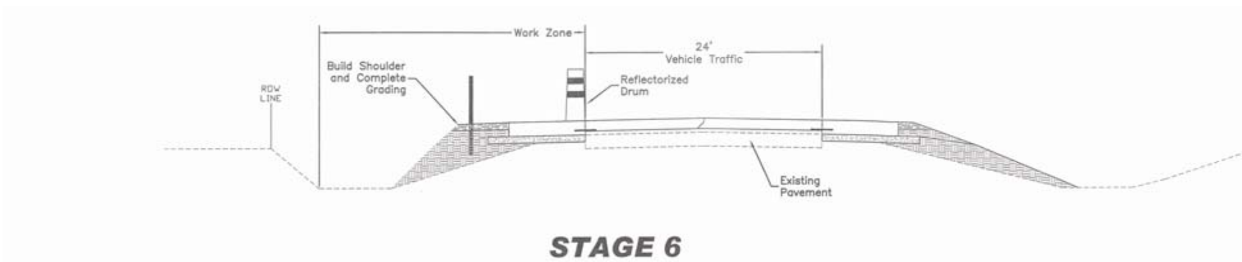
FABRIC = 15' wide x 300' long
LONGITUDINAL LAP — No More than 12" with the top layer in direction of paving

Fabric Interlayer Layout

APPENDIX B. JOHNSON COUNTY CROSS-SECTION PLANS



Johnson County Construction Staging



Johnson County Construction Staging

Johnson County Construction Phases

Construction Phasing Notes:

Phase A:

Build Stage 1 and Stage 2 improvements throughout the length of the project (See Sheet J.01). Use flaggers and pilot car during construction operations. Reopen to two way traffic at the end of each day.

When ready to begin Stage 3, Close Oak Crest Hill Road from the beginning of project to south of 500th Street. Use standard road closure details. Build all improvements and open to traffic south of 500th Street. Maintain closure of Oak Crest Hill Road from 500th Street north.

Phase B:

Close Oak Crest Hill Road to through traffic. Operate as one-way southbound.

Build Stage 3 and Stage 4 improvements along east side of Oak Crest Hill Road from 500th Street to IA 923. Maintain access to the electric substation and to Izaak Walton Road (See Sheet J.03).

Phase C:

Open Oak Crest Hill Road to northbound traffic only through entire length of the project.

Prep subbase and build Stage 5 improvements along west side of Oak Crest Hill Road from 500th Street to IA 923 (See Sheet J.03).

Phase D:

Build permanent pavement markings. Open Oak Crest Hill Road to two-way traffic. Build Stage 6 improvements (See Sheet J.03).

Phase E:

Complete any remaining construction items (seeding, grading, etc.).

Johnson County Construction Phasing Notes

APPENDIX C. CONCRETE CORES

Sta 20+50

Sta 21+00

Sta 22+00

Sta 36+50

Sta 37+00

Sta 38+00

Sta 190+00

Sta 200+50

Sta 235+00

Sta 340+00

Sta 372+00

Sta 373+00

APPENDIX D. MATURITY TTF STATISTICS

Osceola County

Curve 2

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
NO7571	191+25	3.25	216.78	8.5	31.75
N07574	197+25	6.00	295.90	9.00	33.25
N07563	207+00	8.75	326.42	10.25	35.75
N07572	837+00	8.50	324.08	10.00	32.50
N07573	847+00	5.50	281.51	9.25	32.25
N07560	857+00	7.00	299.48	10.25	32.75
N07557	867+00	6.75	284.77	10.25	32.75
N07563	877+00	2.75	172.66	9.75	33.50
N07571	890+00	6.25	293.62	9.50	32.00
N07569	900+00	7.75	303.27	11.00	33.00
N07574	910+00	6.50	288.12	9.75	32.50
N07568	920+00	8.75	347.69	9.00	31.00
N07577	935+00	3.75	208.78	10.25	35.75
N07572	945+00	4.75	245.05	10.50	33.50
N07565	955+00	6.00	269.10	10.25	34.00
N07561	965+00	5.25	257.94	10.25	34.75
N07570	975+00	5.00	249.50	10.50	34.75
N07573	985+00	5.50	255.12	10.25	35.50
N07563	995+00	6.75	294.59	10.00	35.25
N07560	1005+00	3.75	211.41	9.50	32.25
N07562	1015+00	5.25	265.90	9.50	31.50
N07564	1025+00	6.00	279.80	10.00	32.00
N07571	1035+00	N/A	N/A	10.25	33.75
N07557	1045+00	7.25	300.33	10.00	34.25

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	23	23	24	24
Average	5.96	272.69	9.91	33.34
Median	6.00	281.51	10.00	33.13
Maximum	8.75	347.69	11.00	35.75
Minimum	2.75	172.66	8.50	31.00
Std. Devi	1.66285	41.77659	0.570147	1.398393

Curve 4

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07573	217+00	9.25	199.29	15.00	26.75
N07569	227+00	7.00	289.78	11.00	37.50
N07570	247+00	5.50	270.31	9.25	31.75
N07577	257+00	5.75	289.69	9.00	30.50
N07572	267+00	8.00	329.30	9.50	32.50
N07564	277+00	6.00	276.94	10.25	33.50
N07565	287+00	9.75	353.66	9.50	32.25
N07561	297+00	10.50	360.42	9.75	32.75
N07562	307+00	8.00	307.92	10.25	33.50
N07560	317+00	10.75	368.62	9.50	32.50
N07574	327+00	14.25	400.34	9.50	32.75
N07571	337+00	2.25	146.78	10.50	33.75
N07557	347+00	7.75	308.19	10.50	36.50
N07573	357+00	N/A	N/A	10.75	37.00
N07563	767+00	10.75	331.71	12.50	39.25
N07577	777+00	7.50	287.45	11.50	36.50
N07570	787+00	7.00	287.05	11.25	34.50
N07564	797+00	8.25	308.91	11.25	34.25
N07562	807+00	7.25	302.57	10.00	33.75
N07561	817+00	8.25	335.42	9.25	31.25
N07565	827+00	8.50	335.48	9.50	30.50

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	20	20	21	21
Average	8.11	304.49	10.45	33.50
Median	8.00	308.05	10.25	33.50
Maximum	14.25	400.3425	15	39.25
Minimum	2.25	146.78	9.00	26.75
Std. Devi	2.475505	56.69241	1.377541	2.805129

Combined

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
NO7571	191+25	3.25	216.78	8.5	31.75
N07574	197+25	6.00	295.90	9.00	33.25
N07563	207+00	8.75	326.42	10.25	35.75
N07573	217+00	9.25	199.29	15.00	26.75
N07569	227+00	7.00	289.78	11.00	37.50
N07570	247+00	5.50	270.31	9.25	31.75
N07577	257+00	5.75	289.69	9.00	30.50
N07572	267+00	8.00	329.30	9.50	32.50
N07564	277+00	6.00	276.94	10.25	33.50
N07565	287+00	9.75	353.66	9.50	32.25
N07561	297+00	10.50	360.42	9.75	32.75
N07562	307+00	8.00	307.92	10.25	33.50
N07560	317+00	10.75	368.62	9.50	32.50
N07574	327+00	14.25	400.34	9.50	32.75
N07571	337+00	2.25	146.78	10.50	33.75
N07557	347+00	7.75	308.19	10.50	36.50
N07573	357+00	N/A	N/A	10.75	37.00
N07563	767+00	10.75	331.71	12.50	39.25
N07577	777+00	7.50	287.45	11.50	36.50
N07570	787+00	7.00	287.05	11.25	34.50
N07564	797+00	8.25	308.91	11.25	34.25
N07562	807+00	7.25	302.57	10.00	33.75
N07561	817+00	8.25	335.42	9.25	31.25
N07565	827+00	8.50	335.48	9.50	30.50
N07572	837+00	8.50	324.08	10.00	32.50
N07573	847+00	5.50	281.51	9.25	32.25
N07560	857+00	7.00	299.48	10.25	32.75
N07557	867+00	6.75	284.77	10.25	32.75
N07563	877+00	2.75	172.66	9.75	33.50
N07571	890+00	6.25	293.62	9.50	32.00
N07569	900+00	7.75	303.27	11.00	33.00
N07574	910+00	6.50	288.12	9.75	32.50
N07568	920+00	8.75	347.69	9.00	31.00
N07577	935+00	3.75	208.78	10.25	35.75
N07572	945+00	4.75	245.05	10.50	33.50
N07565	955+00	6.00	269.10	10.25	34.00
N07561	965+00	5.25	257.94	10.25	34.75
N07570	975+00	5.00	249.50	10.50	34.75
N07573	985+00	5.50	255.12	10.25	35.50
N07563	995+00	6.75	294.59	10.00	35.25
N07560	1005+00	3.75	211.41	9.50	32.25
N07562	1015+00	5.25	265.90	9.50	31.50
N07564	1025+00	6.00	279.80	10.00	32.00
N07571	1035+00	N/A	N/A	10.25	33.75
N07557	1045+00	7.25	300.33	10.00	34.25

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	43	43	45	45
Average	6.96	287.48	10.16	33.42
Median	7.00	289.78	10.00	33.25
Maximum	14.25	400.34	15.00	39.25
Minimum	2.25	146.78	8.50	26.75
Std. Devi	2.32477	51.24251	1.052804	2.145953

Worth County

Curve 1

Device ID	Station	Saw Time	Saw Time lb/in²	350 lb/in² Time	500 lb/in² Time
N07571	2335+00 NBL	8.25	269.03	10.75	17.75
N07567	2345+00NBL	3.50	37.04	9.25	16.00
N07564	2355+00 NBL	7.00	212.90	10.75	18.00
N07560	2365+00 NBL	7.00	217.01	10.50	17.50
N07573	2375+00 NBL	7.75	250.09	10.75	18.25
N07561	2395+00 NBL	5.25	152.06	10.00	17.25
N07557	2430+00 NBL	5.75	164.66	10.50	18.00
N07568	2440+00 NBL	7.25	203.61	11.00	17.50
N07570	2470+00 NBL	8.00	275.15	10.25	18.50
N07559	2480+00 NBL	7.00	225.31	10.50	17.75
N07572	2490+00 NBL	7.50	246.04	10.50	17.75
N07565	2500+00 NBL	9.75	315.10	11.00	18.50
N07573	2565+00 NBL	N/A	N/A	10.75	18.25
N07572	2575+00 NBL	6.25	186.29	10.00	16.75
N07570	2585+00 NBL	7.25	227.93	10.50	17.25
N07561	2595+00 NBL	7.25	259.72	10.25	17.75
N07557	2605+00 NBL	7.50	258.96	10.25	18.00
N07565	2615+00 NBL	8.00	274.68	10.25	17.75
N07573	2625+00 NBL	9.00	301.28	10.50	17.75
N07560	2635+00 NBL	4.75	75.81	10.50	17.00
N07564	2645+00 NBL	5.75	163.59	9.75	16.00

	Saw Time (hr)	Saw Time (lb/in²)	350 lb/in² Time (hr)	500 lb/in² Time (hr)
Count	20	20	21	21
Average	6.99	215.81	10.40	17.58
Median	7.25	226.62	10.50	17.75
Maximum	9.75	315.10	11.00	18.50
Minimum	3.50	37.04	9.25	16.00
Std. Devi	1.458809	70.74611	0.414399	0.690712

Curve 2

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07573	2685+00 NBL	4.50	54.52	10.00	15.75
N07572	2695+00 NBL	5.50	119.39	10.25	16.25
N07560	2705+00 NBL	6.25	172.67	10.00	15.75
N07565	2715+00 NBL	6.75	203.55	10.25	16.00
N07559	2725+00 NBL	6.75	193.09	10.50	16.75
N07571	2735+00 NBL	7.25	202.12	11.00	17.25
N07569	2745+00 NBL	9.50	285.70	11.50	18.00
N07561	2765+00 NBL	4.75	77.54	9.75	15.00
N07557	2775+00 NBL	4.75	40.66	11.25	17.50

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	9	9	9	9
Average	6.22	149.92	10.50	16.47
Median	6.25	172.67	10.25	16.25
Maximum	9.50	285.70	11.50	18.00
Minimum	4.50	40.66	9.75	15.00
Std. Devi	1.58826	81.87513	0.612372	0.971825

Curve 3

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07570	2755+00 NBL	5.75	92.67	10.75	16.00
N07559	2785+00 NBL	4.00	262.41	6.25	14.50
N07561	2795+00 NBL	5.25	298.94	6.75	15.00
N07560	2805+00 NBL	7.00	359.41	6.75	14.50
N07570	2815+00 NBL	9.25	406.31	7.00	15.25
N07569	2825+00 NBL	14.25	487.95	7.00	15.25
N07567	2835+00 NBL	14.25	477.71	7.25	16.25
N07557	2845+00 NBL	N/A	N/A	7.00	15.00
N07559	2855+00 NBL	N/A	N/A	6.50	14.25
N07565	2865+00 NBL	8.50	399.82	6.75	14.25
N07561	2875+00 NBL	12.50	473.66	6.50	14.50
N07561	2885+00 NBL	10.75	445.97	6.50	14.50
N07561	2890+00 SBL	3.75	229.91	7.25	16.75
N07569	2895+00 NBL	10.50	437.70	6.75	14.75
N07570	2900+00 SBL	4.00	241.36	7.25	16.50
N07570	2905+00 NBL	15.00	498.88	7.00	15.00

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	14	14	16	16
Average	8.91	365.19	7.08	15.14
Median	8.88	403.07	6.88	15.00
Maximum	15.00	498.88	10.75	16.75
Minimum	3.75	92.67	6.25	14.25
Std. Devi	4.067468	122.4527	1.023551	0.811217

Curve 4

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07570	2780+00 SBL	5.50	223.15	8.25	14.25
N07569	2790+00 SBL	5.50	197.05	8.75	14.50
N07558	2800+00 SBL	4.75	175.83	8.25	13.50
N07562	2810+00 SBL	4.50	139.03	9.25	15.75
N07558	2820+00 SBL	3.75	130.88	8.00	13.50
N07561	2830+00 SBL	3.50	81.07	8.50	14.25
N07565	2840+00 SBL	3.75	99.31	8.50	14.25
N07570	2850+00 SBL	4.25	122.80	8.75	14.75
N07569	2860+00 SBL	4.25	114.60	8.75	14.25
N07557	2870+00 SBL	5.00	155.50	9.25	15.25
N07567	2880+00 SBL	4.75	124.13	9.50	15.50

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	11	11	11	11
Average	4.50	142.12	8.70	14.52
Median	4.50	130.88	8.75	14.25
Maximum	5.50	223.15	9.50	15.75
Minimum	3.50	81.07	8.00	13.50
Std. Devi	0.680074	42.48352	0.47194	0.737009

Curve 5

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07557	2340+00 SBL	4.25	305.89	5.50	12.25
N07567	2350+00 SBL	4.00	311.77	5.00	12.25
N07559	2360+00 SBL	4.00	310.81	5.00	12.25
N07569	2370+00 SBL	5.00	334.38	5.50	13.75
N07570	2380+00 SBL	5.50	336.22	5.75	19.00
N07570	2430+00 SBL	6.25	356.09	6.00	15.00
N07569	2449+00 SBL	7.50	382.44	6.25	15.25
N07559	2460+00 SBL	6.00	347.40	6.00	14.75
N07567	2470+00 SBL	6.25	358.01	6.00	14.50
N07562	2490+00 SBL	6.50	368.30	5.75	14.25
N07564	2500+00 SBL	N/A	N/A	5.75	14.25

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	10	10	11	11
Average	5.525	341.131	5.681818	14.31818
Median	5.75	341.81	5.75	14.25
Maximum	7.5	382.44	6.25	19
Minimum	4	305.89	5	12.25
Std. Devi	1.187025	26.00345	0.40452	1.914063

Curve 6

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07565	2450+00 NBL	N/A	N/A	18.00	28.00
N07573	2460+00 NBL	N/A	N/A	19.00	28.50
N07557	2510+00 SBL	9.00	154.39	16.25	N/A

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	1	1	3	2
Average	9.00	154.39	17.75	28.25
Median	9.00	154.39	18.00	28.25
Maximum	9.00	154.39	19.00	28.50
Minimum	9.00	154.39	16.25	28.00
Std. Devi	#DIV/0!	#DIV/0!	1.391941	0.353553

Combined

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07571	2335+00 NBL	8.25	269.03	10.75	17.75
N07567	2345+00NBL	3.50	37.04	9.25	16.00
N07564	2355+00 NBL	7.00	212.90	10.75	18.00
N07560	2365+00 NBL	7.00	217.01	10.50	17.50
N07573	2375+00 NBL	7.75	250.09	10.75	18.25
N07561	2395+00 NBL	5.25	152.06	10.00	17.25
N07557	2430+00 NBL	5.75	164.66	10.50	18.00
N07568	2440+00 NBL	7.25	203.61	11.00	17.50
N07570	2470+00 NBL	8.00	275.15	10.25	18.50
N07559	2480+00 NBL	7.00	225.31	10.50	17.75
N07572	2490+00 NBL	7.50	246.04	10.50	17.75
N07565	2500+00 NBL	9.75	315.10	11.00	18.50
N07573	2565+00 NBL	N/A	N/A	10.75	18.25
N07572	2575+00 NBL	6.25	186.29	10.00	16.75
N07570	2585+00 NBL	7.25	227.93	10.50	17.25
N07561	2595+00 NBL	7.25	259.72	10.25	17.75
N07557	2605+00 NBL	7.50	258.96	10.25	18.00
N07565	2615+00 NBL	8.00	274.68	10.25	17.75
N07573	2625+00 NBL	9.00	301.28	10.50	17.75
N07560	2635+00 NBL	4.75	75.81	10.50	17.00
N07564	2645+00 NBL	5.75	163.59	9.75	16.00
N07573	2685+00 NBL	4.50	54.52	10.00	15.75
N07572	2695+00 NBL	5.50	119.39	10.25	16.25
N07560	2705+00 NBL	6.25	172.67	10.00	15.75
N07565	2715+00 NBL	6.75	203.55	10.25	16.00
N07559	2725+00 NBL	6.75	193.09	10.50	16.75
N07571	2735+00 NBL	7.25	202.12	11.00	17.25
N07569	2745+00 NBL	9.50	285.70	11.50	18.00
N07561	2765+00 NBL	4.75	77.54	9.75	15.00
N07557	2775+00 NBL	4.75	40.66	11.25	17.50
N07570	2755+00 NBL	5.75	92.67	10.75	16.00
N07559	2785+00 NBL	4.00	262.41	6.25	14.50
N07561	2795+00 NBL	5.25	298.94	6.75	15.00
N07560	2805+00 NBL	7.00	359.41	6.75	14.50
N07570	2815+00 NBL	9.25	406.31	7.00	15.25
N07569	2825+00 NBL	14.25	487.95	7.00	15.25
N07567	2835+00 NBL	14.25	477.71	7.25	16.25
N07557	2845+00 NBL	N/A	N/A	7.00	15.00
N07559	2855+00 NBL	N/A	N/A	6.50	14.25
N07565	2865+00 NBL	8.50	399.82	6.75	14.25
N07561	2875+00 NBL	12.50	473.66	6.50	14.50
N07561	2885+00 NBL	10.75	445.97	6.50	14.50
N07561	2890+00 SBL	3.75	229.91	7.25	16.75
N07569	2895+00 NBL	10.50	437.70	6.75	14.75

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07570	2900+00 SBL	4.00	241.36	7.25	16.50
N07570	2905+00 NBL	15.00	498.88	7.00	15.00
N07570	2780+00 SBL	5.50	223.15	8.25	14.25
N07569	2790+00 SBL	5.50	197.05	8.75	14.50
N07558	2800+00 SBL	4.75	175.83	8.25	13.50
N07562	2810+00 SBL	4.50	139.03	9.25	15.75
N07558	2820+00 SBL	3.75	130.88	8.00	13.50
N07561	2830+00 SBL	3.50	81.07	8.50	14.25
N07565	2840+00 SBL	3.75	99.31	8.50	14.25
N07570	2850+00 SBL	4.25	122.80	8.75	14.75
N07569	2860+00 SBL	4.25	114.60	8.75	14.25
N07557	2870+00 SBL	5.00	155.50	9.25	15.25
N07567	2880+00 SBL	4.75	124.13	9.50	15.50
N07557	2340+00 SBL	4.25	305.89	5.50	12.25
N07567	2350+00 SBL	4.00	311.77	5.00	12.25
N07559	2360+00 SBL	4.00	310.81	5.00	12.25
N07569	2370+00 SBL	5.00	334.38	5.50	13.75
N07570	2380+00 SBL	5.50	336.22	5.75	19.00
N07570	2430+00 SBL	6.25	356.09	6.00	15.00
N07569	2449+00 SBL	7.50	382.44	6.25	15.25
N07559	2460+00 SBL	6.00	347.40	6.00	14.75
N07567	2470+00 SBL	6.25	358.01	6.00	14.50
N07562	2490+00 SBL	6.50	368.30	5.75	14.25
N07564	2500+00 SBL	N/A	N/A	5.75	14.25
N07565	2450+00 NBL	N/A	N/A	18.00	28.00
N07573	2460+00 NBL	N/A	N/A	19.00	28.50
N07557	2510+00 SBL	9.00	154.39	16.25	N/A

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	65	65	71	70
Average	6.68	244.73	8.98	16.19
Median	6.25	229.91	9.25	15.75
Maximum	15.00	498.88	19.00	28.50
Minimum	3.50	37.04	5.00	12.25
Std. Devi	2.614379	117.6251	2.67906	2.66015

Poweshiek County

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07576	7+50	4.50	151.11	14.50	40.25
N07575	12+50	3.75	118.00	15.50	43.25
N07579	17+50	2.50	59.89	15.00	42.25
N07581	22+50	4.75	166.22	15.50	43.00
N07580	27+50	5.25	162.71	16.50	43.75
N07567	32+50	4.75	158.18	16.25	42.50
N07575	CP 152	7.25	175.16	19.75	50.25
N07584	CP 156	7.25	180.93	18.75	48.75
N07578	CP 160	7.00	174.34	20.25	50.75
N07567	CP 164	5.75	145.42	20.50	49.75
N07586	CP 168	7.50	196.45	19.25	47.25
N07579	CP 172	5.25	135.02	17.50	47.25
N07582	CP 176	3.50	83.43	15.75	43.75
N07576	CP 180	3.75	101.92	17.00	47.00
N07583	CP 184	N/A	N/A	17.75	47.25
N07583	CP 188	3.25	76.76	17.75	47.25
N07586	CP 193	4.50	122.96	17.00	47.25
N07575	CP 201	4.75	151.94	16.25	45.50
N07584	CP 205	5.00	163.42	16.25	46.75
N07580	CP 209	4.50	132.71	17.00	45.25
N07578	CP 213	4.75	123.19	17.25	47.75
N07579	CP 217	5.50	161.16	16.75	46.50
N07582	CP 221	5.75	168.55	16.50	46.75
N07576	CP 225	4.25	126.26	16.50	46.00
N07583	CP 229	4.25	125.20	17.25	47.75
N07567	CP 233	6.25	172.87	18.75	50.75
N07580	CP 237	5.50	151.61	18.50	52.75
N07559	CP 241	4.00	110.96	17.25	50.00
N07584	CP 245	6.75	190.37	19.25	52.75
N07586	CP 249	7.25	187.52	21.25	55.25
N07558	CP 253	7.50	192.47	19.25	49.25
N07585	CP 257	9.75	227.23	21.00	53.50
N07575	CP261	7.50	177.73	21.75	54.25
N07581	CP 265	6.50	150.43	21.75	53.00
N07559	CP269	3.50	65.96	18.75	53.75
N07581	CP 273	5.25	128.21	19.00	53.25
N07558	CP 277	3.75	106.07	16.50	46.75
N07585	CP 281	5.00	142.88	18.50	52.50
N07586	CP 285	7.00	195.43	19.00	52.00
N07575	CP 289	7.25	192.02	20.00	52.00
N07584	CP 297	5.25	152.98	16.50	45.00
N07567	CP 301	5.25	157.90	17.50	45.75
N07583	CP 305	6.50	182.79	18.25	N/A
N07578	PT 114	6.75	173.38	18.25	47.25

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07583	PT 118	5.00	120.22	19.75	49.75
N07586	PT 122	4.75	120.32	18.75	47.75
N07585	PT 126	6.00	172.91	17.50	45.25
N07582	PT 132	5.00	131.63	17.50	47.50
N07584	PT 136	5.00	134.26	17.75	48.25
N07576	PT 140	4.50	119.33	19.25	51.00
N07575	PT 144	5.00	144.33	17.75	47.75
N07567	PT 148	6.00	176.22	17.75	48.50

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	51	51	52	51
Average	5.43	147.82	17.99	48.22
Median	5.25	151.61	17.75	47.75
Maximum	9.75	227.23	21.75	55.25
Minimum	2.50	59.89	14.50	40.25
Std. Devi	1.400963	35.46013	1.698048	3.471184

Johnson County

Curve 2

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07584	1671+00 NB	6.25	-233.68	26.25	38.50
N07585	1681+00 NB	6.75	-193.05	25.25	37.25
N07580	1690+00 NB	12.25	58.37	25.50	38.75
N07582	1695+00 NB	7.75	-137.05	26.50	N/A
N07575	1696+25 SB	6.00	-253.04	27.50	40.75
N07567	1703+50 NB	5.00	-332.39	26.50	39.00

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	6	6	6	5
Average	7.33	-181.81	26.25	38.85
Median	6.50	-213.37	26.38	38.75
Maximum	12.25	58.37	27.50	40.75
Minimum	5.00	-332.39	25.25	37.25
Std. Devi	2.572288	134.3538	0.806226	1.257478

Curve 3

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07580	1464+00 SB	6.50	240.48	12.25	33.00
N07585	1469+00 NB	7.00	238.40	13.00	35.25
N07584	1474+00 SB	7.00	248.78	12.00	32.25
N07583	1480+00 SB	7.25	255.02	12.50	33.75
N07582	1489+00 NB	1.25	-58.45	13.25	32.75
N07582	1501+00 NB	7.50	249.77	13.00	N/A
N07580	1502+00 SB	7.25	197.00	19.00	N/A
N07582	1515+75 SB	6.75	203.63	16.50	N/A
N07580	1519+50 NB	8.00	275.20	12.75	34.25
N07583	1527+50 NB	13.50	351.80	13.50	35.00
N07585	1535+00 SB	20.00	348.32	20.25	54.25
N07582	1541+50 NB	5.50	191.17	12.75	34.00
N07583	1545+00 SB	19.25	349.29	19.50	52.00
N07585	1550+75 NB	7.75	276.41	12.00	33.50
N07578	1555+00 SB	19.00	344.58	19.75	51.25
N07576	1565+00 SB	21.00	359.56	19.75	51.75
N07580	1569+50 NB	8.25	277.37	12.50	33.75
N07582	1579+00 NB	7.25	263.59	11.75	31.50
`N07582	1595+00 NB	9.25	282.30	13.50	35.50

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07580	1605+00 NB	8.50	275.34	13.25	35.00
N07583	1614+50 NB	13.50	343.56	14.00	36.50
N07585	1626+75 NB	7.00	244.43	13.00	36.00
N07585	1637+00 NB	12.00	284.13	17.50	46.00
N07582	1647+00 NB	12.00	292.40	17.25	45.75
N07580	1658+00 NB	12.00	269.69	19.75	49.50
N07581	1666+60 SB	N/A	N/A	12.00	33.75
N07583	1672+00 SB	4.50	199.94	11.25	32.25
N07581	1686+00 SB	4.50	186.03	11.50	32.00

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 lb/in^2 Time (hr)
Count	27	27	28	25
Average	9.75	258.88	14.61	38.42
Median	7.75	269.69	13.13	35.00
Maximum	21.00	359.56	20.25	54.25
Minimum	1.25	-58.45	11.25	31.50
Std. Devi	5.08911	82.08973	3.093773	7.68139

Combined

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07580	1464+00 SB	6.50	240.48	12.25	33.00
N07585	1469+00 NB	7.00	238.40	13.00	35.25
N07584	1474+00 SB	7.00	248.78	12.00	32.25
N07583	1480+00 SB	7.25	255.02	12.50	33.75
N07582	1489+00 NB	1.25	-58.45	13.25	32.75
N07582	1501+00 NB	7.50	249.77	13.00	N/A
N07580	1502+00 SB	7.25	197.00	19.00	N/A
N07582	1515+75 SB	6.75	203.63	16.50	N/A
N07580	1519+50 NB	8.00	275.20	12.75	34.25
N07583	1527+50 NB	13.50	351.80	13.50	35.00
N07585	1535+00 SB	20.00	348.32	20.25	54.25
N07582	1541+50 NB	5.50	191.17	12.75	34.00
N07583	1545+00 SB	19.25	349.29	19.50	52.00
N07585	1550+75 NB	7.75	276.41	12.00	33.50
N07578	1555+00 SB	19.00	344.58	19.75	51.25
N07576	1565+00 SB	21.00	359.56	19.75	51.75
N07580	1569+50 NB	8.25	277.37	12.50	33.75
N07582	1579+00 NB	7.25	263.59	11.75	31.50
N07582	1595+00 NB	9.25	282.30	13.50	35.50

Device ID	Station	Saw Time	Saw Time lb/in^2	350 lb/in^2 Time	500 lb/in^2 Time
N07580	1605+00 NB	8.50	275.34	13.25	35.00
N07583	1614+50 NB	13.50	343.56	14.00	36.50
N07585	1626+75 NB	7.00	244.43	13.00	36.00
N07585	1637+00 NB	12.00	284.13	17.50	46.00
N07582	1647+00 NB	12.00	292.40	17.25	45.75
N07580	1658+00 NB	12.00	269.69	19.75	49.50
N07581	1666+60 SB	N/A	N/A	12.00	33.75
N07583	1672+00 SB	4.50	199.94	11.25	32.25
N07581	1686+00 SB	4.50	186.03	11.50	32.00
N07584	1671+00 NB	6.25	-233.68	26.25	38.50
N07585	1681+00 NB	6.75	-193.05	25.25	37.25
N07580	1690+00 NB	12.25	58.37	25.50	38.75
N07582	1695+00 NB	7.75	-137.05	26.50	N/A
N07575	1696+25 SB	6.00	-253.04	27.50	40.75
N07567	1703+50 NB	5.00	-332.39	26.50	39.00

	Saw Time (hr)	Saw Time (lb/in^2)	350 lb/in^2 Time (hr)	500 Time (hr)
Count	33	33	34	30
Average	9.31	178.75	16.66	38.49
Median	7.50	249.77	13.50	35.38
Maximum	21.00	359.56	27.50	54.25
Minimum	1.25	-332.39	11.25	31.50
Std. Devi	4.792992	195.1624	5.312893	7.005381

APPENDIX E. FWD DATA

Brooklyn Northbound, May 2009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IKUAB FWD FILE      : Brooklyn Cable NB.fwd
HProject No.        : Brooklyn
HLocation           : Brooklyn
HClient             : Cable
HStart Station      : test
HDirection          : test
HEnd Station        :
HWeather            : cloudy drizzle
HOperator           : HG

IDate Created       : 5/7/2009
IVersion            : 2.3.11
ILoad Mode          : 1        (SHRP 8+8 buffers, 0 plates)
IPlate Radius       : 5.91     (in)
IExtra Field Set    : Example Road
IDrop Sequence      : 2123
INo of drops        : 1111
IRecord Drop?       : NYYY
IDrop Height        :     1      2      3      4
IImpact Load        :  6003   9005  12007  16009 lbf
ISensor Number      :      0      1      2      3      4      5      6      7      8
ISensor Distance    :   0.00  12.00  12.00  18.00  24.00  36.00  48.00  60.00  59.06 (in)
ISensor Position    : CENTER  FRONT BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :      0 ft
ITestpoint spacing:   1000 ft
```

J	Distance ft	Imp Num	Load lbf	D0 µm	D1 µm	D2 µm	D3 µm	D4 µm	D5 µm	D6 µm	D7 µm	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	0	2	5893	108	99	97	88	82	67	52	41	66	75	14:46:17	CTR	PCC	Excel.	None	792
D	0	3	9103	168	155	153	141	129	106	83	63	66	75	14:46:22	CTR	PCC	Excel.	None	784
D	0	4	12358	228	211	208	195	177	145	114	87	66	75	14:46:29	CTR	PCC	Excel.	None	783
D	-876	2	5883	156	146	141	131	121	97	76	57	67	76	14:49:28	CTR	PCC	Excel.	None	545
D	-876	3	9048	243	227	221	206	189	152	120	89	67	76	14:49:34	CTR	PCC	Excel.	None	537
D	-876	4	12274	331	308	300	282	256	207	163	122	67	76	14:49:41	CTR	PCC	Excel.	None	535
D	-1515	2	5881	152	144	127	111	102	80	62	47	67	77	14:51:19	RWP	PCC	Excel.	None	558
D	-1515	3	8985	238	225	198	177	159	124	96	73	67	77	14:51:24	RWP	PCC	Excel.	None	545
D	-1515	4	12261	329	308	272	246	218	171	132	100	67	77	14:51:31	RWP	PCC	Excel.	None	539
D	-1541	2	5871	125	115	114	104	97	78	62	47	67	76	14:52:18	CTR	PCC	Excel.	None	676
D	-1541	3	8976	195	179	178	166	151	122	96	74	67	76	14:52:24	CTR	PCC	Excel.	None	663
D	-1541	4	12314	268	245	244	229	207	167	132	102	67	76	14:52:31	CTR	PCC	Excel.	None	664
D	-2458	2	5871	138	126	125	112	105	83	64	49	66	77	14:54:21	CTR	PCC	Excel.	None	615
D	-2458	3	9005	215	197	195	180	164	130	100	76	66	77	14:54:26	CTR	PCC	Excel.	None	605
D	-2458	4	12307	295	269	267	248	225	179	139	105	66	77	14:54:33	CTR	PCC	Excel.	None	602
D	-3458	2	5859	127	118	114	102	94	73	55	41	66	78	14:56:11	CTR	PCC	Excel.	None	664
D	-3458	3	9023	199	183	179	163	147	114	86	63	66	78	14:56:16	CTR	PCC	Excel.	None	656
D	-3458	4	12333	271	250	245	223	201	157	119	88	66	78	14:56:23	CTR	PCC	Excel.	None	656
D	-4538	2	5890	132	122	117	108	100	78	58	42	66	78	14:58:05	CTR	PCC	Excel.	None	644
D	-4538	3	9044	207	191	186	173	157	123	92	65	66	78	14:58:11	CTR	PCC	Excel.	None	632
D	-4538	4	12302	284	260	256	238	215	169	127	90	66	78	14:58:18	CTR	PCC	Excel.	None	626
D	-5663	2	5849	200	152	145	124	109	80	57	40	67	78	15:00:25	RWP	PCC	Excel.	None	422
D	-5663	3	8988	312	238	226	196	171	125	89	63	67	78	15:00:31	RWP	PCC	Excel.	None	416
D	-5663	4	12211	428	326	313	269	235	172	122	85	67	78	15:00:38	RWP	PCC	Excel.	None	412
D	-5689	2	5860	146	117	126	107	93	66	46	31	68	78	15:01:26	CTR	PCC	Excel.	None	580
D	-5689	3	9014	231	186	200	173	148	106	73	51	68	78	15:01:32	CTR	PCC	Excel.	None	563
D	-5689	4	12268	321	257	279	241	206	148	103	72	68	78	15:01:39	CTR	PCC	Excel.	None	552
D	-6544	2	5868	100	92	91	81	76	61	46	36	68	79	15:03:16	CTR	PCC	Excel.	None	847
D	-6544	3	9082	157	145	143	133	119	96	75	58	68	79	15:03:22	CTR	PCC	Excel.	None	835
D	-6544	4	12313	217	199	198	183	165	133	104	80	68	79	15:03:29	CTR	PCC	Excel.	None	819
D	-7545	2	5867	118	107	106	96	89	70	54	39	68	80	15:05:00	CTR	PCC	Excel.	None	720
D	-7545	3	9036	183	167	167	154	139	110	84	61	68	80	15:05:05	CTR	PCC	Excel.	None	712
D	-7545	4	12318	253	229	230	212	191	153	117	86	68	80	15:05:12	CTR	PCC	Excel.	None	703

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D	-8537	2	5877	137	125	124	113	104	83	64	48	68	79	15:07:00	CTR	PCC	Excel.	None	622
D	-8537	3	9022	212	194	193	180	164	131	101	75	68	79	15:07:06	CTR	PCC	Excel.	None	615
D	-8537	4	12300	293	268	268	248	227	182	142	106	68	79	15:07:13	CTR	PCC	Excel.	None	606
D	-9537	2	5851	155	144	133	115	103	79	60	45	68	77	15:09:15	RWP	PCC	Excel.	None	545
D	-9537	3	9043	244	228	206	183	162	124	94	70	68	77	15:09:20	RWP	PCC	Excel.	None	534
D	-9537	4	12271	335	312	285	252	221	170	128	96	68	77	15:09:27	RWP	PCC	Excel.	None	529
D	-9562	2	5855	126	115	118	103	96	77	61	46	68	77	15:10:12	CTR	PCC	Excel.	None	673
D	-9562	3	9020	194	178	185	164	149	120	95	73	68	77	15:10:18	CTR	PCC	Excel.	None	670
D	-9562	4	12313	266	244	251	226	205	165	130	100	68	77	15:10:25	CTR	PCC	Excel.	None	668
D	-9722	2	5838	144	133	130	118	109	87	68	52	68	79	15:11:19	CTR	PCC	Excel.	None	587
D	-9722	3	8957	224	207	204	189	171	137	107	82	68	79	15:11:25	CTR	PCC	Excel.	None	578
D	-9722	4	12234	305	280	279	259	234	188	147	113	68	79	15:11:32	CTR	PCC	Excel.	None	579
C	Comment at -9722 ft Time: 15:11:57 :extensive longitud cracking																		
D	-10758	2	5888	122	113	115	100	92	73	56	44	68	78	15:13:30	CTR	PCC	Excel.	None	699
D	-10758	3	9076	192	177	177	159	144	116	90	68	68	78	15:13:36	CTR	PCC	Excel.	None	684
D	-10758	4	12388	261	242	240	218	198	159	124	94	68	78	15:13:43	CTR	PCC	Excel.	None	685
D	-11601	2	5857	129	121	119	110	104	85	68	50	68	77	15:15:27	CTR	PCC	Excel.	None	658
D	-11601	3	9025	201	188	185	175	163	134	106	79	68	77	15:15:33	CTR	PCC	Excel.	None	650
D	-11601	4	12294	273	257	254	242	221	184	146	109	68	77	15:15:40	CTR	PCC	Excel.	None	649
C	Comment at -12511 ft Time: 15:17:46 :Deflection is not decreasing																		
D	-12511	2	5761	493	276	386	333	288	210	149	104	69	78	15:17:49	RWP	PCC	Excel.	None	169
C	Comment at -12511 ft Time: 15:17:54 :Deflection is not decreasing																		
D	-12511	3	8793	747	434	585	508	436	317	226	158	69	78	15:17:56	RWP	PCC	Excel.	None	170
C	Comment at -12511 ft Time: 15:18:03 :Deflection is not decreasing																		
D	-12511	4	11908	992	589	777	676	578	422	301	210	69	78	15:18:07	RWP	PCC	Excel.	None	173
C	Comment at -12538 ft Time: 15:18:49 :Deflection is not decreasing																		
D	-12538	2	5891	193	165	205	169	151	120	92	72	69	76	15:18:52	CTR	PCC	Excel.	None	441
C	Comment at -12538 ft Time: 15:18:57 :Deflection is not decreasing																		
D	-12538	3	9101	299	256	318	265	239	190	148	114	69	76	15:18:59	CTR	PCC	Excel.	None	440
C	Comment at -12538 ft Time: 15:19:06 :Deflection is not decreasing																		
D	-12538	4	12333	404	345	432	363	328	262	203	156	69	76	15:19:09	CTR	PCC	Excel.	None	441
D	-13452	2	5877	136	125	123	112	103	82	62	47	68	78	15:20:44	CTR	PCC	Excel.	None	622
D	-13452	3	9094	213	194	193	179	162	129	99	74	68	78	15:20:50	CTR	PCC	Excel.	None	617
D	-13452	4	12353	292	266	265	246	223	178	137	102	68	78	15:20:57	CTR	PCC	Excel.	None	612
D	-14518	2	5873	129	118	115	103	95	74	57	43	68	79	15:22:36	CTR	PCC	Excel.	None	660
D	-14518	3	9076	201	185	181	165	148	117	90	68	68	79	15:22:42	CTR	PCC	Excel.	None	653
D	-14518	4	12351	274	252	247	227	203	161	124	94	68	79	15:22:49	CTR	PCC	Excel.	None	651
D	-15512	2	5871	118	108	106	96	86	67	49	36	68	78	15:24:38	CTR	PCC	Excel.	None	718
D	-15512	3	9061	186	170	167	154	138	107	80	58	68	78	15:24:43	CTR	PCC	Excel.	None	704
D	-15512	4	12329	259	235	233	213	191	149	112	81	68	78	15:24:50	CTR	PCC	Excel.	None	687
D	-15862	2	5874	105	95	94	84	76	60	45	33	68	79	15:26:16	CTR	PCC	Excel.	None	806
D	-15862	3	9087	165	149	147	133	120	93	70	52	68	79	15:26:21	CTR	PCC	Excel.	None	794
D	-15862	4	12399	229	205	204	186	165	129	97	72	68	79	15:26:28	CTR	PCC	Excel.	None	784
D	-16621	2	5822	155	131	123	103	90	65	47	33	68	79	15:28:40	RWP	PCC	Excel.	None	544
D	-16621	3	9010	247	208	195	167	144	104	75	53	68	79	15:28:46	RWP	PCC	Excel.	None	527
D	-16621	4	12292	346	288	272	234	201	147	105	74	68	79	15:28:53	RWP	PCC	Excel.	None	513
D	-16646	2	5866	117	104	108	93	84	64	48	35	70	78	15:31:35	CTR	PCC	Excel.	None	727
D	-16646	3	9081	184	164	170	149	134	102	77	56	70	78	15:31:40	CTR	PCC	Excel.	None	715
D	-16646	4	12371	254	227	229	209	186	144	108	79	70	78	15:31:47	CTR	PCC	Excel.	None	704
D	-17600	2	5867	130	118	121	106	97	76	59	44	69	80	15:33:22	CTR	PCC	Excel.	None	651
D	-17600	3	9065	203	185	187	169	152	121	92	70	69	80	15:33:28	CTR	PCC	Excel.	None	646
D	-17600	4	12375	277	252	254	232	208	166	127	96	69	80	15:33:35	CTR	PCC	Excel.	None	645
D	-18530	2	5846	150	138	137	124	115	92	72	55	68	79	15:35:11	CTR	PCC	Excel.	None	563
D	-18530	3	9033	234	214	213	197	180	144	112	86	68	79	15:35:17	CTR	PCC	Excel.	None	558
D	-18530	4	12304	318	291	289	268	244	197	155	118	68	79	15:35:24	CTR	PCC	Excel.	None	559
D	-19555	2	5850	128	116	115	102	93	72	55	41	69	83	15:37:03	CTR	PCC	Excel.	None	658
D	-19555	3	8955	201	181	183	163	147	113	86	64	69	83	15:37:09	CTR	PCC	Excel.	None	645
D	-19555	4	12272	275	248	249	226	202	156	119	89	69	83	15:37:16	CTR	PCC	Excel.	None	644
D	-20488	2	5820	166	137	132	117	108	85	66	51	70	82	15:39:03	RWP	PCC	Excel.	None	507
D	-20488	3	8974	263	216	211	189	170	135	105	81	70	82	15:39:09	RWP	PCC	Excel.	None	493
D	-20488	4	12271	363	297	290	262	234	186	145	111	70	82	15:39:16	RWP	PCC	Excel.	None	488
D	-20514	2	5841	118	108	108	99	92	75	60	47	71	81	15:39:59	CTR	PCC	Excel.	None	714
D	-20514	3	8972	185	168	170	158	144	118	94	74	71	81	15:40:04	CTR	PCC	Excel.	None	702

D	-20514	4	12339	254	230	234	218	198	162	130	102	71	81	15:40:11	CTR	PCC	Excel.	None	701
D	-21615	2	5845	136	124	122	111	101	78	59	44	70	85	15:41:48	CTR	PCC	Excel.	None	619
D	-21615	3	9022	216	196	194	179	161	125	95	70	70	85	15:41:54	CTR	PCC	Excel.	None	604
D	-21615	4	12353	296	269	268	246	221	174	133	97	70	85	15:42:01	CTR	PCC	Excel.	None	602
D	-22503	2	5857	133	121	120	109	101	82	63	48	72	84	15:43:41	CTR	PCC	Excel.	None	637
D	-22503	3	9061	207	190	189	176	160	128	99	76	72	84	15:43:47	CTR	PCC	Excel.	None	631
D	-22503	4	12314	283	260	258	241	217	176	137	104	72	84	15:43:54	CTR	PCC	Excel.	None	628
D	-23584	2	5834	135	126	104	90	76	52	33	24	73	82	15:46:30	RWP	AC	Excel.	None	622
D	-23584	3	8951	213	199	165	143	120	82	52	38	73	82	15:46:36	RWP	AC	Excel.	None	607
D	-23584	4	12270	296	278	230	201	166	114	71	53	73	82	15:46:44	RWP	AC	Excel.	None	598
C	Comment at -23584 ft Time: 15:47:16 :on full depth patch 1 and 7 oppisite jnt																		
D	-23607	2	5856	111	100	105	89	81	63	48	35	74	82	15:47:58	CTR	AC	Excel.	None	763
D	-23607	3	9063	173	157	163	143	127	99	75	56	74	82	15:48:04	CTR	AC	Excel.	None	755
D	-23607	4	12413	239	216	221	197	176	139	106	79	74	82	15:48:11	CTR	AC	Excel.	None	751
D	-24558	2	5870	122	112	107	97	88	70	53	39	72	85	15:49:47	CTR	AC	Excel.	None	697
D	-24558	3	9071	190	176	169	156	140	111	84	61	72	85	15:49:52	CTR	AC	Excel.	None	688
D	-24558	4	12348	260	240	233	214	192	153	117	85	72	85	15:49:59	CTR	AC	Excel.	None	685
D	-25747	2	5830	124	118	115	108	102	87	72	57	71	84	15:51:47	CTR	PCC	Excel.	None	681
D	-25747	3	8962	194	184	181	173	160	137	114	91	71	84	15:51:53	CTR	PCC	Excel.	None	668
D	-25747	4	12304	266	252	248	238	219	188	159	127	71	84	15:52:00	CTR	PCC	Excel.	None	669
C	Comment at -25747 ft Time: 15:52:21 :extenssive patching																		
D	-26590	2	5834	175	159	145	128	117	89	68	52	72	83	15:53:45	RWP	PCC	Excel.	None	481
D	-26590	3	8981	275	250	228	204	181	140	106	80	72	83	15:53:51	RWP	PCC	Excel.	None	472
D	-26590	4	12200	378	342	312	280	247	191	145	108	72	83	15:53:58	RWP	PCC	Excel.	None	466
D	-26617	2	5851	132	124	122	112	106	89	69	54	74	83	15:54:43	CTR	PCC	Excel.	None	638
D	-26617	3	9043	205	192	190	178	165	140	109	84	74	83	15:54:49	CTR	PCC	Excel.	None	638
D	-26617	4	12344	277	259	258	243	224	190	150	115	74	83	15:54:56	CTR	PCC	Excel.	None	643
D	-27556	2	5830	131	121	119	108	98	76	58	43	72	82	15:56:29	CTR	PCC	Excel.	None	641
D	-27556	3	9023	206	189	187	173	154	121	91	67	72	82	15:56:35	CTR	PCC	Excel.	None	631
D	-27556	4	12335	285	260	258	236	212	168	127	93	72	82	15:56:43	CTR	PCC	Excel.	None	626
D	-28707	2	5842	128	118	116	105	97	77	59	45	71	83	15:58:14	CTR	PCC	Excel.	None	661
D	-28707	3	9026	201	186	183	169	153	123	95	71	71	83	15:58:19	CTR	PCC	Excel.	None	647
D	-28707	1	12324	279	255	253	233	212	171	133	99	72	82	15:58:53	CTR	PCC	Excel.	None	638
D	-29589	2	5846	112	101	98	87	80	61	45	33	72	83	16:00:21	CTR	PCC	Excel.	None	754
D	-29589	3	9007	176	159	155	141	126	97	72	52	72	83	16:00:26	CTR	PCC	Excel.	None	741
D	-29589	4	12316	241	218	215	195	173	134	100	73	72	83	16:00:33	CTR	PCC	Excel.	None	737
D	-30583	2	5801	198	148	122	105	92	67	48	34	72	83	16:02:24	RWP	PCC	Excel.	None	424
D	-30583	3	8926	311	237	196	172	148	108	77	54	72	83	16:02:29	RWP	PCC	Excel.	None	415
D	-30583	4	12226	426	328	274	240	205	149	107	75	72	83	16:02:36	RWP	PCC	Excel.	None	414
D	-31560	2	5889	107	96	94	84	78	61	45	35	73	84	16:04:06	CTR	PCC	Excel.	None	796
D	-31560	3	9130	167	151	149	136	122	96	73	54	73	84	16:04:12	CTR	PCC	Excel.	None	788
D	-31560	1	12391	231	208	208	188	169	132	102	76	74	83	16:04:36	CTR	PCC	Excel.	None	776
D	-32550	2	5845	120	108	106	96	87	68	51	38	72	84	16:06:14	CTR	PCC	Excel.	None	703
D	-32550	3	9025	189	171	168	155	138	107	81	59	72	84	16:06:20	CTR	PCC	Excel.	None	691
D	-32550	4	12324	260	234	232	213	189	148	113	82	72	84	16:06:26	CTR	PCC	Excel.	None	685
D	-33605	2	5814	135	125	125	113	106	87	69	55	72	83	16:07:57	CTR	PCC	Excel.	None	622
D	-33605	3	9008	211	194	196	180	166	136	109	86	72	83	16:08:03	CTR	PCC	Excel.	None	618
D	-33605	4	12304	287	265	266	248	226	187	150	118	72	83	16:08:10	CTR	PCC	Excel.	None	619
D	-34467	2	5813	171	147	140	120	106	78	57	42	73	84	16:09:45	RWP	PCC	Excel.	None	490
D	-34467	3	8986	273	233	224	192	167	124	90	65	73	84	16:09:50	RWP	PCC	Excel.	None	475
D	-34467	4	12277	379	320	310	267	230	171	124	89	73	84	16:09:58	RWP	PCC	Excel.	None	468
D	-35731	2	5855	124	114	115	103	95	77	59	45	72	82	16:11:45	CTR	PCC	Excel.	None	680
D	-35731	3	9040	195	178	180	164	148	119	93	71	72	82	16:11:51	CTR	PCC	Excel.	None	671
D	-35731	4	12309	266	243	249	226	204	165	129	98	72	82	16:11:58	CTR	PCC	Excel.	None	669
D	-36446	2	5836	157	149	143	129	121	99	78	61	73	83	16:13:30	CTR	PCC	Excel.	None	536
D	-36446	3	9019	239	227	218	204	186	153	121	94	73	83	16:13:36	CTR	PCC	Excel.	None	545
D	-36446	4	12285	322	302	294	274	250	206	163	127	73	83	16:13:43	CTR	PCC	Excel.	None	551
D	-37552	2	5800	139	130	126	114	106	85	67	51	72	83	16:16:03	CTR	PCC	Excel.	None	604
D	-37552	3	8994	216	203	196	182	167	134	105	81	72	83	16:16:09	CTR	PCC	Excel.	None	602
D	-37552	4	12280	293	275	268	249	226	183	144	111	72	83	16:16:16	CTR	PCC	Excel.	None	605
D	-38542	2	5794	113	95	96	86	76	58	43	32	70	84	16:17:47	CTR	PCC	Excel.	None	741
D	-38542	3	8970	181	152	154	139	122	94	70	52	70	84	16:17:53	CTR	PCC	Excel.	None	717
D	-38542	4	12300	252	211	214	194	169	131	98	72	70	84	16:18:00	CTR	PCC	Excel.	None	705

Brooklyn Cable NB

D	-39473	2	5839	202	188	176	159	145	116	89	66	71	83	16:20:06	RWP	PCC	Excel.	None	417
D	-39473	3	9027	323	300	279	254	230	183	140	103	71	83	16:20:11	RWP	PCC	Excel.	None	404
D	-39473	4	12293	447	416	385	353	317	252	193	141	71	83	16:20:18	RWP	PCC	Excel.	None	397
D	-39498	2	5804	149	138	137	127	117	95	75	57	71	82	16:21:21	CTR	PCC	Excel.	None	563
D	-39498	3	8987	232	215	213	199	183	149	118	89	71	82	16:21:26	CTR	PCC	Excel.	None	559
D	-39498	4	12378	317	294	294	275	251	206	163	123	71	82	16:21:33	CTR	PCC	Excel.	None	563
D	-40545	2	5802	121	110	109	98	91	72	56	44	71	81	16:23:52	CTR	PCC	Excel.	None	695
D	-40545	3	9042	188	173	169	156	142	113	89	69	71	81	16:23:58	CTR	PCC	Excel.	None	693
D	-40545	4	12342	257	235	232	215	193	154	122	93	71	81	16:24:05	CTR	PCC	Excel.	None	694
D	-42256	2	5820	139	132	123	112	106	87	71	56	72	83	16:26:40	RWP	PCC	Excel.	None	604
D	-42256	3	9056	219	208	195	182	168	139	112	88	72	83	16:26:46	RWP	PCC	Excel.	None	597
D	-42256	4	12373	301	285	269	251	230	192	154	121	72	83	16:26:53	RWP	PCC	Excel.	None	594
D	-42281	2	5861	125	115	112	104	96	78	63	48	72	82	16:27:39	CTR	PCC	Excel.	None	679
D	-42281	3	9023	195	181	177	166	151	124	98	76	72	82	16:27:44	CTR	PCC	Excel.	None	668
D	-42281	4	12332	268	247	245	228	208	171	136	105	72	82	16:27:52	CTR	PCC	Excel.	None	666
D	-43148	2	5837	132	123	120	110	102	82	65	49	74	83	16:29:26	CTR	PCC	Excel.	None	638
D	-43148	3	8981	207	193	189	176	161	129	102	77	74	83	16:29:36	CTR	PCC	Excel.	None	628
D	-43148	4	12308	289	269	265	248	225	184	145	110	74	83	16:29:43	CTR	PCC	Excel.	None	615
D	-44228	2	5832	112	104	103	95	87	71	58	46	73	81	16:31:28	CTR	PCC	Excel.	None	752
D	-44228	3	9014	174	162	160	148	137	113	91	72	73	81	16:31:33	CTR	PCC	Excel.	None	747
D	-44228	4	12387	239	221	221	207	189	157	126	99	73	81	16:31:40	CTR	PCC	Excel.	None	748
D	-45275	2	5826	146	137	125	113	104	81	65	48	73	82	16:33:16	RWP	PCC	Excel.	None	577
D	-45275	3	8998	232	218	199	183	164	131	103	78	73	82	16:33:22	RWP	PCC	Excel.	None	560
D	-45275	4	12290	320	301	274	251	227	182	143	109	73	82	16:33:29	RWP	PCC	Excel.	None	554
D	-45302	2	5817	146	133	133	121	112	90	71	53	74	82	16:34:25	CTR	PCC	Excel.	None	576
D	-45302	3	9006	230	212	212	196	179	144	114	86	74	82	16:34:31	CTR	PCC	Excel.	None	565
D	-45302	4	12318	317	291	293	272	247	202	159	121	74	82	16:34:38	CTR	PCC	Excel.	None	561
D	-46380	2	5824	138	129	128	117	111	92	75	60	73	83	16:36:18	CTR	PCC	Excel.	None	610
D	-46380	3	9009	216	202	203	188	174	145	118	94	73	83	16:36:24	CTR	PCC	Excel.	None	603
D	-46380	4	12301	295	274	275	257	238	199	163	129	73	83	16:36:31	CTR	PCC	Excel.	None	603
D	-47312	2	5821	124	116	111	102	94	75	59	44	72	83	16:37:59	CTR	PCC	Excel.	None	677
D	-47312	3	9010	194	181	175	164	148	119	93	70	72	83	16:38:04	CTR	PCC	Excel.	None	670
D	-47312	4	12315	266	248	242	225	204	166	130	98	72	83	16:38:11	CTR	PCC	Excel.	None	668
D	-48230	2	5777	190	154	154	134	114	71	50	37	73	79	16:39:56	RWP	PCC	Excel.	None	440
D	-48230	3	8946	302	248	248	217	183	115	81	60	73	79	16:40:02	RWP	PCC	Excel.	None	428
D	-48230	4	12240	419	345	345	301	255	162	114	83	73	79	16:40:09	RWP	PCC	Excel.	None	422
C	Comment at -48230 ft	Time: 16:40:55 :full depth patch 1 6 7 not on patch																	
D	-48255	2	5883	121	115	106	93	84	63	46	32	74	82	16:41:35	CTR	PCC	Excel.	None	703
D	-48255	3	9117	189	181	166	150	134	101	73	51	74	82	16:41:40	CTR	PCC	Excel.	None	695
D	-48255	4	12397	261	249	230	208	186	142	103	71	74	82	16:41:47	CTR	PCC	Excel.	None	687
D	-49362	2	5831	139	129	128	118	111	88	69	51	73	84	16:43:34	CTR	PCC	Excel.	None	605
D	-49362	3	9047	220	204	204	190	175	142	111	81	73	84	16:43:39	CTR	PCC	Excel.	None	594
D	-49362	4	12379	300	279	279	261	239	197	153	112	73	84	16:43:46	CTR	PCC	Excel.	None	595
D	-50336	2	5853	112	108	102	92	86	67	53	40	72	83	16:45:32	CTR	PCC	Excel.	None	752
D	-50336	3	9034	173	166	157	146	133	106	82	62	72	83	16:45:37	CTR	PCC	Excel.	None	755
D	-50336	4	12370	237	224	215	199	181	147	113	86	72	83	16:45:44	CTR	PCC	Excel.	None	754
D	-50808	2	5828	110	102	99	90	82	65	52	39	73	83	16:47:18	CTR	PCC	Excel.	None	768
D	-50808	3	9033	173	161	156	145	131	106	82	62	73	83	16:47:24	CTR	PCC	Excel.	None	756
D	-50808	4	12323	236	220	216	200	181	147	115	87	73	83	16:47:30	CTR	PCC	Excel.	None	754

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IKUAB FWD FILE      : Brooklyn NB 17Nov09.fwd
HProject No.        : Cable Overlay
HLocation           : hwy 17 nb
HClient             : Cable
HStart Station      :
HDirection          :
HEnd Station        :
HWeather            : sunny clear
HOperator           : hg

IDate Created       : 11/11/2009
IVersion            : 2.3.11
ILoad Mode          : 1          (SHRP 8+8 buffers, 0 plates)
IPlate Radius       : 5.91       (in)
IExtra Field Set    : Example Road
IDrop Sequence      : 2123
INo of drops        : 1111
IRecord Drop?       : NYYY
IDrop Height        :     1      2     3     4
IImpact Load        :   6003   9005 12007 16009 lbf
ISensor Number      :      0      1      2      3      4      5      6      7      8
ISensor Distance    :   0.00  12.00  12.00  18.00  24.00  36.00  48.00  60.00   0.00 (in)
ISensor Position    : CENTER  FRONT BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :      0 ft
ITestpoint spacing:    500 ft
```

J	Distance ft	Imp Num	Load lbf	D0 mils	D1 mils	D2 mils	D3 mils	D4 mils	D5 mils	D6 mils	D7 mils	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	491	2	6266	2.23	2.09	1.98	1.88	1.79	1.60	1.40	1.17	59	60	12:29:29	RWP	PCC	Excel.	None	1598
D	491	3	9464	3.37	3.17	3.03	2.91	2.74	2.44	2.12	1.81	59	60	12:29:35	RWP	PCC	Excel.	None	1596
D	491	4	12603	4.49	4.21	4.08	3.88	3.69	3.27	2.86	2.44	59	60	12:29:41	RWP	PCC	Excel.	None	1595
D	1013	2	6291	3.36	3.30	3.07	2.96	2.85	2.57	2.25	1.97	59	62	12:31:29	RWP	PCC	Excel.	None	1064
D	1013	3	9455	5.08	4.99	4.71	4.53	4.35	3.91	3.46	3.01	59	62	12:31:34	RWP	PCC	Excel.	None	1059
D	1013	4	12611	6.82	6.63	6.35	6.09	5.83	5.23	4.68	4.07	59	62	12:31:41	RWP	PCC	Excel.	None	1051
D	1016	2	6263	4.56	3.87	3.69	3.38	3.18	2.73	2.31	1.97	59	61	12:32:32	RWP	PCC	Excel.	None	781
D	1016	3	9431	6.72	5.97	5.56	5.17	4.79	4.08	3.53	2.98	59	61	12:32:37	RWP	PCC	Excel.	None	798
D	1016	4	12567	8.82	8.02	7.41	6.84	6.32	5.45	4.72	4.00	59	61	12:32:44	RWP	PCC	Excel.	None	810
C	Comment at 1016 ft Time: 12:32:54 :Load transfer																		
D	1522	2	6245	2.37	2.21	2.18	2.09	2.10	1.94	1.64	1.43	60	62	12:34:21	RWP	PCC	Excel.	None	1499
D	1522	3	9460	3.55	3.33	3.37	3.32	3.18	2.91	2.54	2.15	60	62	12:34:27	RWP	PCC	Excel.	None	1515
D	1522	4	12625	4.72	4.40	4.52	4.34	4.24	3.88	3.38	2.88	60	62	12:34:34	RWP	PCC	Excel.	None	1522
D	1995	2	6259	4.03	3.84	3.58	3.36	3.22	2.83	2.36	2.02	60	60	12:36:01	RWP	PCC	Excel.	None	883
D	1995	3	9428	6.09	5.83	5.46	5.24	4.92	4.29	3.65	3.09	60	60	12:36:07	RWP	PCC	Excel.	None	880
D	1995	4	12595	8.13	7.76	7.35	7.00	6.62	5.76	4.93	4.13	60	60	12:36:14	RWP	PCC	Excel.	None	881
C	Comment at 1995 ft Time: 12:36:24 :Test on panel with core hole (middle hole S end)																		
D	2651	2	6221	1.95	1.88	1.79	1.67	1.65	1.54	1.36	1.21	61	61	12:37:47	RWP	PCC	Excel.	None	1815
D	2651	3	9382	2.91	2.82	2.69	2.62	2.51	2.30	2.06	1.82	61	61	12:37:53	RWP	PCC	Excel.	None	1831
D	2651	4	12542	3.86	3.73	3.57	3.48	3.35	3.09	2.78	2.47	61	61	12:38:00	RWP	PCC	Excel.	None	1848
D	2999	2	6273	2.30	2.21	2.15	2.05	2.00	1.88	1.68	1.53	60	60	12:39:09	RWP	PCC	Excel.	None	1549
D	2999	3	9429	3.44	3.30	3.20	3.16	3.04	2.81	2.54	2.29	60	60	12:39:14	RWP	PCC	Excel.	None	1559
D	2999	4	12604	4.55	4.36	4.30	4.18	4.08	3.77	3.45	3.06	60	60	12:39:21	RWP	PCC	Excel.	None	1575
D	3513	2	6175	2.28	2.18	2.04	1.92	1.82	1.61	1.36	1.20	61	60	12:40:40	RWP	PCC	Excel.	None	1539
D	3513	3	9315	3.46	3.33	3.11	2.99	2.79	2.44	2.13	1.81	61	60	12:40:45	RWP	PCC	Excel.	None	1529
D	3513	4	12517	4.67	4.46	4.23	4.03	3.80	3.30	2.90	2.46	61	60	12:40:51	RWP	PCC	Excel.	None	1525
D	4019	2	6226	1.97	1.90	1.78	1.69	1.64	1.50	1.32	1.18	61	60	12:42:17	RWP	PCC	Excel.	None	1795
D	4019	3	9367	2.98	2.87	2.68	2.61	2.50	2.23	2.01	1.78	61	60	12:42:22	RWP	PCC	Excel.	None	1790
D	4019	4	12605	3.95	3.81	3.61	3.49	3.34	3.01	2.72	2.37	61	60	12:42:29	RWP	PCC	Excel.	None	1815
D	4521	2	6260	2.19	2.08	2.00	1.88	1.86	1.68	1.50	1.32	61	61	12:43:55	RWP	PCC	Excel.	None	1629
D	4521	3	9415	3.30	3.15	3.03	2.93	2.80	2.55	2.28	2.02	61	61	12:44:01	RWP	PCC	Excel.	None	1622
D	4521	4	12612	4.40	4.19	4.09	3.91	3.76	3.43	3.09	2.73	61	61	12:44:08	RWP	PCC	Excel.	None	1629
D	5019	2	6226	2.44	2.32	2.22	2.07	2.03	1.81	1.56	1.38	62	62	12:45:32	RWP	PCC	Excel.	None	1449
D	5019	3	9378	3.68	3.51	3.37	3.26	3.07	2.73	2.43	2.08	62	62	12:45:38	RWP	PCC	Excel.	None	1448
D	5019	4	12607	4.93	4.70	4.56	4.33	4.15	3.70	3.26	2.84	62	62	12:45:44	RWP	PCC	Excel.	None	1454
D	5023	2	6219	3.35	2.73	2.75	2.53	2.36	1.98	1.67	1.40	61	61	12:46:44	RWP	PCC	Excel.	None	1054

D	5023	3	9316	4.97	4.20	4.16	3.89	3.55	3.00	2.55	2.14	61	61	12:46:50	RWP	PCC	Excel.	None	1065
D	5023	4	12522	6.57	5.69	5.56	5.17	4.75	4.01	3.42	2.88	61	61	12:46:57	RWP	PCC	Excel.	None	1084
C	Comment at 5023 ft Time: 12:47:06 :Load transfer																		
D	5512	2	6239	1.79	1.72	1.64	1.54	1.50	1.39	1.22	1.09	60	62	12:48:33	RWP	PCC	Excel.	None	1983
D	5512	3	9370	2.72	2.64	2.51	2.45	2.34	2.13	1.90	1.67	60	62	12:48:38	RWP	PCC	Excel.	None	1956
D	5512	4	12578	3.65	3.52	3.39	3.25	3.15	2.86	2.58	2.26	60	62	12:48:45	RWP	PCC	Excel.	None	1959
D	6026	2	6270	1.60	1.52	1.40	1.34	1.27	1.13	1.00	0.86	62	62	12:50:02	RWP	PCC	Excel.	None	2235
D	6026	3	9394	2.42	2.30	2.14	2.10	1.95	1.73	1.51	1.32	62	62	12:50:07	RWP	PCC	Excel.	None	2210
D	6026	4	12588	3.23	3.08	2.91	2.76	2.61	2.32	2.06	1.77	62	62	12:50:13	RWP	PCC	Excel.	None	2215
D	6488	2	6233	1.86	1.78	1.67	1.63	1.58	1.45	1.27	1.18	61	61	12:51:32	RWP	PCC	Excel.	None	1910
D	6488	3	9364	2.79	2.67	2.56	2.52	2.40	2.21	2.00	1.79	61	61	12:51:37	RWP	PCC	Excel.	None	1908
D	6488	4	12522	3.68	3.53	3.43	3.34	3.20	2.94	2.68	2.38	61	61	12:51:44	RWP	PCC	Excel.	None	1933
D	7008	2	6240	3.72	3.46	3.31	3.06	2.83	2.32	1.86	1.51	62	63	12:53:03	RWP	PCC	Excel.	None	955
D	7008	3	9383	5.67	5.29	5.09	4.77	4.36	3.59	2.91	2.30	62	63	12:53:08	RWP	PCC	Excel.	None	941
D	7008	4	12561	7.64	7.12	6.87	6.42	5.88	4.87	3.94	3.12	62	63	12:53:15	RWP	PCC	Excel.	None	935
D	7537	2	6246	3.25	3.06	2.97	2.73	2.61	2.20	1.81	1.49	62	62	12:54:41	RWP	PCC	Excel.	None	1094
D	7537	3	9376	4.95	4.66	4.54	4.32	4.00	3.37	2.82	2.29	62	62	12:54:46	RWP	PCC	Excel.	None	1077
D	7537	4	12587	6.64	6.24	6.11	5.74	5.40	4.60	3.82	3.10	62	62	12:54:53	RWP	PCC	Excel.	None	1078
D	8003	2	6192	2.30	2.29	2.12	1.97	1.93	1.68	1.44	1.25	63	64	12:56:17	RWP	PCC	Excel.	None	1531
D	8003	3	9364	3.56	3.50	3.23	3.12	2.93	2.58	2.24	1.91	63	64	12:56:23	RWP	PCC	Excel.	None	1497
D	8003	4	12563	4.80	4.68	4.37	4.18	3.96	3.51	3.06	2.61	63	64	12:56:29	RWP	PCC	Excel.	None	1490
D	8501	2	6187	2.15	2.05	1.98	1.90	1.82	1.62	1.41	1.23	63	64	12:58:08	RWP	PCC	Excel.	None	1635
D	8501	3	9316	3.30	3.14	3.02	2.93	2.79	2.49	2.20	1.89	63	64	12:58:14	RWP	PCC	Excel.	None	1606
D	8501	4	12505	4.46	4.23	4.13	3.94	3.80	3.40	3.00	2.59	63	64	12:58:20	RWP	PCC	Excel.	None	1595
D	9013	2	6203	2.85	2.58	2.50	2.30	2.22	1.92	1.63	1.39	63	64	12:59:47	RWP	PCC	Excel.	None	1236
D	9013	3	9364	4.31	3.93	3.82	3.60	3.37	2.93	2.50	2.12	63	64	12:59:52	RWP	PCC	Excel.	None	1237
D	9013	4	12556	5.73	5.22	5.14	4.80	4.53	3.93	3.37	2.84	63	64	12:59:59	RWP	PCC	Excel.	None	1245
D	9528	2	6227	2.73	2.63	2.45	2.25	2.20	1.92	1.65	1.42	63	62	13:01:35	RWP	PCC	Excel.	None	1296
D	9528	3	9390	4.12	4.01	3.72	3.56	3.33	2.93	2.53	2.15	63	62	13:01:41	RWP	PCC	Excel.	None	1295
D	9528	4	12608	5.48	5.38	4.94	4.73	4.46	3.92	3.40	2.88	63	62	13:01:48	RWP	PCC	Excel.	None	1308
D	10020	2	6238	2.78	2.68	2.51	2.36	2.30	2.06	1.80	1.56	62	62	13:03:09	RWP	PCC	Excel.	None	1278
D	10020	3	9405	4.18	4.04	3.81	3.73	3.51	3.15	2.77	2.37	62	62	13:03:15	RWP	PCC	Excel.	None	1279
D	10020	4	12566	5.56	5.36	5.11	4.92	4.72	4.22	3.72	3.17	62	62	13:03:22	RWP	PCC	Excel.	None	1284
D	10040	2	6167	3.75	3.10	3.09	2.82	2.66	2.24	1.87	1.56	62	62	13:04:46	RWP	PCC	Excel.	None	935
D	10040	3	9335	5.66	4.68	4.70	4.41	4.04	3.42	2.83	2.37	62	62	13:04:52	RWP	PCC	Excel.	None	937
D	10040	4	12508	7.54	6.20	6.31	5.85	5.42	4.53	3.82	3.16	62	62	13:04:59	RWP	PCC	Excel.	None	943
C	Comment at 10040 ft Time: 13:05:08 :Load transfer																		
D	10519	2	6188	2.55	2.53	2.36	2.25	2.24	1.94	1.63	1.39	62	61	13:06:18	RWP	PCC	Excel.	None	1381
D	10519	3	9327	3.92	3.87	3.64	3.57	3.40	3.01	2.54	2.14	62	61	13:06:23	RWP	PCC	Excel.	None	1353
D	10519	4	12534	5.25	5.16	4.89	4.75	4.57	4.03	3.44	2.89	62	61	13:06:30	RWP	PCC	Excel.	None	1358
D	11018	2	6211	1.91	1.74	1.71	1.61	1.57	1.43	1.26	1.06	63	62	13:07:53	RWP	PCC	Excel.	None	1853
D	11018	3	9389	2.90	2.66	2.62	2.52	2.43	2.17	1.93	1.61	63	62	13:07:58	RWP	PCC	Excel.	None	1842
D	11018	4	12590	3.88	3.55	3.54	3.39	3.26	2.95	2.59	2.17	63	62	13:08:04	RWP	PCC	Excel.	None	1844
D	11506	2	6138	2.40	2.37	2.14	2.01	2.00	1.80	1.56	1.32	63	63	13:09:22	RWP	PCC	Excel.	None	1453
D	11506	3	9320	3.64	3.62	3.29	3.18	3.05	2.75	2.41	2.03	63	63	13:09:28	RWP	PCC	Excel.	None	1457
D	11506	4	12483	4.84	4.82	4.45	4.27	4.09	3.70	3.25	2.73	63	63	13:09:35	RWP	PCC	Excel.	None	1466
D	12082	2	6154	1.96	1.90	1.81	1.70	1.70	1.58	1.41	1.27	63	62	13:11:03	RWP	PCC	Excel.	None	1788
D	12082	3	9356	2.97	2.84	2.77	2.73	2.61	2.39	2.17	1.94	63	62	13:11:08	RWP	PCC	Excel.	None	1790
D	12082	4	12531	3.95	3.76	3.73	3.59	3.48	3.21	2.92	2.61	63	62	13:11:15	RWP	PCC	Excel.	None	1804
D	12500	2	6191	2.53	2.41	2.33	2.22	2.16	1.97	1.73	1.49	63	60	13:12:27	RWP	PCC	Excel.	None	1392
D	12500	3	9357	3.79	3.61	3.52	3.42	3.27	2.96	2.59	2.25	63	60	13:12:32	RWP	PCC	Excel.	None	1406
D	12500	4	12525	5.05	4.79	4.74	4.56	4.39	3.96	3.51	3.01	63	60	13:12:39	RWP	PCC	Excel.	None	1411
D	13018	2	6191	1.57	1.50	1.43	1.38	1.34	1.24	1.10	0.97	64	61	13:14:10	RWP	PCC	Excel.	None	2242
D	13018	3	9356	2.37	2.25	2.20	2.15	2.05	1.87	1.68	1.48	64	61	13:14:15	RWP	PCC	Excel.	None	2242
D	13018	4	12560	3.19	3.02	2.98	2.86	2.77	2.54	2.28	2.00	64	61	13:14:22	RWP	PCC	Excel.	None	2241
D	13513	2	6233	2.24	2.12	2.02	1.91	1.89	1.67	1.46	1.27	63	63	13:15:59	RWP	PCC	Excel.	None	1579
D	13513	3	9426	3.39	3.23	3.11	3.03	2.88	2.56	2.27	1.94	63	63	13:16:04	RWP	PCC	Excel.	None	1579
D	13513	4	12625	4.55	4.31	4.21	4.05	3.90	3.50	3.08	2.64	63	63	13:16:11	RWP	PCC	Excel.	None	1578
D	14017	2	6154	2.22	2.11	2.03	1.94	1.91	1.74	1.54	1.36	62	63	13:17:43	RWP	PCC	Excel.	None	1577
D	14017	3	9319	3.34	3.19	3.13	3.04	2.90	2.63	2.35	2.08	62	63	13:17:48	RWP	PCC	Excel.	None	1586
D	14017	4	12494	4.48	4.25	4.18	4.02	3.89	3.51	3.16	2.80	62	63	13:17:56	RWP	PCC	Excel.	None	1586
D	14563	2	6177	2.60	2.51	2.44	2.31	2.32	2.09	1.83	1.58	63	62	13:19:19	RWP	PCC	Excel.	None	1350
D	14563	3	9342	3.98	3.84	3.74	3.67	3.54	3.25	2.85	2.44	63	62	13:19:25	RWP	PCC	Excel.	None	1335
D	14563	4	12552	5.30	5.12	5.02	4.85	4.77	4.37	3.86	3.30	63	62	13:19:32	RWP	PCC	Excel.	None	1346
D	15039	2	6186	2.71	2.55	2.34	2.16	2.07	1.79	1.49	1.23	62	60	13:20:52	RWP	PCC	Excel.	None	1297
D	15039	3	9355	4.13	3.89	3.59	3.38	3.16	2.72	2.29	1.90	62	60	13:20:58	RWP	PCC	Excel.	None	1289

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D	15039	4	12550	5.52	5.19	4.83	4.56	4.25	3.65	3.11	2.59	62	60	13:21:04	RWP	PCC	Excel.	None	1292
D	15045	2	6154	4.01	2.64	3.00	2.62	2.40	1.96	1.58	1.25	61	59	13:22:03	RWP	PCC	Excel.	None	872
D	15045	3	9285	6.01	3.99	4.55	4.10	3.66	2.95	2.38	1.91	61	59	13:22:08	RWP	PCC	Excel.	None	879
D	15045	4	12478	7.96	5.32	6.12	5.43	4.94	4.00	3.25	2.59	61	59	13:22:15	RWP	PCC	Excel.	None	891
C	Comment at 15045 ft Time: 13:22:25 :Loadd transfer																		
D	15504	2	6163	1.98	1.88	1.78	1.67	1.62	1.45	1.26	1.07	62	61	13:23:37	RWP	PCC	Excel.	None	1766
D	15504	3	9358	3.03	2.87	2.74	2.64	2.50	2.23	1.91	1.65	62	61	13:23:42	RWP	PCC	Excel.	None	1757
D	15504	4	12591	4.08	3.87	3.73	3.54	3.39	3.03	2.63	2.24	62	61	13:23:49	RWP	PCC	Excel.	None	1753
D	16076	2	6228	2.20	1.96	2.04	1.85	1.78	1.51	1.28	1.10	62	60	13:25:29	RWP	PCC	Excel.	None	1610
D	16076	3	9403	3.34	3.00	3.09	2.93	2.73	2.33	2.00	1.68	62	60	13:25:34	RWP	PCC	Excel.	None	1601
D	16076	4	12643	4.48	4.02	4.17	3.91	3.67	3.18	2.72	2.29	62	60	13:25:41	RWP	PCC	Excel.	None	1604
C	Comment at 16076 ft Time: 13:25:50 :N side 460th street																		
D	16497	2	6192	1.61	1.54	1.45	1.40	1.39	1.23	1.12	0.98	62	63	13:26:56	RWP	PCC	Excel.	None	2184
D	16497	3	9334	2.46	2.34	2.25	2.20	2.11	1.92	1.72	1.53	62	63	13:27:01	RWP	PCC	Excel.	None	2159
D	16497	4	12567	3.32	3.15	3.08	2.98	2.88	2.62	2.35	2.08	62	63	13:27:08	RWP	PCC	Excel.	None	2153
D	17004	2	6165	1.84	1.75	1.68	1.55	1.53	1.37	1.22	1.03	63	64	13:28:26	RWP	PCC	Excel.	None	1910
D	17004	3	9354	2.80	2.66	2.55	2.46	2.34	2.11	1.86	1.60	63	64	13:28:31	RWP	PCC	Excel.	None	1899
D	17004	4	12560	3.74	3.55	3.46	3.29	3.18	2.84	2.52	2.16	63	64	13:28:37	RWP	PCC	Excel.	None	1909
D	17507	2	6201	2.14	2.01	2.00	1.87	1.82	1.67	1.49	1.29	63	62	13:29:57	RWP	PCC	Excel.	None	1647
D	17507	3	9390	3.26	3.08	3.03	2.89	2.80	2.55	2.26	1.99	63	62	13:30:02	RWP	PCC	Excel.	None	1639
D	17507	4	12578	4.32	4.08	4.03	3.89	3.74	3.41	3.03	2.66	63	62	13:30:09	RWP	PCC	Excel.	None	1654
D	18016	2	6199	2.10	2.01	1.90	1.76	1.71	1.52	1.32	1.15	63	63	13:31:29	RWP	PCC	Excel.	None	1681
D	18016	3	9371	3.18	3.06	2.90	2.75	2.63	2.34	2.04	1.74	63	63	13:31:34	RWP	PCC	Excel.	None	1673
D	18016	4	12539	4.25	4.09	3.90	3.70	3.55	3.15	2.78	2.35	63	63	13:31:40	RWP	PCC	Excel.	None	1677
D	18495	2	6212	2.80	2.67	2.55	2.37	2.36	2.09	1.85	1.64	64	65	13:33:09	RWP	PCC	Excel.	None	1263
D	18495	3	9416	4.24	4.04	3.87	3.76	3.57	3.22	2.85	2.49	64	65	13:33:15	RWP	PCC	Excel.	None	1264
D	18495	4	12641	5.66	5.40	5.22	5.02	4.78	4.35	3.84	3.34	64	65	13:33:22	RWP	PCC	Excel.	None	1269
D	19048	2	6234	2.05	1.98	1.81	1.72	1.67	1.45	1.27	1.12	64	64	13:35:23	RWP	PCC	Excel.	None	1733
D	19048	3	9387	3.14	3.02	2.77	2.70	2.53	2.24	1.96	1.70	64	64	13:35:28	RWP	PCC	Excel.	None	1702
D	19048	4	12596	4.22	4.06	3.76	3.62	3.43	3.05	2.67	2.31	64	64	13:35:34	RWP	PCC	Excel.	None	1699
D	19511	2	6182	2.46	2.38	2.21	2.05	1.99	1.77	1.59	1.36	64	64	13:37:02	RWP	PCC	Excel.	None	1430
D	19511	3	9373	3.71	3.61	3.34	3.21	3.05	2.69	2.40	2.09	64	64	13:37:08	RWP	PCC	Excel.	None	1436
D	19511	4	12574	4.94	4.81	4.47	4.22	4.06	3.64	3.22	2.80	64	64	13:37:15	RWP	PCC	Excel.	None	1446
D	20003	2	6200	2.45	2.37	2.24	2.12	2.06	1.83	1.63	1.40	63	63	13:38:30	RWP	PCC	Excel.	None	1436
D	20003	3	9372	3.75	3.59	3.42	3.29	3.15	2.79	2.46	2.14	63	63	13:38:36	RWP	PCC	Excel.	None	1422
D	20003	4	12598	5.01	4.80	4.60	4.41	4.26	3.83	3.35	2.90	63	63	13:38:42	RWP	PCC	Excel.	None	1429
D	20023	2	6189	3.17	2.62	2.65	2.41	2.30	1.91	1.58	1.31	63	62	13:40:06	RWP	PCC	Excel.	None	1110
D	20023	3	9360	4.83	3.96	4.06	3.77	3.50	2.91	2.45	2.01	63	62	13:40:12	RWP	PCC	Excel.	None	1101
D	20023	4	12540	6.47	5.29	5.46	5.04	4.69	3.97	3.34	2.73	63	62	13:40:19	RWP	PCC	Excel.	None	1103
C	Comment at 20023 ft Time: 13:40:28 :Load Transfer																		
D	20505	2	6210	1.75	1.63	1.57	1.47	1.47	1.33	1.17	1.02	63	61	13:41:46	RWP	PCC	Excel.	None	2017
D	20505	3	9400	2.63	2.46	2.41	2.35	2.23	2.02	1.78	1.59	63	61	13:41:51	RWP	PCC	Excel.	None	2029
D	20505	4	12602	3.52	3.29	3.25	3.11	2.99	2.73	2.44	2.14	63	61	13:41:57	RWP	PCC	Excel.	None	2035
D	21004	2	6181	2.21	2.10	2.00	1.89	1.84	1.64	1.44	1.25	63	61	13:43:14	RWP	PCC	Excel.	None	1591
D	21004	3	9311	3.35	3.19	3.05	2.99	2.84	2.53	2.23	1.92	63	61	13:43:20	RWP	PCC	Excel.	None	1579
D	21004	4	12549	4.45	4.23	4.10	3.98	3.79	3.40	3.01	2.59	63	61	13:43:26	RWP	PCC	Excel.	None	1603
C	Comment at 21230 ft Time: 13:44:16 :Center 450th ave																		
D	21481	2	6143	3.19	3.01	2.90	2.69	2.58	2.21	1.79	1.43	63	61	13:45:12	RWP	PCC	Excel.	None	1094
D	21481	3	9320	4.88	4.60	4.44	4.24	3.96	3.35	2.75	2.18	63	61	13:45:17	RWP	PCC	Excel.	None	1087
D	21481	4	12487	6.54	6.14	5.98	5.68	5.33	4.53	3.73	2.94	63	61	13:45:24	RWP	PCC	Excel.	None	1086
D	22045	2	6163	3.65	3.46	3.36	3.16	3.00	2.57	2.17	1.82	63	63	13:46:57	RWP	PCC	Excel.	None	960
D	22045	3	9347	5.58	5.29	5.13	4.87	4.62	3.95	3.32	2.77	63	63	13:47:02	RWP	PCC	Excel.	None	952
D	22045	4	12546	7.46	7.07	6.90	6.57	6.21	5.32	4.49	3.75	63	63	13:47:09	RWP	PCC	Excel.	None	956
D	22517	2	6184	2.92	2.55	2.62	2.34	2.27	1.89	1.59	1.34	63	63	13:48:37	RWP	PCC	Excel.	None	1205
D	22517	3	9324	4.43	3.90	4.03	3.77	3.47	2.89	2.46	2.06	63	63	13:48:42	RWP	PCC	Excel.	None	1198
D	22517	4	12540	5.95	5.24	5.44	5.02	4.67	3.92	3.30	2.76	63	63	13:48:49	RWP	PCC	Excel.	None	1197
D	23000	2	6202	2.28	2.18	2.07	1.91	1.92	1.75	1.59	1.36	64	63	13:50:23	RWP	PCC	Excel.	None	1548
D	23000	3	9443	3.46	3.29	3.17	3.11	2.94	2.68	2.40	2.08	64	63	13:50:29	RWP	PCC	Excel.	None	1552
D	23000	4	12616	4.60	4.38	4.28	4.13	3.98	3.64	3.27	2.80	64	63	13:50:36	RWP	PCC	Excel.	None	1561
D	23498	2	6176	1.97	1.91	1.75	1.67	1.61	1.43	1.23	1.07	64	64	13:52:15	RWP	PCC	Excel.	None	1782
D	23498	3	9353	3.00	2.94	2.69	2.58	2.47	2.18	1.90	1.64	64	64	13:52:20	RWP	PCC	Excel.	None	1770
D	23498	4	12514	4.01	3.90	3.64	3.48	3.32	2.95	2.60	2.22	64	64	13:52:26	RWP	PCC	Excel.	None	1776
D	23998	2	6198	1.85	1.72	1.69	1.58	1.53	1.36	1.21	1.03	64	65	13:54:16	RWP	PCC	Excel.	None	1901
D	23998	3	9408	2.81	2.62	2.56	2.48	2.35	2.10	1.83	1.59	64	65	13:54:21	RWP	PCC	Excel.	None	1904
D	23998	4	12626	3.77	3.51	3.47	3.34	3.15	2.84	2.50	2.15	64	65	13:54:28	RWP	PCC	Excel.	None	1904
D	24522	2	6177	2.04	1.92	1.85	1.73	1.64	1.46	1.27	1.07	64	66	13:55:43	RWP	PCC	Excel.	None	1721

D	24522	3	9361	3.13	2.93	2.85	2.75	2.57	2.27	1.97	1.67	64	66	13:55:48	RWP	PCC	Excel.	None	1702
D	24522	4	12598	4.22	3.93	3.88	3.68	3.49	3.08	2.70	2.28	64	66	13:55:55	RWP	PCC	Excel.	None	1698
D	25016	2	6187	2.20	2.19	1.99	1.87	1.83	1.61	1.41	1.22	64	63	13:57:06	RWP	PCC	Excel.	None	1602
D	25016	3	9363	3.36	3.36	3.04	2.95	2.78	2.50	2.19	1.90	64	63	13:57:11	RWP	PCC	Excel.	None	1586
D	25016	4	12613	4.50	4.49	4.13	3.95	3.78	3.39	2.98	2.60	64	63	13:57:18	RWP	PCC	Excel.	None	1592
D	25023	2	6173	3.24	2.58	2.70	2.41	2.25	1.82	1.47	1.18	63	63	13:58:03	RWP	PCC	Excel.	None	1084
D	25023	3	9334	4.95	3.92	4.12	3.80	3.44	2.79	2.25	1.85	63	63	13:58:09	RWP	PCC	Excel.	None	1072
D	25023	4	12522	6.64	5.24	5.58	5.11	4.65	3.77	3.07	2.51	63	63	13:58:16	RWP	PCC	Excel.	None	1072
C	Comment at 25023 ft Time: 13:58:27 :Load Transfer																		
D	25549	2	6197	3.29	2.95	2.82	2.55	2.44	2.05	1.70	1.36	64	62	14:00:02		PCC	Excel.	None	1073
D	25549	3	9387	5.00	4.47	4.31	4.07	3.74	3.13	2.58	2.07	64	62	14:00:08		PCC	Excel.	None	1068
D	25549	4	12585	6.68	5.98	5.77	5.36	5.02	4.22	3.49	2.79	64	62	14:00:15		PCC	Excel.	None	1072
D	26120	2	6185	2.58	2.48	2.39	2.27	2.23	1.99	1.75	1.53	64	63	14:01:30	RWP	PCC	Excel.	None	1366
D	26120	3	9366	3.90	3.74	3.65	3.58	3.41	3.05	2.72	2.36	64	63	14:01:37	RWP	PCC	Excel.	None	1364
D	26120	4	12571	5.23	4.98	4.92	4.70	4.55	4.14	3.67	3.19	64	63	14:01:45	RWP	PCC	Excel.	None	1367
D	26562	2	6181	1.98	1.89	1.82	1.73	1.70	1.55	1.40	1.24	63	62	14:03:11	RWP	PCC	Excel.	None	1777
D	26562	3	9359	2.96	2.85	2.76	2.75	2.59	2.37	2.13	1.88	63	62	14:03:16	RWP	PCC	Excel.	None	1800
D	26562	4	12583	3.93	3.76	3.68	3.57	3.48	3.17	2.87	2.53	63	62	14:03:23	RWP	PCC	Excel.	None	1821
D	27033	2	6187	2.60	2.41	2.26	2.07	1.95	1.65	1.34	1.12	63	60	14:04:42	RWP	PCC	Excel.	None	1354
D	27033	3	9375	4.00	3.66	3.45	3.26	2.97	2.53	2.10	1.72	63	60	14:04:47	RWP	PCC	Excel.	None	1333
D	27033	4	12601	5.38	4.90	4.66	4.34	4.04	3.44	2.86	2.35	63	60	14:04:54	RWP	PCC	Excel.	None	1331
D	27507	2	6185	2.02	1.92	1.86	1.74	1.74	1.57	1.37	1.19	63	60	14:06:10	RWP	PCC	Excel.	None	1740
D	27507	3	9349	3.07	2.90	2.83	2.78	2.63	2.40	2.10	1.84	63	60	14:06:16	RWP	PCC	Excel.	None	1732
D	27507	4	12603	4.12	3.89	3.83	3.69	3.57	3.24	2.88	2.50	63	60	14:06:24	RWP	PCC	Excel.	None	1738
D	27989	2	6175	1.94	1.83	1.74	1.65	1.60	1.42	1.23	1.07	63	62	14:07:39	RWP	PCC	Excel.	None	1805
D	27989	3	9341	2.97	2.81	2.69	2.60	2.49	2.21	1.92	1.65	63	62	14:07:44	RWP	PCC	Excel.	None	1789
D	27989	4	12541	3.99	3.77	3.64	3.51	3.35	3.00	2.63	2.25	63	62	14:07:51	RWP	PCC	Excel.	None	1789
D	28557	2	6156	1.91	1.81	1.72	1.59	1.58	1.41	1.21	1.07	63	62	14:09:15	RWP	PCC	Excel.	None	1835
D	28557	3	9345	2.91	2.72	2.64	2.53	2.42	2.16	1.87	1.65	63	62	14:09:20	RWP	PCC	Excel.	None	1826
D	28557	4	12571	3.89	3.63	3.56	3.43	3.26	2.93	2.59	2.24	63	62	14:09:26	RWP	PCC	Excel.	None	1839
D	29006	2	6173	2.35	2.26	2.12	1.97	1.94	1.70	1.48	1.28	64	64	14:10:48	RWP	PCC	Excel.	None	1496
D	29006	3	9364	3.58	3.48	3.24	3.12	2.95	2.61	2.29	1.98	64	64	14:10:53	RWP	PCC	Excel.	None	1489
D	29006	4	12592	4.79	4.63	4.36	4.13	3.97	3.52	3.11	2.67	64	64	14:11:00	RWP	PCC	Excel.	None	1495
D	29535	2	6172	3.21	2.68	2.66	2.38	2.21	1.80	1.43	1.12	64	64	14:12:14	RWP	PCC	Excel.	None	1093
D	29535	3	9363	4.92	4.13	4.11	3.75	3.40	2.77	2.22	1.73	64	64	14:12:19	RWP	PCC	Excel.	None	1082
D	29535	4	12561	6.65	5.58	5.58	5.04	4.61	3.78	3.03	2.34	64	64	14:12:26	RWP	PCC	Excel.	None	1075
D	30044	2	6205	2.09	1.98	1.88	1.76	1.71	1.51	1.32	1.16	64	63	14:13:44	RWP	PCC	Excel.	None	1687
D	30044	3	9330	3.16	3.04	2.85	2.80	2.63	2.34	2.08	1.79	64	63	14:13:50	RWP	PCC	Excel.	None	1678
D	30044	4	12532	4.23	4.06	3.87	3.71	3.55	3.20	2.83	2.43	64	63	14:13:57	RWP	PCC	Excel.	None	1686
D	30065	2	6111	2.67	2.61	2.18	1.98	1.92	1.62	1.38	1.18	64	62	14:15:37	RWP	PCC	Excel.	None	1302
D	30065	3	9275	4.01	3.82	3.32	3.11	2.92	2.49	2.13	1.81	64	62	14:15:43	RWP	PCC	Excel.	None	1314
D	30065	4	12473	5.33	4.98	4.44	4.19	3.90	3.36	2.92	2.45	64	62	14:15:50	RWP	PCC	Excel.	None	1330
C	Comment at 30064 ft Time: 14:15:59 :Load transfer																		
D	30494	2	6147	2.13	1.99	1.97	1.89	1.80	1.56	1.32	1.13	64	63	14:17:10	RWP	PCC	Excel.	None	1641
D	30494	3	9314	3.22	3.03	3.01	2.96	2.76	2.38	2.05	1.73	64	63	14:17:17	RWP	PCC	Excel.	None	1644
D	30494	4	12499	4.30	4.05	4.06	3.93	3.72	3.22	2.76	2.33	64	63	14:17:24	RWP	PCC	Excel.	None	1652
D	31018	2	6104	2.21	2.09	1.99	1.89	1.82	1.64	1.40	1.26	65	64	14:18:52	RWP	PCC	Excel.	None	1570
D	31018	3	9282	3.38	3.20	3.08	2.94	2.81	2.51	2.19	1.91	65	64	14:18:58	RWP	PCC	Excel.	None	1562
D	31018	4	12449	4.53	4.27	4.18	3.99	3.83	3.41	3.02	2.60	65	64	14:19:05	RWP	PCC	Excel.	None	1562
D	31512	2	6096	2.17	2.04	1.94	1.82	1.80	1.58	1.37	1.20	65	63	14:20:42	RWP	PCC	Excel.	None	1598
D	31512	3	9316	3.30	3.13	3.02	2.91	2.77	2.45	2.17	1.86	65	63	14:20:47	RWP	PCC	Excel.	None	1603
D	31512	4	12513	4.42	4.18	4.10	3.88	3.74	3.32	2.94	2.52	65	63	14:20:54	RWP	PCC	Excel.	None	1609
D	32017	2	6119	2.15	2.04	1.93	1.87	1.80	1.62	1.44	1.24	65	62	14:22:14	RWP	PCC	Excel.	None	1622
D	32017	3	9280	3.27	3.09	2.98	2.95	2.77	2.48	2.21	1.91	65	62	14:22:19	RWP	PCC	Excel.	None	1616
D	32017	4	12450	4.39	4.14	4.06	3.95	3.73	3.38	3.01	2.62	65	62	14:22:26	RWP	PCC	Excel.	None	1614
D	32543	2	6158	2.05	1.94	1.85	1.77	1.72	1.52	1.34	1.18	65	63	14:23:41	RWP	PCC	Excel.	None	1707
D	32543	3	9372	3.13	2.99	2.91	2.78	2.66	2.41	2.12	1.83	65	63	14:23:46	RWP	PCC	Excel.	None	1700
D	32543	4	12562	4.19	4.00	3.93	3.73	3.61	3.24	2.88	2.50	65	63	14:23:53	RWP	PCC	Excel.	None	1706
D	33045	2	6161	2.25	2.18	2.02	1.96	1.91	1.74	1.54	1.34	64	64	14:25:19	RWP	PCC	Excel.	None	1558
D	33045	3	9339	3.40	3.28	3.19	3.06	2.91	2.66	2.36	2.08	64	64	14:25:24	RWP	PCC	Excel.	None	1560
D	33045	4	12528	4.55	4.37	4.23	4.11	3.92	3.57	3.19	2.81	64	64	14:25:31	RWP	PCC	Excel.	None	1566
D	33517	2	6151	2.41	2.36	2.27	2.17	2.17	2.01	1.81	1.66	65	63	14:26:42	RWP	PCC	Excel.	None	1452
D	33517	3	9348	3.62	3.51	3.44	3.39	3.27	3.02	2.78	2.51	65	63	14:26:49	RWP	PCC	Excel.	None	1467
D	33517	4	12539	4.81	4.66	4.63	4.50	4.36	4.06	3.73	3.36	65	63	14:26:57	RWP	PCC	Excel.	None	1481
D	34013	2	6178	2.23	2.10	2.01	1.88	1.84	1.68	1.48	1.33	64	63	14:28:15	RWP	PCC	Excel.	None	1578
D	34013	3	9363	3.37	3.20	3.04	2.98	2.78	2.53	2.27	2.01	64	63	14:28:20	RWP	PCC	Excel.	None	1578

D	34013	4	12579	4.46	4.24	4.07	3.90	3.74	3.37	3.06	2.69	64	63	14:28:27	RWP	PCC	Excel.	None	1604
D	34506	2	6194	2.55	2.32	2.35	2.21	2.11	1.82	1.59	1.35	64	63	14:30:09	RWP	PCC	Excel.	None	1379
D	34506	3	9391	3.86	3.50	3.60	3.41	3.21	2.79	2.42	2.05	64	63	14:30:14	RWP	PCC	Excel.	None	1383
D	34506	4	12592	5.15	4.66	4.85	4.60	4.29	3.76	3.28	2.76	64	63	14:30:21	RWP	PCC	Excel.	None	1391
D	35060	2	6196	2.47	2.43	2.30	2.19	2.17	1.98	1.81	1.64	64	62	14:31:59	RWP	PCC	Excel.	None	1427
D	35060	3	9435	3.72	3.63	3.51	3.48	3.31	3.07	2.79	2.49	64	62	14:32:05	RWP	PCC	Excel.	None	1440
D	35060	4	12630	4.95	4.81	4.70	4.60	4.45	4.12	3.77	3.37	64	62	14:32:12	RWP	PCC	Excel.	None	1451
C	Comment at 35130 ft Time: 14:34:01 :Deflection is not decreasing																		
D	35130	2	6147	5.54	1.46	4.36	3.94	3.63	3.00	2.49	2.03	62	63	14:34:04	RWP	PCC	Excel.	None	630
C	Comment at 35130 ft Time: 14:34:09 :Deflection is not decreasing																		
D	35130	3	9337	8.39	2.13	6.68	6.14	5.52	4.56	3.81	3.13	62	63	14:34:10	RWP	PCC	Excel.	None	632
C	Comment at 35130 ft Time: 14:34:17 :Deflection is not decreasing																		
D	35130	4	12501	11.17	2.75	9.00	8.18	7.41	6.15	5.14	4.23	62	63	14:34:21	RWP	PCC	Excel.	None	636
C	Comment at 35129 ft Time: 14:34:30 :Load Transfer																		
D	35519	2	6163	2.37	2.33	2.16	2.07	1.99	1.78	1.56	1.38	63	62	14:35:27	RWP	PCC	Excel.	None	1476
D	35519	3	9350	3.60	3.52	3.26	3.20	3.04	2.71	2.42	2.11	63	62	14:35:34	RWP	PCC	Excel.	None	1478
D	35519	4	12565	4.77	4.56	4.40	4.27	4.07	3.70	3.29	2.86	63	62	14:35:42	RWP	PCC	Excel.	None	1498
D	36021	2	6194	2.53	2.40	2.33	2.24	2.16	1.91	1.69	1.51	63	62	14:37:05	RWP	PCC	Excel.	None	1391
D	36021	3	9396	3.81	3.63	3.52	3.40	3.26	2.92	2.62	2.28	63	62	14:37:11	RWP	PCC	Excel.	None	1402
D	36021	4	12626	5.04	4.79	4.67	4.54	4.33	3.92	3.50	3.08	63	62	14:37:18	RWP	PCC	Excel.	None	1425
C	Comment at 36021 ft Time: 14:37:27 :N Core hole slab just before turn																		
D	36570	2	6225	2.21	2.09	2.06	1.94	1.94	1.79	1.69	1.49	63	63	14:39:34	RWP	PCC	Excel.	None	1599
D	36570	3	9430	3.33	3.12	3.11	3.10	2.94	2.74	2.56	2.23	63	63	14:39:40	RWP	PCC	Excel.	None	1612
D	36570	4	12645	4.42	4.14	4.16	4.05	3.93	3.68	3.46	2.99	63	63	14:39:47	RWP	PCC	Excel.	None	1628
C	Comment at 36570 ft Time: 14:39:56 :EB just after turn																		
D	37001	2	6236	2.68	2.41	2.58	2.40	2.36	2.10	1.67	1.46	63	64	14:41:01	RWP	PCC	Excel.	None	1325
D	37001	3	9431	4.04	3.67	3.92	3.83	3.58	3.19	2.56	2.21	63	64	14:41:07	RWP	PCC	Excel.	None	1328
D	37001	4	12632	5.37	4.85	5.27	5.04	4.78	4.27	3.45	2.95	63	64	14:41:14	RWP	PCC	Excel.	None	1337
C	Comment at 37526 ft Time: 14:48:03 :Deflection is not decreasing																		
D	37526	2	6195	4.04	3.52	3.90	3.74	3.82	2.15	1.81	1.55	61	64	14:48:04	RWP	PCC	Excel.	None	873
C	Comment at 37526 ft Time: 14:48:09 :Deflection is not decreasing																		
D	37526	3	9385	6.12	5.35	5.86	5.79	5.68	3.58	2.99	2.44	61	64	14:48:10	RWP	PCC	Excel.	None	871
C	Comment at 37526 ft Time: 14:48:17 :Deflection is not decreasing																		
D	37526	4	12558	8.14	7.14	7.80	7.60	7.42	5.11	4.20	3.40	61	64	14:48:18	RWP	PCC	Excel.	None	877
D	37987	2	6227	2.60	2.37	2.53	2.39	2.25	1.93	1.67	1.38	61	61	14:49:29	RWP	PCC	Excel.	None	1361
D	37987	3	9354	3.94	3.62	3.85	3.68	3.46	2.98	2.57	2.12	61	61	14:49:35	RWP	PCC	Excel.	None	1349
D	37987	4	12561	5.26	4.79	5.17	4.96	4.64	4.01	3.43	2.86	61	61	14:49:42	RWP	PCC	Excel.	None	1357
D	38524	2	6226	2.68	2.42	2.27	2.04	1.91	1.58	1.29	1.04	61	62	14:50:59	RWP	PCC	Excel.	None	1322
D	38524	3	9385	4.10	3.72	3.52	3.26	2.98	2.45	2.02	1.64	61	62	14:51:04	RWP	PCC	Excel.	None	1302
D	38524	4	12618	5.56	5.03	4.78	4.43	4.05	3.36	2.77	2.20	61	62	14:51:11	RWP	PCC	Excel.	None	1289
D	39021	2	6297	2.04	1.91	1.88	1.79	1.76	1.59	1.37	1.17	60	62	14:52:27	RWP	PCC	Excel.	None	1758
D	39021	3	9450	3.06	2.86	2.85	2.81	2.69	2.45	2.13	1.77	60	62	14:52:32	RWP	PCC	Excel.	None	1757
D	39021	4	12624	4.08	3.81	3.84	3.74	3.62	3.33	2.89	2.41	60	62	14:52:39	RWP	PCC	Excel.	None	1761
D	39474	2	6232	2.03	1.93	1.86	1.76	1.75	1.56	1.40	1.22	61	63	14:53:49	RWP	PCC	Excel.	None	1744
D	39474	3	9401	3.08	2.94	2.86	2.79	2.66	2.41	2.16	1.88	61	63	14:53:54	RWP	PCC	Excel.	None	1733
D	39474	4	12589	4.13	3.96	3.88	3.75	3.61	3.28	2.95	2.57	61	63	14:54:00	RWP	PCC	Excel.	None	1732
D	40024	2	6231	1.95	1.86	1.76	1.66	1.60	1.45	1.26	1.07	61	60	14:55:08	RWP	PCC	Excel.	None	1817
D	40024	3	9399	2.94	2.78	2.66	2.60	2.45	2.18	1.93	1.65	61	60	14:55:13	RWP	PCC	Excel.	None	1818
D	40024	4	12587	3.91	3.70	3.58	3.44	3.29	2.92	2.59	2.22	61	60	14:55:19	RWP	PCC	Excel.	None	1829
D	40501	2	6163	5.88	4.91	4.55	4.10	3.67	2.87	2.24	1.78	62	61	14:58:02	RWP	PCC	Excel.	None	596
D	40501	3	9316	8.59	7.20	7.24	6.56	5.86	4.58	3.58	2.82	62	61	14:58:08	RWP	PCC	Excel.	None	617
D	40501	4	12485	11.10	9.32	9.87	8.96	8.01	6.26	4.91	3.84	62	61	14:58:15	RWP	PCC	Excel.	None	640
C	Comment at 40654 ft Time: 15:00:04 :Begin S end overpass																		
C	Comment at 41562 ft Time: 15:01:20 :End N Overpass																		
D	41609	2	6095	11.81	9.49	4.62	4.11	3.63	2.77	2.16	1.68	61	62	15:01:58	RWP	PCC	Excel.	None	293
D	41609	3	9232	16.98	13.64	7.28	6.54	5.73	4.41	3.45	2.67	61	62	15:02:05	RWP	PCC	Excel.	None	309
D	41609	4	12312	21.74	17.46	10.05	8.98	7.90	6.12	4.75	3.69	61	62	15:02:12	RWP	PCC	Excel.	None	322
C	Comment at 41668 ft Time: 15:03:53 :Deflection is not decreasing																		
D	41668	2	6134	8.06	2.02	6.38	5.61	4.99	3.82	2.89	2.17	61	61	15:03:54	RWP	PCC	Excel.	None	433
C	Comment at 41668 ft Time: 15:04:00 :Deflection is not decreasing																		
D	41668	3	9254	12.43	3.01	9.91	8.85	7.73	5.93	4.52	3.36	61	61	15:04:02	RWP	PCC	Excel.	None	423
C	Comment at 41668 ft Time: 15:04:09 :Deflection is not decreasing																		
D	41668	4	12391	16.76	4.10	13.40	11.89	10.47	8.04	6.12	4.58	61	61	15:04:10	RWP	PCC	Excel.	None	420
C	Comment at 41992 ft Time: 15:04:56 :Load Transfer																		
D	41992	2	6178	2.65	2.47	2.43	2.24	2.13	1.86	1.60	1.37	62	62	15:05:30	RWP	PCC	Excel.	None	1327
D	41992	3	9353	4.03	3.75	3.71	3.53	3.30	2.86	2.49	2.12	62	62	15:05:36	RWP	PCC	Excel.	None	1321

D	41992	4	12553	5.41	5.02	5.02	4.70	4.46	3.92	3.38	2.88	62	62	15:05:43	RWP	PCC	Excel.	None	1321
D	42508	2	6175	2.22	2.25	1.99	1.86	1.80	1.60	1.43	1.23	62	61	15:07:03	RWP	PCC	Excel.	None	1581
D	42508	3	9371	3.36	3.38	3.05	2.94	2.78	2.47	2.20	1.90	62	61	15:07:08	RWP	PCC	Excel.	None	1584
D	42508	4	12578	4.48	4.48	4.09	3.86	3.74	3.36	2.96	2.58	62	61	15:07:15	RWP	PCC	Excel.	None	1596
D	43013	2	6162	2.65	2.59	2.43	2.26	2.25	2.01	1.77	1.59	62	61	15:08:37	RWP	PCC	Excel.	None	1324
D	43013	3	9347	4.04	3.97	3.72	3.61	3.44	3.10	2.78	2.46	62	61	15:08:42	RWP	PCC	Excel.	None	1314
D	43013	4	12575	5.38	5.28	4.97	4.79	4.62	4.19	3.75	3.34	62	61	15:08:49	RWP	PCC	Excel.	None	1328
D	43517	2	6183	2.77	2.75	2.55	2.41	2.35	2.14	1.88	1.63	62	58	15:10:05	RWP	PCC	Excel.	None	1271
D	43517	3	9355	4.19	4.17	3.85	3.72	3.56	3.22	2.86	2.50	62	58	15:10:11	RWP	PCC	Excel.	None	1268
D	43517	4	12541	5.54	5.49	5.13	4.96	4.75	4.29	3.83	3.34	62	58	15:10:18	RWP	PCC	Excel.	None	1286
D	44014	2	6215	2.01	1.89	1.84	1.74	1.74	1.60	1.42	1.30	62	58	15:11:30	RWP	PCC	Excel.	None	1762
D	44014	3	9379	3.03	2.88	2.82	2.75	2.66	2.44	2.23	1.99	62	58	15:11:35	RWP	PCC	Excel.	None	1760
D	44014	4	12531	4.04	3.81	3.76	3.67	3.57	3.31	3.00	2.68	62	58	15:11:41	RWP	PCC	Excel.	None	1764
D	44546	2	6208	2.43	2.35	2.24	2.08	2.06	1.87	1.68	1.48	62	59	15:13:02	RWP	PCC	Excel.	None	1454
D	44546	3	9401	3.66	3.53	3.38	3.29	3.14	2.84	2.57	2.26	62	59	15:13:08	RWP	PCC	Excel.	None	1459
D	44546	4	12601	4.88	4.70	4.56	4.39	4.25	3.85	3.48	3.05	62	59	15:13:16	RWP	PCC	Excel.	None	1467
D	45004	2	6233	2.40	2.34	2.24	2.14	2.14	1.98	1.80	1.65	62	60	15:14:34	RWP	PCC	Excel.	None	1478
D	45004	3	9402	3.61	3.48	3.41	3.35	3.24	3.01	2.78	2.53	62	60	15:14:40	RWP	PCC	Excel.	None	1483
D	45004	4	12616	4.80	4.62	4.58	4.43	4.33	4.03	3.73	3.39	62	60	15:14:47	RWP	PCC	Excel.	None	1494
D	45008	2	6210	3.07	3.00	2.63	2.47	2.39	2.09	1.81	1.59	62	60	15:15:36	RWP	PCC	Excel.	None	1151
D	45008	3	9391	4.53	4.48	3.99	3.82	3.60	3.17	2.79	2.40	62	60	15:15:42	RWP	PCC	Excel.	None	1179
D	45008	4	12599	6.05	5.96	5.37	5.08	4.84	4.28	3.80	3.27	62	60	15:15:49	RWP	PCC	Excel.	None	1185
C	Comment at 45008 ft Time: 15:15:59 :Load transfer																		
D	45503	2	6194	2.38	2.26	2.24	2.17	2.14	1.96	1.76	1.52	62	60	15:17:02	RWP	PCC	Excel.	None	1480
D	45503	3	9382	3.61	3.41	3.42	3.35	3.25	3.03	2.73	2.33	62	60	15:17:08	RWP	PCC	Excel.	None	1478
D	45503	4	12585	4.80	4.55	4.58	4.52	4.38	4.08	3.70	3.17	62	60	15:17:15	RWP	PCC	Excel.	None	1490
D	46035	2	6183	3.25	3.22	3.04	2.92	2.90	2.57	2.22	1.91	61	59	15:18:23	RWP	PCC	Excel.	None	1082
D	46035	3	9353	4.92	4.90	4.62	4.54	4.44	3.93	3.36	2.92	61	59	15:18:30	RWP	PCC	Excel.	None	1080
D	46035	4	12530	6.63	6.61	6.27	6.15	6.01	5.32	4.62	3.99	61	59	15:18:37	RWP	PCC	Excel.	None	1074
D	46545	2	6230	2.22	2.11	2.13	2.07	2.05	1.98	1.86	1.78	61	60	15:19:50	RWP	PCC	Excel.	None	1599
D	46545	3	9426	3.34	3.17	3.23	3.19	3.13	2.96	2.82	2.68	61	60	15:19:56	RWP	PCC	Excel.	None	1604
D	46545	4	12627	4.42	4.17	4.31	4.24	4.17	3.96	3.76	3.56	61	60	15:20:03	RWP	PCC	Excel.	None	1625
C	Comment at 47006 ft Time: 15:21:17 :Deflection is not decreasing																		
D	47006	2	6186	2.51	2.31	2.50	2.46	2.53	2.57	2.62	2.71	61	58	15:21:20	RWP	PCC	Excel.	None	1403
C	Comment at 47006 ft Time: 15:21:25 :Deflection is not decreasing																		
D	47006	3	9341	3.82	3.48	3.85	3.91	3.94	4.01	4.09	4.22	61	58	15:21:29	RWP	PCC	Excel.	None	1389
C	Comment at 47006 ft Time: 15:21:36 :Deflection is not decreasing																		
D	47006	4	12573	5.11	4.66	5.20	5.24	5.33	5.43	5.56	5.75	61	58	15:21:38	RWP	PCC	Excel.	None	1398
D	47526	2	6180	3.37	3.12	2.98	2.78	2.63	2.28	1.95	1.62	61	58	15:22:52	RWP	PCC	Excel.	None	1043
D	47526	3	9386	5.12	4.74	4.54	4.27	4.00	3.46	2.95	2.47	61	58	15:22:58	RWP	PCC	Excel.	None	1043
D	47526	4	12577	6.82	6.33	6.09	5.75	5.38	4.65	3.97	3.32	61	58	15:23:05	RWP	PCC	Excel.	None	1049
D	47996	2	6239	1.67	1.59	1.52	1.46	1.46	1.35	1.21	1.09	61	58	15:24:28	RWP	PCC	Excel.	None	2129
D	47996	3	9455	2.50	2.36	2.31	2.26	2.20	2.03	1.83	1.66	61	58	15:24:33	RWP	PCC	Excel.	None	2151
D	47996	4	12687	3.32	3.13	3.10	3.03	2.93	2.72	2.49	2.22	61	58	15:24:39	RWP	PCC	Excel.	None	2171
D	48512	2	6173	2.13	2.08	1.98	1.88	1.88	1.74	1.58	1.42	61	58	15:25:57	RWP	PCC	Excel.	None	1647
D	48512	3	9333	3.25	3.11	3.01	2.97	2.85	2.63	2.40	2.15	61	58	15:26:03	RWP	PCC	Excel.	None	1635
D	48512	4	12555	4.30	4.12	4.03	3.95	3.80	3.53	3.21	2.88	61	58	15:26:10	RWP	PCC	Excel.	None	1661
D	49013	2	6211	2.08	1.97	1.92	1.82	1.77	1.61	1.39	1.17	61	59	15:27:25	RWP	PCC	Excel.	None	1697
D	49013	3	9415	3.20	3.01	2.97	2.88	2.75	2.52	2.21	1.84	61	59	15:27:30	RWP	PCC	Excel.	None	1671
D	49013	4	12641	4.31	4.04	4.02	3.91	3.75	3.42	3.03	2.52	61	59	15:27:37	RWP	PCC	Excel.	None	1667
D	49500	2	6222	1.51	1.41	1.38	1.32	1.33	1.23	1.09	0.99	61	58	15:28:51	RWP	PCC	Excel.	None	2348
D	49500	3	9388	2.29	2.16	2.11	2.09	1.99	1.87	1.69	1.54	61	58	15:28:56	RWP	PCC	Excel.	None	2327
D	49500	4	12638	3.06	2.85	2.86	2.80	2.70	2.52	2.30	2.10	61	58	15:29:02	RWP	PCC	Excel.	None	2352
D	49996	2	6266	1.89	1.81	1.73	1.63	1.57	1.43	1.28	1.14	61	59	15:30:15	RWP	PCC	Excel.	None	1887
D	49996	3	9431	2.87	2.75	2.62	2.53	2.43	2.21	1.98	1.75	61	59	15:30:20	RWP	PCC	Excel.	None	1869
D	49996	4	12663	3.85	3.67	3.53	3.42	3.28	2.98	2.71	2.37	61	59	15:30:26	RWP	PCC	Excel.	None	1872
C	Comment at 50001 ft Time: 15:31:12 :Deflection is not decreasing																		
D	50001	2	6196	5.22	2.34	3.36	2.77	2.46	1.99	1.56	1.23	61	59	15:31:13	RWP	PCC	Excel.	None	675
C	Comment at 50001 ft Time: 15:31:19 :Deflection is not decreasing																		
D	50001	3	9350	7.45	3.53	4.88	4.19	3.68	2.97	2.36	1.87	61	59	15:31:20	RWP	PCC	Excel.	None	713
C	Comment at 50001 ft Time: 15:31:27 :Deflection is not decreasing																		
D	50001	4	12543	9.29	4.72	6.28	5.41	4.79	3.90	3.13	2.47	61	59	15:31:29	RWP	PCC	Excel.	None	768
C	Comment at 50544 ft Time: 15:32:51 :Deflection is not decreasing																		
D	50544	2	6199	4.64	5.21	3.70	3.29	2.97	2.29	1.73	1.34	61	59	15:32:53	RWP	PCC	Excel.	None	759
C	Comment at 50544 ft Time: 15:32:59 :Deflection is not decreasing																		
D	50544	3	9358	7.02	7.87	5.62	5.04	4.52	3.51	2.71	2.06	61	59	15:33:00	RWP	PCC	Excel.	None	758

```
C  Comment at 50544 ft  Time: 15:33:07 :Deflection is not decreasing
D   50544   4 12552   9.09  10.11   7.36   6.65   5.96   4.66   3.61   2.75   61   59 15:33:08 RWP   PCC   Excel.   None   785
```

Brooklyn Southbound, May 2009


```
IKUAB FWD FILE     : Brooklyn  SB Cable.fwd
HProject No.       : Brooklyn
HLocation          : Brooklyn
HClient            : Cable
HStart Station     : test
HDirection         : test
HEnd Station       :
HWeather           : cloudy drizzle
HOperator          : HG

IDate Created      : 5/7/2009
IVersion           : 2.3.11
ILoad Mode         : 1        (SHRP 8+8 buffers, 0 plates)
IPlate Radius      : 5.91     (in)
IExtra Field Set   : Example Road
IDrop Sequence     : 2123
INo of drops       : 1111
IRecord Drop?      : NYYY
IDrop Height       :    1     2     3     4
IImpact Load       :  6003  9005 12007 16009 lbf
ISensor Number     :     0      1      2      3      4      5      6      7      8
ISensor Distance   :   0.00  12.00  12.00  18.00  24.00  36.00  48.00  60.00  59.06 (in)
ISensor Position   : CENTER  FRONT BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :     0 ft
ITestpoint spacing:  1000 ft
```

J	Distance ft	Imp Num	Load lbf	D0 µm	D1 µm	D2 µm	D3 µm	D4 µm	D5 µm	D6 µm	D7 µm	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	0	2	5953	106	98	94	85	79	61	46	36	64	70	12:35:34	RWP	AC	Excel.	None	814
D	0	3	9159	166	154	149	139	124	98	73	57	64	70	12:35:40	RWP	AC	Excel.	None	797
D	0	4	12384	226	210	205	190	170	134	101	79	64	70	12:35:47	RWP	AC	Excel.	None	792
D	-987	2	5972	103	94	85	75	69	53	40	30	64	71	12:38:43	RWP	PCC	Good	None	835
D	-987	3	9210	163	148	135	123	108	83	63	47	64	71	12:38:49	RWP	PCC	Good	None	818
D	-987	4	12491	223	204	186	166	149	115	88	65	64	71	12:38:56	RWP	PCC	Good	None	808
D	-2049	2	5963	121	115	100	88	78	59	44	32	64	69	12:40:58	RWP	PCC	Good	None	711
D	-2049	3	9182	191	181	159	143	125	94	69	50	64	69	12:41:03	RWP	PCC	Good	None	694
D	-2049	4	12405	263	250	220	195	172	130	96	70	64	69	12:41:10	RWP	PCC	Good	None	681
D	-2110	2	5963	109	98	98	88	82	65	52	40	63	68	12:43:05	CTR	PCC	Good	None	794
D	-2110	3	9150	168	152	152	141	127	102	81	63	63	68	12:43:11	CTR	PCC	Good	None	785
D	-2110	4	12411	229	207	209	192	172	140	111	87	63	68	12:43:18	CTR	PCC	Good	None	781
D	-2967	2	5919	185	144	148	129	115	87	64	46	63	68	12:45:16	RWP	PCC	Good	None	463
D	-2967	3	9089	292	230	234	209	183	139	103	74	63	68	12:45:22	RWP	PCC	Good	None	450
D	-2967	4	12317	402	321	326	289	254	194	144	104	63	68	12:45:29	RWP	PCC	Good	None	442
D	-3028	2	5971	110	100	99	90	84	66	52	38	63	68	12:46:18	CTR	PCC	Good	None	787
D	-3028	3	9162	171	156	155	145	131	105	81	60	63	68	12:46:26	CTR	PCC	Good	None	774
D	-3028	4	12432	234	212	213	198	179	145	112	85	63	68	12:46:34	CTR	PCC	Good	None	766
D	-3967	2	5962	155	146	124	107	95	71	52	37	63	67	12:48:45	RWP	PCC	Good	None	557
D	-3967	3	9124	243	229	195	172	150	111	81	59	63	67	12:48:51	RWP	PCC	Good	None	541
D	-3967	4	12331	335	312	268	236	205	153	111	81	63	67	12:48:58	RWP	PCC	Good	None	532
D	-3988	2	5977	120	110	108	98	91	72	56	42	62	67	12:49:42	CTR	PCC	Good	None	718
D	-3988	3	9152	187	172	168	156	142	112	88	66	62	67	12:49:48	CTR	PCC	Good	None	705
D	-3988	4	12411	257	235	233	215	195	157	121	93	62	67	12:49:55	CTR	PCC	Good	None	697
D	-5042	2	5934	150	143	128	114	105	85	67	52	63	67	12:51:47	RWP	PCC	Good	None	571
D	-5042	3	9073	234	222	200	182	164	132	104	82	63	67	12:51:53	RWP	PCC	Good	None	561
D	-5042	4	12345	319	302	272	249	224	181	142	113	63	67	12:52:00	RWP	PCC	Good	None	559
D	-5069	2	5948	124	114	114	105	97	79	64	50	63	67	12:52:45	CTR	PCC	Good	None	695
D	-5069	3	9136	194	180	179	169	153	126	102	80	63	67	12:52:51	CTR	PCC	Good	None	679
D	-5069	4	12393	266	246	245	231	211	174	140	111	63	67	12:52:59	CTR	PCC	Good	None	674
D	-6120	2	5943	165	158	135	118	106	81	59	44	63	66	12:54:54	RWP	PCC	Good	None	520
D	-6120	3	9084	257	248	212	189	167	127	93	69	63	66	12:55:00	RWP	PCC	Good	None	510
D	-6120	4	12299	351	337	289	259	227	173	128	94	63	66	12:55:07	RWP	PCC	Good	None	506

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D	-6148	2	5972	121	113	110	100	93	75	59	45	63	66	12:55:53	CTR	PCC	Good	None	713
D	-6148	3	9150	189	175	172	160	145	119	92	71	63	66	12:55:58	CTR	PCC	Good	None	701
D	-6148	4	12426	259	239	237	220	201	163	128	98	63	66	12:56:05	CTR	PCC	Good	None	693
D	-7200	2	5941	172	160	143	129	116	92	71	54	63	66	12:58:23	RWP	PCC	Good	None	498
D	-7200	3	9086	270	250	224	203	182	143	111	85	63	66	12:58:29	RWP	PCC	Good	None	487
D	-7200	4	12318	372	342	310	282	250	198	154	118	63	66	12:58:36	RWP	PCC	Good	None	479
D	-7224	2	6005	135	126	122	112	104	85	68	52	62	65	12:59:25	CTR	PCC	Good	None	641
D	-7224	3	9177	210	196	191	179	164	134	107	83	62	65	12:59:31	CTR	PCC	Good	None	632
D	-7224	4	12401	287	268	263	245	223	183	146	114	62	65	12:59:38	CTR	PCC	Good	None	623
D	-8186	2	5925	128	118	117	104	98	79	62	47	63	67	13:01:34	CTR	PCC	Good	None	667
D	-8186	3	9153	201	185	183	170	155	126	97	74	63	67	13:01:40	CTR	PCC	Good	None	658
D	-8186	4	12372	274	251	251	232	211	172	135	102	63	67	13:01:47	CTR	PCC	Good	None	652
D	-8904	2	5949	150	140	129	110	100	77	59	44	62	67	13:03:53	RWP	PCC	Good	None	572
D	-8904	3	9127	235	220	202	178	157	121	92	69	62	67	13:03:59	RWP	PCC	Good	None	560
D	-8904	4	12353	323	301	273	243	215	166	127	94	62	67	13:04:06	RWP	PCC	Good	None	552
D	-8930	2	5930	121	112	111	100	93	74	59	46	62	67	13:04:46	CTR	PCC	Good	None	707
D	-8930	3	9121	188	174	172	161	144	116	92	71	62	67	13:04:52	CTR	PCC	Good	None	699
D	-8930	4	12390	258	237	237	219	198	161	128	98	62	67	13:04:59	CTR	PCC	Good	None	693
C	Comment at -10847 ft Time: 13:08:10 :Deflection is not decreasing																		
D	-10847	2	5967	197	106	149	127	112	82	60	45	63	67	13:08:15	RWP	PCC	Good	None	437
C	Comment at -10847 ft Time: 13:08:21 :Deflection is not decreasing																		
D	-10847	3	9105	303	168	230	200	173	126	91	68	63	67	13:08:23	RWP	PCC	Good	None	435
C	Comment at -10847 ft Time: 13:08:30 :Deflection is not decreasing																		
D	-10847	4	12330	413	233	316	275	235	172	125	93	63	67	13:08:32	RWP	PCC	Good	None	431
D	-10875	2	5944	116	107	106	95	89	73	56	44	62	68	13:09:20	CTR	PCC	Good	None	741
D	-10875	3	9159	180	165	164	153	139	112	88	69	62	68	13:09:27	CTR	PCC	Good	None	736
D	-10875	4	12400	245	225	224	207	188	153	121	93	62	68	13:09:35	CTR	PCC	Good	None	730
D	-12064	2	5933	152	141	139	126	116	93	70	52	63	66	13:11:38	CTR	PCC	Good	None	565
D	-12064	3	9101	238	221	218	201	183	147	112	83	63	66	13:11:44	CTR	PCC	Good	None	553
D	-12064	1	12296	326	300	297	274	249	200	153	113	62	67	13:12:59	CTR	PCC	Good	None	545
D	-13015	2	5891	173	149	142	125	113	87	68	51	63	66	13:15:36	RWP	PCC	Good	None	491
D	-13015	3	9040	271	232	222	200	177	138	106	80	63	66	13:15:41	RWP	PCC	Good	None	482
D	-13015	4	12274	372	317	306	275	242	190	147	112	63	66	13:15:49	RWP	PCC	Good	None	476
D	-13064	2	5926	131	122	121	112	106	88	72	57	62	66	13:16:35	CTR	PCC	Good	None	655
D	-13064	3	9095	203	190	189	178	165	138	113	90	62	66	13:16:41	CTR	PCC	Good	None	647
D	-13064	4	12317	280	260	261	245	227	192	157	125	62	66	13:16:48	CTR	PCC	Good	None	635
D	-13993	2	5882	146	137	134	125	117	97	78	61	63	67	13:18:28	CTR	PCC	Good	None	583
D	-13993	3	9037	225	210	209	197	182	151	122	95	63	67	13:18:35	CTR	PCC	Good	None	580
D	-13993	4	12246	308	287	287	270	248	207	168	131	63	67	13:18:43	CTR	PCC	Good	None	574
C	Comment at -14986 ft Time: 13:20:51 :Deflection is not decreasing																		
D	-14986	2	5818	312	136	243	211	189	141	104	78	63	67	13:20:55	RWP	PCC	Good	None	270
C	Comment at -14986 ft Time: 13:21:00 :Deflection is not decreasing																		
D	-14986	3	8916	483	206	377	334	294	221	163	121	63	67	13:21:02	RWP	PCC	Good	None	266
C	Comment at -14986 ft Time: 13:21:10 :Deflection is not decreasing																		
D	-14986	4	12095	654	275	512	453	397	299	224	165	63	67	13:21:11	RWP	PCC	Good	None	267
D	-15007	2	5893	159	149	147	135	128	107	86	69	62	67	13:22:07	CTR	PCC	Good	None	536
D	-15007	3	8978	245	230	227	213	198	165	133	106	62	67	13:22:12	CTR	PCC	Good	None	529
D	-15007	4	12273	336	314	313	292	271	226	183	146	62	67	13:22:20	CTR	PCC	Good	None	528
D	-16021	2	5937	160	148	150	138	131	109	88	70	63	69	13:23:59	CTR	PCC	Good	None	537
D	-16021	3	9092	247	227	231	216	202	169	137	109	63	69	13:24:05	CTR	PCC	Good	None	532
D	-16021	4	12338	333	306	312	293	272	229	185	148	63	69	13:24:13	CTR	PCC	Good	None	535
C	Comment at -17171 ft Time: 13:26:07 :Deflection is not decreasing																		
D	-17171	2	5888	258	136	171	146	128	92	67	48	63	70	13:26:08	RWP	PCC	Good	None	329
C	Comment at -17171 ft Time: 13:26:31 :Deflection is not decreasing																		
D	-17171	2	5898	258	136	171	145	128	92	66	47	63	69	13:26:32	RWP	PCC	Good	None	330
C	Comment at -17171 ft Time: 13:26:38 :Deflection is not decreasing																		
D	-17171	3	9004	392	215	267	232	200	145	104	74	63	69	13:26:39	RWP	PCC	Good	None	332
C	Comment at -17171 ft Time: 13:26:46 :Deflection is not decreasing																		
D	-17171	4	12241	530	296	368	318	274	200	145	103	63	69	13:26:47	RWP	PCC	Good	None	334
D	-17196	2	5912	129	119	116	106	98	79	62	48	63	69	13:27:42	CTR	PCC	Good	None	660
D	-17196	3	9053	201	184	181	169	152	122	96	74	63	69	13:27:49	CTR	PCC	Good	None	651
D	-17196	4	12333	274	251	249	230	208	167	131	101	63	69	13:27:57	CTR	PCC	Good	None	649
D	-17962	2	5954	135	127	123	113	104	85	65	51	64	70	13:29:31	CTR	PCC	Good	None	635

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D	-17962	3	9100	210	197	191	178	162	132	103	79	64	70	13:29:37	CTR	PCC	Good	None	626
D	-17962	4	12345	288	268	263	243	221	181	143	109	64	70	13:29:45	CTR	PCC	Good	None	619
D	-19017	2	5937	124	112	112	99	92	72	54	40	64	69	13:31:23	CTR	PCC	Good	None	690
D	-19017	3	9127	194	176	175	160	143	113	85	63	64	69	13:31:30	CTR	PCC	Good	None	681
D	-19017	4	12367	264	239	239	218	196	155	117	86	64	69	13:31:38	CTR	PCC	Good	None	678
D	-20004	2	5948	112	100	101	91	83	64	48	35	64	69	13:33:14	CTR	PCC	Good	None	767
D	-20004	3	9119	177	158	160	147	131	103	78	57	64	69	13:33:20	CTR	PCC	Good	None	746
D	-20004	4	12404	245	218	222	203	183	144	109	80	64	69	13:33:28	CTR	PCC	Good	None	732
D	-21043	2	5945	110	101	100	91	84	67	52	39	63	69	13:35:34	CTR	PCC	Good	None	779
D	-21043	3	9104	173	157	158	146	132	106	82	62	63	69	13:35:41	CTR	PCC	Good	None	761
D	-21043	4	12411	238	216	218	200	182	147	113	86	63	69	13:35:49	CTR	PCC	Good	None	753
D	-22107	2	5950	111	101	100	90	84	65	50	38	64	68	13:37:35	CTR	PCC	Good	None	774
D	-22107	3	9124	174	159	157	146	131	103	79	61	64	68	13:37:41	CTR	PCC	Good	None	756
D	-22107	4	12355	240	218	217	198	180	143	110	84	64	68	13:37:49	CTR	PCC	Good	None	742
C	Comment at -23080 ft Time: 13:40:37 :Deflection is not decreasing																		
D	-23080	2	5924	239	74	165	139	119	82	56	38	63	68	13:40:39	RWP	PCC	Good	None	359
C	Comment at -23080 ft Time: 13:40:45 :Deflection is not decreasing																		
D	-23080	3	9034	368	122	258	221	186	130	88	60	63	68	13:40:46	RWP	PCC	Good	None	355
C	Comment at -23080 ft Time: 13:40:54 :Deflection is not decreasing																		
D	-23080	4	12267	499	175	354	303	254	179	123	84	63	68	13:40:55	RWP	PCC	Good	None	355
D	-23108	2	5930	116	105	105	95	88	71	55	42	63	69	13:41:39	CTR	PCC	Good	None	738
D	-23108	3	9126	182	165	165	154	139	112	87	66	63	69	13:41:46	CTR	PCC	Good	None	726
D	-23108	4	12391	249	226	227	210	191	156	121	92	63	69	13:41:54	CTR	PCC	Good	None	718
D	-24064	2	5937	143	129	128	116	106	83	63	47	64	69	13:43:36	CTR	PCC	Good	None	598
D	-24064	3	9114	225	204	202	186	167	133	101	74	64	69	13:43:43	CTR	PCC	Good	None	585
D	-24064	4	12364	309	281	280	257	232	185	141	104	64	69	13:43:51	CTR	PCC	Good	None	578
D	-25086	2	5896	131	120	119	109	101	82	63	49	63	69	13:45:30	CTR	PCC	Good	None	652
D	-25086	3	9094	203	187	187	174	159	128	99	76	63	69	13:45:37	CTR	PCC	Good	None	646
D	-25086	4	12347	278	253	256	236	216	175	136	104	63	69	13:45:44	CTR	PCC	Good	None	642
D	-26076	2	5908	188	137	142	119	102	67	38	26	64	70	13:47:45	RWP	PCC	Good	None	455
D	-26076	3	9040	296	214	223	192	161	105	60	42	64	70	13:47:51	RWP	PCC	Good	None	442
D	-26076	4	12335	409	290	309	264	220	144	83	58	64	70	13:47:58	RWP	PCC	Good	None	436
C	Comment at -26076 ft Time: 13:49:28 :measurement on full depth patch sensor 1 and 7 not on patch																		
D	-26098	2	5941	125	116	114	103	94	75	56	41	64	70	13:50:44	CTR	PCC	Good	None	687
D	-26098	3	9069	197	181	178	164	148	118	89	66	64	70	13:50:51	CTR	PCC	Good	None	666
D	-26098	4	12397	270	248	245	226	204	162	124	91	64	70	13:50:59	CTR	PCC	Good	None	664
D	-27045	2	5949	119	112	108	97	91	72	56	42	64	71	13:52:34	CTR	PCC	Good	None	721
D	-27045	3	9123	186	174	169	158	143	114	88	67	64	71	13:52:41	CTR	PCC	Good	None	708
D	-27045	4	12387	258	238	234	216	196	158	123	93	64	71	13:52:49	CTR	PCC	Good	None	694
D	-28024	2	5912	187	152	143	125	112	84	63	47	64	70	13:54:27	RWP	PCC	Good	None	457
D	-28024	3	9066	292	237	225	200	175	133	99	74	64	70	13:54:35	RWP	PCC	Good	None	448
D	-28024	4	12296	401	325	310	275	241	183	137	102	64	70	13:54:42	RWP	PCC	Good	None	443
D	-28049	2	5963	142	131	131	120	115	96	77	60	63	70	13:55:26	CTR	PCC	Good	None	606
D	-28049	3	9154	220	203	205	193	180	149	121	94	63	70	13:55:33	CTR	PCC	Good	None	601
D	-28049	4	12333	300	276	278	262	244	203	165	129	63	70	13:55:41	CTR	PCC	Good	None	594
D	-29219	2	5954	125	115	111	101	91	71	53	40	63	70	13:57:25	CTR	PCC	Good	None	687
D	-29219	3	9114	196	180	175	161	143	112	84	63	63	70	13:57:32	CTR	PCC	Good	None	670
D	-29219	4	12363	271	246	241	220	196	155	116	87	63	70	13:58:10	CTR	PCC	Good	None	659
D	-30015	2	5938	130	118	116	103	93	72	53	39	63	69	13:59:59	CTR	PCC	Good	None	660
D	-30015	3	9133	204	186	182	167	147	114	84	61	63	69	14:00:05	CTR	PCC	Good	None	648
D	-30015	4	12351	279	254	251	229	203	157	117	85	63	69	14:00:13	CTR	PCC	Good	None	638
D	-31067	2	5947	139	129	127	116	108	87	68	52	63	69	14:01:47	CTR	PCC	Good	None	618
D	-31067	3	9099	213	198	195	182	166	134	105	80	63	69	14:01:54	CTR	PCC	Good	None	616
D	-31067	4	12360	290	268	265	249	226	183	144	110	63	69	14:02:02	CTR	PCC	Good	None	616
D	-32215	2	5944	155	142	143	127	119	96	75	56	63	69	14:03:48	CTR	PCC	Good	None	554
D	-32215	2	5933	155	143	142	130	119	96	74	56	63	68	14:04:13	CTR	PCC	Good	None	554
D	-32215	2	5912	155	143	143	129	120	97	75	56	62	69	14:04:35	CTR	PCC	Good	None	550
D	-32215	3	9049	239	220	222	203	185	150	117	88	62	69	14:04:42	CTR	PCC	Good	None	547
D	-32215	4	12368	329	302	303	282	256	208	163	122	62	69	14:04:50	CTR	PCC	Good	None	543
C	Comment at -33049 ft Time: 14:06:24 :Deflection is not decreasing																		
D	-33049	2	5898	218	74	160	134	116	80	56	40	62	67	14:06:27	RWP	PCC	Good	None	391
C	Comment at -33049 ft Time: 14:06:33 :Deflection is not decreasing																		
D	-33049	3	9015	336	117	248	212	179	125	87	62	62	67	14:06:34	RWP	PCC	Good	None	388

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C	Comment at -33049 ft Time: 14:06:41 :Deflection is not decreasing																		
D	-33049	4	12256	457	163	338	288	244	171	120	85	62	67	14:06:43	RWP	PCC	Good	None	387
D	-33076	2	5940	114	103	102	91	84	66	50	38	62	67	14:07:35	CTR	PCC	Good	None	750
D	-33076	3	9138	178	160	160	147	131	103	79	59	62	67	14:07:41	CTR	PCC	Good	None	742
D	-33076	4	12422	243	218	219	200	180	142	109	82	62	67	14:07:49	CTR	PCC	Good	None	737
D	-34192	2	5894	119	108	108	95	87	69	52	39	62	67	14:09:52	RWP	AC	Excel.	None	717
D	-34192	3	9117	186	169	171	152	137	108	82	62	62	67	14:09:58	RWP	AC	Excel.	None	709
D	-34192	4	12391	255	232	233	211	190	150	114	86	62	67	14:10:06	RWP	AC	Excel.	None	702
D	-35187	2	5926	117	106	106	95	87	67	51	38	62	67	14:12:09	CTR	AC	Excel.	None	731
D	-35187	3	9104	185	167	170	152	137	107	81	60	62	67	14:12:14	CTR	AC	Excel.	None	713
D	-35187	4	12398	255	230	230	211	189	149	113	84	62	67	14:12:21	CTR	AC	Excel.	None	703
D	-36086	2	5913	132	123	121	110	103	83	65	50	62	69	14:13:46	CTR	AC	Excel.	None	647
D	-36086	3	9111	206	191	189	175	160	130	102	78	62	69	14:13:52	CTR	AC	Excel.	None	640
D	-36086	1	12344	282	259	258	239	218	177	140	107	62	69	14:14:19	CTR	AC	Excel.	None	632
D	-37127	2	5887	135	124	122	111	102	80	62	45	62	68	14:16:07	CTR	AC	Excel.	None	631
D	-37127	3	9043	211	195	191	176	160	127	97	71	62	68	14:16:13	CTR	AC	Excel.	None	620
D	-37127	4	12331	289	266	263	243	220	175	134	99	62	68	14:16:20	CTR	AC	Excel.	None	615
D	-38157	2	5919	130	119	119	109	99	80	63	48	62	69	14:18:05	CTR	PCC	Excel.	None	657
D	-38157	3	9122	202	185	184	171	155	125	97	75	62	69	14:18:10	CTR	PCC	Excel.	None	651
D	-38157	4	12364	274	249	250	232	211	170	133	102	62	69	14:18:17	CTR	PCC	Excel.	None	652
D	-39033	2	5932	110	102	100	90	83	67	52	40	63	70	14:19:42	CTR	PCC	Excel.	None	777
D	-39033	3	9111	173	159	157	145	131	106	83	63	63	70	14:19:48	CTR	PCC	Excel.	None	762
D	-39033	4	12387	236	216	215	197	179	145	114	86	63	70	14:19:55	CTR	PCC	Excel.	None	758
D	-40061	2	5843	163	151	152	140	133	111	90	72	63	70	14:21:26	CTR	PCC	Excel.	None	517
D	-40061	3	8980	254	235	236	222	207	174	141	112	63	70	14:21:32	CTR	PCC	Excel.	None	512
D	-40061	4	12281	344	319	322	304	281	238	192	153	63	70	14:21:39	CTR	PCC	Excel.	None	515
D	-41078	2	5878	139	129	115	101	90	68	51	40	63	69	14:23:29	RWP	PCC	Excel.	None	609
D	-41078	3	9053	219	202	180	160	142	107	81	61	63	69	14:23:35	RWP	PCC	Excel.	None	596
D	-41078	4	12324	302	277	248	221	194	147	112	83	63	69	14:23:42	RWP	PCC	Excel.	None	590
D	-41105	2	5889	117	108	106	97	89	71	55	43	63	69	14:24:27	CTR	PCC	Excel.	None	728
D	-41105	3	9104	182	168	166	155	139	112	87	67	63	69	14:24:33	CTR	PCC	Excel.	None	721
D	-41105	4	12305	249	228	228	210	190	153	119	92	63	69	14:24:40	CTR	PCC	Excel.	None	712
D	-42099	2	5895	118	110	109	98	90	72	55	42	64	72	14:26:18	CTR	PCC	Excel.	None	719
D	-42099	1	9033	186	170	170	157	142	113	87	65	64	72	14:26:40	CTR	PCC	Excel.	None	700
D	-42099	2	12277	257	234	234	216	196	156	121	89	64	72	14:26:52	CTR	PCC	Excel.	None	689
D	-43141	2	5871	126	114	113	101	92	71	54	40	64	72	14:28:29	CTR	PCC	Excel.	None	671
D	-43141	3	9005	199	179	178	163	146	112	85	63	64	72	14:28:34	CTR	PCC	Excel.	None	655
D	-43141	4	12294	274	245	245	225	200	156	118	87	64	72	14:28:41	CTR	PCC	Excel.	None	648
D	-44186	2	5912	109	101	98	88	80	62	46	34	64	74	14:30:19	CTR	PCC	Excel.	None	781
D	-44186	3	9098	172	158	155	141	127	98	73	53	64	74	14:30:25	CTR	PCC	Excel.	None	762
D	-44186	4	12368	237	217	213	195	174	136	101	74	64	74	14:30:32	CTR	PCC	Excel.	None	754
D	-45163	2	5908	129	121	116	106	96	77	59	46	65	75	14:31:57	CTR	PCC	Excel.	None	661
D	-45163	3	9038	199	186	180	165	150	119	93	72	65	75	14:32:03	CTR	PCC	Excel.	None	656
D	-45163	4	12343	270	252	244	226	203	162	128	99	65	75	14:32:10	CTR	PCC	Excel.	None	661
D	-46066	2	5866	139	128	126	114	106	84	66	51	65	76	14:33:41	CTR	PCC	Excel.	None	611
D	-46066	3	9030	217	200	197	182	166	131	102	79	65	76	14:33:47	CTR	PCC	Excel.	None	600
D	-46066	4	12266	297	271	268	249	225	181	140	108	65	76	14:33:54	CTR	PCC	Excel.	None	597
C	Comment at -47108 ft Time: 14:35:59 :Deflection is not decreasing																		
D	-47108	2	5828	325	114	249	211	183	131	93	64	65	75	14:36:02	RWP	PCC	Excel.	None	259
C	Comment at -47108 ft Time: 14:36:07 :Deflection is not decreasing																		
D	-47108	3	8915	518	173	397	338	292	209	148	103	65	75	14:36:10	RWP	PCC	Excel.	None	249
C	Comment at -47108 ft Time: 14:36:17 :Deflection is not decreasing																		
D	-47108	4	12039	714	230	546	470	403	292	207	143	65	75	14:36:22	RWP	PCC	Excel.	None	244
D	-47135	2	5879	171	154	158	138	126	98	74	55	65	75	14:37:04	CTR	PCC	Excel.	None	498
D	-47135	3	9008	267	241	246	219	198	154	117	86	65	75	14:37:09	CTR	PCC	Excel.	None	487
D	-47135	4	12300	367	330	337	303	272	213	161	119	65	75	14:37:17	CTR	PCC	Excel.	None	484
D	-48034	2	5897	146	134	131	120	111	89	69	53	65	74	14:38:56	CTR	PCC	Excel.	None	584
D	-48034	3	9085	227	209	206	190	174	139	108	83	65	74	14:39:02	CTR	PCC	Excel.	None	578
D	-48034	4	12318	310	284	282	261	237	191	149	114	65	74	14:39:09	CTR	PCC	Excel.	None	574
D	-48750	2	5888	158	146	145	133	124	99	77	58	64	75	14:40:48	CTR	PCC	Excel.	None	538
D	-48750	3	9021	248	228	228	212	194	156	122	92	64	75	14:40:54	CTR	PCC	Excel.	None	525
D	-48750	4	12256	339	311	312	291	265	214	169	126	64	75	14:41:01	CTR	PCC	Excel.	None	521
D	-49748	2	5909	123	115	113	105	98	79	62	45	65	76	14:43:17	CTR	PCC	Excel.	None	691

																Brooklyn	SB Cable		
D	-49748	3	9078	195	181	178	168	155	126	100	71	65	76	14:43:23	CTR	PCC	Excel.	None	671
D	-49748	4	12408	269	248	245	230	212	174	138	98	65	76	14:43:30	CTR	PCC	Excel.	None	667

Brooklyn Southbound, November 2009

IKUAB FWD FILE : Brooklyn SB 17 Nov09.fwd
HProject No. : Cable Overlay
HLocation : hwy 17 sb
HClient : Cable
HStart Station :
HDirection :
HEnd Station :
HWeather : sunny clear
HOperator : hg

IDate Created : 11/11/2009
IVersion : 2.3.11
ILoad Mode : 1 (SHRP 8+8 buffers, 0 plates)
IPlate Radius : 5.91 (in)
IExtra Field Set : Example Road
IDrop Sequence : 2123
INo of drops : 1111
IRecord Drop? : NYYY

IDrop Height :	1	2	3	4						
IImpact Load :	6003	9005	12007	16009 lbf						
ISensor Number :	0	1	2	3	4	5	6	7	8	
ISensor Distance :	0.00	12.00	12.00	18.00	24.00	36.00	48.00	60.00	0.00	(in)
ISensor Position :	CENTER	FRONT	BEHIND	BEHIND	BEHIND	BEHIND	BEHIND	BEHIND	??????	

IReference Offset : 0 ft
ITestpoint spacing: 0 ft

J	Distance ft	Imp Num	Load lbf	D0 mils	D1 mils	D2 mils	D3 mils	D4 mils	D5 mils	D6 mils	D7 mils	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	97	2	6273	3.10	3.07	2.73	2.45	2.32	1.87	1.44	1.12	45	44	08:54:16	RWP	PCC	Excel.	None	1152
D	97	3	9612	4.85	4.76	4.30	3.98	3.64	2.93	2.31	1.74	45	44	08:54:21	RWP	PCC	Excel.	None	1128
D	97	4	12766	6.46	6.33	5.76	5.31	4.88	3.95	3.10	2.33	45	44	08:54:29	RWP	PCC	Excel.	None	1124
D	518	2	6290	1.66	1.65	1.47	1.39	1.35	1.19	1.04	0.89	47	45	09:03:10	RWP	PCC	Excel.	None	2156
D	518	3	9659	2.58	2.55	2.35	2.25	2.12	1.88	1.64	1.39	47	45	09:03:16	RWP	PCC	Excel.	None	2127
D	518	4	12830	3.45	3.41	3.14	2.96	2.83	2.52	2.21	1.89	47	45	09:03:23	RWP	PCC	Excel.	None	2117
D	1019	2	6312	1.63	1.57	1.50	1.42	1.38	1.23	1.10	0.99	47	45	09:05:05	RWP	PCC	Excel.	None	2204
D	1019	3	9596	2.53	2.38	2.34	2.28	2.17	1.95	1.75	1.55	47	45	09:05:11	RWP	PCC	Excel.	None	2158
D	1019	4	12765	3.37	3.21	3.16	3.04	2.92	2.66	2.37	2.09	47	45	09:05:19	RWP	PCC	Excel.	None	2157
D	1520	2	6363	1.66	1.56	1.50	1.42	1.40	1.25	1.10	0.99	48	42	09:07:07	RWP	PCC	Excel.	None	2180
D	1520	3	9678	2.55	2.43	2.35	2.29	2.17	1.95	1.72	1.55	48	42	09:07:13	RWP	PCC	Excel.	None	2154
D	1520	4	12854	3.41	3.26	3.16	3.01	2.89	2.61	2.33	2.06	48	42	09:07:21	RWP	PCC	Excel.	None	2144
D	2024	2	6361	2.16	2.07	1.98	1.88	1.84	1.62	1.42	1.25	48	44	09:09:06	RWP	PCC	Excel.	None	1675
D	2024	3	9638	3.31	3.17	3.06	2.98	2.82	2.52	2.21	1.93	48	44	09:09:12	RWP	PCC	Excel.	None	1657
D	2024	4	12789	4.38	4.19	4.09	3.90	3.76	3.36	2.96	2.58	48	44	09:09:20	RWP	PCC	Excel.	None	1660
D	2506	2	6368	2.74	2.53	2.61	2.41	2.36	2.05	1.80	1.61	48	45	09:10:48	RWP	PCC	Excel.	None	1319
D	2506	3	9597	4.23	3.91	4.05	3.85	3.63	3.19	2.80	2.51	48	45	09:10:54	RWP	PCC	Excel.	None	1291
D	2506	4	12761	5.65	5.18	5.42	5.11	4.82	4.26	3.78	3.37	48	45	09:11:02	RWP	PCC	Excel.	None	1284
D	3023	2	6374	2.45	2.35	2.25	2.11	2.09	1.85	1.61	1.44	48	45	09:12:45	RWP	PCC	Excel.	None	1477
D	3023	3	9613	3.79	3.63	3.51	3.39	3.23	2.87	2.56	2.24	48	45	09:12:50	RWP	PCC	Excel.	None	1443
D	3023	4	12789	5.07	4.84	4.73	4.47	4.32	3.87	3.41	3.02	48	45	09:12:58	RWP	PCC	Excel.	None	1435
D	3511	2	6425	2.67	2.42	2.44	2.36	2.28	2.00	1.75	1.55	48	45	09:14:40	RWP	PCC	Excel.	None	1368
D	3511	3	9580	4.01	3.66	3.82	3.67	3.43	3.04	2.66	2.32	48	45	09:14:46	RWP	PCC	Excel.	None	1360
D	3511	4	12751	5.32	4.82	5.04	4.80	4.55	4.04	3.55	3.09	48	45	09:14:53	RWP	PCC	Excel.	None	1363
D	4019	2	6420	2.56	2.48	2.35	2.21	2.18	1.92	1.70	1.55	47	46	09:16:41	RWP	PCC	Excel.	None	1427
D	4019	3	9642	3.88	3.76	3.58	3.46	3.32	2.98	2.63	2.32	47	46	09:16:47	RWP	PCC	Excel.	None	1413
D	4019	4	12806	5.17	4.95	4.80	4.59	4.40	3.95	3.50	3.09	47	46	09:16:54	RWP	PCC	Excel.	None	1408
D	4494	2	6410	3.35	3.17	2.97	2.77	2.64	2.32	1.99	1.72	47	46	09:18:45	RWP	PCC	Excel.	None	1088
D	4494	3	9620	5.05	4.80	4.50	4.29	4.02	3.50	3.03	2.59	47	46	09:18:51	RWP	PCC	Excel.	None	1084
D	4494	4	12723	6.63	6.26	5.94	5.61	5.30	4.65	4.02	3.46	47	46	09:18:58	RWP	PCC	Excel.	None	1091
D	5026	2	6402	3.24	2.86	2.90	2.67	2.51	2.14	1.79	1.47	47	47	09:20:33	RWP	PCC	Excel.	None	1122
D	5026	3	9546	4.93	4.37	4.50	4.20	3.86	3.29	2.75	2.27	47	47	09:20:39	RWP	PCC	Excel.	None	1101
D	5026	4	12704	6.58	5.79	6.02	5.55	5.19	4.41	3.69	3.05	47	47	09:20:47	RWP	PCC	Excel.	None	1097
C	Comment at 5472 ft Time: 09:23:00 :Deflection is not decreasing																		
D	5472	2	6374	4.21	2.41	3.31	2.95	2.79	2.28	1.87	1.52	48	46	09:23:08	RWP	PCC	Excel.	None	860
C	Comment at 5472 ft Time: 09:23:14 :Deflection is not decreasing																		

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D	5472	3	9511	6.24	3.60	4.97	4.57	4.13	3.41	2.81	2.28	48	46	09:23:17	RWP	PCC	Excel.	None	866
C	Comment at 5472 ft Time: 09:23:24 :Deflection is not decreasing																		
D	5472	4	12653	8.28	4.77	6.60	5.99	5.47	4.54	3.75	3.05	48	46	09:23:27	RWP	PCC	Excel.	None	869
C	Comment at 5472 ft Time: 09:23:41 :Load transfer at 5472																		
D	5518	2	6412	2.41	2.32	2.22	2.14	2.08	1.86	1.65	1.45	48	46	09:24:38	RWP	PCC	Excel.	None	1511
D	5518	3	9551	3.65	3.51	3.36	3.28	3.13	2.85	2.54	2.22	48	46	09:24:43	RWP	PCC	Excel.	None	1488
D	5518	4	12689	4.86	4.65	4.52	4.39	4.19	3.83	3.40	2.96	48	46	09:24:50	RWP	PCC	Excel.	None	1485
D	5985	2	6418	2.76	2.82	2.41	2.25	2.16	1.86	1.59	1.40	48	46	09:26:27	RWP	PCC	Excel.	None	1321
D	5985	3	9570	4.14	4.29	3.66	3.46	3.27	2.84	2.46	2.11	48	46	09:26:33	RWP	PCC	Excel.	None	1314
D	5985	4	12713	5.48	5.64	4.86	4.57	4.33	3.80	3.30	2.80	48	46	09:26:40	RWP	PCC	Excel.	None	1319
D	6513	2	6414	2.20	2.14	2.03	1.92	1.87	1.70	1.55	1.39	48	46	09:28:25	RWP	PCC	Excel.	None	1659
D	6513	3	9605	3.28	3.19	3.06	2.96	2.84	2.58	2.31	2.09	48	46	09:28:31	RWP	PCC	Excel.	None	1667
D	6513	4	12765	4.32	4.17	4.05	3.86	3.76	3.43	3.11	2.77	48	46	09:28:38	RWP	PCC	Excel.	None	1680
D	6984	2	6441	2.86	2.78	2.72	2.59	2.59	2.38	2.18	2.03	48	46	09:30:41	RWP	PCC	Excel.	None	1282
D	6984	3	9592	4.30	4.16	4.10	4.01	3.89	3.61	3.31	3.04	48	46	09:30:47	RWP	PCC	Excel.	None	1269
D	6984	4	12738	5.69	5.48	5.44	5.31	5.18	4.83	4.45	4.05	48	46	09:30:54	RWP	PCC	Excel.	None	1273
D	7510	2	6389	3.01	3.01	2.73	2.54	2.52	2.21	1.96	1.74	48	47	09:32:30	RWP	PCC	Excel.	None	1208
D	7510	3	9503	4.47	4.51	4.04	3.87	3.73	3.32	2.93	2.61	48	47	09:32:36	RWP	PCC	Excel.	None	1209
D	7510	4	12649	5.90	5.92	5.38	5.11	4.90	4.43	3.91	3.49	48	47	09:32:43	RWP	PCC	Excel.	None	1220
D	7998	2	6370	2.71	2.62	2.42	2.29	2.25	1.96	1.71	1.53	48	47	09:34:12	RWP	PCC	Excel.	None	1336
D	7998	3	9506	4.08	3.96	3.71	3.56	3.36	3.00	2.62	2.31	48	47	09:34:18	RWP	PCC	Excel.	None	1325
D	7998	4	12687	5.47	5.27	5.00	4.73	4.51	3.99	3.52	3.09	48	47	09:34:25	RWP	PCC	Excel.	None	1319
D	8409	2	6287	13.78	10.79	1.94	1.78	1.68	1.42	1.22	1.07	48	48	09:35:50	RWP	PCC	Excel.	None	259
D	8409	3	9396	19.33	15.20	2.89	2.73	2.50	2.13	1.84	1.59	48	48	09:35:56	RWP	PCC	Excel.	None	276
D	8409	4	12425	24.15	18.98	3.79	3.57	3.29	2.82	2.45	2.11	48	48	09:36:03	RWP	PCC	Excel.	None	293
C	Comment at 8409 ft Time: 09:36:14 :8409 last test before overpass section																		
C	Comment at 8509 ft Time: 09:36:58 :8509 start of overpass section																		
C	Comment at 9825 ft Time: 09:39:04 :9825 end of overlay section																		
D	10002	2	6371	8.23	6.52	5.17	4.62	4.11	3.17	2.43	1.88	48	48	09:40:02	RWP	PCC	Excel.	None	440
D	10002	3	9513	11.58	9.27	8.23	7.38	6.54	5.02	3.85	2.96	48	48	09:40:09	RWP	PCC	Excel.	None	467
D	10002	4	12597	14.63	11.71	11.08	9.94	8.80	6.76	5.17	3.97	48	48	09:40:16	RWP	PCC	Excel.	None	490
C	Comment at 10079 ft Time: 09:42:00 :Deflection is not decreasing																		
D	10079	2	6362	9.76	2.74	7.70	6.77	6.03	4.58	3.49	2.69	49	47	09:42:03	RWP	PCC	Excel.	None	371
C	Comment at 10079 ft Time: 09:42:09 :Deflection is not decreasing																		
D	10079	3	9454	13.11	5.83	10.36	9.20	8.23	6.24	4.84	3.75	49	47	09:42:11	RWP	PCC	Excel.	None	410
C	Comment at 10079 ft Time: 09:42:18 :Deflection is not decreasing																		
D	10079	4	12581	16.14	8.75	12.88	11.49	10.18	7.82	6.12	4.70	49	47	09:42:19	RWP	PCC	Excel.	None	443
C	Comment at 10079 ft Time: 09:42:33 :10079 load tansfer test																		
D	10522	2	6475	2.05	1.96	1.94	1.86	1.83	1.69	1.55	1.45	50	48	09:43:55	RWP	PCC	Excel.	None	1800
D	10522	3	9633	3.04	2.90	2.90	2.87	2.77	2.58	2.37	2.19	50	48	09:44:01	RWP	PCC	Excel.	None	1802
D	10522	4	12816	4.07	3.85	3.89	3.78	3.70	3.45	3.21	2.97	50	48	09:44:08	RWP	PCC	Excel.	None	1790
D	11017	2	6461	2.25	2.14	2.11	2.01	1.94	1.78	1.56	1.38	50	49	09:45:51	RWP	PCC	Excel.	None	1632
D	11017	3	9653	3.39	3.22	3.18	3.11	2.95	2.68	2.40	2.08	50	49	09:45:56	RWP	PCC	Excel.	None	1620
D	11017	4	12821	4.49	4.26	4.24	4.09	3.95	3.60	3.21	2.80	50	49	09:46:03	RWP	PCC	Excel.	None	1623
D	11506	2	6444	2.18	2.13	2.00	1.89	1.86	1.71	1.51	1.33	50	49	09:48:00	RWP	PCC	Excel.	None	1684
D	11506	3	9597	3.25	3.19	3.00	2.92	2.81	2.57	2.30	2.01	50	49	09:48:05	RWP	PCC	Excel.	None	1680
D	11506	4	12767	4.29	4.23	3.99	3.85	3.75	3.43	3.09	2.69	50	49	09:48:12	RWP	PCC	Excel.	None	1691
D	11991	2	6439	2.22	2.15	2.09	2.01	1.97	1.77	1.63	1.45	49	50	09:50:15	RWP	PCC	Excel.	None	1652
D	11991	3	9591	3.33	3.23	3.16	3.05	2.96	2.73	2.48	2.23	49	50	09:50:20	RWP	PCC	Excel.	None	1637
D	11991	4	12752	4.41	4.23	4.21	4.06	3.95	3.64	3.33	2.99	49	50	09:50:27	RWP	PCC	Excel.	None	1643
D	12519	2	6393	4.45	3.97	4.07	3.71	3.50	2.95	2.54	2.24	49	49	09:52:19	RWP	PCC	Excel.	None	816
D	12519	3	9569	6.77	6.06	6.18	5.74	5.32	4.48	3.89	3.43	49	49	09:52:24	RWP	PCC	Excel.	None	804
D	12519	4	12700	9.06	8.07	8.29	7.73	7.11	6.05	5.27	4.62	49	49	09:52:32	RWP	PCC	Excel.	None	797
D	13016	2	6432	2.33	2.28	2.13	2.01	1.97	1.77	1.56	1.40	48	50	09:54:08	RWP	PCC	Excel.	None	1570
D	13016	3	9594	3.49	3.43	3.22	3.11	2.99	2.72	2.42	2.14	48	50	09:54:13	RWP	PCC	Excel.	None	1564
D	13016	4	12746	4.59	4.52	4.28	4.10	3.99	3.62	3.24	2.88	48	50	09:54:20	RWP	PCC	Excel.	None	1577
D	13394	2	6417	2.46	2.41	2.31	2.20	2.17	1.95	1.75	1.56	49	50	09:55:53	RWP	PCC	Excel.	None	1484
D	13394	3	9580	3.71	3.62	3.46	3.38	3.25	2.98	2.67	2.38	49	50	09:55:59	RWP	PCC	Excel.	None	1470
D	13394	4	12748	4.88	4.73	4.62	4.44	4.30	3.95	3.56	3.18	49	50	09:56:06	RWP	PCC	Excel.	None	1486
C	Comment at 13542 ft Time: 09:57:05 :Turned to sb section																		
D	13985	2	6392	2.63	2.47	2.56	2.54	2.53	2.29	1.96	1.71	51	50	10:00:33	RWP	PCC	Excel.	None	1381
D	13985	3	9532	3.94	3.69	3.87	3.90	3.81	3.42	2.98	2.55	51	50	10:00:39	RWP	PCC	Excel.	None	1377
C	Comment at 13985 ft Time: 10:00:46 :Deflection is not decreasing																		
D	13985	4	12679	5.16	4.82	5.15	5.10	5.03	4.52	3.96	3.37	51	50	10:00:48	RWP	PCC	Excel.	None	1398
C	Comment at 13985 ft Time: 10:00:59 :Joint spacings is gretter than 15ft in this area																		
D	14504	2	6410	2.29	2.20	2.14	2.07	2.05	1.89	1.72	1.58	51	50	10:02:44	RWP	PCC	Excel.	None	1590

D	14504	3	9601	3.44	3.30	3.24	3.18	3.10	2.88	2.62	2.37	51	50	10:02:49	RWP	PCC	Excel.	None	1588
D	14504	4	12748	4.56	4.35	4.33	4.22	4.14	3.85	3.51	3.17	51	50	10:02:56	RWP	PCC	Excel.	None	1590
D	14975	2	6386	2.58	2.48	2.35	2.29	2.26	2.09	1.88	1.69	51	51	10:04:38	RWP	PCC	Excel.	None	1406
D	14975	3	9548	3.84	3.72	3.65	3.51	3.42	3.15	2.85	2.54	51	51	10:04:44	RWP	PCC	Excel.	None	1415
D	14975	4	12720	5.07	4.89	4.83	4.64	4.54	4.20	3.82	3.40	51	51	10:04:51	RWP	PCC	Excel.	None	1426
D	14980	2	6391	3.96	3.01	3.26	3.03	2.90	2.53	2.18	1.90	52	51	10:07:21	RWP	PCC	Excel.	None	918
D	14980	3	9541	5.95	4.53	4.94	4.67	4.38	3.81	3.33	2.87	52	51	10:07:27	RWP	PCC	Excel.	None	912
D	14980	4	12685	7.87	5.94	6.57	6.16	5.79	5.06	4.42	3.81	52	51	10:07:34	RWP	PCC	Excel.	None	916
C	Comment at 14980 ft Time: 10:07:44 :Load transfer																		
D	15530	2	6341	2.25	2.15	2.09	2.00	1.95	1.81	1.59	1.44	52	52	10:09:23	RWP	PCC	Excel.	None	1604
D	15530	3	9511	3.36	3.22	3.14	3.06	2.96	2.72	2.44	2.17	52	52	10:09:29	RWP	PCC	Excel.	None	1612
D	15530	4	12700	4.44	4.26	4.20	4.08	3.94	3.58	3.25	2.90	52	52	10:09:36	RWP	PCC	Excel.	None	1625
D	16016	2	6349	2.75	2.61	2.45	2.25	2.16	1.89	1.63	1.44	52	51	10:11:10	RWP	PCC	Excel.	None	1312
D	16016	3	9516	4.16	3.97	3.73	3.52	3.31	2.90	2.53	2.16	52	51	10:11:16	RWP	PCC	Excel.	None	1300
D	16016	4	12664	5.52	5.24	4.99	4.67	4.41	3.88	3.40	2.90	52	51	10:11:23	RWP	PCC	Excel.	None	1304
D	16501	2	6355	2.19	2.10	2.03	1.96	1.94	1.78	1.61	1.46	51	52	10:13:05	RWP	PCC	Excel.	None	1651
D	16501	3	9528	3.28	3.16	3.09	3.01	2.92	2.71	2.47	2.22	51	52	10:13:11	RWP	PCC	Excel.	None	1654
D	16501	4	12696	4.32	4.17	4.11	3.97	3.87	3.58	3.28	2.95	51	52	10:13:18	RWP	PCC	Excel.	None	1673
D	17021	2	6364	2.38	2.28	2.19	2.10	2.05	1.86	1.64	1.47	52	53	10:14:45	RWP	PCC	Excel.	None	1523
D	17021	3	9523	3.55	3.40	3.33	3.20	3.10	2.83	2.54	2.23	52	53	10:14:51	RWP	PCC	Excel.	None	1525
D	17021	4	12725	4.70	4.47	4.42	4.26	4.11	3.75	3.36	2.96	52	53	10:14:58	RWP	PCC	Excel.	None	1541
D	17486	2	6351	2.03	1.92	1.89	1.77	1.75	1.55	1.35	1.21	52	52	10:16:25	RWP	PCC	Excel.	None	1781
D	17486	3	9459	3.06	2.90	2.85	2.74	2.63	2.36	2.09	1.83	52	52	10:16:30	RWP	PCC	Excel.	None	1757
D	17486	4	12664	4.06	3.83	3.79	3.65	3.49	3.13	2.81	2.45	52	52	10:16:37	RWP	PCC	Excel.	None	1774
D	18024	2	6390	1.92	1.84	1.77	1.69	1.66	1.51	1.34	1.21	52	53	10:18:12	RWP	PCC	Excel.	None	1893
D	18024	3	9544	2.89	2.75	2.68	2.63	2.51	2.28	2.04	1.80	52	53	10:18:17	RWP	PCC	Excel.	None	1880
D	18024	4	12715	3.83	3.64	3.59	3.46	3.35	3.05	2.75	2.41	52	53	10:18:24	RWP	PCC	Excel.	None	1887
D	18559	2	6370	2.12	2.01	1.94	1.86	1.81	1.65	1.45	1.25	52	53	10:20:04	RWP	PCC	Excel.	None	1708
D	18559	3	9519	3.22	3.04	2.97	2.88	2.77	2.51	2.22	1.88	52	53	10:20:09	RWP	PCC	Excel.	None	1678
D	18559	4	12699	4.30	4.03	4.01	3.85	3.71	3.37	2.97	2.51	52	53	10:20:16	RWP	PCC	Excel.	None	1681
D	19007	2	6401	1.94	1.81	1.75	1.69	1.64	1.46	1.30	1.14	53	53	10:21:42	RWP	PCC	Excel.	None	1879
D	19007	3	9552	2.91	2.73	2.66	2.60	2.46	2.23	1.97	1.74	53	53	10:21:48	RWP	PCC	Excel.	None	1864
D	19007	4	12697	3.88	3.61	3.57	3.44	3.32	2.99	2.68	2.33	53	53	10:21:54	RWP	PCC	Excel.	None	1861
D	19514	2	6412	1.92	1.81	1.79	1.71	1.61	1.48	1.29	1.13	53	53	10:23:49	RWP	PCC	Excel.	None	1901
D	19514	3	9623	2.88	2.70	2.67	2.58	2.47	2.21	1.94	1.68	53	53	10:23:54	RWP	PCC	Excel.	None	1899
D	19514	4	12784	3.88	3.64	3.60	3.45	3.33	2.99	2.64	2.29	53	53	10:24:01	RWP	PCC	Excel.	None	1873
D	20013	2	6393	1.95	1.86	1.77	1.68	1.64	1.50	1.31	1.18	53	53	10:25:28	RWP	PCC	Excel.	None	1863
D	20013	3	9558	2.95	2.82	2.72	2.64	2.49	2.26	2.02	1.76	53	53	10:25:34	RWP	PCC	Excel.	None	1842
D	20013	4	12738	3.91	3.72	3.63	3.48	3.34	3.02	2.71	2.34	53	53	10:25:40	RWP	PCC	Excel.	None	1853
C	Comment at 20017 ft Time: 10:26:49 :Deflection is not decreasing																		
D	20017	2	6371	4.36	1.86	3.01	2.62	2.44	2.00	1.64	1.35	54	52	10:26:55	RWP	PCC	Excel.	None	831
C	Comment at 20017 ft Time: 10:27:00 :Deflection is not decreasing																		
D	20017	3	9518	6.40	3.02	4.48	4.00	3.61	2.98	2.45	2.03	54	52	10:27:01	RWP	PCC	Excel.	None	845
C	Comment at 20017 ft Time: 10:27:08 :Deflection is not decreasing																		
D	20017	4	12677	8.35	4.49	5.91	5.22	4.75	3.93	3.25	2.67	54	52	10:27:11	RWP	PCC	Excel.	None	863
C	Comment at 20017 ft Time: 10:27:21 :load transfer																		
D	20504	2	6374	2.15	2.12	1.88	1.78	1.70	1.49	1.27	1.07	54	54	10:28:39	RWP	PCC	Excel.	None	1688
D	20504	3	9533	3.26	3.23	2.90	2.77	2.60	2.25	1.94	1.64	54	54	10:28:44	RWP	PCC	Excel.	None	1663
D	20504	4	12702	4.37	4.31	3.90	3.69	3.49	3.04	2.61	2.21	54	54	10:28:51	RWP	PCC	Excel.	None	1651
D	21009	2	6407	1.94	1.86	1.78	1.70	1.67	1.52	1.35	1.20	54	53	10:30:20	RWP	PCC	Excel.	None	1882
D	21009	3	9571	2.90	2.77	2.69	2.60	2.50	2.28	2.03	1.81	54	53	10:30:26	RWP	PCC	Excel.	None	1877
D	21009	4	12765	3.83	3.63	3.56	3.45	3.31	3.03	2.73	2.39	54	53	10:30:33	RWP	PCC	Excel.	None	1897
D	21520	2	6356	1.99	1.92	1.80	1.72	1.73	1.55	1.39	1.24	53	52	10:32:58	RWP	PCC	Excel.	None	1813
D	21520	3	9546	2.98	2.86	2.75	2.64	2.56	2.30	2.04	1.80	53	52	10:33:03	RWP	PCC	Excel.	None	1823
D	21520	4	12711	3.93	3.77	3.68	3.50	3.39	3.07	2.76	2.40	53	52	10:33:10	RWP	PCC	Excel.	None	1838
D	22009	2	6327	1.90	1.82	1.72	1.65	1.56	1.38	1.19	1.01	52	52	10:34:41	RWP	PCC	Excel.	None	1890
D	22009	3	9489	2.94	2.78	2.68	2.58	2.44	2.11	1.83	1.55	52	52	10:34:46	RWP	PCC	Excel.	None	1834
D	22009	4	12650	3.89	3.67	3.57	3.43	3.23	2.86	2.47	2.10	52	52	10:34:53	RWP	PCC	Excel.	None	1847
D	22509	2	6353	1.85	1.77	1.70	1.63	1.57	1.42	1.26	1.11	52	51	10:36:37	RWP	PCC	Excel.	None	1947
D	22509	3	9487	2.79	2.64	2.60	2.47	2.36	2.13	1.89	1.64	52	51	10:36:42	RWP	PCC	Excel.	None	1935
D	22509	4	12661	3.74	3.52	3.44	3.30	3.16	2.85	2.54	2.20	52	51	10:36:49	RWP	PCC	Excel.	None	1924
D	22982	2	6358	1.73	1.69	1.55	1.51	1.43	1.29	1.12	0.95	52	51	10:38:14	RWP	PCC	Excel.	None	2086
D	22982	3	9515	2.65	2.54	2.45	2.31	2.21	1.95	1.69	1.45	52	51	10:38:20	RWP	PCC	Excel.	None	2039
D	22982	4	12699	3.56	3.39	3.23	3.11	2.94	2.61	2.31	1.97	52	51	10:38:26	RWP	PCC	Excel.	None	2028
D	23533	2	6368	1.97	1.88	1.82	1.74	1.71	1.55	1.39	1.26	51	52	10:40:14	RWP	PCC	Excel.	None	1835
D	23533	3	9535	2.95	2.84	2.75	2.71	2.57	2.35	2.12	1.89	51	52	10:40:19	RWP	PCC	Excel.	None	1840

D	23533	4	12737	3.88	3.71	3.66	3.54	3.42	3.11	2.83	2.52	51	52	10:40:26	RWP	PCC	Excel.	None	1867
D	24146	2	6373	3.12	2.88	2.69	2.53	2.38	2.04	1.75	1.47	52	53	10:42:45	RWP	PCC	Excel.	None	1163
D	24146	3	9523	4.69	4.33	4.11	3.86	3.61	3.12	2.64	2.22	52	53	10:42:50	RWP	PCC	Excel.	None	1154
D	24146	4	12684	6.21	5.71	5.50	5.12	4.80	4.20	3.56	2.98	52	53	10:42:57	RWP	PCC	Excel.	None	1161
D	24517	2	6342	2.58	2.61	2.30	2.18	2.12	1.88	1.65	1.46	52	52	10:44:23	RWP	PCC	Excel.	None	1398
D	24517	3	9450	3.91	3.94	3.52	3.38	3.23	2.89	2.58	2.24	52	52	10:44:28	RWP	PCC	Excel.	None	1376
D	24517	4	12671	5.15	5.18	4.70	4.48	4.29	3.87	3.45	3.01	52	52	10:44:35	RWP	PCC	Excel.	None	1399
D	25001	2	6355	2.21	2.14	2.04	1.92	1.89	1.72	1.50	1.29	53	53	10:46:07	RWP	PCC	Excel.	None	1633
D	25001	3	9514	3.35	3.25	3.07	3.03	2.89	2.62	2.31	1.96	53	53	10:46:12	RWP	PCC	Excel.	None	1615
D	25001	4	12690	4.46	4.30	4.15	4.00	3.86	3.53	3.11	2.61	53	53	10:46:19	RWP	PCC	Excel.	None	1619
C	Comment at 25004 ft Time: 10:47:16 :Deflection is not decreasing																		
D	25004	2	6326	3.88	2.21	2.86	2.59	2.42	1.99	1.64	1.35	53	52	10:47:18	RWP	PCC	Excel.	None	928
C	Comment at 25004 ft Time: 10:47:24 :Deflection is not decreasing																		
D	25004	3	9457	5.86	3.33	4.35	4.02	3.69	3.04	2.53	2.06	53	52	10:47:24	RWP	PCC	Excel.	None	918
C	Comment at 25004 ft Time: 10:47:31 :Deflection is not decreasing																		
D	25004	4	12628	7.81	4.43	5.87	5.38	4.92	4.10	3.40	2.77	53	52	10:47:32	RWP	PCC	Excel.	None	920
C	Comment at 25004 ft Time: 10:47:42 :Load Transfer																		
D	25540	2	6374	1.65	1.54	1.53	1.49	1.46	1.40	1.26	1.11	54	54	10:48:53	RWP	PCC	Excel.	None	2193
D	25540	3	9511	2.50	2.32	2.34	2.31	2.24	2.13	1.93	1.65	54	54	10:48:58	RWP	PCC	Excel.	None	2160
D	25540	4	12732	3.32	3.08	3.16	3.07	3.02	2.85	2.59	2.23	54	54	10:49:05	RWP	PCC	Excel.	None	2182
D	26005	2	6349	1.99	1.84	1.79	1.69	1.62	1.45	1.26	1.07	54	54	10:50:22	RWP	PCC	Excel.	None	1815
D	26005	3	9479	3.00	2.81	2.73	2.63	2.50	2.19	1.91	1.61	54	54	10:50:28	RWP	PCC	Excel.	None	1795
D	26005	4	12674	4.02	3.74	3.67	3.50	3.35	2.97	2.59	2.19	54	54	10:50:34	RWP	PCC	Excel.	None	1793
D	26508	2	6334	2.18	2.06	2.00	1.89	1.87	1.65	1.48	1.32	54	54	10:51:58	RWP	PCC	Excel.	None	1650
D	26508	3	9456	3.30	3.14	3.05	2.97	2.83	2.55	2.26	1.99	54	54	10:52:03	RWP	PCC	Excel.	None	1629
D	26508	4	12640	4.42	4.22	4.12	3.98	3.83	3.48	3.11	2.70	54	54	10:52:10	RWP	PCC	Excel.	None	1628
D	26990	2	6309	2.66	2.57	2.44	2.33	2.29	2.05	1.81	1.60	54	53	10:53:46	RWP	PCC	Excel.	None	1348
D	26990	3	9448	4.00	3.85	3.70	3.60	3.45	3.10	2.76	2.40	54	53	10:53:52	RWP	PCC	Excel.	None	1343
D	26990	4	12628	5.28	5.06	4.92	4.76	4.57	4.11	3.67	3.20	54	53	10:53:59	RWP	PCC	Excel.	None	1359
D	27504	2	6302	2.15	2.07	1.97	1.86	1.83	1.66	1.45	1.32	54	52	10:55:44	RWP	PCC	Excel.	None	1668
D	27504	3	9432	3.21	3.10	2.98	2.93	2.78	2.50	2.24	1.96	54	52	10:55:49	RWP	PCC	Excel.	None	1668
D	27504	4	12615	4.26	4.09	3.97	3.83	3.69	3.33	2.98	2.63	54	52	10:55:56	RWP	PCC	Excel.	None	1683
D	27995	2	6310	3.60	3.43	3.28	3.05	2.95	2.57	2.15	1.93	54	53	10:57:41	RWP	PCC	Excel.	None	998
D	27995	3	9505	5.43	5.18	5.02	4.82	4.51	3.91	3.35	2.92	54	53	10:57:47	RWP	PCC	Excel.	None	995
D	27995	4	12646	7.22	6.86	6.70	6.38	6.03	5.24	4.46	3.89	54	53	10:57:54	RWP	PCC	Excel.	None	996
D	28530	2	6389	3.57	3.32	3.19	2.93	2.71	2.22	1.78	1.42	54	53	10:59:27	RWP	PCC	Excel.	None	1016
D	28530	3	9495	5.43	5.03	4.89	4.56	4.16	3.37	2.72	2.15	54	53	10:59:32	RWP	PCC	Excel.	None	994
D	28530	4	12670	7.32	6.78	6.63	6.14	5.62	4.59	3.68	2.91	54	53	10:59:39	RWP	PCC	Excel.	None	984
D	28973	2	6331	1.97	1.88	1.83	1.76	1.71	1.54	1.37	1.17	54	53	11:01:25	RWP	PCC	Excel.	None	1829
D	28973	3	9490	2.99	2.84	2.79	2.71	2.61	2.37	2.07	1.77	54	53	11:01:31	RWP	PCC	Excel.	None	1808
D	28973	4	12661	4.00	3.78	3.76	3.62	3.50	3.21	2.79	2.41	54	53	11:01:37	RWP	PCC	Excel.	None	1799
C	Comment at 28973 ft Time: 11:01:47 :center of 450th street																		
D	29501	2	6369	1.55	1.50	1.46	1.39	1.34	1.20	1.08	0.94	55	54	11:03:19	RWP	PCC	Excel.	None	2331
D	29501	3	9508	2.38	2.26	2.22	2.16	2.03	1.84	1.64	1.44	55	54	11:03:24	RWP	PCC	Excel.	None	2269
D	29501	4	12713	3.21	3.00	2.97	2.87	2.76	2.49	2.22	1.95	55	54	11:03:31	RWP	PCC	Excel.	None	2251
D	29968	2	6321	2.27	2.31	2.08	2.00	1.97	1.75	1.61	1.44	55	53	11:04:56	RWP	PCC	Excel.	None	1584
D	29968	3	9474	3.43	3.47	3.16	3.07	2.94	2.67	2.43	2.18	55	53	11:05:01	RWP	PCC	Excel.	None	1571
D	29968	4	12649	4.54	4.56	4.19	4.04	3.91	3.58	3.22	2.91	55	53	11:05:08	RWP	PCC	Excel.	None	1584
D	30507	2	6358	2.29	2.21	2.11	2.00	1.95	1.76	1.58	1.41	55	55	11:06:40	RWP	PCC	Excel.	None	1582
D	30507	3	9485	3.41	3.30	3.16	3.08	2.94	2.68	2.39	2.10	55	55	11:06:45	RWP	PCC	Excel.	None	1579
D	30507	4	12686	4.50	4.33	4.21	4.05	3.91	3.56	3.19	2.79	55	55	11:06:52	RWP	PCC	Excel.	None	1602
C	Comment at 30512 ft Time: 11:07:39 :Deflection is not decreasing																		
D	30512	2	6228	4.08	2.17	3.20	2.88	2.71	2.32	1.98	1.66	56	55	11:07:41	RWP	PCC	Excel.	None	867
C	Comment at 30512 ft Time: 11:07:47 :Deflection is not decreasing																		
D	30512	3	9391	6.12	3.23	4.78	4.45	4.12	3.49	2.97	2.50	56	55	11:07:54	RWP	PCC	Excel.	None	873
C	Comment at 30512 ft Time: 11:08:01 :Deflection is not decreasing																		
D	30512	4	12525	8.10	4.23	6.38	5.87	5.48	4.66	3.97	3.33	56	55	11:08:05	RWP	PCC	Excel.	None	879
C	Comment at 30512 ft Time: 11:08:15 :Load transfer																		
D	30997	2	6311	3.34	3.21	2.84	2.58	2.38	1.98	1.63	1.38	55	56	11:09:42	RWP	PCC	Excel.	None	1074
D	30997	3	9439	5.08	4.84	4.32	4.01	3.64	3.04	2.53	2.08	55	56	11:09:47	RWP	PCC	Excel.	None	1057
D	30997	4	12604	6.81	6.48	5.84	5.37	4.89	4.11	3.43	2.81	55	56	11:09:54	RWP	PCC	Excel.	None	1052
D	31529	2	6388	1.84	1.74	1.69	1.65	1.60	1.46	1.34	1.17	56	56	11:11:31	RWP	PCC	Excel.	None	1974
D	31529	3	9544	2.76	2.62	2.55	2.53	2.42	2.19	1.97	1.76	56	56	11:11:36	RWP	PCC	Excel.	None	1964
D	31529	4	12736	3.64	3.43	3.41	3.31	3.19	2.93	2.65	2.33	56	56	11:11:43	RWP	PCC	Excel.	None	1988
D	32002	2	6293	2.19	2.12	2.01	1.94	1.88	1.73	1.54	1.39	56	56	11:13:24	RWP	PCC	Excel.	None	1635
D	32002	3	9452	3.29	3.18	3.02	2.98	2.86	2.61	2.36	2.08	56	56	11:13:30	RWP	PCC	Excel.	None	1632

D	32002	4	12633	4.36	4.19	4.05	3.96	3.79	3.50	3.16	2.79	56	56	11:13:37	RWP	PCC	Excel.	None	1648
D	32524	2	6316	2.01	1.94	1.84	1.75	1.66	1.50	1.31	1.12	56	55	11:15:21	RWP	PCC	Excel.	None	1786
D	32524	3	9456	3.05	2.92	2.79	2.70	2.56	2.26	2.00	1.72	56	55	11:15:27	RWP	PCC	Excel.	None	1761
D	32524	4	12621	4.07	3.88	3.73	3.58	3.41	3.03	2.67	2.30	56	55	11:15:33	RWP	PCC	Excel.	None	1762
D	33119	2	6362	1.95	1.87	1.81	1.73	1.69	1.55	1.40	1.26	56	57	11:17:23	RWP	PCC	Excel.	None	1852
D	33119	3	9506	2.92	2.78	2.72	2.67	2.57	2.36	2.14	1.91	56	57	11:17:28	RWP	PCC	Excel.	None	1849
D	33119	4	12711	3.88	3.69	3.64	3.56	3.42	3.15	2.87	2.56	56	57	11:17:35	RWP	PCC	Excel.	None	1861
D	33573	2	6332	2.10	2.00	1.91	1.82	1.76	1.58	1.40	1.23	57	58	11:19:31	RWP	PCC	Excel.	None	1716
D	33573	3	9485	3.17	3.06	2.93	2.81	2.70	2.42	2.15	1.88	57	58	11:19:36	RWP	PCC	Excel.	None	1704
D	33573	4	12676	4.22	4.07	3.94	3.75	3.61	3.25	2.90	2.53	57	58	11:19:43	RWP	PCC	Excel.	None	1706
D	34047	2	6310	1.71	1.63	1.57	1.53	1.50	1.39	1.23	1.08	56	55	11:21:02	RWP	PCC	Excel.	None	2098
D	34047	3	9491	2.58	2.45	2.40	2.37	2.30	2.10	1.87	1.63	56	55	11:21:07	RWP	PCC	Excel.	None	2091
D	34047	4	12673	3.43	3.28	3.25	3.12	3.07	2.83	2.53	2.20	56	55	11:21:14	RWP	PCC	Excel.	None	2098
D	34513	2	6291	1.91	1.85	1.77	1.67	1.64	1.44	1.25	1.08	56	55	11:22:51	RWP	PCC	Excel.	None	1876
D	34513	3	9447	2.94	2.82	2.70	2.60	2.48	2.21	1.94	1.65	56	55	11:22:56	RWP	PCC	Excel.	None	1827
D	34513	4	12608	3.94	3.75	3.64	3.50	3.33	2.97	2.62	2.24	56	55	11:23:03	RWP	PCC	Excel.	None	1820
D	35005	2	6313	2.31	2.31	2.07	1.95	1.84	1.58	1.38	1.17	56	55	11:24:39	RWP	PCC	Excel.	None	1555
D	35005	3	9459	3.55	3.56	3.16	3.02	2.86	2.49	2.11	1.79	56	55	11:24:44	RWP	PCC	Excel.	None	1514
D	35005	4	12614	4.79	4.76	4.27	4.08	3.82	3.32	2.85	2.42	56	55	11:24:51	RWP	PCC	Excel.	None	1496
C	Comment at 35009 ft Time: 11:25:46 :Deflection is not decreasing																		
D	35009	2	6268	5.27	1.31	4.05	3.57	3.25	2.56	2.04	1.63	56	54	11:25:48	RWP	PCC	Excel.	None	676
C	Comment at 35009 ft Time: 11:25:54 :Deflection is not decreasing																		
D	35009	3	9424	7.99	1.99	6.19	5.52	4.96	3.93	3.16	2.49	56	54	11:25:56	RWP	PCC	Excel.	None	671
C	Comment at 35009 ft Time: 11:26:03 :Deflection is not decreasing																		
D	35009	4	12545	10.66	2.66	8.33	7.43	6.66	5.32	4.28	3.39	56	54	11:26:04	RWP	PCC	Excel.	None	669
C	Comment at 35008 ft Time: 11:26:14 :load transfer																		
D	35530	2	6303	2.12	2.00	2.07	2.00	1.93	1.72	1.49	1.25	56	56	11:27:36	RWP	PCC	Excel.	None	1691
D	35530	3	9503	3.22	3.01	3.13	3.10	2.93	2.59	2.24	1.91	56	56	11:27:42	RWP	PCC	Excel.	None	1677
D	35530	4	12708	4.28	3.97	4.20	4.09	3.93	3.39	2.96	2.55	56	56	11:27:49	RWP	PCC	Excel.	None	1687
D	36022	2	6312	2.49	2.43	2.26	2.16	2.09	1.89	1.66	1.44	56	58	11:29:02	RWP	PCC	Excel.	None	1440
D	36022	3	9477	3.73	3.67	3.42	3.31	3.17	2.84	2.52	2.18	56	58	11:29:07	RWP	PCC	Excel.	None	1443
D	36022	4	12658	4.96	4.86	4.59	4.42	4.23	3.82	3.36	2.91	56	58	11:29:14	RWP	PCC	Excel.	None	1451
D	36551	2	6284	1.88	1.77	1.68	1.59	1.53	1.34	1.17	1.01	56	58	11:30:44	RWP	PCC	Excel.	None	1902
D	36551	3	9457	2.84	2.69	2.57	2.47	2.34	2.07	1.82	1.55	56	58	11:30:49	RWP	PCC	Excel.	None	1893
D	36551	4	12616	3.78	3.56	3.45	3.31	3.12	2.79	2.43	2.09	56	58	11:30:56	RWP	PCC	Excel.	None	1897
D	37012	2	6282	2.05	1.97	1.88	1.78	1.74	1.58	1.38	1.22	56	57	11:32:25	RWP	PCC	Excel.	None	1741
D	37012	3	9437	3.08	2.97	2.85	2.75	2.63	2.39	2.11	1.84	56	57	11:32:30	RWP	PCC	Excel.	None	1744
D	37012	4	12610	4.08	3.93	3.82	3.67	3.51	3.19	2.84	2.48	56	57	11:32:37	RWP	PCC	Excel.	None	1757
D	37507	2	6282	2.12	2.02	1.96	1.88	1.81	1.61	1.43	1.25	56	56	11:33:59	RWP	PCC	Excel.	None	1688
D	37507	3	9475	3.26	3.10	3.03	2.94	2.81	2.50	2.19	1.93	56	56	11:34:04	RWP	PCC	Excel.	None	1653
D	37507	4	12672	4.40	4.12	4.10	3.91	3.77	3.37	3.00	2.61	56	56	11:34:11	RWP	PCC	Excel.	None	1638
D	38220	2	6276	1.89	1.79	1.74	1.68	1.60	1.48	1.34	1.18	56	58	11:35:39	RWP	PCC	Excel.	None	1884
D	38220	3	9449	2.81	2.66	2.60	2.52	2.43	2.22	2.00	1.79	56	58	11:35:44	RWP	PCC	Excel.	None	1915
D	38220	4	12646	3.68	3.47	3.46	3.35	3.21	2.95	2.66	2.36	56	58	11:35:51	RWP	PCC	Excel.	None	1952
D	38550	2	6262	2.34	2.28	2.16	2.06	2.00	1.81	1.63	1.43	56	59	11:37:03	RWP	PCC	Excel.	None	1520
D	38550	3	9407	3.52	3.42	3.26	3.15	3.03	2.75	2.47	2.17	56	59	11:37:08	RWP	PCC	Excel.	None	1518
D	38550	4	12591	4.67	4.49	4.34	4.20	4.06	3.70	3.32	2.90	56	59	11:37:15	RWP	PCC	Excel.	None	1535
D	39023	2	6276	3.00	2.83	2.57	2.42	2.30	1.97	1.71	1.45	57	59	11:39:24	RWP	PCC	Excel.	None	1189
D	39023	3	9397	4.55	4.29	3.96	3.74	3.49	3.02	2.58	2.17	57	59	11:39:29	RWP	PCC	Excel.	None	1175
D	39023	4	12559	6.06	5.68	5.28	4.96	4.68	4.06	3.49	2.92	57	59	11:39:36	RWP	PCC	Excel.	None	1178
D	39524	2	6337	1.73	1.67	1.59	1.54	1.50	1.37	1.22	1.11	56	58	11:41:06	RWP	PCC	Excel.	None	2081
D	39524	3	9520	2.63	2.53	2.43	2.40	2.30	2.07	1.89	1.68	56	58	11:41:11	RWP	PCC	Excel.	None	2059
D	39524	4	12735	3.47	3.31	3.27	3.15	3.01	2.78	2.53	2.24	56	58	11:41:17	RWP	PCC	Excel.	None	2087
D	40065	2	6314	2.62	2.52	2.35	2.20	2.11	1.86	1.63	1.42	57	58	11:42:41	RWP	PCC	Excel.	None	1369
D	40065	3	9455	3.93	3.79	3.54	3.38	3.20	2.82	2.46	2.13	57	58	11:42:46	RWP	PCC	Excel.	None	1368
D	40065	4	12633	5.27	5.04	4.77	4.51	4.26	3.80	3.33	2.86	57	58	11:42:53	RWP	PCC	Excel.	None	1364
D	40067	2	6311	3.60	3.25	2.84	2.56	2.40	2.02	1.68	1.44	57	58	11:43:42	RWP	PCC	Excel.	None	997
D	40067	3	9440	5.34	4.88	4.26	3.96	3.59	3.04	2.57	2.16	57	58	11:43:47	RWP	PCC	Excel.	None	1004
D	40067	4	12622	7.10	6.46	5.69	5.20	4.76	4.06	3.44	2.88	57	58	11:43:54	RWP	PCC	Excel.	None	1010
C	Comment at 40067 ft Time: 11:44:04 :Load transfer																		
D	40504	2	6302	2.58	2.48	2.38	2.27	2.23	2.02	1.82	1.60	57	59	11:45:29	RWP	PCC	Excel.	None	1387
D	40504	3	9495	3.89	3.75	3.61	3.54	3.39	3.08	2.76	2.40	57	59	11:45:35	RWP	PCC	Excel.	None	1386
D	40504	4	12676	5.20	4.96	4.84	4.65	4.51	4.12	3.67	3.23	57	59	11:45:42	RWP	PCC	Excel.	None	1387
D	40974	2	6308	2.53	2.43	2.30	2.17	2.08	1.86	1.62	1.38	57	58	11:47:27	RWP	PCC	Excel.	None	1415
D	40974	3	9501	3.82	3.67	3.48	3.38	3.19	2.84	2.47	2.12	57	58	11:47:33	RWP	PCC	Excel.	None	1413
D	40974	4	12661	5.08	4.89	4.67	4.48	4.27	3.81	3.32	2.83	57	58	11:47:40	RWP	PCC	Excel.	None	1416

D	41501	2	6317	2.06	1.94	1.86	1.79	1.72	1.59	1.39	1.21	56	59	11:49:10	RWP	PCC	Excel.	None	1746
D	41501	3	9498	3.09	2.94	2.82	2.73	2.60	2.36	2.10	1.84	56	59	11:49:15	RWP	PCC	Excel.	None	1750
D	41501	4	12672	4.09	3.87	3.78	3.65	3.50	3.16	2.83	2.48	56	59	11:49:21	RWP	PCC	Excel.	None	1760
D	42016	2	6282	2.30	2.06	2.19	2.16	2.08	1.80	1.51	1.23	57	61	11:50:54	RWP	PCC	Excel.	None	1552
D	42016	3	9430	3.47	3.12	3.35	3.31	3.19	2.75	2.29	1.86	57	61	11:50:59	RWP	PCC	Excel.	None	1545
C	Comment at 42016 ft Time: 11:51:06 :Deflection is not decreasing																		
D	42016	4	12635	4.68	4.24	4.53	4.49	4.32	3.74	3.12	2.52	57	61	11:51:08	RWP	PCC	Excel.	None	1536
D	42506	2	6313	2.08	1.95	1.89	1.80	1.71	1.53	1.32	1.14	57	61	11:52:28	RWP	PCC	Excel.	None	1724
D	42506	3	9488	3.18	2.97	2.91	2.79	2.63	2.34	2.03	1.73	57	61	11:52:33	RWP	PCC	Excel.	None	1696
D	42506	4	12687	4.26	3.98	3.91	3.73	3.55	3.15	2.73	2.34	57	61	11:52:40	RWP	PCC	Excel.	None	1692
D	42929	2	6306	3.04	2.80	2.69	2.49	2.29	1.90	1.53	1.27	57	59	11:54:17	RWP	PCC	Excel.	None	1178
D	42929	3	9421	4.62	4.27	4.13	3.84	3.52	2.91	2.35	1.92	57	59	11:54:22	RWP	PCC	Excel.	None	1159
D	42929	4	12652	6.23	5.72	5.60	5.19	4.75	3.94	3.20	2.59	57	59	11:54:29	RWP	PCC	Excel.	None	1155
D	43606	2	6311	2.75	2.58	2.52	2.35	2.25	1.87	1.54	1.27	57	59	11:56:10	RWP	PCC	Excel.	None	1305
D	43606	3	9467	4.16	3.90	3.84	3.65	3.39	2.88	2.37	1.94	57	59	11:56:16	RWP	PCC	Excel.	None	1295
D	43606	4	12657	5.60	5.22	5.17	4.90	4.54	3.87	3.24	2.61	57	59	11:56:23	RWP	PCC	Excel.	None	1285
D	43963	2	6291	1.91	1.85	1.77	1.68	1.64	1.49	1.36	1.19	57	59	11:57:43	RWP	PCC	Excel.	None	1871
D	43963	3	9485	2.93	2.82	2.71	2.64	2.52	2.28	2.03	1.82	57	59	11:57:48	RWP	PCC	Excel.	None	1842
D	43963	4	12682	3.94	3.75	3.65	3.53	3.37	3.09	2.76	2.46	57	59	11:57:55	RWP	PCC	Excel.	None	1830
D	44534	2	6305	1.71	1.58	1.53	1.45	1.36	1.21	1.08	0.97	57	60	11:59:25	RWP	PCC	Excel.	None	2091
D	44534	3	9478	2.58	2.39	2.32	2.26	2.08	1.85	1.66	1.46	57	60	11:59:30	RWP	PCC	Excel.	None	2090
D	44534	4	12654	3.44	3.18	3.13	2.97	2.82	2.53	2.26	1.98	57	60	11:59:37	RWP	PCC	Excel.	None	2092
D	45018	2	6318	1.87	1.78	1.69	1.63	1.55	1.36	1.19	1.03	57	59	12:01:07	RWP	PCC	Excel.	None	1925
D	45018	3	9469	2.81	2.69	2.59	2.49	2.38	2.10	1.84	1.59	57	59	12:01:12	RWP	PCC	Excel.	None	1916
D	45018	4	12656	3.76	3.60	3.49	3.36	3.18	2.86	2.52	2.15	57	59	12:01:19	RWP	PCC	Excel.	None	1912
D	45022	2	6268	2.88	2.58	2.27	2.06	1.88	1.59	1.35	1.12	57	59	12:02:13	RWP	PCC	Excel.	None	1239
D	45022	3	9440	4.37	3.94	3.50	3.23	2.95	2.43	2.05	1.75	57	59	12:02:18	RWP	PCC	Excel.	None	1228
D	45022	4	12632	5.87	5.27	4.72	4.33	3.95	3.32	2.82	2.35	57	59	12:02:25	RWP	PCC	Excel.	None	1224
C	Comment at 45022 ft Time: 12:02:34 :load transferr																		
D	45529	2	6275	2.41	2.27	2.19	2.06	1.96	1.78	1.51	1.26	57	60	12:03:46	RWP	PCC	Excel.	None	1479
D	45529	3	9447	3.70	3.46	3.34	3.20	3.05	2.69	2.29	1.91	57	60	12:03:51	RWP	PCC	Excel.	None	1453
D	45529	4	12655	4.96	4.65	4.53	4.34	4.11	3.64	3.09	2.59	57	60	12:03:58	RWP	PCC	Excel.	None	1451
D	46028	2	6190	1.82	1.75	1.62	1.56	1.52	1.36	1.20	1.05	56	59	12:05:30	RWP	PCC	Excel.	None	1930
D	46028	3	9332	2.72	2.63	2.47	2.40	2.29	2.05	1.82	1.59	56	59	12:05:35	RWP	PCC	Excel.	None	1954
D	46028	4	12526	3.61	3.48	3.32	3.20	3.05	2.77	2.45	2.12	56	59	12:05:42	RWP	PCC	Excel.	None	1971
D	46512	2	6292	2.06	2.04	1.80	1.70	1.66	1.49	1.30	1.16	57	59	12:07:10	RWP	PCC	Excel.	None	1740
D	46512	3	9456	3.08	3.07	2.76	2.65	2.49	2.22	1.97	1.74	57	59	12:07:16	RWP	PCC	Excel.	None	1746
D	46512	4	12663	4.09	4.06	3.70	3.51	3.33	2.99	2.65	2.34	57	59	12:07:23	RWP	PCC	Excel.	None	1759
D	47017	2	6304	1.90	1.83	1.76	1.69	1.68	1.51	1.35	1.21	56	58	12:08:52	RWP	PCC	Excel.	None	1890
D	47017	3	9482	2.90	2.77	2.70	2.63	2.55	2.30	2.07	1.84	56	58	12:08:57	RWP	PCC	Excel.	None	1860
D	47017	4	12640	3.84	3.67	3.62	3.52	3.39	3.10	2.82	2.50	56	58	12:09:04	RWP	PCC	Excel.	None	1871
D	47531	2	6304	2.49	2.45	2.33	2.22	2.19	1.98	1.74	1.54	57	58	12:10:39	RWP	PCC	Excel.	None	1441
D	47531	3	9484	3.79	3.69	3.54	3.43	3.30	2.98	2.67	2.34	57	58	12:10:45	RWP	PCC	Excel.	None	1421
D	47531	4	12670	5.09	4.92	4.77	4.58	4.41	3.99	3.60	3.15	57	58	12:10:52	RWP	PCC	Excel.	None	1416
D	48079	2	6292	2.39	2.30	2.21	2.08	2.04	1.88	1.68	1.49	57	59	12:12:15	RWP	PCC	Excel.	None	1495
D	48079	3	9474	3.62	3.49	3.33	3.24	3.10	2.82	2.52	2.23	57	59	12:12:21	RWP	PCC	Excel.	None	1490
D	48079	4	12643	4.82	4.63	4.50	4.31	4.16	3.79	3.39	3.00	57	59	12:12:28	RWP	PCC	Excel.	None	1493
D	48518	2	6290	3.66	3.39	3.30	3.12	2.97	2.59	2.14	1.81	57	59	12:14:03	RWP	PCC	Excel.	None	978
D	48518	3	9452	5.56	5.17	5.06	4.86	4.51	3.88	3.25	2.73	57	59	12:14:08	RWP	PCC	Excel.	None	967
D	48518	4	12604	7.46	6.94	6.85	6.51	6.11	5.23	4.39	3.66	57	59	12:14:15	RWP	PCC	Excel.	None	961
D	49050	2	6266	2.44	2.36	2.23	2.11	2.07	1.89	1.68	1.48	57	60	12:15:55	RWP	PCC	Excel.	None	1458
D	49050	3	9445	3.68	3.56	3.37	3.30	3.13	2.83	2.52	2.20	57	60	12:16:00	RWP	PCC	Excel.	None	1458
D	49050	4	12612	4.92	4.76	4.55	4.38	4.22	3.82	3.39	2.95	57	60	12:16:07	RWP	PCC	Excel.	None	1458
D	49603	2	6284	2.90	2.85	2.57	2.44	2.38	2.16	1.89	1.62	58	60	12:17:31	RWP	PCC	Excel.	None	1230
D	49603	3	9414	4.36	4.28	3.94	3.83	3.61	3.26	2.86	2.47	58	60	12:17:37	RWP	PCC	Excel.	None	1228
D	49603	4	12564	5.79	5.66	5.29	5.10	4.84	4.38	3.85	3.30	58	60	12:17:44	RWP	PCC	Excel.	None	1234
D	50092	2	6306	1.97	1.87	1.80	1.70	1.67	1.52	1.36	1.19	58	60	12:19:04	RWP	PCC	Excel.	None	1823
D	50092	3	9477	2.94	2.82	2.72	2.66	2.54	2.31	2.05	1.82	58	60	12:19:09	RWP	PCC	Excel.	None	1832
D	50092	4	12658	3.94	3.78	3.67	3.55	3.42	3.12	2.79	2.47	58	60	12:19:16	RWP	PCC	Excel.	None	1826
C	Comment at 50159 ft Time: 12:20:28 :Deflection is not decreasing																		
D	50159	2	6296	3.76	1.52	3.05	2.73	2.56	2.14	1.76	1.43	58	59	12:20:30	RWP	PCC	Excel.	None	952
C	Comment at 50159 ft Time: 12:20:35 :Deflection is not decreasing																		
D	50159	3	9435	5.68	2.34	4.68	4.27	3.92	3.23	2.66	2.21	58	59	12:20:37	RWP	PCC	Excel.	None	944
C	Comment at 50159 ft Time: 12:20:44 :Deflection is not decreasing																		
D	50159	4	12620	7.57	3.21	6.26	5.69	5.20	4.32	3.59	2.95	58	59	12:20:47	RWP	PCC	Excel.	None	948
C	Comment at 50159 ft Time: 12:20:57 :Load transfer																		

													Brooklyn SB 17		Nov09					
D	50509	2	6276	3.46	3.29	3.16	2.94	2.79	2.34	1.88	1.52	58	59	12:22:04	RWP	PCC	Excel.	None	1031
D	50509	3	9431	5.24	4.96	4.82	4.61	4.26	3.57	2.91	2.30	58	59	12:22:10	RWP	PCC	Excel.	None	1023
D	50509	4	12574	7.01	6.63	6.49	6.14	5.73	4.82	3.95	3.09	58	59	12:22:16	RWP	PCC	Excel.	None	1020

C Comment at 50639 ft Time: 12:23:23 :End

Iowa Highway 9 Eastbound, May 2009


```
IKUAB FWD FILE      : IA9  EB Cable.fwd
HProject No.        : Overlay 9
HLocation           : Sibley
HClient             : Cable
HStart Station      : test
HDirection          : test
HEnd Station        :
HWeather            : Sunny breezy
HOperator           : HG

IDate Created       : 5/4/2009
IVersion            : 2.3.11
ILoad Mode          : 1          (SHRP 8+8 buffers, 0 plates)
IPlate Radius       : 5.91       (in)
IExtra Field Set    : Example Road
IDrop Sequence      : 2123
INo of drops        : 1111
IRecord Drop?       : NYYY
IDrop Height        :    1     2     3     4
IImpact Load        :  6003  9005 12007 16009 lbf
ISensor Number      :      0      1      2      3      4      5      6      7      8
ISensor Distance    :   0.00   8.00  12.00  18.00  24.00  36.00  48.00  60.00  59.06 (in)
ISensor Position    : CENTER BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :     0 ft
ITestpoint spacing:  1000 ft
```

J	Distance ft	Imp Num	Load lbf	D0 µm	D1 µm	D2 µm	D3 µm	D4 µm	D5 µm	D6 µm	D7 µm	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	-8	2	20390	211	174	156	140	131	112	95	78	70	70	11:06:40	RWP	AC	Excel.	None	15086
D	-8	3	8962	318	267	243	221	204	175	149	123	70	70	11:06:45	RWP	AC	Excel.	None	407
D	-8	4	12203	429	363	332	302	278	241	206	170	70	70	11:06:52	RWP	AC	Excel.	None	411
D	-8	2	5869	211	176	158	142	132	112	96	79	70	70	11:07:27	RWP	AC	Excel.	None	402
D	-8	3	8989	321	271	246	223	206	176	151	124	70	70	11:07:33	RWP	AC	Excel.	None	405
D	-8	4	12196	428	364	333	304	280	241	206	171	70	70	11:07:40	RWP	AC	Excel.	None	411
D	-1022	2	5856	199	182	168	154	146	127	107	86	70	79	11:10:24	RWP	AC	Poor	None	426
D	-1022	3	8974	306	281	261	244	229	200	169	137	70	79	11:10:30	RWP	AC	Poor	None	424
D	-1022	4	12190	412	380	354	335	314	274	233	188	70	79	11:10:37	RWP	AC	Poor	None	428
D	-2038	2	5865	188	149	139	129	123	108	93	77	71	80	11:12:28	RWP	AC	Poor	None	451
D	-2038	3	8983	288	233	218	206	196	172	148	123	71	80	11:12:34	RWP	AC	Poor	None	450
D	-2038	4	12188	384	315	294	280	265	234	203	169	71	80	11:12:40	RWP	AC	Poor	None	458
D	-3016	2	5858	178	143	127	115	108	91	75	60	71	81	11:14:16	RWP	AC	Poor	None	477
D	-3016	3	8993	270	222	200	183	170	144	119	96	71	81	11:14:22	RWP	AC	Poor	None	480
D	-3016	4	12242	363	301	274	252	233	199	164	133	71	81	11:14:30	RWP	AC	Poor	None	487
D	-4041	2	5762	211	183	162	147	138	118	98	81	72	83	11:16:08	RWP	AC	Poor	None	395
D	-4041	3	8930	329	291	259	237	220	188	158	130	72	83	11:16:14	RWP	AC	Poor	None	392
D	-4041	4	12121	447	399	356	327	302	260	218	179	72	83	11:16:21	RWP	AC	Poor	None	392
D	-5016	2	5882	229	183	160	138	124	101	82	65	72	85	11:18:05	RWP	AC	Poor	None	372
D	-5016	3	9001	351	285	252	222	199	162	133	105	72	85	11:18:10	RWP	AC	Poor	None	370
D	-5016	4	12196	472	388	345	306	275	226	184	147	72	85	11:18:17	RWP	AC	Poor	None	373
D	-6025	2	5837	219	191	171	152	144	122	102	82	73	83	11:19:48	RWP	AC	Poor	None	385
D	-6025	3	8923	340	299	270	245	228	195	162	132	73	83	11:19:53	RWP	AC	Poor	None	379
D	-6025	4	12136	456	406	368	335	312	268	224	182	73	83	11:20:00	RWP	AC	Poor	None	384
D	-7033	2	5895	122	114	110	105	102	91	79	68	73	83	11:22:16	RWP	AC	Poor	None	696
D	-7033	3	9102	192	178	174	168	161	143	125	108	73	83	11:22:22	RWP	AC	Poor	None	683
D	-7033	4	12364	260	242	236	230	219	196	172	147	73	83	11:22:29	RWP	AC	Poor	None	688
D	-8022	2	5900	112	106	102	98	94	83	71	58	71	84	11:24:00	RWP	AC	Poor	None	758
D	-8022	3	9039	177	166	161	155	148	130	112	93	71	84	11:24:05	RWP	AC	Poor	None	739
D	-8022	4	12244	243	228	222	214	204	180	154	129	71	84	11:24:12	RWP	AC	Poor	None	729
D	-9024	2	5885	118	106	98	91	87	74	63	51	72	83	11:25:46	RWP	AC	Poor	None	721
D	-9024	3	9005	187	169	158	149	139	120	102	83	72	83	11:25:53	RWP	AC	Poor	None	697
D	-9024	4	12259	259	235	221	209	195	169	143	117	72	83	11:26:01	RWP	AC	Poor	None	683

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IA9 EB Cable

D	-10010	2	5849	134	127	123	117	111	100	86	73	73	85	11:27:41	RWP	AC	Poor	None	628
D	-10010	3	9038	214	202	195	187	178	158	137	117	73	85	11:27:46	RWP	AC	Poor	None	611
D	-10010	4	12277	292	274	265	256	244	218	189	161	73	85	11:27:53	RWP	AC	Poor	None	607
D	-11010	2	5846	164	147	138	130	126	110	94	77	72	82	11:29:42	RWP	AC	Poor	None	516
D	-11010	3	9010	258	232	220	209	200	175	150	124	72	82	11:29:49	RWP	AC	Poor	None	505
D	-11010	4	12207	352	317	301	287	274	240	206	172	72	82	11:29:56	RWP	AC	Poor	None	501
D	-12039	2	5846	201	156	138	125	117	99	82	68	72	85	11:31:19	RWP	AC	Poor	None	420
D	-12039	3	8976	309	245	218	199	186	157	130	107	72	85	11:31:25	RWP	AC	Poor	None	419
D	-12039	4	12134	417	334	299	274	256	216	180	148	72	85	11:31:33	RWP	AC	Poor	None	420
D	-13053	2	5858	251	197	169	144	129	110	94	75	73	84	11:33:23	RWP	AC	Poor	None	337
D	-13053	3	9016	368	298	260	227	205	175	149	120	73	84	11:33:29	RWP	AC	Poor	None	354
D	-13053	4	12241	480	396	350	308	281	241	206	166	73	84	11:33:36	RWP	AC	Poor	None	368
D	-14062	2	5813	237	209	191	175	165	139	112	87	72	83	11:35:08	RWP	AC	Poor	None	354
D	-14062	3	8932	368	326	300	277	260	220	176	136	72	83	11:35:13	RWP	AC	Poor	None	350
D	-14062	4	12146	497	440	406	378	354	301	240	185	72	83	11:35:20	RWP	AC	Poor	None	353
D	-15002	2	5814	245	212	190	165	149	123	103	82	72	84	11:36:52	RWP	AC	Poor	None	342
D	-15002	3	8956	373	324	293	259	233	194	162	129	72	84	11:36:58	RWP	AC	Poor	None	347
D	-15002	4	12130	494	430	391	349	315	264	221	176	72	84	11:37:06	RWP	AC	Poor	None	354
D	-16025	2	5910	181	154	145	133	127	111	93	78	72	82	11:38:47	RWP	AC	Poor	None	471
D	-16025	3	9052	285	243	229	211	201	175	148	124	72	82	11:38:54	RWP	AC	Poor	None	458
D	-16025	4	12263	389	329	310	290	274	238	203	169	72	82	11:39:02	RWP	AC	Poor	None	455
D	-16954	2	5847	206	160	143	125	115	98	80	65	72	84	11:41:05	RWP	AC	Poor	None	410
D	-16954	3	8958	313	249	224	202	184	157	129	104	72	84	11:41:10	RWP	AC	Poor	None	414
D	-16954	4	12196	423	340	307	280	257	218	180	145	72	84	11:41:17	RWP	AC	Poor	None	417
C	Comment at -16954 ft Time: 11:41:51 :just before HWY59 pavement change																		
D	-18046	2	5844	160	143	129	117	110	96	81	64	72	84	11:43:37	RWP	AC	Poor	None	527
D	-18046	3	8977	249	222	203	186	174	152	128	102	72	84	11:43:42	RWP	AC	Poor	None	521
D	-18046	4	12222	338	301	276	256	238	209	175	141	72	84	11:43:49	RWP	AC	Poor	None	522
D	-19046	2	5879	144	133	128	122	119	103	74	61	72	82	11:45:23	RWP	AC	Poor	None	590
D	-19046	3	9068	228	212	204	196	190	165	119	97	72	82	11:45:30	RWP	AC	Poor	None	575
D	-19046	4	12304	314	291	282	272	262	228	165	135	72	82	11:45:38	RWP	AC	Poor	None	566
D	-20021	2	5856	182	157	146	139	131	112	92	75	72	84	11:47:17	RWP	AC	Poor	None	465
D	-20021	3	9020	280	245	230	220	207	177	147	119	72	84	11:47:22	RWP	AC	Poor	None	466
D	-20021	4	12241	376	334	314	301	285	245	202	166	72	84	11:47:29	RWP	AC	Poor	None	470
D	-21041	2	5924	135	125	121	116	113	100	86	72	72	85	11:49:01	RWP	AC	Poor	None	635
D	-21041	3	9097	212	197	191	186	178	158	136	114	72	85	11:49:07	RWP	AC	Poor	None	619
D	-21041	4	12320	289	269	261	254	244	217	187	158	72	85	11:49:15	RWP	AC	Poor	None	617
D	-22034	2	5974	75	68	66	63	62	56	50	44	72	83	11:50:41	RWP	AC	Poor	None	1144
D	-22034	3	9195	118	107	104	101	97	88	79	68	72	83	11:50:46	RWP	AC	Poor	None	1123
D	-22034	4	12523	162	148	142	140	132	121	108	93	72	83	11:50:53	RWP	AC	Poor	None	1118
D	-23059	2	5874	128	121	115	110	105	93	81	68	72	85	11:52:30	RWP	AC	Poor	None	662
D	-23059	3	9028	205	189	181	173	164	146	128	107	72	85	11:52:36	RWP	AC	Poor	None	637
D	-23059	4	12238	281	259	249	237	224	200	176	149	72	85	11:52:44	RWP	AC	Poor	None	629
D	-24009	2	5920	140	115	108	98	89	77	64	51	71	83	11:54:50	RWP	AC	Poor	None	611
D	-24009	3	9097	223	183	172	158	144	123	102	81	71	83	11:54:55	RWP	AC	Poor	None	589
D	-24009	4	12356	311	254	239	222	201	173	145	115	71	83	11:55:02	RWP	AC	Poor	None	575
D	-25001	2	5872	138	111	100	92	86	75	64	53	71	82	11:56:37	RWP	AC	Poor	None	613
D	-25001	3	9106	218	176	158	146	137	121	102	85	71	82	11:56:42	RWP	AC	Poor	None	602
D	-25001	2	5862	137	111	100	92	85	76	65	53	71	81	11:57:28	RWP	AC	Poor	None	617
D	-25001	3	9088	216	176	158	147	137	120	103	85	71	81	11:57:34	RWP	AC	Poor	None	609
D	-25001	4	12304	296	241	217	203	190	168	142	118	71	81	11:57:40	RWP	AC	Poor	None	600
D	-26045	2	5873	116	101	90	80	74	62	51	40	70	79	11:59:49	RWP	AC	Poor	None	728
D	-26045	3	9036	179	156	141	128	118	100	81	63	70	79	11:59:55	RWP	AC	Poor	None	728
D	-26045	4	12272	242	212	192	175	161	137	112	87	70	79	12:00:03	RWP	AC	Poor	None	732
D	-27058	2	5897	146	128	120	110	101	79	61	46	70	84	12:01:32	RWP	AC	Poor	None	584
D	-27058	3	9039	225	196	182	168	153	120	95	71	70	84	12:01:38	RWP	AC	Poor	None	580
D	-27058	4	12279	305	263	244	224	203	160	127	96	70	84	12:01:46	RWP	AC	Poor	None	582
D	-27984	2	5906	114	97	91	85	82	71	60	50	70	80	12:03:35	RWP	AC	Poor	None	748
D	-27984	3	9021	178	154	145	136	129	113	96	80	70	80	12:03:40	RWP	AC	Poor	None	733
D	-27984	4	12308	243	210	199	190	179	157	134	111	70	80	12:03:47	RWP	AC	Poor	None	731
D	-29038	2	5891	196	135	115	104	96	80	66	52	70	80	12:05:19	RWP	AC	Poor	None	435
D	-29038	3	9083	296	209	182	165	151	126	104	83	70	80	12:05:25	RWP	AC	Poor	None	443
D	-29038	4	12351	397	284	251	229	209	176	144	116	70	80	12:05:32	RWP	AC	Poor	None	450

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																IA9	EB Cable		
D	-30067	2	5916	152	135	118	98	86	68	55	44	71	82	12:07:08	RWP	AC	Poor	None	561
D	-30067	3	9056	236	209	187	158	139	109	90	72	71	82	12:07:13	RWP	AC	Poor	None	555
D	-30067	4	12259	320	281	255	220	193	153	126	101	71	82	12:07:20	RWP	AC	Poor	None	554
D	-31011	2	5815	172	126	116	103	94	79	65	52	70	80	12:08:45	RWP	AC	Poor	None	489
D	-31011	3	8977	262	198	178	164	151	126	97	83	70	80	12:08:51	RWP	AC	Poor	None	494
D	-31011	4	12219	353	269	244	226	209	173	142	114	70	80	12:08:58	RWP	AC	Poor	None	500
D	-32062	2	5859	151	118	105	96	91	79	66	55	71	83	12:10:37	RWP	AC	Poor	None	559
D	-32062	3	9008	236	187	168	156	147	127	107	88	71	83	12:10:42	RWP	AC	Poor	None	550
D	-32062	4	12265	323	257	232	217	204	177	150	123	71	83	12:10:49	RWP	AC	Poor	None	549
D	-33077	2	5981	104	94	89	84	80	69	57	46	71	81	12:12:10	RWP	AC	Poor	None	830
D	-33077	3	9073	165	146	141	133	128	110	92	75	71	81	12:12:15	RWP	AC	Poor	None	796
D	-33077	4	12309	225	198	192	187	175	151	128	104	71	81	12:12:22	RWP	AC	Poor	None	790
D	-34057	2	5854	172	135	124	116	109	95	80	65	71	85	12:14:01	RWP	AC	Poor	None	492
D	-34057	3	8960	268	215	197	186	176	152	128	105	71	85	12:14:06	RWP	AC	Poor	None	482
D	-34057	4	12155	363	293	270	256	243	210	178	146	71	85	12:14:13	RWP	AC	Poor	None	483
D	-35141	2	5869	208	176	153	129	113	86	65	46	71	79	12:16:16	RWP	AC	Poor	None	408
D	-35141	3	9012	311	265	235	201	176	135	102	73	71	79	12:16:21	RWP	AC	Poor	None	419
D	-35141	4	12288	406	352	315	271	239	184	140	101	71	79	12:16:28	RWP	AC	Poor	None	437
D	-36038	2	5879	144	113	105	97	88	76	63	50	72	83	12:17:50	RWP	AC	Poor	None	588
D	-36038	3	9038	225	179	167	156	143	122	101	80	72	83	12:17:55	RWP	AC	Poor	None	581
D	-36038	4	12279	305	249	231	215	199	169	141	113	72	83	12:18:02	RWP	AC	Poor	None	581
D	-37038	2	5849	138	121	111	103	98	85	70	57	72	81	12:19:50	RWP	AC	Poor	None	611
D	-37038	3	9027	217	190	176	165	156	135	112	91	72	81	12:19:55	RWP	AC	Poor	None	601
D	-37038	4	12270	297	261	243	228	217	188	157	127	72	81	12:20:02	RWP	AC	Poor	None	597
D	-38042	2	5944	143	103	89	79	74	64	54	44	73	87	12:21:36	RWP	AC	Poor	None	599
D	-38042	3	9058	221	162	142	128	118	101	87	70	73	87	12:21:42	RWP	AC	Poor	None	592
D	-38042	4	12336	300	223	196	177	163	140	121	99	73	87	12:21:49	RWP	AC	Poor	None	594
D	-39141	2	5930	142	109	101	97	92	77	65	52	74	88	12:23:11	RWP	AC	Poor	None	605
D	-39141	3	9142	225	175	164	158	148	125	106	84	74	88	12:23:16	RWP	AC	Poor	None	587
D	-39141	4	12448	308	244	229	221	207	176	149	119	74	88	12:23:23	RWP	AC	Poor	None	583
D	-40072	2	5962	180	139	124	105	96	81	67	54	73	87	12:24:43	RWP	AC	Poor	None	478
D	-40072	3	9108	275	216	195	169	154	130	108	88	73	87	12:24:48	RWP	AC	Poor	None	479
D	-40072	4	12301	367	294	266	237	213	180	151	122	73	87	12:24:55	RWP	AC	Poor	None	484
D	-41049	2	5857	143	135	123	113	106	92	76	61	73	83	12:26:12	RWP	AC	Poor	None	591
D	-41049	3	9016	226	213	195	180	170	149	123	100	73	83	12:26:18	RWP	AC	Poor	None	576
D	-41049	4	12228	311	293	267	249	235	205	173	139	73	83	12:26:24	RWP	AC	Poor	None	569
D	-42031	2	5870	183	162	148	128	119	102	85	67	73	84	12:27:45	RWP	AC	Poor	None	463
D	-42031	3	9040	284	249	229	203	191	163	135	108	73	84	12:27:50	RWP	AC	Poor	None	459
D	-42031	4	12268	387	335	315	281	263	226	188	150	73	84	12:27:57	RWP	AC	Poor	None	458
D	-43041	2	5849	127	111	107	99	95	82	68	55	73	83	12:29:28	RWP	AC	Poor	None	663
D	-43041	3	8978	201	178	169	157	150	130	109	89	73	83	12:29:33	RWP	AC	Poor	None	645
D	-43041	4	12251	275	246	231	219	208	181	151	124	73	83	12:29:40	RWP	AC	Poor	None	643
D	-44086	2	5903	132	109	100	90	86	74	63	51	73	83	12:31:14	RWP	AC	Poor	None	647
D	-44086	3	9056	202	169	158	146	137	119	100	82	73	83	12:31:19	RWP	AC	Poor	None	646
D	-44086	4	12375	276	232	217	202	190	165	140	115	73	83	12:31:26	RWP	AC	Poor	None	648
D	-44954	2	5868	162	138	125	112	105	92	80	66	73	82	12:32:40	RWP	AC	Poor	None	524
D	-44954	3	8963	249	216	196	179	169	148	127	106	73	82	12:32:45	RWP	AC	Poor	None	519
D	-44954	4	12287	336	293	268	249	234	204	176	147	73	82	12:32:52	RWP	AC	Poor	None	529
D	-45220	2	5879	140	118	112	106	99	89	77	66	73	86	12:34:04	RWP	AC	Poor	None	608
D	-45220	3	9029	220	187	178	169	158	140	122	105	73	86	12:34:09	RWP	AC	Poor	None	593
D	-45220	4	12328	303	259	247	236	219	195	171	145	73	86	12:34:16	RWP	AC	Poor	None	588

Iowa Highway 9 Westbound, May 2009


```
IKUAB FWD FILE     : IA9 WB Cable.fwd
HProject No.       : Overlay 9
HLocation          : Sibley
HClient            : Cable
HStart Station     : test
HDirection         : test
HEnd Station       :
HWeather           : Sunny breezy
HOperator          : HG

IDate Created      : 5/4/2009
IVersion           : 2.3.11
ILoad Mode         : 1        (SHRP 8+8 buffers, 0 plates)
IPlate Radius      : 5.91     (in)
IExtra Field Set   : Example Road
IDrop Sequence     : 2123
INo of drops       : 1111
IRecord Drop?      : NYYY
IDrop Height       :    1     2     3     4
IImpact Load       :  6003  9005 12007 16009 lbf
ISensor Number     :      0      1      2      3      4      5      6      7      8
ISensor Distance   :   0.00   8.00  12.00  18.00  24.00  36.00  48.00  60.00  59.06 (in)
ISensor Position   : CENTER BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :     0 ft
ITestpoint spacing:  1000 ft
```

J	Distance ft	Imp Num	Load lbf	D0 µm	D1 µm	D2 µm	D3 µm	D4 µm	D5 µm	D6 µm	D7 µm	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	0	2	5894	146	133	127	121	117	101	87	71	72	82	12:38:24	RWP	AC	Poor	None	584
D	0	3	9002	229	209	201	194	185	160	137	114	72	82	12:38:30	RWP	AC	Poor	None	567
D	0	4	12249	314	287	276	267	254	222	189	158	72	82	12:38:37	RWP	AC	Poor	None	563
D	-1008	2	5847	140	119	116	106	102	91	78	67	72	86	12:40:12	RWP	AC	Poor	None	601
D	-1008	3	8958	218	191	181	168	162	145	126	107	72	86	12:40:17	RWP	AC	Poor	None	594
D	-1008	4	12188	296	262	244	233	221	200	173	148	72	86	12:40:24	RWP	AC	Poor	None	595
D	-2018	2	5831	117	108	106	101	97	85	74	63	72	92	12:41:50	RWP	AC	Poor	None	719
D	-2018	3	8945	186	172	168	163	155	137	118	100	72	92	12:41:55	RWP	AC	Poor	None	695
D	-2018	4	12232	257	238	233	226	215	190	165	139	72	92	12:42:02	RWP	AC	Poor	None	689
D	-3066	2	5818	202	158	140	124	113	91	74	58	73	89	12:43:29	RWP	AC	Poor	None	415
D	-3066	3	8937	314	248	222	196	179	145	118	93	73	89	12:43:34	RWP	AC	Poor	None	411
D	-3066	4	12182	430	340	305	271	246	201	164	129	73	89	12:43:41	RWP	AC	Poor	None	409
D	-4038	2	5891	204	178	167	157	139	104	83	67	72	90	12:45:02	RWP	AC	Poor	None	417
D	-4038	3	9038	316	280	263	247	218	165	132	107	72	90	12:45:08	RWP	AC	Poor	None	413
D	-4038	4	12289	431	384	361	339	297	228	183	150	72	90	12:45:16	RWP	AC	Poor	None	412
D	-5025	2	5868	147	141	131	122	114	99	84	69	72	89	12:46:48	RWP	AC	Poor	None	577
D	-5025	3	9014	231	219	205	192	181	157	133	108	72	89	12:46:55	RWP	AC	Poor	None	563
D	-5025	4	12282	317	295	278	263	249	217	184	149	72	89	12:47:03	RWP	AC	Poor	None	559
D	-6060	2	5884	177	141	124	108	100	80	64	49	73	95	12:48:37	RWP	AC	Poor	None	481
D	-6060	3	9040	272	220	196	174	159	128	101	79	73	95	12:48:43	RWP	AC	Poor	None	480
D	-6060	4	12243	370	302	271	242	220	177	141	111	73	95	12:48:51	RWP	AC	Poor	None	478
D	-7026	2	5890	105	100	96	88	85	75	65	54	74	93	12:50:27	RWP	AC	Poor	None	809
D	-7026	3	9026	165	154	149	140	135	119	102	85	74	93	12:50:32	RWP	AC	Poor	None	788
D	-7026	4	12269	227	209	202	195	187	165	142	119	74	93	12:50:39	RWP	AC	Poor	None	781
D	-8002	2	5843	170	135	126	116	110	94	80	65	73	90	12:52:10	RWP	AC	Poor	None	498
D	-8002	3	8973	263	214	199	186	175	150	127	105	73	90	12:52:16	RWP	AC	Poor	None	492
D	-8002	4	12204	359	292	273	258	242	208	177	146	73	90	12:52:23	RWP	AC	Poor	None	491
D	-9025	2	5913	176	130	107	92	83	70	58	45	73	87	12:54:07	RWP	AC	Poor	None	485
D	-9025	3	9087	266	201	169	146	132	111	92	72	73	87	12:54:12	RWP	AC	Poor	None	493
D	-9025	4	12372	356	271	231	202	182	154	128	101	73	87	12:54:19	RWP	AC	Poor	None	503
D	-10015	2	5871	101	89	84	81	67	57	49	41	74	89	12:55:47	RWP	AC	Poor	None	840
D	-10015	3	9048	161	142	134	131	107	91	77	64	74	89	12:55:52	RWP	AC	Poor	None	813
D	-10015	4	12387	221	196	186	181	148	125	106	88	74	89	12:55:59	RWP	AC	Poor	None	810

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D	-11035	2	5885	230	194	171	148	133	106	76	51	73	91	12:57:37	RWP	AC	Poor	None	369
D	-11035	3	9014	358	302	268	234	211	168	122	82	73	91	12:57:44	RWP	AC	Poor	None	363
D	-11035	4	12218	488	408	366	322	289	231	168	112	73	91	12:57:52	RWP	AC	Poor	None	362
D	-12015	2	5894	114	98	91	87	81	70	58	46	72	91	12:59:14	RWP	AC	Poor	None	745
D	-12015	3	9101	182	156	146	139	131	112	92	73	72	91	12:59:21	RWP	AC	Poor	None	723
D	-12015	4	12331	250	212	201	194	181	155	128	101	72	91	12:59:29	RWP	AC	Poor	None	714
D	-13028	2	5834	155	134	130	123	118	103	87	70	73	92	13:01:08	RWP	AC	Poor	None	544
D	-13028	3	8980	247	215	206	195	187	163	138	112	73	92	13:01:14	RWP	AC	Poor	None	525
D	-13028	4	12195	340	295	282	270	258	225	192	155	73	92	13:01:21	RWP	AC	Poor	None	519
D	-14029	2	5840	150	133	123	114	109	94	79	62	74	92	13:02:45	RWP	AC	Poor	None	562
D	-14029	3	9017	238	208	194	181	172	150	126	100	74	92	13:02:51	RWP	AC	Poor	None	547
D	-14029	4	12302	327	283	264	250	236	208	176	140	74	92	13:02:59	RWP	AC	Poor	None	543
D	-15033	2	5840	185	144	129	111	102	83	68	53	74	94	13:04:27	RWP	AC	Poor	None	456
D	-15033	3	9003	284	224	200	176	161	132	109	86	74	94	13:04:33	RWP	AC	Poor	None	457
D	-15033	4	12229	385	304	274	243	221	183	152	120	74	94	13:04:40	RWP	AC	Poor	None	459
D	-16037	2	5846	210	158	150	127	114	92	72	54	74	94	13:06:09	RWP	AC	Poor	None	402
D	-16037	3	8926	330	256	237	205	187	150	118	89	74	94	13:06:15	RWP	AC	Poor	None	390
D	-16037	4	12103	455	357	331	290	263	212	167	128	74	94	13:06:22	RWP	AC	Poor	None	385
D	-17069	2	5893	135	112	105	101	95	83	70	58	74	93	13:07:58	RWP	AC	Poor	None	630
D	-17069	3	9046	214	178	168	161	153	134	113	92	74	93	13:08:05	RWP	AC	Poor	None	612
D	-17069	4	12321	295	245	234	225	214	187	159	130	74	93	13:08:12	RWP	AC	Poor	None	604
D	-18043	2	5878	113	89	78	68	62	50	42	34	74	96	13:09:31	RWP	AC	Poor	None	750
D	-18043	3	9021	176	140	123	110	101	80	67	55	74	96	13:09:37	RWP	AC	Poor	None	742
D	-18043	4	12290	239	192	170	153	140	111	93	76	74	96	13:09:45	RWP	AC	Poor	None	742
D	-19048	2	5827	105	82	72	65	62	51	41	34	73	90	13:11:10	RWP	AC	Poor	None	798
D	-19048	3	9028	165	128	115	107	99	82	66	54	73	90	13:11:15	RWP	AC	Poor	None	791
D	-19048	4	12258	223	174	158	147	136	114	92	74	73	90	13:11:22	RWP	AC	Poor	None	793
D	-19997	2	5868	175	146	121	105	97	83	70	57	74	93	13:12:52	RWP	AC	Poor	None	484
D	-19997	3	9052	266	223	190	166	154	132	111	91	74	93	13:12:58	RWP	AC	Poor	None	492
D	-19997	4	12341	356	299	257	229	211	182	155	127	74	93	13:13:05	RWP	AC	Poor	None	501
D	-21040	2	5859	130	104	95	77	69	57	48	39	74	92	13:14:53	RWP	AC	Poor	None	652
D	-21040	3	9076	202	163	147	123	110	91	77	63	74	92	13:14:59	RWP	AC	Poor	None	650
D	-21040	4	12383	275	222	200	172	153	128	108	88	74	92	13:15:07	RWP	AC	Poor	None	650
D	-22070	2	5882	112	94	94	89	86	77	67	56	73	89	13:16:23	RWP	AC	Poor	None	761
D	-22070	3	8999	176	151	148	143	136	122	107	90	73	89	13:16:29	RWP	AC	Poor	None	737
D	-22070	4	12250	240	207	203	197	187	170	148	125	73	89	13:16:36	RWP	AC	Poor	None	737
D	-23007	2	5776	139	115	104	97	92	78	67	56	72	87	13:18:03	RWP	AC	Poor	None	601
D	-23007	3	8963	220	182	166	156	147	126	107	89	72	87	13:18:09	RWP	AC	Poor	None	588
D	-23007	4	12246	304	248	227	217	203	175	149	124	72	87	13:18:15	RWP	AC	Poor	None	582
D	-24034	2	5773	146	136	133	120	116	103	89	74	72	86	13:19:43	RWP	AC	Poor	None	572
D	-24034	3	8919	231	213	206	192	184	164	142	119	72	86	13:19:49	RWP	AC	Poor	None	557
D	-24034	4	12129	318	286	279	265	254	227	197	165	72	86	13:19:56	RWP	AC	Poor	None	551
D	-25040	2	5776	154	132	128	121	113	97	80	64	71	84	13:21:35	RWP	AC	Poor	None	543
D	-25040	3	8908	245	212	204	193	182	155	129	104	71	84	13:21:40	RWP	AC	Poor	None	524
D	-25040	4	12146	339	293	282	268	250	216	181	147	71	84	13:21:47	RWP	AC	Poor	None	517
D	-26058	2	5924	162	141	133	125	120	105	87	71	70	85	13:23:09	RWP	AC	Poor	None	528
D	-26058	3	9055	258	225	214	203	192	169	140	114	70	85	13:23:15	RWP	AC	Poor	None	506
D	-26058	4	12362	355	311	296	281	266	233	197	161	70	85	13:23:22	RWP	AC	Poor	None	503
D	-27023	2	5844	142	128	126	123	119	108	95	82	69	89	13:24:52	RWP	AC	Poor	None	596
D	-27023	3	9005	223	200	198	193	188	169	149	129	69	89	13:24:58	RWP	AC	Poor	None	583
D	-27023	4	12299	307	273	270	266	257	233	206	177	69	89	13:25:05	RWP	AC	Poor	None	579
D	-28023	2	5844	184	166	163	146	136	116	100	85	69	83	13:26:43	RWP	AC	Poor	None	459
D	-28023	3	9028	288	263	253	230	215	184	159	135	69	83	13:26:49	RWP	AC	Poor	None	453
D	-28023	4	12266	394	359	345	318	295	253	220	188	69	83	13:26:56	RWP	AC	Poor	None	450
D	-29052	2	5900	196	159	146	120	108	90	76	61	68	85	13:28:23	RWP	AC	Poor	None	435
D	-29052	3	9079	301	246	227	190	170	144	121	98	68	85	13:28:29	RWP	AC	Poor	None	435
D	-29052	4	12341	409	335	308	263	235	199	168	136	68	85	13:28:37	RWP	AC	Poor	None	436
D	-30039	2	5857	242	188	177	146	133	111	87	67	67	80	13:30:05	RWP	AC	Poor	None	350
D	-30039	3	8960	364	293	276	231	211	176	139	107	67	80	13:30:11	RWP	AC	Poor	None	356
D	-30039	4	12218	486	398	374	321	291	245	195	149	67	80	13:30:17	RWP	AC	Poor	None	363
D	-31015	2	5882	177	153	141	134	127	108	93	78	67	78	13:31:46	RWP	AC	Poor	None	480
D	-31015	3	9101	272	239	220	209	198	170	147	124	67	78	13:31:52	RWP	AC	Poor	None	483
D	-31015	4	12409	369	324	299	286	271	234	203	171	67	78	13:32:00	RWP	AC	Poor	None	486

IA9 WB Cable

D	-32016	2	5879	196	166	152	131	124	105	87	73	67	84	13:33:23	RWP	AC	Poor	None	434
D	-32016	3	9037	299	256	237	207	195	165	139	115	67	84	13:33:30	RWP	AC	Poor	None	436
D	-32016	4	12282	402	341	314	286	267	228	191	159	67	84	13:33:38	RWP	AC	Poor	None	441
D	-33011	2	5835	155	144	137	130	122	106	89	73	67	76	13:35:34	RWP	AC	Poor	None	545
D	-33011	3	8972	242	225	215	207	193	167	140	115	67	76	13:35:40	RWP	AC	Poor	None	536
D	-33011	4	12215	331	308	293	285	267	231	195	159	67	76	13:35:48	RWP	AC	Poor	None	533
D	-34050	2	5770	176	155	146	138	134	117	103	86	67	75	13:37:35		AC	Poor	None	473
D	-34050	3	8878	276	247	230	220	212	187	164	139	67	75	13:37:40		AC	Poor	None	465
D	-34050	4	12129	373	335	312	303	290	256	225	190	67	75	13:37:48		AC	Poor	None	469
D	-35022	2	5737	208	162	153	135	128	110	92	75	66	76	13:39:30	RWP	AC	Poor	None	399
D	-35022	3	8884	321	253	237	215	203	174	146	120	66	76	13:39:35	RWP	AC	Poor	None	399
D	-35022	4	12145	436	347	324	299	280	240	202	166	66	76	13:39:42	RWP	AC	Poor	None	403
D	-36013	2	5836	173	142	126	112	108	94	80	67	65	75	13:41:13	RWP	AC	Poor	None	488
D	-36013	3	8959	264	219	196	180	169	147	125	104	65	75	13:41:20	RWP	AC	Poor	None	490
D	-36013	4	12283	357	300	267	246	231	201	171	144	65	75	13:41:28	RWP	AC	Poor	None	497
D	-37017	2	5769	163	151	126	121	112	97	82	67	65	74	13:43:08	RWP	AC	Poor	None	510
D	-37017	3	8902	252	230	202	187	175	153	129	105	65	74	13:43:14	RWP	AC	Poor	None	511
D	-37017	4	12192	341	310	277	258	242	212	178	146	65	74	13:43:21	RWP	AC	Poor	None	517
D	-38029	2	5860	118	109	104	97	92	79	65	51	65	74	13:44:52	RWP	AC	Poor	None	717
D	-38029	3	9024	188	173	166	157	148	127	104	81	65	74	13:44:57	RWP	AC	Poor	None	692
D	-38029	4	12270	259	239	229	219	205	177	146	114	65	74	13:45:04	RWP	AC	Poor	None	684
D	-39000	2	5722	180	154	149	142	135	118	99	79	64	73	13:46:35	RWP	AC	Poor	None	459
D	-39000	3	8891	285	248	236	229	216	189	159	128	64	73	13:46:41	RWP	AC	Poor	None	450
D	-39000	4	12113	389	337	323	314	297	260	219	177	64	73	13:46:48	RWP	AC	Poor	None	450
D	-40004	2	5842	198	169	150	137	129	112	93	79	64	74	13:48:23	RWP	AC	Poor	None	425
D	-40004	3	8960	307	262	237	217	203	177	147	124	64	74	13:48:29	RWP	AC	Poor	None	422
D	-40004	4	12159	416	355	323	300	280	244	205	172	64	74	13:48:36	RWP	AC	Poor	None	422
D	-41011	2	5882	197	157	140	125	112	93	76	61	64	74	13:50:03	RWP	AC	Poor	None	430
D	-41011	3	9018	304	245	221	199	178	147	122	97	64	74	13:50:08	RWP	AC	Poor	None	429
D	-41011	4	12281	408	333	303	274	245	203	169	135	64	74	13:50:15	RWP	AC	Poor	None	435
D	-42001	2	5924	195	162	144	132	124	107	89	72	64	76	13:51:44	RWP	AC	Poor	None	438
D	-42001	3	9056	300	252	227	209	196	170	143	115	64	76	13:51:49	RWP	AC	Poor	None	436
D	-42001	4	12348	407	344	311	289	270	237	198	162	64	76	13:51:56	RWP	AC	Poor	None	438
D	-42536	2	5841	201	172	152	135	125	104	88	73	63	74	13:53:05	RWP	AC	Poor	None	420
D	-42536	3	9023	314	268	240	216	198	166	140	116	63	74	13:53:10	RWP	AC	Poor	None	415
D	-42536	4	12282	428	367	333	298	273	230	195	162	63	74	13:53:17	RWP	AC	Poor	None	414

Iowa Highway 9 Eastbound, Sibley, IA, November 2009

IKUAB FWD FILE : Sibley HWY9 NOV13.fwd
HProject No. : Cable Overlay
HLocation : HWY 9 EB
HClient : Cable
HStart Station :
HDirection :
HEnd Station :
HWeather : CLOUDY DRIZZLE
HOperator : hg

IDate Created : 11/13/2009
IVersion : 2.3.11
ILoad Mode : 1 (SHRP 8+8 buffers, 0 plates)
IPlate Radius : 5.91 (in)
IExtra Field Set : Example Road
IDrop Sequence : 2123
INo of drops : 1111
IRecord Drop? : NYYY

IDrop Height	:	1	2	3	4					
IImpact Load	:	6003	9005	12007	16009 lbf					
ISensor Number	:	0	1	2	3	4	5	6	7	8
ISensor Distance	:	0.00	12.00	12.00	18.00	24.00	36.00	48.00	60.00	0.00 (in)
ISensor Position	:	CENTER	FRONT	BEHIND	BEHIND	BEHIND	BEHIND	BEHIND	BEHIND	??????

IReference Offset : 0 ft
ITestpoint spacing: 500 ft

J	Distance ft	Imp Num	Load lbf	D0 mils	D1 mils	D2 mils	D3 mils	D4 mils	D5 mils	D6 mils	D7 mils	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	70	2	6592	3.71	3.54	3.49	3.29	3.14	2.71	2.28	1.89	53	51	10:23:15	RWP	AC	Excel.	None	1011
D	70	3	9832	5.60	5.29	5.23	5.02	4.71	4.09	3.47	2.88	53	51	10:23:20	RWP	AC	Excel.	None	997
D	70	4	13088	7.48	6.99	6.98	6.68	6.27	5.48	4.67	3.86	53	51	10:23:28	RWP	AC	Excel.	None	994
D	75	2	6500	5.92	5.53	4.86	4.31	3.95	3.13	2.45	1.91	53	51	10:24:16	RWP	AC	Excel.	None	624
D	75	3	9693	8.95	8.20	7.28	6.61	5.94	4.69	3.66	2.87	53	51	10:24:21	RWP	AC	Excel.	None	616
D	75	4	12888	11.84	10.72	9.63	8.69	7.80	6.20	4.88	3.84	53	51	10:24:29	RWP	AC	Excel.	None	619
C	Comment at 75 ft Time: 10:24:40 :LOAD TRANSFER																		
D	359	2	6535	2.18	2.15	2.03	1.92	1.85	1.66	1.49	1.28	53	51	10:27:39	RWP	AC	Excel.	None	1708
D	359	3	9765	3.40	3.27	3.08	2.96	2.81	2.54	2.24	1.98	53	51	10:27:44	RWP	AC	Excel.	None	1635
D	359	4	12989	4.60	4.34	4.14	3.95	3.76	3.40	3.03	2.66	53	51	10:27:51	RWP	AC	Excel.	None	1607
D	1018	2	6509	2.65	2.43	2.35	2.19	2.16	1.91	1.67	1.51	53	52	10:29:34	RWP	AC	Excel.	None	1397
D	1018	3	9721	4.00	3.69	3.56	3.46	3.28	2.91	2.60	2.31	53	52	10:29:39	RWP	AC	Excel.	None	1383
D	1018	4	12916	5.29	4.88	4.78	4.59	4.35	3.89	3.47	3.09	53	52	10:29:47	RWP	AC	Excel.	None	1387
D	1512	2	6535	2.36	2.22	2.28	2.20	2.15	1.88	1.59	1.37	53	52	10:31:13	RWP	AC	Excel.	None	1572
D	1512	3	9773	3.65	3.35	3.43	3.37	3.24	2.87	2.42	2.08	53	52	10:31:19	RWP	AC	Excel.	None	1521
D	1512	4	12933	4.91	4.49	4.58	4.47	4.27	3.80	3.24	2.74	53	52	10:31:26	RWP	AC	Excel.	None	1498
D	2092	2	6516	3.04	2.82	2.74	2.55	2.52	2.28	1.94	1.70	53	52	10:33:02	RWP	AC	Excel.	None	1218
D	2092	3	9720	4.66	4.32	4.18	4.04	3.81	3.49	3.01	2.60	53	52	10:33:08	RWP	AC	Excel.	None	1186
D	2092	4	12880	6.25	5.74	5.60	5.35	5.14	4.68	4.07	3.51	53	52	10:33:15	RWP	AC	Excel.	None	1171
D	2556	2	6505	2.75	2.72	2.45	2.28	2.17	1.93	1.71	1.49	53	52	10:34:48	RWP	AC	Excel.	None	1345
D	2556	3	9686	4.21	4.09	3.70	3.52	3.29	2.91	2.55	2.24	53	52	10:34:53	RWP	AC	Excel.	None	1307
D	2556	4	12891	5.68	5.47	4.96	4.69	4.40	3.91	3.43	3.03	53	52	10:35:00	RWP	AC	Excel.	None	1292
D	3050	2	6488	2.82	2.56	2.57	2.42	2.38	2.01	1.69	1.47	53	52	10:36:24	RWP	AC	Excel.	None	1306
D	3050	3	9690	4.33	3.94	3.94	3.81	3.62	3.12	2.62	2.23	53	52	10:36:30	RWP	AC	Excel.	None	1272
D	3050	4	12905	5.87	5.30	5.33	5.09	4.87	4.24	3.56	3.01	53	52	10:36:37	RWP	AC	Excel.	None	1249
C	Comment at 3565 ft Time: 10:37:36 :DURING NORMAL TESTING JOINT IS AROOND SENSOR 4																		
D	3565	2	6518	2.05	1.91	1.95	1.83	1.90	1.73	1.51	1.33	53	52	10:38:02	RWP	AC	Excel.	None	1804
D	3565	3	9745	3.11	2.87	2.93	2.93	2.83	2.58	2.31	2.01	53	52	10:38:07	RWP	AC	Excel.	None	1782
D	3565	4	12904	4.12	3.78	3.92	3.82	3.76	3.49	3.08	2.68	53	52	10:38:14	RWP	AC	Excel.	None	1783
C	Comment at 3565 ft Time: 10:38:24 :jOINT USAULLY BETWEEEN SENSOR 4 AND 5 AFTER FURTHER REVIEW																		
D	4052	2	6494	2.40	2.16	2.15	1.94	1.92	1.70	1.50	1.34	52	52	10:39:34	RWP	AC	Excel.	None	1541
D	4052	3	9718	3.61	3.26	3.23	3.11	2.90	2.57	2.28	2.02	52	52	10:39:39	RWP	AC	Excel.	None	1529
D	4052	4	12899	4.80	4.31	4.31	4.09	3.87	3.45	3.07	2.71	52	52	10:39:46	RWP	AC	Excel.	None	1529

Sibley HWY9 EB NOV13

D	4584	2	6475	2.39	2.18	2.20	2.01	2.05	1.82	1.62	1.42	52	52	10:41:11	RWP	AC	Excel.	None	1539
D	4584	3	9686	3.62	3.30	3.30	3.24	3.07	2.82	2.47	2.16	52	52	10:41:16	RWP	AC	Excel.	None	1520
D	4584	4	12872	4.84	4.39	4.45	4.30	4.11	3.80	3.36	2.93	52	52	10:41:23	RWP	AC	Excel.	None	1512
D	5098	2	6484	2.00	1.91	1.81	1.72	1.68	1.53	1.38	1.26	52	52	10:42:38	RWP	AC	Excel.	None	1848
D	5098	3	9694	3.04	2.89	2.76	2.67	2.55	2.34	2.13	1.93	52	52	10:42:44	RWP	AC	Excel.	None	1810
D	5098	4	12888	4.09	3.86	3.69	3.54	3.40	3.12	2.85	2.58	52	52	10:42:50	RWP	AC	Excel.	None	1791
D	5100	2	6468	2.10	1.99	1.89	1.74	1.71	1.56	1.38	1.26	53	52	10:43:33	RWP	AC	Excel.	None	1753
D	5100	3	9673	3.17	3.00	2.82	2.70	2.57	2.29	2.07	1.86	53	52	10:43:39	RWP	AC	Excel.	None	1733
D	5100	4	12911	4.36	4.05	3.88	3.72	3.51	3.18	2.88	2.58	53	52	10:43:45	RWP	AC	Excel.	None	1684
C	Comment at 5100 ft Time: 10:43:55 :LOAD TRANSFER																		
D	5591	2	6486	2.71	2.55	2.62	2.45	2.51	2.18	1.85	1.62	53	52	10:45:09	RWP	AC	Excel.	None	1359
D	5591	3	9685	4.15	3.85	3.95	3.92	3.78	3.32	2.83	2.42	53	52	10:45:14	RWP	AC	Excel.	None	1327
D	5591	4	12893	5.53	5.11	5.29	5.17	5.04	4.46	3.79	3.22	53	52	10:45:22	RWP	AC	Excel.	None	1325
D	6024	2	6476	2.38	2.23	2.18	1.94	1.88	1.61	1.40	1.23	53	52	10:46:38	RWP	AC	Excel.	None	1549
D	6024	3	9740	3.67	3.41	3.30	3.12	2.89	2.49	2.18	1.89	53	52	10:46:43	RWP	AC	Excel.	None	1510
D	6024	4	12945	4.86	4.49	4.37	4.08	3.78	3.27	2.84	2.46	53	52	10:46:50	RWP	AC	Excel.	None	1515
D	6578	2	6491	2.13	2.14	2.00	1.82	1.81	1.60	1.39	1.21	53	52	10:48:14	RWP	AC	Excel.	None	1730
D	6578	3	9752	3.38	3.30	3.08	2.98	2.80	2.47	2.17	1.87	53	52	10:48:19	RWP	AC	Excel.	None	1640
D	6578	4	12929	4.64	4.44	4.20	4.01	3.81	3.38	2.97	2.55	53	52	10:48:26	RWP	AC	Excel.	None	1585
D	7048	2	6514	1.78	1.72	1.72	1.61	1.62	1.49	1.35	1.24	53	52	10:50:04	RWP	AC	Excel.	None	2083
D	7048	3	9779	2.69	2.55	2.54	2.52	2.42	2.25	2.05	1.85	53	52	10:50:10	RWP	AC	Excel.	None	2068
D	7048	4	12983	3.55	3.32	3.35	3.28	3.21	2.99	2.72	2.44	53	52	10:50:16	RWP	AC	Excel.	None	2079
D	7557	2	6507	1.59	1.54	1.44	1.33	1.33	1.17	1.07	0.96	53	52	10:51:41	RWP	AC	Excel.	None	2324
D	7557	3	9767	2.40	2.28	2.17	2.11	1.98	1.78	1.60	1.45	53	52	10:51:46	RWP	AC	Excel.	None	2312
D	7557	4	12947	3.18	3.01	2.89	2.75	2.65	2.39	2.15	1.92	53	52	10:51:53	RWP	AC	Excel.	None	2318
D	8061	2	6495	2.23	2.07	2.03	1.87	1.81	1.61	1.46	1.32	53	52	10:53:18	RWP	AC	Excel.	None	1655
D	8061	3	9738	3.41	3.17	3.09	3.00	2.80	2.48	2.23	2.03	53	52	10:53:24	RWP	AC	Excel.	None	1623
D	8061	4	12899	4.55	4.21	4.14	3.97	3.75	3.33	3.02	2.73	53	52	10:53:30	RWP	AC	Excel.	None	1614
D	8581	2	6522	1.85	1.77	1.72	1.61	1.60	1.47	1.37	1.25	53	52	10:54:55	RWP	AC	Excel.	None	2004
D	8581	3	9767	2.77	2.66	2.54	2.51	2.38	2.21	2.04	1.87	53	52	10:55:00	RWP	AC	Excel.	None	2003
D	8581	4	12982	3.64	3.48	3.37	3.27	3.16	2.95	2.71	2.47	53	52	10:55:07	RWP	AC	Excel.	None	2025
D	9060	2	6475	2.22	2.09	2.03	1.89	1.86	1.66	1.46	1.28	53	52	10:56:25	RWP	AC	Excel.	None	1659
D	9060	3	9709	3.38	3.19	3.07	3.02	2.85	2.58	2.25	1.97	53	52	10:56:30	RWP	AC	Excel.	None	1635
D	9060	4	12886	4.51	4.22	4.13	3.94	3.79	3.45	3.03	2.64	53	52	10:56:36	RWP	AC	Excel.	None	1624
D	9545	2	6480	2.22	2.12	2.01	1.86	1.79	1.60	1.45	1.32	53	52	10:57:54	RWP	AC	Excel.	None	1659
D	9545	3	9692	3.41	3.19	3.04	2.90	2.73	2.45	2.22	1.99	53	52	10:58:00	RWP	AC	Excel.	None	1618
D	9545	4	12872	4.53	4.23	4.04	3.82	3.61	3.25	2.94	2.61	53	52	10:58:06	RWP	AC	Excel.	None	1615
D	10019	2	6500	2.91	2.70	2.67	2.49	2.37	2.10	1.86	1.63	53	52	10:59:25	RWP	AC	Excel.	None	1272
D	10019	3	9722	4.41	4.06	4.05	3.87	3.61	3.20	2.83	2.50	53	52	10:59:31	RWP	AC	Excel.	None	1254
D	10019	4	12872	5.89	5.40	5.41	5.15	4.83	4.30	3.80	3.35	53	52	10:59:38	RWP	AC	Excel.	None	1243
D	10021	2	6504	2.84	2.65	2.60	2.42	2.34	2.03	1.81	1.58	53	52	11:00:24	RWP	AC	Excel.	None	1301
D	10021	3	9739	4.30	3.99	3.94	3.79	3.55	3.13	2.76	2.42	53	52	11:00:29	RWP	AC	Excel.	None	1288
D	10021	4	12876	5.70	5.27	5.24	4.97	4.72	4.20	3.70	3.24	53	52	11:00:36	RWP	AC	Excel.	None	1284
C	Comment at 10021 ft Time: 11:00:46 :LOAD TRANSFFER																		
D	10548	2	6512	2.37	2.23	2.26	2.14	2.13	1.98	1.77	1.62	53	52	11:02:05	RWP	AC	Excel.	None	1565
D	10548	3	9747	3.54	3.32	3.37	3.28	3.18	2.94	2.67	2.38	53	52	11:02:11	RWP	AC	Excel.	None	1566
D	10548	4	12926	4.70	4.39	4.44	4.32	4.22	3.92	3.52	3.18	53	52	11:02:18	RWP	AC	Excel.	None	1562
D	11052	2	6509	2.64	2.53	2.41	2.24	2.13	1.86	1.65	1.41	53	52	11:03:45	RWP	AC	Excel.	None	1403
D	11052	3	9720	4.05	3.84	3.67	3.49	3.26	2.89	2.49	2.19	53	52	11:03:50	RWP	AC	Excel.	None	1365
D	11052	4	12864	5.45	5.12	4.93	4.64	4.39	3.89	3.41	2.95	53	52	11:03:57	RWP	AC	Excel.	None	1342
D	11551	2	6467	2.94	2.71	2.66	2.40	2.33	1.99	1.71	1.50	53	52	11:05:12	RWP	AC	Excel.	None	1251
D	11551	3	9670	4.43	4.08	3.98	3.78	3.49	3.02	2.60	2.26	53	52	11:05:18	RWP	AC	Excel.	None	1242
D	11551	4	12837	5.88	5.39	5.28	4.97	4.65	4.05	3.50	3.02	53	52	11:05:24	RWP	AC	Excel.	None	1241
D	12085	2	6478	2.56	2.43	2.39	2.21	2.16	1.95	1.70	1.42	53	52	11:06:37	RWP	AC	Excel.	None	1440
D	12085	3	9696	3.92	3.68	3.61	3.47	3.29	2.98	2.57	2.14	53	52	11:06:43	RWP	AC	Excel.	None	1407
D	12085	4	12853	5.27	4.90	4.85	4.64	4.42	4.01	3.48	2.85	53	52	11:06:49	RWP	AC	Excel.	None	1386
D	12538	2	6466	2.49	2.41	2.19	2.04	1.96	1.73	1.55	1.36	53	52	11:08:03	RWP	AC	Excel.	None	1474
D	12538	3	9683	3.82	3.68	3.35	3.15	3.00	2.65	2.38	2.07	53	52	11:08:08	RWP	AC	Excel.	None	1439
D	12538	4	12832	5.16	4.93	4.50	4.25	4.02	3.59	3.18	2.80	53	52	11:08:15	RWP	AC	Excel.	None	1414
D	13032	2	6476	2.64	2.36	2.48	2.35	2.32	2.07	1.78	1.57	53	52	11:09:29	RWP	AC	Excel.	None	1396
D	13032	3	9710	3.97	3.53	3.76	3.63	3.48	3.11	2.71	2.36	53	52	11:09:34	RWP	AC	Excel.	None	1390
D	13032	4	12875	5.25	4.64	5.00	4.78	4.61	4.18	3.61	3.13	53	52	11:09:41	RWP	AC	Excel.	None	1394
C	Comment at 13032 ft Time: 11:09:51 :ALL TESTING DONE IN CENTER OF LANE CENTER OF SECTION																		

D	13543	2	6479	3.06	2.87	2.86	2.68	2.56	2.25	1.93	1.69	53	52	11:11:10	RWP	AC	Excel.	None	1202
D	13543	3	9716	4.70	4.38	4.34	4.13	3.93	3.45	2.98	2.55	53	52	11:11:15	RWP	AC	Excel.	None	1175
D	13543	4	12874	6.35	5.89	5.86	5.60	5.27	4.66	4.05	3.45	53	52	11:11:22	RWP	AC	Excel.	None	1152
D	14117	2	6454	2.52	2.39	2.45	2.38	2.34	2.20	1.91	1.62	53	52	11:12:46	RWP	AC	Excel.	None	1458
D	14117	3	9670	3.83	3.59	3.66	3.59	3.52	3.31	2.84	2.45	53	52	11:12:51	RWP	AC	Excel.	None	1436
D	14117	4	12829	5.06	4.69	4.81	4.69	4.61	4.33	3.73	3.15	53	52	11:12:58	RWP	AC	Excel.	None	1442
D	14541	2	6493	1.99	1.88	1.80	1.68	1.61	1.42	1.24	1.08	53	52	11:14:28	RWP	AC	Excel.	None	1855
D	14541	3	9710	3.01	2.86	2.75	2.61	2.45	2.16	1.86	1.63	53	52	11:14:35	RWP	AC	Excel.	None	1832
D	14541	4	12904	3.99	3.76	3.65	3.48	3.27	2.86	2.51	2.19	53	52	11:14:41	RWP	AC	Excel.	None	1838
D	14542	2	6489	2.17	1.99	1.88	1.74	1.66	1.45	1.28	1.10	53	52	11:15:22	RWP	AC	Excel.	None	1702
D	14542	3	9711	3.27	2.98	2.83	2.68	2.50	2.18	1.91	1.67	53	52	11:15:27	RWP	AC	Excel.	None	1687
C	Comment at 14541 ft Time: 11:15:58 :LOAD TRANSFER																		
D	14541	2	6502	2.10	1.97	1.88	1.72	1.66	1.45	1.27	1.10	53	52	11:16:25	RWP	AC	Excel.	None	1759
D	14541	3	9717	3.24	2.98	2.83	2.69	2.52	2.18	1.92	1.66	53	52	11:16:30	RWP	AC	Excel.	None	1705
D	14541	4	12863	4.35	3.94	3.76	3.55	3.36	2.93	2.56	2.21	53	52	11:16:36	RWP	AC	Excel.	None	1681
C	Comment at 14540 ft Time: 11:16:46 :LOAD TRANSFER RERUN																		
D	15090	2	6469	2.35	2.23	2.26	2.17	2.15	2.07	1.88	1.70	53	52	11:18:08	RWP	AC	Excel.	None	1563
D	15090	3	9690	3.52	3.34	3.39	3.34	3.30	3.13	2.83	2.56	53	52	11:18:14	RWP	AC	Excel.	None	1566
D	15090	2	6468	2.28	2.21	2.26	2.16	2.18	2.04	1.84	1.71	53	52	11:19:04	RWP	AC	Excel.	None	1612
D	15090	3	9672	3.50	3.32	3.39	3.32	3.28	3.09	2.83	2.55	53	52	11:19:10	RWP	AC	Excel.	None	1570
D	15090	4	12878	4.69	4.35	4.47	4.40	4.34	4.14	3.78	3.39	53	52	11:19:17	RWP	AC	Excel.	None	1560
D	15564	2	6485	2.34	2.20	2.24	2.12	2.08	1.89	1.61	1.34	53	51	11:20:34	RWP	AC	Excel.	None	1578
D	15564	3	9701	3.65	3.34	3.44	3.32	3.17	2.85	2.43	2.04	53	51	11:20:39	RWP	AC	Excel.	None	1511
D	15564	4	12881	4.94	4.47	4.62	4.43	4.27	3.85	3.29	2.75	53	51	11:20:45	RWP	AC	Excel.	None	1483
D	16018	2	6479	2.57	2.55	2.38	2.22	2.17	1.92	1.68	1.49	53	52	11:22:11	RWP	AC	Excel.	None	1434
D	16018	3	9700	3.92	3.84	3.62	3.51	3.27	2.94	2.58	2.26	53	52	11:22:16	RWP	AC	Excel.	None	1406
D	16018	4	12847	5.31	5.16	4.87	4.68	4.44	3.96	3.50	3.04	53	52	11:22:27	RWP	AC	Excel.	None	1376
D	16608	2	6494	2.07	2.03	1.91	1.81	1.78	1.64	1.50	1.35	53	52	11:23:55	RWP	AC	Excel.	None	1782
D	16608	3	9721	3.10	3.01	2.85	2.80	2.67	2.46	2.26	2.03	53	52	11:24:00	RWP	AC	Excel.	None	1785
D	16608	4	12913	4.12	3.96	3.78	3.66	3.54	3.29	3.00	2.72	53	52	11:24:07	RWP	AC	Excel.	None	1784
D	17560	2	6472	2.48	2.35	2.25	2.12	2.07	1.78	1.53	1.34	53	52	11:26:11	RWP	AC	Excel.	None	1486
D	17560	3	9675	3.83	3.59	3.48	3.33	3.15	2.75	2.38	2.04	53	52	11:26:16	RWP	AC	Excel.	None	1437
D	17560	4	12829	5.18	4.80	4.70	4.49	4.26	3.73	3.22	2.73	53	52	11:26:23	RWP	AC	Excel.	None	1408
D	18021	2	6481	2.54	2.38	2.34	2.24	2.24	2.03	1.73	1.48	53	52	11:27:46	RWP	AC	Excel.	None	1452
D	18021	3	9669	3.87	3.63	3.63	3.50	3.40	3.09	2.66	2.26	53	52	11:27:52	RWP	AC	Excel.	None	1421
D	18021	4	12861	5.22	4.88	4.91	4.72	4.57	4.19	3.57	3.05	53	52	11:27:58	RWP	AC	Excel.	None	1400
D	18505	2	6501	2.89	2.73	2.54	2.34	2.22	1.94	1.68	1.46	53	52	11:29:43	RWP	AC	Excel.	None	1279
D	18505	3	9691	4.33	4.09	3.84	3.60	3.34	2.92	2.55	2.22	53	52	11:29:48	RWP	AC	Excel.	None	1272
D	18505	4	12892	5.78	5.42	5.16	4.80	4.48	3.91	3.42	2.98	53	52	11:29:55	RWP	AC	Excel.	None	1268
D	19030	2	6422	3.25	3.07	2.95	2.71	2.63	2.28	2.01	1.72	53	52	11:31:25	RWP	AC	Excel.	None	1124
D	19030	3	9582	4.87	4.58	4.37	4.15	3.89	3.45	3.02	2.57	53	52	11:31:30	RWP	AC	Excel.	None	1119
D	19030	4	12742	6.53	6.13	5.91	5.55	5.26	4.69	4.09	3.49	53	52	11:31:37	RWP	AC	Excel.	None	1109
D	19539	2	6446	2.70	2.53	2.51	2.38	2.36	2.11	1.84	1.59	53	52	11:33:08	RWP	AC	Excel.	None	1355
D	19539	3	9627	4.16	3.85	3.83	3.74	3.57	3.25	2.82	2.42	53	52	11:33:13	RWP	AC	Excel.	None	1317
D	19539	4	12799	5.57	5.18	5.18	5.00	4.80	4.41	3.80	3.26	53	52	11:33:20	RWP	AC	Excel.	None	1306
D	20040	2	6482	1.94	1.79	1.80	1.73	1.69	1.59	1.45	1.29	53	52	11:34:38	RWP	AC	Excel.	None	1900
D	20040	3	9696	2.89	2.68	2.69	2.62	2.56	2.41	2.18	1.93	53	52	11:34:43	RWP	AC	Excel.	None	1904
D	20040	4	12888	3.83	3.53	3.57	3.47	3.38	3.21	2.89	2.58	53	52	11:34:50	RWP	AC	Excel.	None	1915
D	20041	2	6489	1.92	1.78	1.74	1.67	1.66	1.53	1.42	1.31	53	52	11:35:38	RWP	AC	Excel.	None	1926
D	20041	3	9707	2.85	2.67	2.64	2.57	2.50	2.31	2.17	1.96	53	52	11:35:44	RWP	AC	Excel.	None	1939
D	20041	4	12904	3.76	3.49	3.51	3.41	3.29	3.08	2.89	2.61	53	52	11:35:50	RWP	AC	Excel.	None	1950
C	Comment at 20041 ft Time: 11:36:00 :LOAD TRANSFER																		
D	20529	2	6495	1.76	1.67	1.64	1.57	1.56	1.47	1.37	1.25	53	52	11:37:25	RWP	AC	Excel.	None	2100
D	20529	3	9715	2.61	2.48	2.43	2.40	2.33	2.18	2.03	1.88	53	52	11:37:30	RWP	AC	Excel.	None	2116
D	20529	4	12915	3.45	3.26	3.23	3.16	3.09	2.91	2.71	2.53	53	52	11:37:37	RWP	AC	Excel.	None	2131
D	21042	2	6454	2.20	2.05	2.13	2.02	2.00	1.81	1.60	1.38	53	52	11:38:57	RWP	AC	Excel.	None	1671
D	21042	3	9633	3.41	3.09	3.25	3.15	3.04	2.77	2.40	2.11	53	52	11:39:02	RWP	AC	Excel.	None	1609
D	21042	4	12811	4.55	4.12	4.33	4.19	4.02	3.69	3.20	2.84	53	52	11:39:09	RWP	AC	Excel.	None	1599
D	21522	2	6444	1.30	1.26	1.18	1.10	1.08	0.97	0.89	0.80	53	52	11:40:32	RWP	AC	Excel.	None	2821
D	21522	3	9673	1.99	1.89	1.77	1.69	1.63	1.47	1.35	1.23	53	52	11:40:37	RWP	AC	Excel.	None	2760
D	21522	4	12881	2.66	2.47	2.37	2.24	2.16	1.98	1.80	1.62	53	52	11:40:44	RWP	AC	Excel.	None	2758
D	22007	2	6484	1.24	1.17	1.14	1.11	1.09	1.04	0.98	0.92	53	52	11:42:02	RWP	AC	Excel.	None	2979
D	22007	3	9675	1.87	1.73	1.72	1.69	1.64	1.56	1.46	1.35	53	52	11:42:07	RWP	AC	Excel.	None	2946

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D	22007	4	12887	2.48	2.25	2.28	2.21	2.17	2.09	1.95	1.79	53	52	11:42:14	RWP	AC	Excel.	None	2960
D	22536	2	6480	1.62	1.43	1.49	1.38	1.35	1.19	1.08	0.98	53	52	11:43:44	RWP	AC	Excel.	None	2273
D	22536	3	9692	2.44	2.17	2.25	2.15	2.03	1.83	1.63	1.46	53	52	11:43:49	RWP	AC	Excel.	None	2263
D	22536	4	12880	3.20	2.80	2.99	2.83	2.68	2.42	2.17	1.95	53	52	11:43:55	RWP	AC	Excel.	None	2289
D	23035	2	6500	1.72	1.70	1.54	1.47	1.41	1.30	1.20	1.10	53	52	11:45:21	RWP	AC	Excel.	None	2151
D	23035	3	9697	2.55	2.50	2.29	2.22	2.10	1.93	1.77	1.62	53	52	11:45:26	RWP	AC	Excel.	None	2162
D	23035	4	12926	3.35	3.28	3.05	2.93	2.82	2.60	2.37	2.16	53	52	11:45:32	RWP	AC	Excel.	None	2191
D	23575	2	6457	1.51	1.42	1.45	1.37	1.33	1.12	0.96	0.83	53	52	11:46:47	RWP	AC	Excel.	None	2425
D	23575	3	9696	2.39	2.13	2.17	2.09	2.00	1.73	1.47	1.24	53	52	11:46:52	RWP	AC	Excel.	None	2304
D	23575	4	12888	3.15	2.83	2.89	2.79	2.66	2.31	1.97	1.64	53	52	11:46:59	RWP	AC	Excel.	None	2325
D	24074	2	6469	2.28	2.14	2.06	1.91	1.81	1.56	1.36	1.14	53	52	11:48:13	RWP	AC	Excel.	None	1611
D	24074	3	9637	3.48	3.25	3.14	2.98	2.76	2.40	2.04	1.73	53	52	11:48:18	RWP	AC	Excel.	None	1576
D	24074	4	12814	4.68	4.34	4.22	3.97	3.72	3.24	2.76	2.35	53	52	11:48:24	RWP	AC	Excel.	None	1557
D	24526	2	6464	2.31	2.07	2.09	1.97	1.88	1.64	1.37	1.14	53	52	11:49:36	RWP	AC	Excel.	None	1588
D	24526	3	9606	3.51	3.12	3.18	3.04	2.84	2.47	2.06	1.72	53	52	11:49:41	RWP	AC	Excel.	None	1558
D	24526	4	12835	4.71	4.18	4.32	4.07	3.85	3.34	2.79	2.32	53	52	11:49:48	RWP	AC	Excel.	None	1550
D	25767	2	6468	1.63	1.50	1.48	1.38	1.34	1.18	1.00	0.87	53	52	11:52:44	RWP	AC	Excel.	None	2255
D	25767	3	9696	2.60	2.29	2.29	2.15	2.03	1.80	1.53	1.32	53	52	11:52:49	RWP	AC	Excel.	None	2122
D	25767	4	12905	3.53	3.09	3.12	2.92	2.75	2.45	2.05	1.75	53	52	11:52:56	RWP	AC	Excel.	None	2080
C	Comment at 25767 ft Time: 11:53:05 :JUST PAST BRIDGE																		
D	26041	2	6464	1.59	1.50	1.46	1.34	1.29	1.14	0.97	0.87	53	52	11:54:25	RWP	AC	Excel.	None	2309
D	26041	3	9679	2.51	2.29	2.21	2.11	1.97	1.75	1.50	1.31	53	52	11:54:31	RWP	AC	Excel.	None	2194
D	26041	4	12877	3.39	3.07	2.99	2.82	2.67	2.38	2.05	1.77	53	52	11:54:37	RWP	AC	Excel.	None	2160
D	26520	2	6486	1.66	1.51	1.47	1.38	1.32	1.19	1.03	0.92	53	52	11:56:14	RWP	AC	Excel.	None	2227
D	26520	3	9683	2.53	2.30	2.25	2.16	2.05	1.82	1.62	1.41	53	52	11:56:20	RWP	AC	Excel.	None	2178
D	26520	4	12883	3.40	3.07	3.02	2.91	2.75	2.47	2.18	1.91	53	52	11:56:26	RWP	AC	Excel.	None	2155
D	27020	2	6469	2.22	2.00	1.86	1.69	1.57	1.38	1.19	1.02	53	52	11:57:46	RWP	AC	Excel.	None	1659
D	27020	3	9661	3.38	3.04	2.86	2.64	2.42	2.10	1.80	1.56	53	52	11:57:51	RWP	AC	Excel.	None	1623
D	27020	4	12850	4.57	4.09	3.85	3.55	3.30	2.84	2.45	2.12	53	52	11:57:58	RWP	AC	Excel.	None	1597
D	27579	2	6462	1.92	1.76	1.73	1.62	1.60	1.45	1.25	1.10	53	52	11:59:23	RWP	AC	Excel.	None	1917
D	27579	3	9650	2.91	2.64	2.61	2.49	2.41	2.20	1.90	1.69	53	52	11:59:28	RWP	AC	Excel.	None	1888
D	27579	4	12889	3.91	3.55	3.53	3.35	3.23	2.95	2.57	2.26	53	52	11:59:34	RWP	AC	Excel.	None	1876
D	28004	2	6433	2.33	2.05	2.09	1.87	1.79	1.56	1.33	1.12	53	52	12:00:56	RWP	AC	Excel.	None	1569
D	28004	3	9630	3.56	3.14	3.17	2.96	2.73	2.43	2.04	1.74	53	52	12:01:01	RWP	AC	Excel.	None	1537
D	28004	4	12837	4.81	4.22	4.29	4.00	3.74	3.30	2.78	2.36	53	52	12:01:07	RWP	AC	Excel.	None	1517
D	28558	2	6447	2.15	2.05	1.91	1.83	1.74	1.58	1.39	1.24	53	52	12:02:31	RWP	AC	Excel.	None	1702
D	28558	3	9628	3.24	3.08	2.95	2.79	2.64	2.37	2.10	1.87	53	52	12:02:36	RWP	AC	Excel.	None	1692
D	28558	4	12824	4.33	4.07	3.92	3.71	3.52	3.17	2.84	2.49	53	52	12:02:43	RWP	AC	Excel.	None	1683
D	29028	2	6426	2.47	2.46	2.13	1.97	1.83	1.56	1.35	1.15	53	52	12:04:05	RWP	AC	Excel.	None	1482
D	29028	3	9645	3.78	3.74	3.24	3.03	2.79	2.42	2.05	1.75	53	52	12:04:10	RWP	AC	Excel.	None	1452
D	29028	2	6447	2.43	2.47	2.13	1.95	1.87	1.57	1.34	1.15	53	52	12:04:57	RWP	AC	Excel.	None	1506
D	29028	3	9661	3.76	3.73	3.24	3.03	2.82	2.40	2.07	1.77	53	52	12:05:02	RWP	AC	Excel.	None	1461
D	29028	4	12857	5.07	4.99	4.37	4.06	3.77	3.25	2.79	2.41	53	52	12:05:09	RWP	AC	Excel.	None	1441
D	29534	2	6439	2.37	2.11	2.15	2.01	1.91	1.67	1.40	1.21	53	52	12:06:34	RWP	AC	Excel.	None	1546
D	29534	3	9667	3.66	3.25	3.31	3.12	2.92	2.59	2.15	1.83	53	52	12:06:39	RWP	AC	Excel.	None	1501
D	29534	4	12882	4.97	4.40	4.50	4.27	3.99	3.54	2.95	2.49	53	52	12:06:45	RWP	AC	Excel.	None	1473
D	30038	2	6451	2.66	2.46	2.42	2.28	2.19	1.95	1.70	1.46	53	52	12:08:17	RWP	AC	Excel.	None	1379
D	30038	3	9644	4.07	3.73	3.72	3.55	3.35	2.97	2.59	2.23	53	52	12:08:22	RWP	AC	Excel.	None	1348
D	30038	4	12804	5.42	4.96	4.99	4.72	4.47	3.97	3.46	2.97	53	52	12:08:29	RWP	AC	Excel.	None	1343
D	30039	2	6434	2.60	2.43	2.36	2.28	2.12	1.88	1.69	1.48	54	52	12:09:12	RWP	AC	Excel.	None	1409
D	30039	3	9636	3.96	3.69	3.61	3.46	3.24	2.89	2.55	2.25	54	52	12:09:17	RWP	AC	Excel.	None	1384
D	30039	4	12797	5.30	4.90	4.82	4.61	4.36	3.87	3.42	3.02	54	52	12:09:23	RWP	AC	Excel.	None	1372
C	Comment at 30038 ft Time: 12:09:33 :LOAD TRANSFER																		
D	30552	2	6438	2.01	1.86	1.76	1.65	1.57	1.44	1.27	1.13	53	52	12:10:39	RWP	AC	Excel.	None	1824
D	30552	3	9647	3.01	2.80	2.67	2.56	2.40	2.15	1.92	1.69	53	52	12:10:44	RWP	AC	Excel.	None	1824
D	30552	4	12808	4.02	3.71	3.59	3.39	3.24	2.89	2.59	2.28	53	52	12:10:51	RWP	AC	Excel.	None	1810
D	31019	2	6437	2.18	2.03	2.00	1.85	1.83	1.64	1.50	1.32	53	52	12:12:32	RWP	AC	Excel.	None	1679
D	31019	3	9615	3.26	3.04	3.00	2.88	2.74	2.51	2.27	2.03	53	52	12:12:37	RWP	AC	Excel.	None	1675
D	31019	4	12819	4.33	4.02	3.98	3.83	3.68	3.34	3.04	2.74	53	52	12:12:44	RWP	AC	Excel.	None	1684
D	31563	2	6450	2.50	2.23	2.21	2.07	1.99	1.80	1.55	1.31	53	52	12:14:13	RWP	AC	Excel.	None	1469
D	31563	3	9643	3.81	3.37	3.39	3.22	3.04	2.74	2.36	2.01	53	52	12:14:18	RWP	AC	Excel.	None	1439
D	31563	4	12844	5.11	4.54	4.58	4.34	4.10	3.69	3.17	2.71	53	52	12:14:24	RWP	AC	Excel.	None	1430
D	32023	2	6419	2.62	2.39	2.30	2.12	2.00	1.69	1.44	1.22	53	52	12:15:37	RWP	AC	Excel.	None	1394

D	32023	3	9647	3.95	3.60	3.52	3.31	3.02	2.55	2.13	1.85	53	52	12:15:42	RWP	AC	Excel.	None	1388
D	32023	4	12844	5.26	4.77	4.71	4.36	4.02	3.39	2.88	2.45	53	52	12:15:49	RWP	AC	Excel.	None	1388
D	32542	2	6461	2.17	2.11	1.87	1.78	1.67	1.44	1.25	1.06	53	52	12:17:22	RWP	AC	Excel.	None	1693
D	32542	3	9650	3.30	3.21	2.88	2.72	2.55	2.21	1.91	1.64	53	52	12:17:27	RWP	AC	Excel.	None	1661
D	32542	4	12881	4.44	4.30	3.89	3.67	3.42	3.00	2.59	2.23	53	52	12:17:33	RWP	AC	Excel.	None	1651
C	Comment at 32597 ft Time: 12:18:06 :MIDDE OF STARLING RD 32542																		
D	33052	2	6461	1.87	1.79	1.68	1.55	1.51	1.29	1.14	1.01	53	52	12:19:09	RWP	AC	Excel.	None	1962
D	33052	3	9646	2.81	2.66	2.50	2.35	2.24	1.95	1.75	1.51	53	52	12:19:14	RWP	AC	Excel.	None	1953
D	33052	4	12874	3.85	3.63	3.40	3.22	3.05	2.70	2.39	2.08	53	52	12:19:20	RWP	AC	Excel.	None	1903
D	33547	2	6454	2.14	1.97	1.88	1.74	1.64	1.38	1.20	1.05	53	52	12:20:46	RWP	AC	Excel.	None	1716
D	33547	3	9652	3.25	2.99	2.87	2.71	2.46	2.13	1.83	1.59	53	52	12:20:51	RWP	AC	Excel.	None	1688
D	33547	4	12855	4.35	3.98	3.85	3.60	3.32	2.85	2.48	2.15	53	52	12:20:58	RWP	AC	Excel.	None	1679
D	34017	2	6456	1.88	1.73	1.68	1.58	1.53	1.37	1.19	1.07	54	53	12:22:29	RWP	AC	Excel.	None	1954
D	34017	3	9647	2.85	2.64	2.55	2.46	2.31	2.07	1.82	1.62	54	53	12:22:34	RWP	AC	Excel.	None	1926
D	34017	4	12857	3.82	3.51	3.46	3.29	3.13	2.80	2.45	2.19	54	53	12:22:41	RWP	AC	Excel.	None	1915
D	35107	2	6441	2.20	2.08	2.01	1.87	1.79	1.55	1.33	1.13	54	53	12:24:39	RWP	AC	Excel.	None	1665
D	35107	3	9662	3.35	3.17	3.06	2.90	2.70	2.37	2.01	1.71	54	53	12:24:44	RWP	AC	Excel.	None	1640
D	35107	4	12841	4.57	4.26	4.15	3.90	3.67	3.20	2.74	2.31	54	53	12:24:51	RWP	AC	Excel.	None	1598
D	35512	2	6438	2.07	1.91	1.87	1.77	1.67	1.47	1.28	1.11	54	53	12:26:07	RWP	AC	Excel.	None	1767
D	35512	3	9631	3.24	2.95	2.92	2.76	2.62	2.31	2.00	1.71	54	53	12:26:12	RWP	AC	Excel.	None	1692
D	35512	4	12847	4.38	3.98	3.94	3.73	3.53	3.16	2.71	2.30	54	53	12:26:19	RWP	AC	Excel.	None	1669
D	35513	2	6417	2.08	1.92	1.86	1.71	1.62	1.41	1.24	1.08	54	52	12:26:59	RWP	AC	Excel.	None	1756
D	35513	3	9630	3.24	2.95	2.85	2.68	2.52	2.18	1.92	1.65	54	52	12:27:05	RWP	AC	Excel.	None	1689
D	35513	4	12856	4.39	3.98	3.90	3.62	3.41	2.96	2.59	2.24	54	52	12:27:11	RWP	AC	Excel.	None	1664
C	Comment at 35513 ft Time: 12:27:21 :LOAD TRANSFER																		
D	36176	2	6430	3.39	3.12	3.04	2.79	2.63	2.18	1.77	1.44	54	53	12:28:34	RWP	AC	Excel.	None	1077
D	36176	3	9597	5.20	4.78	4.63	4.34	4.03	3.36	2.77	2.26	54	53	12:28:39	RWP	AC	Excel.	None	1050
D	36176	4	12783	6.95	6.39	6.25	5.80	5.41	4.54	3.75	3.07	54	53	12:28:45	RWP	AC	Excel.	None	1047
D	36505	2	6410	1.93	1.80	1.70	1.57	1.49	1.29	1.16	1.03	54	53	12:29:52	RWP	AC	Excel.	None	1892
D	36505	3	9647	2.91	2.73	2.57	2.43	2.29	2.02	1.77	1.56	54	53	12:29:57	RWP	AC	Excel.	None	1883
D	36505	2	6384	1.91	1.79	1.68	1.55	1.51	1.28	1.16	1.02	54	53	12:30:17	RWP	AC	Excel.	None	1903
D	36505	3	9625	2.90	2.72	2.55	2.42	2.28	2.03	1.77	1.55	54	53	12:30:22	RWP	AC	Excel.	None	1885
D	36505	4	12853	3.88	3.62	3.44	3.24	3.06	2.71	2.41	2.10	54	53	12:30:28	RWP	AC	Excel.	None	1886
D	37013	2	6409	2.90	2.58	2.61	2.42	2.35	1.86	1.38	1.17	54	53	12:31:47	RWP	AC	Excel.	None	1256
D	37013	3	9584	4.42	3.93	4.01	3.81	3.62	2.88	2.10	1.79	54	53	12:31:52	RWP	AC	Excel.	None	1233
D	37013	4	12784	5.92	5.24	5.42	5.13	4.85	3.96	2.84	2.41	54	53	12:31:59	RWP	AC	Excel.	None	1227
D	37522	2	6453	2.15	1.99	1.92	1.79	1.74	1.55	1.37	1.22	54	53	12:33:13	RWP	AC	Excel.	None	1706
D	37522	3	9653	3.26	3.00	2.90	2.77	2.63	2.39	2.10	1.83	54	53	12:33:19	RWP	AC	Excel.	None	1686
D	37522	4	12864	4.35	4.00	3.89	3.70	3.52	3.23	2.78	2.44	54	53	12:33:25	RWP	AC	Excel.	None	1681
D	38034	2	6373	2.66	2.53	2.35	2.13	2.03	1.72	1.49	1.26	54	52	12:34:45	RWP	AC	Excel.	None	1362
D	38034	3	9554	4.06	3.87	3.57	3.32	3.09	2.66	2.29	1.97	54	52	12:34:50	RWP	AC	Excel.	None	1337
D	38034	4	12748	5.45	5.18	4.81	4.48	4.16	3.60	3.10	2.66	54	52	12:34:57	RWP	AC	Excel.	None	1329
D	38522	2	6417	2.08	1.97	1.93	1.84	1.73	1.54	1.35	1.16	54	53	12:36:11	RWP	AC	Excel.	None	1754
D	38522	3	9598	3.23	3.03	2.96	2.86	2.69	2.39	2.06	1.79	54	53	12:36:16	RWP	AC	Excel.	None	1690
D	38522	4	12833	4.41	4.09	4.05	3.88	3.66	3.25	2.83	2.42	54	53	12:36:23	RWP	AC	Excel.	None	1655
D	39034	2	6400	2.13	2.06	1.90	1.76	1.72	1.50	1.33	1.15	53	53	12:37:36	RWP	AC	Excel.	None	1707
D	39034	3	9592	3.22	3.12	2.91	2.81	2.63	2.30	2.00	1.74	53	53	12:37:41	RWP	AC	Excel.	None	1694
D	39034	4	12799	4.35	4.16	3.93	3.74	3.53	3.11	2.70	2.33	53	53	12:37:48	RWP	AC	Excel.	None	1675
D	39508	2	6404	2.35	2.15	2.15	2.02	2.00	1.77	1.57	1.35	53	52	12:39:02	RWP	AC	Excel.	None	1551
D	39508	3	9640	3.55	3.25	3.24	3.12	3.00	2.72	2.37	2.07	53	52	12:39:07	RWP	AC	Excel.	None	1542
D	39508	4	12809	4.72	4.32	4.32	4.17	4.03	3.66	3.18	2.79	53	52	12:39:13	RWP	AC	Excel.	None	1544
D	40028	2	6369	1.83	1.76	1.71	1.58	1.55	1.37	1.26	1.10	53	52	12:40:29	RWP	AC	Excel.	None	1978
D	40028	3	9601	2.85	2.67	2.62	2.47	2.34	2.12	1.90	1.69	53	52	12:40:34	RWP	AC	Excel.	None	1914
D	40028	4	12783	3.88	3.57	3.52	3.33	3.17	2.89	2.59	2.31	53	52	12:40:41	RWP	AC	Excel.	None	1872
D	40527	2	6409	2.20	2.17	1.99	1.83	1.78	1.54	1.38	1.21	53	52	12:41:54	RWP	AC	Excel.	None	1656
D	40527	3	9617	3.37	3.26	3.03	2.85	2.69	2.37	2.09	1.83	53	52	12:41:59	RWP	AC	Excel.	None	1625
D	40527	4	12809	4.55	4.33	4.05	3.79	3.60	3.19	2.82	2.47	53	52	12:42:05	RWP	AC	Excel.	None	1602
D	40528	2	6398	2.38	2.25	2.13	1.90	1.86	1.63	1.43	1.25	53	52	12:42:48	RWP	AC	Excel.	None	1527
D	40528	3	9611	3.64	3.37	3.18	3.04	2.84	2.48	2.17	1.89	53	52	12:42:54	RWP	AC	Excel.	None	1503
D	40528	4	12799	4.90	4.50	4.28	4.02	3.79	3.37	2.93	2.56	53	52	12:43:00	RWP	AC	Excel.	None	1485
C	Comment at 40528 ft Time: 12:43:09 :LOAD TRANSFER																		
D	41026	2	6422	2.08	2.03	1.92	1.79	1.73	1.53	1.35	1.19	53	52	12:44:12	RWP	AC	Excel.	None	1754
D	41026	3	9628	3.18	3.05	2.91	2.78	2.63	2.34	2.06	1.81	53	52	12:44:17	RWP	AC	Excel.	None	1723

Sibley HWY9 EB NOV13

D	41026	4	12849	4.30	4.06	3.87	3.71	3.50	3.12	2.73	2.43	53	52	12:44:24	RWP	AC	Excel.	None	1698
D	41515	2	6418	1.61	1.46	1.44	1.32	1.31	1.19	1.11	0.98	53	52	12:45:41	RWP	AC	Excel.	None	2262
D	41515	3	9631	2.42	2.21	2.14	2.08	1.99	1.82	1.66	1.51	53	52	12:45:46	RWP	AC	Excel.	None	2260
D	41515	4	12854	3.22	2.93	2.87	2.74	2.65	2.46	2.23	2.03	53	52	12:45:52	RWP	AC	Excel.	None	2267
D	42026	2	6413	2.02	1.86	1.79	1.62	1.55	1.29	1.10	0.93	53	52	12:47:09	RWP	AC	Excel.	None	1807
D	42026	3	9613	3.09	2.81	2.76	2.59	2.39	1.99	1.66	1.41	53	52	12:47:14	RWP	AC	Excel.	None	1768
D	42026	4	12824	4.16	3.77	3.72	3.50	3.22	2.70	2.26	1.90	53	52	12:47:21	RWP	AC	Excel.	None	1751
D	42551	2	6398	2.29	2.10	2.03	1.86	1.78	1.49	1.29	1.11	53	53	12:48:46	RWP	AC	Excel.	None	1587
D	42551	3	9581	3.54	3.23	3.12	2.96	2.72	2.33	2.00	1.70	53	53	12:48:51	RWP	AC	Excel.	None	1541
D	42551	4	12785	4.77	4.36	4.26	3.97	3.71	3.18	2.70	2.29	53	53	12:48:57	RWP	AC	Excel.	None	1525
D	43020	2	6443	2.22	2.07	2.05	1.88	1.82	1.63	1.41	1.24	53	53	12:50:10	RWP	AC	Excel.	None	1647
D	43020	3	9648	3.38	3.15	3.11	2.99	2.81	2.49	2.15	1.85	53	53	12:50:15	RWP	AC	Excel.	None	1623
D	43020	4	12856	4.59	4.26	4.23	4.03	3.84	3.41	2.96	2.56	53	53	12:50:22	RWP	AC	Excel.	None	1592
D	43540	2	6437	2.35	2.18	2.07	1.89	1.75	1.52	1.33	1.13	54	52	12:51:55	RWP	AC	Excel.	None	1556
D	43540	3	9627	3.60	3.30	3.13	2.92	2.69	2.33	2.02	1.76	54	52	12:52:00	RWP	AC	Excel.	None	1520
D	43540	4	12818	4.85	4.42	4.24	3.89	3.64	3.12	2.74	2.38	54	52	12:52:06	RWP	AC	Excel.	None	1504
D	44012	2	6411	2.04	1.87	1.77	1.64	1.55	1.34	1.17	0.99	54	52	12:53:30	RWP	AC	Excel.	None	1791
D	44012	3	9614	3.06	2.82	2.68	2.55	2.37	2.05	1.76	1.50	54	52	12:53:36	RWP	AC	Excel.	None	1786
D	44012	4	12806	4.08	3.75	3.61	3.37	3.17	2.76	2.37	2.04	54	52	12:53:42	RWP	AC	Excel.	None	1785
D	44625	2	6410	3.14	2.98	2.93	2.78	2.64	2.31	2.01	1.65	53	52	12:55:33	RWP	AC	Excel.	None	1159
D	44625	3	9591	4.68	4.42	4.35	4.20	3.96	3.48	2.99	2.50	53	52	12:55:39	RWP	AC	Excel.	None	1166
D	44625	4	12800	6.17	5.82	5.77	5.54	5.27	4.64	3.99	3.34	53	52	12:55:46	RWP	AC	Excel.	None	1179

C Comment at 44625 ft Time: 12:55:55 :END OF SECTION LARGE PANEL

C Comment at 44799 ft Time: 12:56:31 :END OF SECTION

Iowa Highway 9 Westbound, Sibley, IA, November 2009


```
IKUAB FWD FILE      : SIBLEY HWY9 WB NOV13.fwd
HProject No.        : Cable Overlay
HLocation           : HWY 9 WB
HClient             : Cable
HStart Station      :
HDirection          :
HEnd Station        :
HWeather            : CLOUDY DRIZZLE
HOperator           : hg

IDate Created       : 11/13/2009
IVersion            : 2.3.11
ILoad Mode          : 1          (SHRP 8+8 buffers, 0 plates)
IPlate Radius       : 5.91       (in)
IExtra Field Set    : Example Road
IDrop Sequence      : 2123
INo of drops        : 1111
IRecord Drop?       : NYYY
IDrop Height        :     1     2     3     4
IImpact Load        :  6003  9005 12007 16009 lbf
ISensor Number      :     0      1      2      3      4      5      6      7      8
ISensor Distance    :  0.00  12.00  12.00  18.00  24.00  36.00  48.00  60.00   0.00 (in)
ISensor Position    : CENTER FRONT BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :     0 ft
ITestpoint spacing:   500 ft
```

J	Distance ft	Imp Num	Load lbf	D0 mils	D1 mils	D2 mils	D3 mils	D4 mils	D5 mils	D6 mils	D7 mils	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	93	2	6429	2.94	2.77	2.75	2.61	2.51	2.17	1.88	1.57	53	53	13:00:18	RWP	AC	Excel.	None	1242
D	93	3	9637	4.37	4.15	4.12	3.97	3.75	3.28	2.85	2.37	53	53	13:00:24	RWP	AC	Excel.	None	1254
D	93	4	12839	5.80	5.47	5.47	5.24	4.97	4.40	3.79	3.18	53	53	13:00:31	RWP	AC	Excel.	None	1260
C	Comment at 93 ft Time: 13:00:41 :LARGE PANEL																		
D	595	2	6422	2.03	1.84	1.84	1.72	1.66	1.45	1.25	1.10	52	52	13:02:17	RWP	AC	Excel.	None	1797
D	595	3	9651	3.09	2.81	2.83	2.69	2.53	2.24	1.92	1.67	52	52	13:02:22	RWP	AC	Excel.	None	1779
D	595	4	12844	4.16	3.78	3.83	3.63	3.42	3.02	2.60	2.24	52	52	13:02:28	RWP	AC	Excel.	None	1755
D	597	2	6425	1.99	1.84	1.81	1.69	1.64	1.42	1.24	1.08	52	52	13:03:12	RWP	AC	Excel.	None	1832
D	597	3	9623	3.03	2.78	2.75	2.65	2.51	2.17	1.90	1.64	52	52	13:03:17	RWP	AC	Excel.	None	1807
D	597	4	12839	4.08	3.74	3.73	3.56	3.37	2.96	2.58	2.20	52	52	13:03:23	RWP	AC	Excel.	None	1790
C	Comment at 595 ft Time: 13:03:33 :LOAD TRANSFER																		
D	1102	2	6413	1.68	1.58	1.51	1.44	1.41	1.29	1.18	1.07	52	52	13:04:42	RWP	AC	Excel.	None	2174
D	1102	3	9613	2.51	2.35	2.26	2.22	2.12	1.96	1.79	1.63	52	52	13:04:47	RWP	AC	Excel.	None	2176
D	1102	4	12823	3.33	3.11	3.03	2.93	2.81	2.61	2.39	2.19	52	52	13:04:53	RWP	AC	Excel.	None	2188
D	1581	2	6422	1.75	1.61	1.59	1.53	1.51	1.38	1.27	1.14	52	52	13:06:12	RWP	AC	Excel.	None	2088
D	1581	3	9621	2.61	2.37	2.39	2.34	2.26	2.14	1.92	1.72	52	52	13:06:18	RWP	AC	Excel.	None	2095
D	1581	4	12816	3.45	3.14	3.18	3.10	3.03	2.85	2.58	2.30	52	52	13:06:24	RWP	AC	Excel.	None	2113
D	2094	2	6400	1.86	1.78	1.68	1.58	1.55	1.41	1.30	1.18	52	52	13:07:51	RWP	AC	Excel.	None	1958
D	2094	3	9603	2.78	2.64	2.51	2.45	2.35	2.14	1.96	1.76	52	52	13:07:56	RWP	AC	Excel.	None	1961
D	2094	4	12806	3.67	3.49	3.35	3.24	3.12	2.86	2.60	2.37	52	52	13:08:02	RWP	AC	Excel.	None	1986
D	2605	2	6386	2.45	2.32	2.17	2.04	1.97	1.74	1.53	1.36	52	52	13:09:19	RWP	AC	Excel.	None	1480
D	2605	3	9598	3.73	3.52	3.34	3.17	2.99	2.66	2.37	2.09	52	52	13:09:24	RWP	AC	Excel.	None	1465
D	2605	4	12790	4.98	4.69	4.49	4.23	4.04	3.58	3.19	2.83	52	52	13:09:31	RWP	AC	Excel.	None	1461
D	3122	2	6421	2.43	2.24	2.05	1.90	1.81	1.60	1.38	1.22	52	52	13:10:51	RWP	AC	Excel.	None	1503
D	3122	3	9609	3.65	3.37	3.13	2.94	2.73	2.42	2.11	1.84	52	52	13:10:57	RWP	AC	Excel.	None	1499
D	3122	4	12820	4.87	4.51	4.22	3.95	3.70	3.27	2.87	2.50	52	52	13:11:03	RWP	AC	Excel.	None	1496
D	3602	2	6417	2.00	1.85	1.79	1.65	1.56	1.37	1.22	1.05	52	52	13:12:37	RWP	AC	Excel.	None	1822
D	3602	3	9642	3.03	2.81	2.70	2.55	2.39	2.10	1.85	1.63	52	52	13:12:42	RWP	AC	Excel.	None	1810
D	3602	4	12830	4.06	3.76	3.65	3.44	3.22	2.85	2.49	2.21	52	52	13:12:48	RWP	AC	Excel.	None	1795
D	4092	2	6395	2.53	2.40	2.28	2.13	2.02	1.76	1.52	1.30	52	52	13:14:06	RWP	AC	Excel.	None	1435
D	4092	3	9592	3.89	3.67	3.47	3.31	3.13	2.70	2.32	1.98	52	52	13:14:12	RWP	AC	Excel.	None	1401
D	4092	4	12778	5.23	4.94	4.70	4.48	4.21	3.68	3.15	2.69	52	52	13:14:18	RWP	AC	Excel.	None	1389
D	4599	2	6379	2.38	2.23	2.12	1.98	1.84	1.57	1.32	1.11	52	52	13:15:46	RWP	AC	Excel.	None	1523

Sibley HWY9 WB NOV13

D	4599	3	9575	3.68	3.43	3.28	3.09	2.84	2.41	2.03	1.72	52	52	13:15:51	RWP	AC	Excel.	None	1481
D	4599	4	12761	4.97	4.61	4.48	4.17	3.87	3.29	2.76	2.33	52	52	13:15:57	RWP	AC	Excel.	None	1461
D	5099	2	6397	2.30	2.16	2.03	1.91	1.86	1.65	1.47	1.30	52	52	13:17:24	RWP	AC	Excel.	None	1584
D	5099	3	9615	3.46	3.24	3.09	3.01	2.81	2.51	2.20	1.97	52	52	13:17:29	RWP	AC	Excel.	None	1581
D	5099	4	12824	4.58	4.28	4.16	3.97	3.76	3.36	2.98	2.62	52	52	13:17:36	RWP	AC	Excel.	None	1593
D	5614	2	6380	2.21	2.02	2.03	1.97	1.96	1.87	1.67	1.47	52	52	13:19:02	RWP	AC	Excel.	None	1644
D	5614	3	9581	3.29	3.03	3.08	3.00	2.94	2.79	2.51	2.23	52	52	13:19:08	RWP	AC	Excel.	None	1654
D	5614	4	12773	4.34	3.97	4.10	4.00	3.91	3.75	3.36	2.96	52	52	13:19:15	RWP	AC	Excel.	None	1672
D	5615	2	6378	2.10	1.96	1.93	1.82	1.81	1.70	1.60	1.48	52	52	13:20:00	RWP	AC	Excel.	None	1730
D	5615	3	9565	3.14	2.92	2.89	2.87	2.74	2.59	2.43	2.22	52	52	13:20:05	RWP	AC	Excel.	None	1730
D	5615	4	12801	4.17	3.86	3.87	3.75	3.64	3.44	3.25	2.96	52	52	13:20:12	RWP	AC	Excel.	None	1747
C	Comment at 5615 ft Time: 13:20:22 :LOAD TRANSFER																		
D	6094	2	6388	2.09	2.04	1.95	1.87	1.84	1.66	1.47	1.32	52	52	13:21:31	RWP	AC	Excel.	None	1741
D	6094	3	9577	3.17	3.08	2.95	2.89	2.78	2.52	2.28	2.03	52	52	13:21:36	RWP	AC	Excel.	None	1716
D	6094	4	12796	4.29	4.12	4.00	3.86	3.76	3.43	3.10	2.78	52	52	13:21:42	RWP	AC	Excel.	None	1694
D	6604	2	6412	1.52	1.45	1.37	1.30	1.31	1.19	1.08	0.97	52	52	13:23:02	RWP	AC	Excel.	None	2403
D	6604	3	9623	2.32	2.20	2.13	2.06	1.98	1.82	1.64	1.50	52	52	13:23:07	RWP	AC	Excel.	None	2360
D	6604	4	12854	3.13	2.91	2.85	2.74	2.66	2.45	2.24	2.02	52	52	13:23:14	RWP	AC	Excel.	None	2336
D	7096	2	6411	1.84	1.76	1.60	1.51	1.45	1.28	1.14	1.03	52	52	13:24:30	RWP	AC	Excel.	None	1984
D	7096	3	9636	2.74	2.65	2.42	2.31	2.17	1.95	1.74	1.56	52	52	13:24:35	RWP	AC	Excel.	None	2000
D	7096	4	12834	3.69	3.51	3.25	3.07	2.91	2.62	2.34	2.09	52	52	13:24:42	RWP	AC	Excel.	None	1979
D	7597	2	6402	2.14	1.90	1.94	1.78	1.71	1.50	1.32	1.18	52	52	13:26:01	RWP	AC	Excel.	None	1701
D	7597	3	9611	3.20	2.80	2.89	2.74	2.57	2.24	1.99	1.76	52	52	13:26:06	RWP	AC	Excel.	None	1707
D	7597	4	12815	4.24	3.70	3.87	3.64	3.41	3.00	2.66	2.35	52	52	13:26:13	RWP	AC	Excel.	None	1718
D	8112	2	6395	2.46	2.18	2.22	2.09	1.95	1.71	1.46	1.24	52	52	13:27:35	RWP	AC	Excel.	None	1476
D	8112	3	9605	3.71	3.29	3.37	3.20	3.00	2.58	2.19	1.87	52	52	13:27:40	RWP	AC	Excel.	None	1473
D	8112	4	12804	4.95	4.38	4.52	4.30	4.02	3.47	2.94	2.52	52	52	13:27:47	RWP	AC	Excel.	None	1471
D	8604	2	6382	1.87	1.72	1.60	1.50	1.42	1.27	1.12	0.98	52	52	13:28:59	RWP	AC	Excel.	None	1940
D	8604	3	9599	2.84	2.64	2.46	2.33	2.22	1.95	1.71	1.47	52	52	13:29:04	RWP	AC	Excel.	None	1924
D	8604	4	12792	3.82	3.52	3.34	3.15	2.96	2.62	2.30	1.99	52	52	13:29:10	RWP	AC	Excel.	None	1904
D	9073	2	6373	2.70	2.40	2.36	2.14	1.98	1.64	1.40	1.20	52	52	13:30:23	RWP	AC	Excel.	None	1341
D	9073	3	9551	4.16	3.67	3.65	3.35	3.02	2.53	2.16	1.85	52	52	13:30:28	RWP	AC	Excel.	None	1306
D	9073	4	12748	5.66	4.91	4.94	4.50	4.09	3.41	2.92	2.50	52	52	13:30:35	RWP	AC	Excel.	None	1280
D	10222	2	6410	1.79	1.65	1.61	1.55	1.51	1.36	1.19	1.05	52	52	13:32:25	RWP	AC	Excel.	None	2041
D	10222	3	9637	2.71	2.50	2.47	2.37	2.28	2.06	1.80	1.59	52	52	13:32:30	RWP	AC	Excel.	None	2026
D	10222	4	12845	3.67	3.35	3.35	3.21	3.04	2.78	2.44	2.13	52	52	13:32:36	RWP	AC	Excel.	None	1990
D	10634	2	6408	1.82	1.72	1.64	1.56	1.48	1.31	1.14	0.98	52	52	13:33:39	RWP	AC	Excel.	None	1999
D	10634	3	9613	2.80	2.63	2.56	2.46	2.31	2.04	1.77	1.51	52	52	13:33:45	RWP	AC	Excel.	None	1950
D	10634	4	12822	3.81	3.55	3.49	3.31	3.13	2.79	2.42	2.06	52	52	13:33:51	RWP	AC	Excel.	None	1911
D	11098	2	6419	1.74	1.59	1.54	1.48	1.44	1.34	1.22	1.10	53	52	13:35:02	RWP	AC	Excel.	None	2104
D	11098	3	9631	2.61	2.41	2.36	2.28	2.18	2.03	1.86	1.66	53	52	13:35:07	RWP	AC	Excel.	None	2102
D	11098	4	12843	3.46	3.20	3.17	3.04	2.94	2.72	2.50	2.24	53	52	13:35:13	RWP	AC	Excel.	None	2113
D	11099	2	6430	1.76	1.62	1.56	1.50	1.46	1.34	1.24	1.12	53	52	13:36:03	RWP	AC	Excel.	None	2074
D	11099	3	9657	2.62	2.43	2.37	2.31	2.22	2.03	1.85	1.67	53	52	13:36:08	RWP	AC	Excel.	None	2100
D	11099	4	12856	3.48	3.23	3.20	3.07	2.96	2.73	2.48	2.25	53	52	13:36:15	RWP	AC	Excel.	None	2099
D	11607	2	6416	1.79	1.63	1.58	1.49	1.44	1.26	1.11	1.01	53	52	13:37:25	RWP	AC	Excel.	None	2037
D	11607	3	9669	2.70	2.47	2.42	2.31	2.17	1.94	1.70	1.53	53	52	13:37:31	RWP	AC	Excel.	None	2034
D	11607	4	12879	3.61	3.28	3.25	3.09	2.93	2.61	2.31	2.03	53	52	13:37:37	RWP	AC	Excel.	None	2031
D	12081	2	6411	2.03	1.83	1.84	1.75	1.71	1.54	1.33	1.17	53	52	13:38:52	RWP	AC	Excel.	None	1799
D	12081	3	9632	3.08	2.79	2.83	2.75	2.65	2.33	2.02	1.76	53	52	13:38:57	RWP	AC	Excel.	None	1777
D	12081	4	12831	4.12	3.75	3.84	3.68	3.55	3.13	2.71	2.34	53	52	13:39:04	RWP	AC	Excel.	None	1772
D	12591	2	6412	2.24	2.08	2.09	1.95	1.91	1.68	1.43	1.21	53	52	13:40:22	RWP	AC	Excel.	None	1629
D	12591	3	9610	3.46	3.16	3.19	3.07	2.95	2.57	2.19	1.84	53	52	13:40:27	RWP	AC	Excel.	None	1578
D	12591	4	12824	4.72	4.25	4.30	4.13	3.97	3.48	2.97	2.49	53	52	13:40:33	RWP	AC	Excel.	None	1546
D	13096	2	6416	2.41	2.26	2.18	1.99	1.93	1.67	1.45	1.27	52	52	13:41:56	RWP	AC	Excel.	None	1511
D	13096	3	9608	3.70	3.41	3.28	3.11	2.89	2.55	2.19	1.91	52	52	13:42:01	RWP	AC	Excel.	None	1476
D	13096	4	12816	4.97	4.54	4.39	4.13	3.87	3.39	2.93	2.55	52	52	13:42:07	RWP	AC	Excel.	None	1467
D	13601	2	6398	2.63	2.46	2.38	2.16	2.06	1.73	1.51	1.33	53	52	13:43:54	RWP	AC	Excel.	None	1385
D	13601	3	9599	4.01	3.67	3.56	3.30	3.05	2.61	2.28	2.01	53	52	13:44:00	RWP	AC	Excel.	None	1359
D	13601	4	12793	5.42	4.88	4.76	4.41	4.06	3.50	3.07	2.70	53	52	13:44:07	RWP	AC	Excel.	None	1342
D	14117	2	6421	2.23	2.11	2.17	2.09	2.06	1.91	1.67	1.46	53	52	13:45:25	RWP	AC	Excel.	None	1636
D	14117	3	9646	3.41	3.19	3.27	3.23	3.14	2.93	2.57	2.21	53	52	13:45:30	RWP	AC	Excel.	None	1607
D	14117	4	12819	4.60	4.21	4.37	4.29	4.20	3.92	3.47	2.99	53	52	13:45:36	RWP	AC	Excel.	None	1583

D	14623	2	6413	2.85	2.62	2.72	2.55	2.50	2.06	1.73	1.41	52	52	13:47:03	RWP	AC	Excel.	None	1278
D	14623	3	9601	4.46	4.04	4.19	4.08	3.89	3.21	2.65	2.15	52	52	13:47:08	RWP	AC	Excel.	None	1225
D	14623	4	12768	6.11	5.45	5.71	5.49	5.30	4.42	3.61	2.95	52	52	13:47:14	RWP	AC	Excel.	None	1189
D	15092	2	6425	2.36	2.21	2.24	2.07	1.96	1.73	1.51	1.32	52	52	13:48:25	RWP	AC	Excel.	None	1547
D	15092	3	9633	3.67	3.39	3.46	3.33	3.10	2.68	2.33	2.02	52	52	13:48:30	RWP	AC	Excel.	None	1494
D	15092	4	12830	5.02	4.58	4.70	4.50	4.22	3.65	3.17	2.72	52	52	13:48:37	RWP	AC	Excel.	None	1454
D	15093	2	6397	2.28	2.17	2.12	1.98	1.94	1.71	1.48	1.29	52	52	13:49:19	RWP	AC	Excel.	None	1593
D	15093	3	9592	3.52	3.31	3.25	3.14	2.97	2.62	2.28	1.97	52	52	13:49:24	RWP	AC	Excel.	None	1548
D	15093	4	12795	4.85	4.46	4.42	4.23	4.04	3.58	3.12	2.68	52	52	13:49:30	RWP	AC	Excel.	None	1501
C	Comment at 15093 ft Time: 13:49:40 :LOAD TRANSFER																		
D	15610	2	6402	2.31	2.16	2.13	1.98	1.91	1.69	1.49	1.31	52	51	13:50:45	RWP	AC	Excel.	None	1577
D	15610	3	9595	3.56	3.27	3.26	3.13	2.94	2.56	2.27	1.97	52	51	13:50:51	RWP	AC	Excel.	None	1532
D	15610	4	12805	4.79	4.33	4.38	4.10	3.93	3.44	3.04	2.66	52	51	13:50:57	RWP	AC	Excel.	None	1520
D	16090	2	6399	2.17	1.91	1.90	1.72	1.64	1.40	1.18	0.99	52	52	13:52:16	RWP	AC	Excel.	None	1680
D	16090	3	9587	3.32	2.93	2.91	2.73	2.51	2.14	1.79	1.51	52	52	13:52:21	RWP	AC	Excel.	None	1642
D	16090	4	12775	4.47	3.91	3.93	3.66	3.39	2.89	2.43	2.04	52	52	13:52:27	RWP	AC	Excel.	None	1627
D	16604	2	6412	2.26	2.03	2.01	1.91	1.84	1.60	1.38	1.17	53	51	13:53:50	RWP	AC	Excel.	None	1613
D	16604	3	9595	3.47	3.11	3.09	2.99	2.81	2.43	2.08	1.77	53	51	13:53:55	RWP	AC	Excel.	None	1571
D	16604	4	12800	4.66	4.19	4.17	3.99	3.80	3.25	2.79	2.37	53	51	13:54:01	RWP	AC	Excel.	None	1562
D	17103	2	6395	2.24	1.97	1.95	1.80	1.69	1.45	1.25	1.07	53	52	13:55:28	RWP	AC	Excel.	None	1627
D	17103	3	9587	3.45	3.04	3.03	2.83	2.64	2.26	1.94	1.65	53	52	13:55:33	RWP	AC	Excel.	None	1579
D	17103	4	12793	4.67	4.10	4.12	3.82	3.58	3.06	2.63	2.25	53	52	13:55:40	RWP	AC	Excel.	None	1558
D	17622	2	6414	1.64	1.48	1.50	1.43	1.43	1.25	1.05	0.90	53	52	13:57:07	RWP	AC	Excel.	None	2226
D	17622	3	9622	2.51	2.25	2.31	2.26	2.19	1.91	1.62	1.39	53	52	13:57:12	RWP	AC	Excel.	None	2181
D	17622	4	12851	3.39	3.04	3.15	3.04	3.00	2.59	2.20	1.86	53	52	13:57:18	RWP	AC	Excel.	None	2155
D	18126	2	6427	1.57	1.36	1.37	1.26	1.16	0.97	0.78	0.62	53	51	13:58:35	RWP	AC	Excel.	None	2328
D	18126	3	9635	2.42	2.11	2.14	2.02	1.85	1.51	1.21	0.96	53	51	13:58:42	RWP	AC	Excel.	None	2268
D	18126	4	12847	3.29	2.86	2.93	2.72	2.51	2.06	1.67	1.33	53	51	13:58:49	RWP	AC	Excel.	None	2219
D	19078	2	6396	2.48	2.23	2.24	2.11	2.02	1.73	1.46	1.22	52	51	14:00:32	RWP	AC	Excel.	None	1469
D	19078	3	9630	3.77	3.43	3.47	3.29	3.13	2.67	2.24	1.89	52	51	14:00:37	RWP	AC	Excel.	None	1452
D	19078	4	12821	5.08	4.61	4.70	4.47	4.22	3.62	3.08	2.56	52	51	14:00:44	RWP	AC	Excel.	None	1435
D	19587	2	6422	1.61	1.42	1.44	1.32	1.22	1.01	0.86	0.76	52	51	14:01:59	RWP	AC	Excel.	None	2263
D	19587	3	9605	2.53	2.17	2.23	2.05	1.85	1.57	1.34	1.16	52	51	14:02:04	RWP	AC	Excel.	None	2156
D	19587	4	12805	3.44	2.91	3.04	2.77	2.52	2.11	1.81	1.58	52	51	14:02:11	RWP	AC	Excel.	None	2117
D	20100	2	6390	1.37	1.28	1.15	1.09	1.05	0.93	0.83	0.74	52	52	14:05:08	RWP	AC	Excel.	None	2660
D	20100	3	9591	2.10	1.94	1.79	1.69	1.60	1.43	1.28	1.13	52	52	14:05:13	RWP	AC	Excel.	None	2596
D	20100	4	12748	2.83	2.60	2.42	2.27	2.14	1.93	1.71	1.51	52	52	14:05:20	RWP	AC	Excel.	None	2557
D	20600	2	6465	1.37	1.30	1.24	1.19	1.16	1.06	0.99	0.96	51	51	14:06:29	RWP	AC	Excel.	None	2678
D	20600	3	9694	2.06	1.93	1.85	1.81	1.74	1.62	1.51	1.38	51	51	14:06:35	RWP	AC	Excel.	None	2677
D	20600	4	12892	2.75	2.56	2.49	2.38	2.32	2.14	2.01	1.85	51	51	14:06:42	RWP	AC	Excel.	None	2670
D	21112	2	6423	1.61	1.50	1.43	1.35	1.30	1.13	0.96	0.84	52	51	14:07:54	RWP	AC	Excel.	None	2274
D	21112	3	9631	2.46	2.27	2.23	2.14	1.99	1.71	1.45	1.25	52	51	14:07:59	RWP	AC	Excel.	None	2225
D	21112	4	12810	3.35	3.05	3.02	2.88	2.71	2.33	1.98	1.70	52	51	14:08:05	RWP	AC	Excel.	None	2176
D	21604	2	6427	1.51	1.41	1.32	1.23	1.19	1.07	0.97	0.85	51	51	14:09:17	RWP	AC	Excel.	None	2420
D	21604	3	9644	2.26	2.10	2.00	1.92	1.80	1.62	1.42	1.29	51	51	14:09:22	RWP	AC	Excel.	None	2426
D	21604	4	12876	3.00	2.80	2.67	2.54	2.40	2.16	1.93	1.72	51	51	14:09:29	RWP	AC	Excel.	None	2440
D	21606	2	6423	1.72	1.51	1.48	1.35	1.32	1.16	1.02	0.91	51	51	14:10:15	RWP	AC	Excel.	None	2129
D	21606	3	9645	2.58	2.23	2.21	2.11	1.96	1.77	1.57	1.37	51	51	14:10:20	RWP	AC	Excel.	None	2122
D	21606	4	12862	3.42	2.99	2.97	2.80	2.65	2.37	2.10	1.84	51	51	14:10:27	RWP	AC	Excel.	None	2139
C	Comment at 21606 ft Time: 14:10:36 :LOAD TRANSFER																		
D	22107	2	6421	1.59	1.52	1.41	1.34	1.31	1.18	1.08	1.00	51	51	14:11:49		AC	Excel.	None	2297
D	22107	3	9622	2.37	2.27	2.13	2.05	1.97	1.79	1.64	1.49	51	51	14:11:54		AC	Excel.	None	2313
D	22107	4	12842	3.12	2.98	2.84	2.72	2.60	2.40	2.17	1.98	51	51	14:12:01		AC	Excel.	None	2344
D	22632	2	6431	1.79	1.74	1.68	1.63	1.62	1.50	1.40	1.29	51	51	14:13:20	RWP	AC	Excel.	None	2048
D	22632	3	9645	2.73	2.59	2.54	2.52	2.43	2.27	2.10	1.94	51	51	14:13:26	RWP	AC	Excel.	None	2005
D	22632	4	12856	3.69	3.43	3.40	3.33	3.24	3.03	2.82	2.60	51	51	14:13:33	RWP	AC	Excel.	None	1979
D	23137	2	6421	2.11	2.06	1.94	1.83	1.74	1.53	1.39	1.27	51	50	14:14:50	RWP	AC	Excel.	None	1733
D	23137	3	9629	3.24	3.08	2.94	2.80	2.64	2.35	2.12	1.92	51	50	14:14:55	RWP	AC	Excel.	None	1692
D	23137	4	12858	4.36	4.06	3.94	3.71	3.49	3.13	2.82	2.56	51	50	14:15:03	RWP	AC	Excel.	None	1676
D	23591	2	6414	2.69	2.53	2.39	2.23	2.09	1.83	1.57	1.37	52	51	14:16:23	RWP	AC	Excel.	None	1358
D	23591	3	9595	4.14	3.89	3.69	3.49	3.28	2.85	2.45	2.09	52	51	14:16:28	RWP	AC	Excel.	None	1318
D	23591	4	12796	5.59	5.25	5.01	4.73	4.48	3.86	3.32	2.84	52	51	14:16:34	RWP	AC	Excel.	None	1302
D	24128	2	6430	2.43	2.32	2.28	2.16	2.03	1.81	1.60	1.44	51	51	14:17:57	RWP	AC	Excel.	None	1502

D	24128	3	9627	3.78	3.54	3.50	3.36	3.17	2.81	2.47	2.18	51	51	14:18:04	RWP	AC	Excel.	None	1447
D	24128	4	12855	5.16	4.76	4.73	4.52	4.32	3.81	3.35	2.93	51	51	14:18:11	RWP	AC	Excel.	None	1416
D	24613	2	6416	2.45	2.31	2.27	2.09	2.00	1.76	1.55	1.37	51	51	14:19:28	RWP	AC	Excel.	None	1489
D	24613	3	9601	3.80	3.52	3.44	3.29	3.07	2.75	2.38	2.08	51	51	14:19:33	RWP	AC	Excel.	None	1437
D	24613	4	12784	5.18	4.73	4.62	4.42	4.19	3.71	3.23	2.80	51	51	14:19:39	RWP	AC	Excel.	None	1405
D	26102	2	6454	1.93	1.87	1.76	1.63	1.58	1.41	1.29	1.17	52	50	14:22:00	RWP	AC	Excel.	None	1904
D	26102	3	9659	3.04	2.86	2.67	2.56	2.40	2.16	1.95	1.77	52	50	14:22:05	RWP	AC	Excel.	None	1805
D	26102	4	12886	4.03	3.75	3.54	3.36	3.18	2.88	2.63	2.38	52	50	14:22:11	RWP	AC	Excel.	None	1817
C	Comment at 26102 ft Time: 14:22:48 :AT 20100 THE DMI HAD AN ERROR,DISTANCES SHOULD BE LOOKED AT AND ADJUSTED IIF NEEDED																		
D	26105	2	6440	2.46	2.20	2.14	1.97	1.88	1.63	1.45	1.29	51	51	14:23:22	RWP	AC	Excel.	None	1486
D	26105	3	9659	3.80	3.32	3.23	3.04	2.82	2.49	2.22	1.95	51	51	14:23:28	RWP	AC	Excel.	None	1445
D	26105	4	12857	5.16	4.46	4.36	4.06	3.82	3.38	2.97	2.62	51	51	14:23:35	RWP	AC	Excel.	None	1418
C	Comment at 26105 ft Time: 14:23:45 :LOAD TRANSFER																		
D	26635	2	6412	2.43	2.40	2.18	2.07	1.96	1.72	1.56	1.39	51	50	14:24:56	RWP	AC	Excel.	None	1499
D	26635	3	9623	3.76	3.57	3.29	3.11	2.94	2.63	2.35	2.09	51	50	14:25:02	RWP	AC	Excel.	None	1454
D	26635	4	12818	5.04	4.73	4.39	4.15	3.91	3.52	3.15	2.80	51	50	14:25:09	RWP	AC	Excel.	None	1447
D	27111	2	6400	2.90	2.69	2.76	2.62	2.57	2.16	1.83	1.55	51	50	14:26:24	RWP	AC	Excel.	None	1255
D	27111	3	9618	4.47	4.06	4.19	4.05	3.89	3.32	2.77	2.33	51	50	14:26:30	RWP	AC	Excel.	None	1225
D	27111	4	12800	6.03	5.44	5.61	5.40	5.21	4.48	3.73	3.13	51	50	14:26:37	RWP	AC	Excel.	None	1207
D	27629	2	6395	2.20	2.09	2.04	1.88	1.83	1.65	1.50	1.37	51	50	14:27:56	RWP	AC	Excel.	None	1650
D	27629	3	9604	3.41	3.16	3.08	2.90	2.77	2.50	2.28	2.07	51	50	14:28:01	RWP	AC	Excel.	None	1600
D	27629	4	12817	4.59	4.17	4.09	3.87	3.67	3.33	3.04	2.74	51	50	14:28:07	RWP	AC	Excel.	None	1590
D	28064	2	6381	2.14	1.96	2.01	1.90	1.84	1.63	1.44	1.27	51	50	14:29:22	RWP	AC	Excel.	None	1699
D	28064	3	9601	3.30	2.98	3.09	2.96	2.82	2.47	2.20	1.93	51	50	14:29:27	RWP	AC	Excel.	None	1655
D	28064	4	12799	4.49	3.97	4.17	3.97	3.78	3.36	2.96	2.62	51	50	14:29:33	RWP	AC	Excel.	None	1621
D	28655	2	6410	2.51	2.52	2.33	2.17	2.07	1.78	1.54	1.34	51	50	14:30:57	RWP	AC	Excel.	None	1453
D	28655	3	9624	3.95	3.81	3.57	3.45	3.18	2.74	2.36	2.03	51	50	14:31:04	RWP	AC	Excel.	None	1387
D	28655	4	12808	5.38	5.12	4.84	4.60	4.30	3.70	3.19	2.73	51	50	14:31:12	RWP	AC	Excel.	None	1353
D	29106	2	6411	2.22	2.23	2.03	1.91	1.85	1.62	1.44	1.24	51	50	14:32:38	RWP	AC	Excel.	None	1639
D	29106	3	9641	3.44	3.35	3.11	2.98	2.80	2.48	2.20	1.88	51	50	14:32:44	RWP	AC	Excel.	None	1596
D	29106	4	12854	4.69	4.49	4.20	3.99	3.77	3.35	2.93	2.53	51	50	14:32:50	RWP	AC	Excel.	None	1559
D	29618	2	6380	2.51	2.40	2.27	2.11	2.04	1.76	1.52	1.32	51	50	14:34:07	RWP	AC	Excel.	None	1448
D	29618	3	9581	3.88	3.64	3.47	3.27	3.08	2.72	2.32	1.99	51	50	14:34:13	RWP	AC	Excel.	None	1405
D	29618	4	12761	5.23	4.86	4.67	4.39	4.15	3.63	3.13	2.67	51	50	14:34:20	RWP	AC	Excel.	None	1387
D	30130	2	6374	3.15	3.07	2.81	2.63	2.50	2.15	1.86	1.59	51	50	14:35:44	RWP	AC	Excel.	None	1152
D	30130	3	9557	4.77	4.67	4.29	4.06	3.80	3.29	2.82	2.43	51	50	14:35:50	RWP	AC	Excel.	None	1140
D	30130	4	12777	6.41	6.24	5.79	5.45	5.09	4.41	3.80	3.25	51	50	14:35:57	RWP	AC	Excel.	None	1134
D	30598	2	6405	2.32	2.17	2.06	1.90	1.83	1.67	1.48	1.35	50	50	14:37:13	RWP	AC	Excel.	None	1570
D	30598	3	9615	3.54	3.27	3.11	2.99	2.81	2.55	2.27	2.04	50	50	14:37:18	RWP	AC	Excel.	None	1545
D	30598	4	12793	4.72	4.32	4.21	3.95	3.76	3.40	3.05	2.73	50	50	14:37:25	RWP	AC	Excel.	None	1541
D	30600	2	6416	2.39	2.20	2.12	1.97	1.86	1.65	1.46	1.32	50	50	14:38:19	RWP	AC	Excel.	None	1528
D	30600	3	9613	3.60	3.28	3.18	3.01	2.78	2.48	2.19	1.96	50	50	14:38:24	RWP	AC	Excel.	None	1520
D	30600	4	12821	4.85	4.35	4.27	4.00	3.78	3.31	2.96	2.65	50	50	14:38:31	RWP	AC	Excel.	None	1502
C	Comment at 30600 ft Time: 14:38:40 :LOAD TRANSFER																		
D	31596	2	6357	2.86	2.70	2.58	2.47	2.38	2.09	1.81	1.60	51	50	14:40:31	RWP	AC	Excel.	None	1264
D	31596	3	9543	4.40	4.12	3.99	3.84	3.66	3.25	2.81	2.42	51	50	14:40:37	RWP	AC	Excel.	None	1233
D	31596	4	12709	5.90	5.52	5.38	5.14	4.92	4.40	3.79	3.24	51	50	14:40:45	RWP	AC	Excel.	None	1225
C	Comment at 31596 ft Time: 14:40:56 :MISSED PREVOUS POINT																		
D	32114	2	6397	2.40	2.21	2.17	1.99	1.89	1.65	1.44	1.26	51	50	14:42:02	RWP	AC	Excel.	None	1514
D	32114	3	9631	3.74	3.35	3.29	3.09	2.88	2.51	2.19	1.91	51	50	14:42:09	RWP	AC	Excel.	None	1465
D	32114	4	12829	5.02	4.48	4.42	4.12	3.85	3.38	2.94	2.56	51	50	14:42:16	RWP	AC	Excel.	None	1452
D	32615	2	6424	1.95	1.79	1.79	1.67	1.56	1.37	1.21	1.09	51	50	14:43:37	RWP	AC	Excel.	None	1871
D	32615	3	9631	2.94	2.66	2.68	2.54	2.35	2.05	1.81	1.63	51	50	14:43:42	RWP	AC	Excel.	None	1862
D	32615	4	12858	3.97	3.52	3.59	3.38	3.17	2.74	2.42	2.18	51	50	14:43:49	RWP	AC	Excel.	None	1844
D	33109	2	6417	1.60	1.52	1.48	1.42	1.39	1.31	1.22	1.12	50	50	14:45:14	RWP	AC	Excel.	None	2277
D	33109	3	9597	2.37	2.22	2.18	2.15	2.06	1.95	1.80	1.66	50	50	14:45:19	RWP	AC	Excel.	None	2302
D	33109	4	12773	3.26	3.04	3.04	3.01	2.88	2.70	2.50	2.30	50	50	14:45:30	RWP	AC	Excel.	None	2226
D	33642	2	6392	2.22	2.05	2.11	2.02	2.00	1.74	1.51	1.35	50	50	14:46:54	RWP	AC	Excel.	None	1634
D	33642	3	9583	3.34	3.09	3.16	3.11	2.98	2.61	2.29	2.02	50	50	14:46:59	RWP	AC	Excel.	None	1633
D	33642	4	12793	4.46	4.11	4.24	4.14	3.96	3.48	3.09	2.69	50	50	14:47:06	RWP	AC	Excel.	None	1632
D	34143	2	6384	1.72	1.61	1.58	1.52	1.48	1.38	1.30	1.19	51	50	14:48:26	RWP	AC	Excel.	None	2117
D	34143	3	9577	2.56	2.38	2.35	2.28	2.20	2.06	1.93	1.78	51	50	14:48:31	RWP	AC	Excel.	None	2125
D	34143	4	12765	3.42	3.19	3.14	3.00	2.95	2.78	2.60	2.41	51	50	14:48:38	RWP	AC	Excel.	None	2122

C	Comment at 34143 ft Time: 14:48:47 :CENTER OF L44/REDWING AVE																		
D	34591	2	6413	2.15	1.99	1.99	1.87	1.82	1.65	1.49	1.36	50	50	14:49:49	RWP	AC	Excel.	None	1698
D	34591	3	9624	3.23	2.98	2.99	2.90	2.76	2.50	2.28	2.05	50	50	14:49:56	RWP	AC	Excel.	None	1693
D	34591	4	12833	4.30	3.95	4.01	3.86	3.69	3.38	3.05	2.73	50	50	14:50:03	RWP	AC	Excel.	None	1698
D	35081	2	6406	2.38	2.25	2.33	2.18	2.13	1.90	1.70	1.55	50	50	14:51:24	RWP	AC	Excel.	None	1530
D	35081	3	9591	3.79	3.45	3.51	3.36	3.17	2.81	2.52	2.24	50	50	14:51:30	RWP	AC	Excel.	None	1439
D	35081	4	12799	5.05	4.55	4.64	4.43	4.19	3.73	3.31	2.97	50	50	14:51:37	RWP	AC	Excel.	None	1440
D	35082	2	6373	2.31	2.21	2.22	2.12	2.06	1.86	1.70	1.51	50	50	14:52:22	RWP	AC	Excel.	None	1568
D	35082	3	9576	3.51	3.28	3.31	3.20	3.07	2.80	2.55	2.24	50	50	14:52:27	RWP	AC	Excel.	None	1550
D	35082	4	12796	4.70	4.31	4.40	4.23	4.07	3.73	3.34	2.98	50	50	14:52:35	RWP	AC	Excel.	None	1549
C	Comment at 35081 ft Time: 14:52:44 :LOAD TRANSFER																		
D	35603	2	6379	2.14	1.95	2.03	1.89	1.79	1.61	1.39	1.20	50	50	14:54:01	RWP	AC	Excel.	None	1697
D	35603	3	9571	3.31	2.97	3.05	2.88	2.70	2.40	2.06	1.79	50	50	14:54:06	RWP	AC	Excel.	None	1644
D	35603	4	12801	4.46	3.96	4.07	3.87	3.61	3.21	2.77	2.42	50	50	14:54:13	RWP	AC	Excel.	None	1630
D	36108	2	6411	1.79	1.74	1.69	1.60	1.57	1.38	1.24	1.17	50	51	14:55:41	RWP	AC	Excel.	None	2041
D	36108	3	9601	2.78	2.61	2.56	2.47	2.36	2.15	1.93	1.75	50	51	14:55:46	RWP	AC	Excel.	None	1964
D	36108	4	12803	3.75	3.48	3.44	3.31	3.16	2.91	2.64	2.38	50	51	14:55:53	RWP	AC	Excel.	None	1939
D	36617	2	6469	2.73	2.63	2.60	2.47	2.38	2.05	1.81	1.63	50	50	14:57:09	RWP	AC	Excel.	None	1347
D	36617	3	9676	4.25	4.01	3.94	3.78	3.61	3.15	2.77	2.47	50	50	14:57:14	RWP	AC	Excel.	None	1296
D	36617	4	12895	5.73	5.31	5.23	5.02	4.79	4.20	3.68	3.23	50	50	14:57:21	RWP	AC	Excel.	None	1280
D	37104	2	6449	1.94	2.04	1.80	1.68	1.62	1.46	1.31	1.18	50	50	14:58:38	RWP	AC	Excel.	None	1889
D	37104	3	9635	3.02	3.02	2.68	2.59	2.44	2.20	1.97	1.76	50	50	14:58:44	RWP	AC	Excel.	None	1813
D	37104	4	12848	4.06	4.02	3.58	3.42	3.28	2.96	2.66	2.36	50	50	14:58:52	RWP	AC	Excel.	None	1798
D	37600	2	6424	2.90	2.82	2.53	2.30	2.17	1.88	1.61	1.43	50	50	15:00:06	RWP	AC	Excel.	None	1258
D	37600	3	9583	4.47	4.24	3.83	3.57	3.30	2.85	2.50	2.16	50	50	15:00:12	RWP	AC	Excel.	None	1220
D	37600	4	12772	6.01	5.63	5.15	4.77	4.45	3.86	3.37	2.92	50	50	15:00:19	RWP	AC	Excel.	None	1208
D	38069	2	6424	2.27	2.12	2.08	1.96	1.92	1.68	1.44	1.25	50	50	15:01:38	RWP	AC	Excel.	None	1609
D	38069	3	9634	3.41	3.19	3.13	3.04	2.88	2.58	2.19	1.89	50	50	15:01:44	RWP	AC	Excel.	None	1607
D	38069	4	12857	4.54	4.24	4.20	4.04	3.87	3.49	2.98	2.54	50	50	15:01:50	RWP	AC	Excel.	None	1612
D	38599	2	6416	2.69	2.51	2.45	2.32	2.24	1.98	1.76	1.57	50	50	15:03:11	RWP	AC	Excel.	None	1357
D	38599	3	9603	4.07	3.79	3.73	3.60	3.42	3.07	2.71	2.39	50	50	15:03:16	RWP	AC	Excel.	None	1343
D	38599	4	12833	5.43	5.05	4.99	4.78	4.57	4.13	3.68	3.21	50	50	15:03:22	RWP	AC	Excel.	None	1345
D	39107	2	6439	2.76	2.52	2.57	2.43	2.41	2.17	1.89	1.64	50	50	15:04:58	RWP	AC	Excel.	None	1328
D	39107	3	9615	4.20	3.82	3.87	3.77	3.67	3.33	2.88	2.46	50	50	15:05:04	RWP	AC	Excel.	None	1302
D	39107	4	12803	5.56	5.05	5.16	5.00	4.91	4.47	3.88	3.28	50	50	15:05:11	RWP	AC	Excel.	None	1308
D	39586	2	6451	2.84	2.66	2.47	2.31	2.21	1.90	1.65	1.42	51	50	15:06:29	RWP	AC	Excel.	None	1293
D	39586	3	9656	4.30	4.00	3.79	3.57	3.34	2.92	2.53	2.17	51	50	15:06:35	RWP	AC	Excel.	None	1277
D	39586	4	12868	5.76	5.34	5.11	4.79	4.50	3.95	3.44	2.94	51	50	15:06:41	RWP	AC	Excel.	None	1271
D	39811	2	6429	3.55	3.37	3.28	3.11	2.94	2.51	2.12	1.74	50	49	15:07:42	RWP	AC	Excel.	None	1029
D	39811	3	9631	5.37	5.02	4.97	4.73	4.42	3.80	3.22	2.62	50	49	15:07:47	RWP	AC	Excel.	None	1020
D	39811	4	12845	7.20	6.64	6.65	6.28	5.91	5.11	4.33	3.54	50	49	15:07:55	RWP	AC	Excel.	None	1015
C	Comment at 39811 ft Time: 15:08:04 :LARGE PANEL AT END																		
C	Comment at 39948 ft Time: 15:08:35 :EEND OF SECTION																		

US 65 Northbound, April 2009


```
IKUAB FWD FILE      : IA65 NB Cable.fwd
HProject No.        : Overlay 65
HLocation           : Manley
HClient             : Cable
HStart Station      :
HDirection          : NB
HEnd Station        :
HWeather            : Cloud rain
HOperator           : HG CD

IDate Created       : 4/30/2009
IVersion            : 2.3.11
ILoad Mode          : 1          (SHRP 8+8 buffers, 0 plates)
IPlate Radius       : 5.91       (in)
IExtra Field Set    : Example Road
IDrop Sequence      : 2123
INo of drops        : 1111
IRecord Drop?       : NYYY
IDrop Height        :     1      2     3     4
IImpact Load        :   6003  9005 12007 16009 lbf
ISensor Number      :     0      1      2      3      4      5      6      7      8
ISensor Distance    :   0.00   8.00  12.00  18.00  24.00  36.00  48.00  60.00  59.06 (in)
ISensor Position    : CENTER BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :     0 ft
ITestpoint spacing:  1000 ft
```

J	Distance ft	Imp Num	Load lbf	D0 µm	D1 µm	D2 µm	D3 µm	D4 µm	D5 µm	D6 µm	D7 µm	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	0	2	6128	137	128	123	117	112	93	78	63	55	55	07:37:26	CTR	AC	Poor	None	647
D	0	3	9383	216	203	196	189	178	150	125	102	55	55	07:37:31	CTR	AC	Poor	None	628
D	0	4	12553	290	274	265	256	240	204	169	140	55	55	07:37:39	CTR	AC	Poor	None	626
D	-1005	2	6095	123	117	109	103	98	79	63	48	55	55	07:41:09	CTR	AC	Poor	None	716
D	-1005	3	9421	191	185	175	166	155	126	100	77	55	55	07:41:15	CTR	AC	Poor	None	711
D	-1005	4	12544	255	247	235	222	208	168	134	103	55	55	07:41:22	CTR	AC	Poor	None	712
D	-2002	2	6198	82	71	66	62	59	50	42	34	55	56	07:43:46	CTR	AC	Poor	None	1098
D	-2002	3	9346	127	111	105	100	92	79	66	55	55	56	07:43:52	CTR	AC	Poor	None	1061
D	-2002	4	12506	172	151	143	135	125	108	91	76	55	56	07:43:59	CTR	AC	Poor	None	1049
D	-3028	2	6232	98	92	89	85	83	74	63	50	55	56	07:46:43	CTR	AC	Poor	None	915
D	-3028	3	9422	150	141	137	134	127	114	98	78	55	56	07:46:49	CTR	AC	Poor	None	906
D	-3028	4	12594	201	189	185	178	171	154	132	105	55	56	07:46:56	CTR	AC	Poor	None	907
D	-4016	2	6244	84	74	71	68	66	60	52	45	55	56	07:48:47	CTR	AC	Poor	None	1075
D	-4016	3	9343	130	116	113	110	105	95	83	71	55	56	07:48:54	CTR	AC	Poor	None	1039
D	-4016	4	12516	176	159	155	149	144	130	114	97	55	56	07:49:01	CTR	AC	Poor	None	1025
C	Comment at -5001 ft Time: 07:50:38 :370 ST @4630																		
D	-5001	2	6232	137	129	123	116	111	98	84	69	55	56	07:51:02	CTR	AC	Poor	None	659
D	-5001	3	9367	209	199	190	183	173	154	133	109	55	56	07:51:08	CTR	AC	Poor	None	647
D	-5001	4	12527	275	262	251	239	228	202	174	143	55	56	07:51:15	CTR	AC	Poor	None	657
D	-6011	2	6218	219	183	163	143	135	118	101	85	55	56	07:52:53	CTR	AC	Poor	None	411
D	-6011	3	9281	325	275	246	223	207	180	154	131	55	56	07:52:59	CTR	AC	Poor	None	412
D	-6011	4	12374	432	367	331	299	277	242	208	177	55	56	07:53:06	CTR	AC	Poor	None	414
D	-7004	2	6281	110	109	100	90	85	74	62	52	56	56	07:55:23	CTR	AC	Poor	None	828
D	-7004	3	9407	164	163	152	141	131	112	94	79	56	56	07:55:30	CTR	AC	Poor	None	826
D	-7004	4	12526	218	216	204	186	175	150	126	106	56	56	07:55:38	CTR	AC	Poor	None	831
D	-8029	2	6242	88	83	79	74	72	63	53	41	56	56	07:58:26	RWP	AC	Poor	None	1025
D	-8029	3	9304	135	127	122	117	112	99	83	63	56	56	07:58:32	RWP	AC	Poor	None	994
D	-8029	4	12428	184	174	168	162	154	135	113	86	56	56	07:58:39	RWP	AC	Poor	None	976
D	-9044	2	6165	181	160	146	132	125	109	94	80	55	56	08:00:25	RWP	AC	Poor	None	491
D	-9044	3	9209	269	239	220	202	190	164	141	119	55	56	08:00:31	RWP	AC	Poor	None	494
D	-9044	4	12332	356	316	294	269	254	221	190	161	55	56	08:00:39	RWP	AC	Poor	None	500
D	-10050	2	6237	127	119	114	107	105	92	75	58	56	57	08:02:30	RWP	AC	Poor	None	708
D	-10050	3	9279	192	180	172	166	159	140	114	90	56	57	08:02:35	RWP	AC	Poor	None	697

IA65 NB Cable

D	-10050	4	12413	257	242	232	221	215	188	154	122	56	57	08:02:43	RWP	AC	Poor	None	697
D	-11069	2	6239	126	121	117	112	110	102	91	79	56	57	08:05:05	RWP	AC	Poor	None	716
D	-11069	3	9313	192	185	180	177	170	157	140	123	56	57	08:05:11	RWP	AC	Poor	None	699
D	-11069	4	12433	260	250	245	237	231	212	191	168	56	57	08:05:19	RWP	AC	Poor	None	689
D	-12005	2	6210	151	136	128	120	115	104	89	76	56	58	08:07:27	RWP	AC	Poor	None	594
D	-12005	3	9230	228	206	196	189	178	158	137	117	56	58	08:07:32	RWP	AC	Poor	None	584
D	-12005	4	12400	304	276	264	252	240	213	186	159	56	58	08:07:39	RWP	AC	Poor	None	589
D	-13130	2	6140	175	159	148	141	137	122	104	88	56	58	08:09:20	RWP	AC	Poor	None	507
D	-13130	3	9204	262	241	225	219	208	186	160	136	56	58	08:09:25	RWP	AC	Poor	None	507
D	-13130	4	12285	348	321	302	292	279	248	216	184	56	58	08:09:32	RWP	AC	Poor	None	510
D	-14002	2	6257	149	133	126	121	117	107	97	85	56	58	08:11:01	RWP	AC	Poor	None	608
D	-14002	3	9317	223	202	192	189	178	164	149	130	56	58	08:11:07	RWP	AC	Poor	None	603
D	-14002	4	12466	299	272	260	252	241	222	202	178	56	58	08:11:14	RWP	AC	Poor	None	603
D	-15008	2	6233	155	129	114	101	97	84	71	58	56	58	08:12:50	RWP	AC	Poor	None	582
D	-15008	3	9292	230	194	175	160	149	129	109	90	56	58	08:12:56	RWP	AC	Poor	None	585
D	-15008	4	12403	305	261	237	214	202	175	148	123	56	58	08:13:04	RWP	AC	Poor	None	587
D	-16000	2	6251	124	113	109	104	103	93	81	70	56	58	08:14:38	RWP	AC	Poor	None	727
D	-16000	3	9282	190	173	167	164	158	143	126	109	56	58	08:14:44	RWP	AC	Poor	None	706
D	-16000	4	12435	256	234	227	221	213	195	172	149	56	58	08:14:51	RWP	AC	Poor	None	702
D	-17014	2	6248	148	118	103	91	84	70	58	47	56	58	08:16:50	RWP	AC	Poor	None	611
D	-17014	3	9293	221	179	158	141	129	107	90	73	56	58	08:16:56	RWP	AC	Poor	None	608
D	-17014	4	12419	295	241	215	191	175	146	123	100	56	58	08:17:03	RWP	AC	Poor	None	608
D	-18006	2	6241	111	99	94	90	87	77	66	56	57	59	08:18:46	RWP	AC	Poor	None	812
D	-18006	3	9257	169	152	145	141	134	119	103	88	57	59	08:18:51	RWP	AC	Poor	None	792
D	-18006	4	12473	229	207	199	192	183	163	142	122	57	59	08:18:58	RWP	AC	Poor	None	787
D	-18998	2	6210	152	130	118	109	105	94	81	68	56	58	08:20:44	RWP	AC	Poor	None	590
D	-18998	3	9243	230	198	181	170	162	144	124	106	56	58	08:20:50	RWP	AC	Poor	None	582
D	-18998	4	12378	305	265	245	227	217	194	168	142	56	58	08:20:57	RWP	AC	Poor	None	585
D	-20000	2	6245	114	103	95	88	83	67	55	44	57	58	08:22:43	RWP	AC	Poor	None	790
D	-20000	3	9285	175	158	148	138	128	105	87	70	57	58	08:22:48	RWP	AC	Poor	None	766
D	-20000	4	12461	238	216	202	189	177	145	122	98	57	58	08:22:54	RWP	AC	Poor	None	757
D	-21021	2	6161	162	145	133	122	120	107	93	81	57	58	08:25:17	RWP	AC	Poor	None	551
D	-21021	3	9191	245	222	205	194	185	166	148	128	57	58	08:25:23	RWP	AC	Poor	None	541
D	-21021	4	12341	331	300	281	264	254	229	204	177	57	58	08:25:31	RWP	AC	Poor	None	538
D	-22002	2	6281	103	96	92	88	85	76	65	55	57	59	08:27:45	RWP	AC	Poor	None	880
D	-22002	3	9316	158	149	142	139	132	118	102	87	57	59	08:27:51	RWP	AC	Poor	None	850
D	-22002	4	12537	215	204	197	190	182	163	143	121	57	59	08:27:58	RWP	AC	Poor	None	841
D	-23010	2	6263	98	90	86	81	77	66	53	43	57	59	08:29:46	CTR	AC	Poor	None	920
D	-23010	3	9336	150	138	132	126	119	102	83	66	57	59	08:29:52	CTR	AC	Poor	None	901
D	-23010	4	12542	202	188	180	172	162	139	114	91	57	59	08:29:59	CTR	AC	Poor	None	896
D	-24001	2	6263	132	128	125	122	116	102	87	74	57	60	08:32:34	RWP	AC	Poor	None	688
D	-24001	3	9290	195	191	187	184	174	153	132	111	57	60	08:32:40	RWP	AC	Poor	None	687
D	-24001	4	12465	261	255	249	245	233	206	177	151	57	60	08:32:48	RWP	AC	Poor	None	691
D	-25003	2	6246	70	66	65	63	63	52	47	40	57	60	08:34:30	RWP	AC	Poor	None	1294
D	-25003	3	9290	105	100	97	96	95	80	71	61	57	60	08:34:36	RWP	AC	Poor	None	1282
D	-25003	4	12457	141	136	133	131	129	109	98	83	57	60	08:34:44	RWP	AC	Poor	None	1272
D	-26020	2	6303	141	131	126	122	116	90	80	65	58	60	08:36:30	RWP	AC	Poor	None	648
D	-26020	3	9283	207	194	187	183	173	134	119	98	58	60	08:36:36	RWP	AC	Poor	None	646
D	-26020	4	12508	278	261	252	244	233	181	161	135	58	60	08:36:43	RWP	AC	Poor	None	650
D	-27008	2	6303	112	102	96	89	86	76	64	53	57	60	08:38:16	RWP	AC	Poor	None	816
D	-27008	3	9325	172	157	148	141	134	118	101	84	57	60	08:38:22	RWP	AC	Poor	None	784
D	-27008	4	12513	235	215	204	193	184	163	140	118	57	60	08:38:29	RWP	AC	Poor	None	770
D	-28062	2	6254	159	138	124	111	102	87	71	58	58	59	08:40:07	RWP	AC	Poor	None	569
D	-28062	3	9253	239	209	190	173	156	134	110	91	58	59	08:40:13	RWP	AC	Poor	None	560
D	-28062	4	12429	321	283	258	236	213	182	151	125	58	59	08:40:20	RWP	AC	Poor	None	559
D	-29013	2	6213	118	113	111	105	106	97	87	79	57	58	08:42:13	CTR	AC	Poor	None	762
D	-29013	3	9229	176	169	166	164	159	146	133	120	57	58	08:42:19	CTR	AC	Poor	None	759
D	-29013	4	12470	234	226	222	217	211	195	178	163	57	58	08:42:26	CTR	AC	Poor	None	770
D	-30000	2	6244	99	92	87	83	80	73	65	55	57	58	08:44:01	RWP	AC	Poor	None	907
D	-30000	3	9318	152	141	135	129	124	112	100	86	57	58	08:44:07	RWP	AC	Poor	None	885
D	-30000	4	12429	206	191	183	175	168	153	137	118	57	58	08:44:14	RWP	AC	Poor	None	870
D	-31012	2	6171	218	193	176	170	158	140	121	98	57	57	08:45:44	RWP	AC	Poor	None	408
D	-31012	3	9161	334	294	270	263	245	217	188	155	57	57	08:45:49	RWP	AC	Poor	None	396

IA65 NB Cable

D	-31012	4	12301	447	392	362	353	330	291	255	210	57	57	08:45:56	RWP	AC	Poor	None	397
D	-32008	2	6236	178	156	143	134	129	112	94	77	57	58	08:47:40	RWP	AC	Poor	None	505
D	-32008	3	9289	267	235	218	207	195	169	143	118	57	58	08:47:45	RWP	AC	Poor	None	503
D	-32008	4	12410	356	316	294	276	261	227	192	159	57	58	08:47:52	RWP	AC	Poor	None	504
D	-33002	2	6212	130	117	112	106	104	95	84	65	57	57	08:49:22	RWP	AC	Poor	None	688
D	-33002	3	9253	199	180	172	168	161	148	131	101	57	57	08:49:27	RWP	AC	Poor	None	671
D	-33002	4	12438	267	244	234	226	218	200	181	138	57	57	08:49:34	RWP	AC	Poor	None	673
D	-34012	2	6143	219	188	172	157	150	130	111	94	57	58	08:51:12	RWP	AC	Poor	None	404
D	-34012	3	9195	331	286	263	244	230	200	171	145	57	58	08:51:18	RWP	AC	Poor	None	401
D	-34012	4	12294	440	384	354	328	309	270	232	197	57	58	08:51:26	RWP	AC	Poor	None	403
D	-35019	2	6132	143	132	121	109	94	77	61	48	57	57	08:53:46	RWP	AC	Poor	None	619
D	-35019	3	9178	217	202	186	172	146	120	96	75	57	57	08:53:52	RWP	AC	Poor	None	610
D	-35019	4	12318	292	272	253	233	199	164	131	104	57	57	08:53:59	RWP	AC	Poor	None	610
D	-36049	2	6146	86	81	79	75	74	66	58	49	57	57	08:55:43	RWP	AC	Poor	None	1030
D	-36049	3	9203	132	125	121	119	112	100	87	75	57	57	08:55:48	RWP	AC	Poor	None	1006
D	-36049	4	12371	177	168	163	159	150	136	119	102	57	57	08:55:55	RWP	AC	Poor	None	1009
D	-37463	2	6097	157	136	128	116	109	89	71	56	57	57	08:58:51	RWP	AC	Poor	None	560
D	-37463	3	9162	242	211	199	184	170	139	112	88	57	57	08:58:57	RWP	AC	Poor	None	547
D	-37463	4	12272	326	286	270	250	231	191	155	122	57	57	08:59:03	RWP	AC	Poor	None	543
D	-38001	2	6087	246	212	190	167	152	129	108	87	57	57	09:02:49	RWP	AC	Poor	None	357
D	-38001	3	9115	368	318	284	253	227	195	165	133	57	57	09:02:55	RWP	AC	Poor	None	358
D	-38001	4	12220	488	423	378	332	301	261	224	181	57	57	09:03:02	RWP	AC	Poor	None	362
D	-39445	2	6185	102	88	82	79	74	63	54	44	57	57	09:05:09	RWP	AC	Poor	None	872
D	-39445	3	9279	162	140	132	127	119	102	87	72	57	57	09:05:15	RWP	AC	Poor	None	829
D	-39445	4	12424	222	193	182	177	166	143	122	101	57	57	09:05:22	RWP	AC	Poor	None	810
D	-40002	2	6069	147	122	111	103	91	78	64	49	57	57	09:06:56		AC	Poor	None	595
D	-40002	3	9147	226	192	176	164	146	126	103	81	57	57	09:07:02		AC	Poor	None	584
D	-40002	4	12271	306	263	243	227	203	175	145	113	57	57	09:07:08		AC	Poor	None	579
D	-41070	2	6142	94	81	76	73	71	63	55	48	57	57	09:09:03	RWP	AC	Poor	None	942
D	-41070	3	9224	146	126	121	117	112	100	89	76	57	57	09:09:08	RWP	AC	Poor	None	911
D	-41070	4	12368	198	173	166	161	153	138	122	105	57	57	09:09:15	RWP	AC	Poor	None	900
D	-42029	2	6167	69	63	60	56	56	49	44	37	57	57	09:10:44	RWP	AC	Poor	None	1297
D	-42029	3	9303	106	98	94	90	87	77	69	59	57	57	09:10:51	RWP	AC	Poor	None	1263
D	-42029	4	12467	142	131	126	122	116	105	93	80	57	57	09:10:59	RWP	AC	Poor	None	1268
D	-43035	2	6176	109	102	98	94	91	80	70	59	57	57	09:12:29	RWP	AC	Poor	None	816
D	-43035	3	9294	166	155	150	146	139	123	107	90	57	57	09:12:35	RWP	AC	Poor	None	811
D	-43035	4	12478	222	208	202	196	187	166	144	122	57	57	09:12:42	RWP	AC	Poor	None	812
D	-44031	2	6079	231	228	222	210	164	96	82	69	57	56	09:14:13	RWP	AC	Poor	None	381
D	-44031	3	9173	342	338	329	313	244	150	128	108	57	56	09:14:19	RWP	AC	Poor	None	388
D	-44031	4	12271	446	441	430	402	317	203	174	148	57	56	09:14:26	RWP	AC	Poor	None	398
D	-45045	2	6104	135	124	105	95	90	74	60	48	57	57	09:15:57	RWP	AC	Poor	None	652
D	-45045	3	9182	211	194	166	155	144	120	98	80	57	57	09:16:03	RWP	AC	Poor	None	629
D	-45045	4	12334	285	263	229	212	197	166	137	113	57	57	09:16:09	RWP	AC	Poor	None	624
D	-46056	2	6123	123	115	101	89	80	66	53	42	57	57	09:18:09	RWP	AC	Poor	None	719
D	-46056	3	9221	186	175	157	140	124	104	83	67	57	57	09:18:16	RWP	AC	Poor	None	718
D	-46056	4	12352	249	235	212	190	169	142	115	92	57	57	09:18:24	RWP	AC	Poor	None	716
D	-47066	2	6110	112	108	101	96	92	76	65	53	57	57	09:19:59	RWP	AC	Poor	None	787
D	-47066	3	9215	175	166	157	152	143	118	99	82	57	57	09:20:04	RWP	AC	Poor	None	760
D	-47066	4	12357	237	224	212	203	192	159	136	111	57	57	09:20:11	RWP	AC	Poor	None	752
D	-47945	2	6057	111	92	83	78	73	63	53	44	57	57	09:21:52	RWP	AC	Poor	None	790
D	-47945	3	9199	174	146	133	124	117	102	85	71	57	57	09:21:57	RWP	AC	Poor	None	763
D	-47945	4	12343	237	199	184	171	160	141	119	100	57	57	09:22:04	RWP	AC	Poor	None	751
D	-49011	2	5972	155	128	117	112	108	99	87	73	57	57	09:23:38	RWP	AC	Poor	None	557
D	-49011	3	9059	236	199	183	176	171	156	136	115	57	57	09:23:44	RWP	AC	Poor	None	554
D	-49011	2	5990	152	127	116	110	108	99	86	72	57	57	09:24:29	RWP	AC	Poor	None	570
D	-49011	3	9091	236	200	184	179	172	157	138	117	57	57	09:24:34	RWP	AC	Poor	None	556
D	-49011	4	12185	317	272	252	244	234	215	190	161	57	57	09:24:41	RWP	AC	Poor	None	555
D	-49991	2	6086	123	110	105	101	94	85	74	62	57	57	09:26:19	RWP	AC	Poor	None	713
D	-49991	3	9212	190	171	165	159	148	133	116	98	57	57	09:26:25	RWP	AC	Poor	None	700
D	-49991	4	12384	257	233	224	216	202	182	160	134	57	57	09:26:32	RWP	AC	Poor	None	697
D	-50994	2	6109	54	51	49	47	46	41	36	31	57	56	09:28:38	RWP	AC	Poor	None	1643
D	-50994	3	9247	84	79	77	74	72	65	57	49	57	56	09:28:44	RWP	AC	Poor	None	1595
D	-50994	4	12423	113	107	104	101	97	88	77	67	57	56	09:28:51	RWP	AC	Poor	None	1586

																IA65 NB Cable			
D	-52108	2	6114	117	102	95	88	82	69	57	47	57	57	09:30:43	RWP	AC	Poor	None	756
D	-52108	3	9252	178	157	147	138	127	107	89	72	57	57	09:30:49	RWP	AC	Poor	None	749
D	-52108	4	12426	240	210	198	185	170	145	120	99	57	57	09:30:55	RWP	AC	Poor	None	749

US 65 Southbound, April 2009


```
IKUAB FWD FILE      : IA65_SB Cable.fwd
HProject No.        : Overlay 65
HLocation           : Manley
HClient             : Cable
HStart Station      : From North End
HDirection          : SB
HEnd Station        :
HWeather            : Cloud rain
HOperator           : HG CD

IDate Created       : 4/30/2009
IVersion            : 2.3.11
ILoad Mode          : 1          (SHRP 8+8 buffers, 0 plates)
IPlate Radius       : 5.91       (in)
IExtra Field Set    : Example Road
IDrop Sequence      : 2123
INo of drops        : 1111
IRecord Drop?       : NYYY
IDrop Height        :     1      2     3      4
IImpact Load        :   6003   9005 12007 16009 lbf
ISensor Number      :      0      1      2      3      4      5      6      7      8
ISensor Distance    :   0.00   8.00  12.00  18.00  24.00  36.00  48.00  60.00  59.06 (in)
ISensor Position    : CENTER BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :      0 ft
ITestpoint spacing:   1000 ft
```

J	Distance ft	Imp Num	Load lbf	D0 µm	D1 µm	D2 µm	D3 µm	D4 µm	D5 µm	D6 µm	D7 µm	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
C	Comment at 0 ft Time: 09:39:07 :Last point at end line of project north end at northwood																		
D	0	2	6111	142	101	91	83	79	67	55	45	58	57	09:39:52	RWP	AC	Poor	None	621
D	0	3	9258	208	154	142	131	123	104	87	71	58	57	09:39:58	RWP	AC	Poor	None	642
D	0	4	12428	274	208	192	178	166	141	117	97	58	57	09:40:05	RWP	AC	Poor	None	655
D	-508	2	6158	110	95	89	83	78	65	53	43	58	57	09:41:43	RWP	AC	Poor	None	808
D	-508	3	9273	172	149	140	132	122	102	84	68	58	57	09:41:49	RWP	AC	Poor	None	779
D	-508	4	12437	234	201	190	178	165	139	115	94	58	57	09:41:55	RWP	AC	Poor	None	768
D	-1493	2	6144	60	56	54	51	50	44	39	33	58	57	09:43:41	RWP	AC	Poor	None	1485
D	-1493	3	9289	92	85	83	80	77	69	61	52	58	57	09:43:47	RWP	AC	Poor	None	1465
D	-1493	4	12480	123	114	111	107	103	92	81	70	58	57	09:43:55	RWP	AC	Poor	None	1468
D	-2510	2	6119	121	112	108	104	102	91	78	67	57	57	09:45:59	RWP	AC	Poor	None	729
D	-2510	3	9206	187	174	168	164	157	142	122	106	57	57	09:46:05	RWP	AC	Poor	None	712
D	-2510	4	12357	253	235	227	221	213	192	167	144	57	57	09:46:13	RWP	AC	Poor	None	706
D	-3500	2	6087	139	111	99	92	90	77	65	54	57	57	09:47:56	RWP	AC	Poor	None	634
D	-3500	3	9201	216	176	161	152	144	125	107	89	57	57	09:48:02	RWP	AC	Poor	None	616
D	-3500	4	12338	290	240	222	208	198	172	147	124	57	57	09:48:10	RWP	AC	Poor	None	614
D	-4495	2	6166	63	57	54	52	49	44	39	34	58	58	09:49:43	RWP	AC	Poor	None	1419
D	-4495	3	9297	96	86	82	78	75	67	59	51	58	58	09:49:49	RWP	AC	Poor	None	1405
D	-4495	4	12531	129	117	112	107	102	91	80	69	58	58	09:49:57	RWP	AC	Poor	None	1398
D	-5501	2	6051	147	124	113	105	101	87	74	60	58	58	09:51:36	RWP	AC	Poor	None	596
D	-5501	3	9139	226	193	178	165	157	135	114	93	58	58	09:51:42	RWP	AC	Poor	None	584
D	-5501	4	12265	304	260	241	224	214	185	156	128	58	58	09:51:50	RWP	AC	Poor	None	583
D	-6513	2	6160	68	64	61	58	57	53	47	42	58	58	09:53:47	RWP	AC	Poor	None	1306
D	-6513	3	9316	106	98	95	92	89	83	74	65	58	58	09:53:52	RWP	AC	Poor	None	1267
D	-6513	4	12523	145	134	129	126	121	112	102	89	58	58	09:54:00	RWP	AC	Poor	None	1250
D	-7536	2	6131	76	70	68	65	64	59	52	46	57	57	09:55:25	RWP	AC	Poor	None	1167
D	-7536	3	9229	117	109	104	102	98	90	80	71	57	57	09:55:30	RWP	AC	Poor	None	1135
D	-7536	4	12406	159	147	141	137	133	122	109	96	57	57	09:55:37	RWP	AC	Poor	None	1127
D	-8526	2	6098	141	132	127	122	118	105	92	79	57	57	09:57:14	RWP	AC	Poor	None	626
D	-8526	3	9234	218	204	197	191	183	163	143	123	57	57	09:57:19	RWP	AC	Poor	None	611
D	-8526	4	12393	296	274	267	258	247	221	194	167	57	57	09:57:26	RWP	AC	Poor	None	605
D	-9499	2	6145	112	106	100	94	88	72	60	49	57	57	09:59:17	RWP	AC	Poor	None	794
D	-9499	3	9259	172	163	154	146	135	112	93	77	57	57	09:59:24	RWP	AC	Poor	None	778
D	-9499	4	12442	233	220	208	196	182	152	127	105	57	57	09:59:31	RWP	AC	Poor	None	772
D	-10492	2	6104	113	99	93	88	84	72	62	50	57	57	10:01:21	RWP	AC	Poor	None	778
D	-10492	3	9250	177	156	148	141	134	116	99	82	57	57	10:01:27	RWP	AC	Poor	None	755

D	-10492	4	12415	240	212	202	193	183	159	137	114	57	57	10:01:35	RWP	AC	Poor	None	746
D	-11518	2	6110	146	118	103	94	81	72	60	47	57	57	10:03:42	RWP	AC	Poor	None	605
D	-11518	3	9241	224	184	164	149	130	115	97	77	57	57	10:03:47	RWP	AC	Poor	None	597
D	-11518	4	12420	301	251	224	205	179	159	134	108	57	57	10:03:53	RWP	AC	Poor	None	595
D	-12609	2	6095	140	124	119	113	110	95	79	66	57	57	10:05:30	RWP	AC	Poor	None	627
D	-12609	3	9221	216	193	186	179	171	150	127	106	57	57	10:05:36	RWP	AC	Poor	None	617
D	-12609	4	12374	291	261	252	242	232	203	173	145	57	57	10:05:44	RWP	AC	Poor	None	614
D	-13544	2	6076	117	109	104	97	93	80	67	58	57	57	10:07:13	RWP	AC	Poor	None	751
D	-13544	3	9220	182	170	163	155	146	126	106	83	57	57	10:07:21	RWP	AC	Poor	None	731
D	-13544	4	12369	249	231	222	210	199	173	146	117	57	57	10:07:30	RWP	AC	Poor	None	718
D	-14529	2	6059	84	75	72	67	65	56	47	38	57	57	10:09:10	RWP	AC	Poor	None	1047
D	-14529	3	9195	133	121	115	111	105	91	76	63	57	57	10:09:15	RWP	AC	Poor	None	996
D	-14529	4	12345	186	169	162	156	148	129	108	90	57	57	10:09:22	RWP	AC	Poor	None	960
D	-15587	2	6037	121	121	119	110	106	92	78	65	57	58	10:11:15	RWP	AC	Poor	None	722
D	-15587	3	9181	188	188	184	173	163	142	121	103	57	58	10:11:20	RWP	AC	Poor	None	707
D	-15587	4	12335	255	254	250	234	221	193	165	140	57	58	10:11:27	RWP	AC	Poor	None	699
D	-16488	2	6084	102	95	91	86	81	70	57	44	57	58	10:13:17	RWP	AC	Poor	None	864
D	-16488	3	9204	160	149	143	136	128	111	90	71	57	58	10:13:23	RWP	AC	Poor	None	829
D	-16488	4	12370	219	204	196	187	176	152	125	98	57	58	10:13:31	RWP	AC	Poor	None	814
D	-20005	2	5973	176	152	136	121	115	100	86	71	58	58	10:16:46					490
D	-20005	3	9073	269	235	213	195	181	159	136	114	58	58	10:16:52					486
D	-20005	4	12177	362	318	290	265	248	218	188	158	58	58	10:16:58					486
C	Comment at -17505 ft Time: 10:20:24 :Note dmi error to 17505																		
D	-18536	2	6040	115	109	106	102	101	92	81	68	58	58	10:22:06	RWP	AC	Excel.	None	758
D	-18536	3	9137	177	169	165	162	157	144	126	107	58	58	10:22:12	RWP	AC	Excel.	None	744
D	-18536	4	12312	241	229	224	219	212	196	172	145	58	58	10:22:20	RWP	AC	Excel.	None	737
C	Comment at -18536 ft Time: 10:22:30 :DMI error should be 17505																		
D	-19526	2	6038	130	118	110	102	98	86	73	60	58	58	10:23:53	RWP	AC	Excel.	None	673
D	-19526	3	9140	203	185	173	165	154	135	115	96	58	58	10:23:59	RWP	AC	Excel.	None	650
D	-19526	4	12253	279	255	240	226	213	186	159	132	58	58	10:24:07	RWP	AC	Excel.	None	633
D	-20595	2	5992	202	198	195	190	188	161	139	119	58	58	10:25:52	RWP	AC	Excel.	None	428
D	-20595	3	9084	309	303	298	297	288	248	214	185	58	58	10:25:58	RWP	AC	Excel.	None	424
D	-20595	4	12201	410	403	396	391	381	329	286	248	58	58	10:26:06	RWP	AC	Excel.	None	429
D	-21518	2	6053	100	97	94	93	91	83	73	64	58	58	10:27:51	RWP	AC	Excel.	None	873
D	-21518	3	9180	157	151	148	148	143	130	115	100	58	58	10:27:56	RWP	AC	Excel.	None	844
D	-21518	4	12386	213	205	201	200	195	177	157	138	58	58	10:28:03	RWP	AC	Excel.	None	840
D	-22530	2	6055	98	96	93	90	82	66	55	46	58	59	10:29:41	RWP	AC	Excel.	None	894
D	-22530	3	9158	153	150	146	140	128	104	86	72	58	59	10:29:48	RWP	AC	Excel.	None	865
D	-22530	4	12316	208	203	198	188	172	140	118	98	58	59	10:29:55	RWP	AC	Excel.	None	856
D	-23519	2	6088	71	65	62	59	56	49	41	34	58	59	10:31:28	RWP	AC	Excel.	None	1236
D	-23519	3	9226	113	102	98	94	88	77	65	54	58	59	10:31:33	RWP	AC	Excel.	None	1174
D	-23519	4	12426	154	139	134	128	121	106	90	75	58	59	10:31:40	RWP	AC	Excel.	None	1164
D	-24504	2	6101	75	69	67	63	60	51	42	34	58	60	10:33:36	RWP	AC	Excel.	None	1169
D	-24504	3	9243	118	109	105	101	95	81	68	56	58	60	10:33:42	RWP	AC	Excel.	None	1129
D	-24504	4	12463	161	149	145	138	130	112	95	78	58	60	10:33:48	RWP	AC	Excel.	None	1116
D	-25573	2	6093	103	94	90	85	81	71	61	51	58	59	10:35:36	RWP	AC	Excel.	None	856
D	-25573	3	9280	163	150	143	139	130	114	98	82	58	59	10:35:42	RWP	AC	Excel.	None	824
D	-25573	4	12493	224	206	199	191	180	158	137	115	58	59	10:35:49	RWP	AC	Excel.	None	806
D	-26542	2	6068	105	97	93	89	86	76	65	55	58	60	10:37:20	RWP	AC	Excel.	None	836
D	-26542	3	9164	162	151	145	141	133	118	102	86	58	60	10:37:26	RWP	AC	Excel.	None	815
D	-26542	4	12350	220	205	198	191	181	161	140	118	58	60	10:37:34	RWP	AC	Excel.	None	810
D	-27562	2	6087	84	75	70	64	62	52	43	36	58	60	10:39:17	RWP	AC	Excel.	None	1051
D	-27562	3	9232	131	117	110	104	97	83	70	58	58	60	10:39:22	RWP	AC	Excel.	None	1019
D	-27562	4	12416	182	161	153	142	134	115	97	81	58	60	10:39:29	RWP	AC	Excel.	None	987
D	-28503	2	6029	198	173	161	149	132	115	98	81	58	61	10:41:40	RWP	AC	Excel.	None	441
D	-28503	3	9113	302	266	249	233	205	179	154	127	58	61	10:41:46	RWP	AC	Excel.	None	436
D	-28503	4	12201	406	358	336	315	279	244	210	175	58	61	10:41:53	RWP	AC	Excel.	None	434
D	-29571	2	6111	127	114	108	104	97	86	74	62	59	58	10:44:38	RWP	AC	Excel.	None	695
D	-29571	3	9229	199	179	169	165	153	137	118	100	59	58	10:44:44	RWP	AC	Excel.	None	670
D	-29571	4	12405	272	244	231	225	210	188	164	138	59	58	10:44:51	RWP	AC	Excel.	None	659
D	-30529	2	6094	81	77	75	71	69	63	56	50	59	60	10:46:48	RWP	AC	Excel.	None	1091
D	-30529	3	9213	124	118	116	110	107	98	87	78	59	60	10:46:54	RWP	AC	Excel.	None	1071
D	-30529	4	12423	167	159	157	151	145	133	119	106	59	60	10:47:01	RWP	AC	Excel.	None	1072
D	-31530	2	6063	139	133	128	122	118	104	89	75	59	59	10:49:06	RWP	AC	Excel.	None	628
D	-31530	3	9159	217	207	201	193	185	163	141	119	59	59	10:49:11	RWP	AC	Excel.	None	609
D	-31530	4	12316	295	279	272	261	250	222	191	163	59	59	10:49:18	RWP	AC	Excel.	None	603

D	-32522	2	6020	262	223	134	103	89	74	61	49	59	60	10:50:50	RWP	AC	Excel.	None	331
D	-32522	3	9126	390	332	209	164	141	118	98	79	59	60	10:50:56	RWP	AC	Excel.	None	338
D	-32522	4	12229	515	438	285	225	195	164	136	110	59	60	10:51:04	RWP	AC	Excel.	None	343
D	-33572	2	6025	127	112	107	103	99	87	75	63	59	60	10:52:51	RWP	AC	Excel.	None	687
D	-33572	3	9138	200	178	171	167	158	139	119	102	59	60	10:52:56	RWP	AC	Excel.	None	661
D	-33572	4	12253	273	244	235	228	217	192	166	142	59	60	10:53:03	RWP	AC	Excel.	None	648
D	-34507	2	6043	158	127	114	103	96	81	67	55	59	60	10:54:35	RWP	AC	Excel.	None	551
D	-34507	3	9158	243	200	181	165	152	128	107	87	59	60	10:54:41	RWP	AC	Excel.	None	544
D	-34507	4	12318	330	274	249	226	208	177	150	121	59	60	10:54:48	RWP	AC	Excel.	None	539
D	-35539	2	6052	147	109	91	74	65	51	42	33	59	60	10:56:28	RWP	AC	Excel.	None	595
D	-35539	3	9163	220	165	140	117	102	80	65	52	59	60	10:56:35	RWP	AC	Excel.	None	603
D	-35539	4	12354	293	221	189	158	138	110	89	72	59	60	10:56:43	RWP	AC	Excel.	None	609
D	-36578	2	6033	169	149	138	128	123	111	96	81	59	61	10:58:29	RWP	AC	Excel.	None	514
D	-36578	3	9144	263	231	215	204	193	173	150	128	59	61	10:58:35	RWP	AC	Excel.	None	503
D	-36578	4	12307	357	313	293	278	262	235	206	176	59	61	10:58:42	RWP	AC	Excel.	None	499
D	-37517	2	6048	141	123	115	107	102	88	74	60	59	60	11:00:25	RWP	AC	Excel.	None	620
D	-37517	3	9170	219	192	180	171	161	140	117	96	59	60	11:00:31	RWP	AC	Excel.	None	604
D	-37517	4	12323	296	261	246	232	220	191	161	133	59	60	11:00:38	RWP	AC	Excel.	None	601
D	-38521	2	6042	137	125	112	105	102	90	81	69	59	60	11:02:23	RWP	AC	Excel.	None	638
D	-38521	3	9180	208	190	169	164	156	139	125	107	59	60	11:02:29	RWP	AC	Excel.	None	637
D	-38521	4	12306	280	255	230	221	211	189	172	147	59	60	11:02:37	RWP	AC	Excel.	None	634
D	-39647	2	6016	116	109	104	98	96	86	75	64	59	61	11:04:31	RWP	AC	Excel.	None	751
D	-39647	3	9147	180	169	162	156	149	135	116	100	59	61	11:04:37	RWP	AC	Excel.	None	733
D	-39647	4	12270	245	229	219	211	201	183	159	136	59	61	11:04:45	RWP	AC	Excel.	None	722
D	-40495	2	6018	180	158	142	135	130	119	104	88	59	60	11:06:25	RWP	AC	Excel.	None	483
D	-40495	3	9112	277	243	222	214	202	186	163	136	59	60	11:06:31	RWP	AC	Excel.	None	474
D	-40495	4	12202	372	327	300	288	274	251	221	186	59	60	11:06:38	RWP	AC	Excel.	None	474
D	-41565	2	6004	175	166	160	154	150	136	121	107	59	60	11:08:29	RWP	AC	Excel.	None	495
D	-41565	3	9073	270	253	244	239	230	208	186	165	59	60	11:08:35	RWP	AC	Excel.	None	485
D	-41565	4	12241	361	338	327	320	309	279	251	225	59	60	11:08:43	RWP	AC	Excel.	None	490
D	-42508	2	6036	161	150	138	130	122	107	94	79	59	60	11:10:08	RWP	AC	Excel.	None	542
D	-42508	3	9165	249	231	214	204	191	168	147	124	59	60	11:10:14	RWP	AC	Excel.	None	531
D	-42508	4	12310	337	310	290	276	258	228	202	171	59	60	11:10:22	RWP	AC	Excel.	None	528
D	-43491	2	5986	151	138	130	126	123	110	95	83	59	60	11:11:49	RWP	AC	Excel.	None	572
D	-43491	3	9038	232	210	199	194	188	169	147	127	59	60	11:11:56	RWP	AC	Excel.	None	564
D	-43491	4	12204	314	283	270	263	253	229	200	172	59	60	11:12:04	RWP	AC	Excel.	None	562
D	-44545	2	6054	95	85	81	76	74	64	54	46	59	61	11:13:50	RWP	AC	Excel.	None	920
D	-44545	3	9191	148	132	127	121	115	100	86	72	59	61	11:13:55	RWP	AC	Excel.	None	895
D	-44545	4	12372	203	180	173	165	156	137	117	99	59	61	11:14:02	RWP	AC	Excel.	None	882
D	-45649	2	6048	151	139	126	113	100	82	69	55	59	61	11:15:42	RWP	AC	Excel.	None	578
D	-45649	3	9171	233	214	196	178	156	130	110	87	59	61	11:15:48	RWP	AC	Excel.	None	568
D	-45649	4	12338	317	289	266	241	212	178	150	121	59	61	11:15:56	RWP	AC	Excel.	None	562
D	-46559	2	6005	177	154	141	126	119	104	88	73	59	61	11:17:23	RWP	AC	Excel.	None	490
D	-46559	3	9075	269	234	215	198	185	160	137	115	59	61	11:17:28	RWP	AC	Excel.	None	488
D	-46559	4	12264	361	314	290	267	249	216	187	157	59	61	11:17:36	RWP	AC	Excel.	None	491
D	-47514	2	6010	156	150	144	138	136	125	112	97	60	62	11:19:24	RWP	AC	Excel.	None	555
D	-47514	3	9146	245	234	226	219	213	197	177	154	60	62	11:19:29	RWP	AC	Excel.	None	539
D	-47514	4	12284	333	314	304	295	285	267	240	209	60	62	11:19:36	RWP	AC	Excel.	None	533
D	-48650	2	6097	92	88	85	81	78	69	59	51	60	62	11:21:13	RWP	AC	Excel.	None	962
D	-48650	3	9253	142	136	133	128	122	107	94	79	60	62	11:21:20	RWP	AC	Excel.	None	939
D	-48650	4	12446	194	185	181	173	166	147	128	109	60	62	11:21:28	RWP	AC	Excel.	None	924
D	-49594	2	6034	87	81	77	73	70	63	52	43	60	62	11:23:07	RWP	AC	Excel.	None	998
D	-49594	3	9199	137	128	122	117	111	100	83	69	60	62	11:23:13	RWP	AC	Excel.	None	972
D	-49594	4	12424	188	175	168	160	152	138	116	96	60	62	11:23:21	RWP	AC	Excel.	None	955
D	-50569	2	5995	199	199	132	114	102	84	67	54	60	62	11:24:46	RWP	AC	Excel.	None	434
D	-50569	3	9121	298	294	202	178	158	131	106	85	60	62	11:24:52	RWP	AC	Excel.	None	442
D	-50569	4	12293	395	385	270	239	213	178	145	116	60	62	11:24:59	RWP	AC	Excel.	None	450
D	-51489	2	6033	227	157	135	117	108	89	71	56	60	63	11:26:14	RWP	AC	Excel.	None	384
D	-51489	3	9135	341	242	211	186	169	140	113	90	60	63	11:26:20	RWP	AC	Excel.	None	387
D	-51489	4	12279	453	323	287	252	230	191	155	123	60	63	11:26:27	RWP	AC	Excel.	None	391
D	-52528	2	6118	95	87	84	79	76	66	55	45	60	64	11:27:59	RWP	AC	Excel.	None	926
D	-52528	3	9229	148	134	129	124	118	102	86	71	60	64	11:28:04	RWP	AC	Excel.	None	900
D	-52528	4	12451	203	184	177	169	161	140	118	97	60	64	11:28:11	RWP	AC	Excel.	None	886
C	Comment at -52986 ft Time: 11:29:40 :Deflection is not decreasing																		
D	-52986	2	5943	290	257	193	182	193	161	129	93	61	64	11:29:48	RWP	AC	Excel.	None	296
C	Comment at -52986 ft Time: 11:29:53 :Deflection is not decreasing																		

```
                                                                                      IA65 SB Cable
D  -52986    3  5964  288  255  191  184  193  162  130   94   61   64 11:30:13 RWP       AC        Excel.    None         299
C  Comment at -52986 ft  Time: 11:30:17 :Deflection is not decreasing
D  -52986    4  5972  284  252  188  181  191  160  128   92   61   64 11:30:19 RWP       AC        Excel.    None         304
C  Comment at -52986 ft  Time: 11:30:24 :Deflection is not decreasing
D  -52986    5  5994  286  254  189  181  192  160  129   93   61   64 11:30:26 RWP       AC        Excel.    None         303
C  Comment at -52986 ft  Time: 11:30:31 :Deflection is not decreasing
```

US 65 Northbound, Northwood, IA, November 2009


```
IKUAB FWD FILE      : Northwood 65 Cable NB.fwd
HProject No.        : Cable Overlay
HLocation           : HWY 65 NB
HClient             : Cable
HStart Station      :
HDirection          :
HEnd Station        :
HWeather            : CLEAR COLD
HOperator           : hg

IDate Created       : 11/17/2009
IVersion            : 2.3.11
ILoad Mode          : 1          (SHRP 8+8 buffers, 0 plates)
IPlate Radius       : 5.91       (in)
IExtra Field Set    : Example Road
IDrop Sequence      : 2123
INo of drops        : 1111
IRecord Drop?       : NYYY
IDrop Height        :    1     2     3     4
IImpact Load        :  6003  9005 12007 16009 lbf
ISensor Number      :     0      1      2      3      4      5      6      7      8
ISensor Distance    :  0.00  12.00  12.00  18.00  24.00  36.00  48.00  60.00   0.00 (in)
ISensor Position    : CENTER FRONT BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference Offset :      0 ft
ITestpoint spacing:    500 ft

JDistance Imp  Load    D0     D1     D2     D3     D4     D5     D6     D7   Air Pave Time     Pavement Pavement Pavement  Pavement Surface
J      ft Num   lbf   mils   mils   mils   mils   mils   mils   mils   mils   °F  °F           Location Type     Condition Distress Modulus
J-------- --- -----  ------ ------ ------ ------ ------ ------ ------ ------ ---- ---- -------- -------- -------- --------- -------- -------
D      78   2  6380   3.41   3.19   2.98   2.75   2.62   2.25   1.96   1.69   30   30 07:15:37 RWP      AC       Excel.    None        1064
D      78   3  9592   5.18   4.88   4.59   4.29   4.01   3.47   3.02   2.60   30   30 07:15:44 RWP      AC       Excel.    None        1053
D      78   4 12822   6.99   6.54   6.19   5.77   5.38   4.68   4.08   3.49   30   30 07:15:52 RWP      AC       Excel.    None        1043
D     570   2  6530   1.60   1.62   1.43   1.37   1.33   1.20   1.08   0.98   29   28 07:17:36 RWP      AC       Excel.    None        2318
D     570   3  9797   2.41   2.41   2.17   2.08   1.99   1.80   1.64   1.47   29   28 07:17:42 RWP      AC       Excel.    None        2307
D     570   4 13036   3.18   3.17   2.86   2.74   2.61   2.39   2.14   1.92   29   28 07:17:50 RWP      AC       Excel.    None        2334
C  Comment at 570 ft  Time: 07:18:09 :WHEN TESTING JOINT BETWEEN JOINT 3 AND 4
D    1091   2  6495   1.53   1.35   1.48   1.42   1.34   1.17   1.03   0.92   29   28 07:19:49 RWP      AC       Excel.    None        2411
D    1091   3  9807   2.33   2.04   2.25   2.21   2.05   1.79   1.57   1.38   29   28 07:19:55 RWP      AC       Excel.    None        2397
D    1091   4 13045   3.09   2.70   3.03   2.90   2.73   2.39   2.08   1.85   29   28 07:20:04 RWP      AC       Excel.    None        2402
D    1093   2  6489   1.26   1.15   1.17   1.12   1.14   1.04   0.91   0.81   29   29 07:20:49 RWP      AC       Excel.    None        2935
D    1093   3  9824   2.02   1.84   1.89   1.87   1.85   1.69   1.50   1.35   29   29 07:20:54 RWP      AC       Excel.    None        2770
CComment: Testing in this file was continued again on 11/17/2009 at 7:22:41 AM
D    1093   2  6522   1.36   1.24   1.26   1.22   1.23   1.11   0.99   0.87   30   29 07:23:19 RWP      AC       Excel.    None        2727
D    1093   3  9811   2.03   1.83   1.92   1.88   1.84   1.72   1.51   1.36   30   29 07:23:25 RWP      AC       Excel.    None        2754
D    1093   4 13057   2.68   2.43   2.54   2.48   2.45   2.31   2.03   1.80   30   29 07:23:33 RWP      AC       Excel.    None        2775
D    1675   2  6515   2.32   2.04   2.27   2.23   2.15   1.89   1.59   1.39   29   28 07:25:38 RWP      AC       Excel.    None        1599
C  Comment at 1675 ft  Time: 07:25:44 :Deflection is not decreasing
D    1675   3  9783   3.55   3.10   3.51   3.43   3.29   2.90   2.47   2.11   29   28 07:25:50 RWP      AC       Excel.    None        1567
C  Comment at 1675 ft  Time: 07:25:58 :Deflection is not decreasing
D    1675   4 13012   4.73   4.14   4.68   4.54   4.37   3.86   3.30   2.83   29   28 07:26:01 RWP      AC       Excel.    None        1564
D    2104   2  6506   1.66   1.58   1.51   1.44   1.42   1.28   1.14   1.06   28   29 07:28:00 CTR      PCC      Excel.    None        2224
D    2104   3  9803   2.57   2.41   2.34   2.28   2.17   1.99   1.80   1.61   28   29 07:28:06 CTR      PCC      Excel.    None        2172
D    2104   4 13065   3.43   3.20   3.13   3.00   2.91   2.66   2.40   2.16   28   29 07:28:14 CTR      PCC      Excel.    None        2167
D    2558   2  6492   2.01   1.97   1.75   1.62   1.59   1.41   1.23   1.08   28   28 07:29:56 CTR      PCC      Excel.    None        1841
D    2558   3  9788   3.08   3.01   2.70   2.59   2.44   2.15   1.88   1.65   28   28 07:30:01 CTR      PCC      Excel.    None        1806
D    2558   4 13007   4.12   4.04   3.61   3.40   3.25   2.89   2.51   2.21   28   28 07:30:09 CTR      PCC      Excel.    None        1795
C  Comment at 2558 ft  Time: 07:30:22 :CENTR 370ST
C  Comment at 3104 ft  Time: 07:31:55 :Deflection is not decreasing
D    3104   2  6480   2.84   2.67   2.87   2.87   2.93   2.69   2.31   2.03   28   28 07:31:56 CTR      PCC      Excel.    None        1297
C  Comment at 3104 ft  Time: 07:32:02 :Deflection is not decreasing
D    3104   3  9763   4.24   3.95   4.31   4.35   4.41   4.03   3.47   3.02   28   28 07:32:04 CTR      PCC      Excel.    None        1310
C  Comment at 3104 ft  Time: 07:32:12 :Deflection is not decreasing
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D    3104  4 12972  5.58  5.16  5.68  5.76  5.79  5.32  4.56  3.97  28  28 07:32:12 CTR  PCC  Excel.  None  1322
D    3608  2  6497  3.31  2.84  2.72  2.45  2.23  1.84  1.54  1.33  28  28 07:33:53 CTR  PCC  Excel.  None  1117
D    3608  3  9758  5.03  4.30  4.17  3.77  3.42  2.83  2.40  2.03  28  28 07:33:58 CTR  PCC  Excel.  None  1103
D    3608  4 12942  6.68  5.69  5.57  5.01  4.57  3.80  3.22  2.72  28  28 07:34:06 CTR  PCC  Excel.  None  1101
CComment: Testing in this file was continued again on 11/17/2009 at 7:36:19 AM
D    5000  2  6519  2.76  2.38  2.45  2.20  2.05  1.44  1.24  1.06  28  29 07:37:15 CTR  AC   Excel.  None  1343
D    5000  3  9785  4.18  3.57  3.71  3.42  3.12  2.14  1.85  1.58  28  29 07:37:21 CTR  AC   Excel.  None  1332
D    5000  4 13007  5.50  4.66  4.88  4.47  4.11  2.78  2.39  2.07  28  29 07:37:28 CTR  AC   Excel.  None  1346
C  Comment at 4999 ft  Time: 07:37:41 :DMI ERROR, LOCATION ESIMATE
D    5508  2  6463  1.85  1.70  1.85  1.80  1.76  1.59  1.42  1.30  28  28 07:39:15 CTR  PCC  Excel.  None  1987
C  Comment at 5508 ft  Time: 07:39:21 :Deflection is not decreasing
D    5508  3  9757  2.78  2.55  2.80  2.77  2.65  2.40  2.16  1.95  28  28 07:39:25 CTR  PCC  Excel.  None  1994
C  Comment at 5508 ft  Time: 07:39:32 :Deflection is not decreasing
D    5508  4 12950  3.69  3.34  3.72  3.65  3.52  3.19  2.87  2.59  28  28 07:39:35 CTR  PCC  Excel.  None  1996
D    6483  2  6524  1.87  1.76  1.70  1.64  1.60  1.49  1.34  1.21  28  28 07:42:58 CTR  PCC  Excel.  None  1983
D    6483  3  9804  2.84  2.65  2.59  2.52  2.43  2.25  2.04  1.85  28  28 07:43:04 CTR  PCC  Excel.  None  1965
D    6483  2  6533  1.87  1.75  1.69  1.63  1.60  1.48  1.32  1.21  28  28 07:43:26 CTR  PCC  Excel.  None  1989
D    6483  3  9755  2.82  2.63  2.58  2.50  2.41  2.24  2.03  1.83  28  28 07:43:31 CTR  PCC  Excel.  None  1964
D    6483  4 13026  3.74  3.49  3.45  3.33  3.22  3.01  2.71  2.45  28  28 07:43:39 CTR  PCC  Excel.  None  1979
D    7029  2  6467  4.25  4.03  3.65  3.31  3.06  2.60  2.21  1.88  28  28 07:45:31 CTR  PCC  Excel.  None   865
D    7029  3  9711  6.51  6.16  5.60  5.13  4.72  4.00  3.41  2.88  28  28 07:45:37 CTR  PCC  Excel.  None   848
D    7029  4 12898  8.66  8.20  7.47  6.84  6.28  5.35  4.57  3.84  28  28 07:45:44 CTR  PCC  Excel.  None   847
D    7030  2  6442  4.59  4.23  3.87  3.46  3.22  2.68  2.25  1.94  28  29 07:47:18 CTR  PCC  Excel.  None   798
D    7030  3  9668  7.07  6.49  5.97  5.45  4.97  4.15  3.54  2.99  28  29 07:47:24 CTR  PCC  Excel.  None   778
D    7030  4 12868  9.38  8.65  7.95  7.24  6.64  5.56  4.73  3.98  28  29 07:47:32 CTR  PCC  Excel.  None   780
C  Comment at 7030 ft  Time: 07:47:57 :LOAD TRANSFER
D    7505  2  6466  2.00  1.90  1.88  1.82  1.84  1.70  1.52  1.39  28  28 07:49:35 CTR  PCC  Excel.  None  1838
D    7505  3  9761  3.02  2.86  2.89  2.82  2.77  2.58  2.36  2.11  28  28 07:49:41 CTR  PCC  Excel.  None  1836
D    7505  4 12985  4.01  3.78  3.84  3.74  3.67  3.44  3.13  2.80  28  28 07:49:48 CTR  PCC  Excel.  None  1841
D    8031  2  6460  3.11  2.73  2.81  2.55  2.42  2.06  1.80  1.58  28  28 07:51:44 CTR  PCC  Excel.  None  1181
D    8031  3  9738  4.76  4.17  4.33  4.03  3.69  3.17  2.76  2.41  28  28 07:51:49 CTR  PCC  Excel.  None  1163
D    8031  4 12948  6.34  5.52  5.80  5.36  4.94  4.25  3.68  3.21  28  28 07:51:57 CTR  PCC  Excel.  None  1162
D    8518  2  6482  1.85  1.76  1.74  1.68  1.70  1.55  1.40  1.29  29  29 07:53:35 CTR  PCC  Excel.  None  1989
D    8518  3  9742  2.79  2.64  2.64  2.60  2.54  2.35  2.15  1.96  29  29 07:53:42 CTR  PCC  Excel.  None  1986
D    8518  4 12970  3.67  3.47  3.51  3.42  3.37  3.13  2.85  2.59  29  29 07:53:50 CTR  PCC  Excel.  None  2010
CComment: Testing in this file was continued again on 11/17/2009 at 7:59:02 AM
D    9008  2  6510  2.27  2.16  2.17  2.15  2.12  1.91  1.61  1.40  30  31 07:59:40 CTR  PCC  Excel.  None  1631
D    9008  3  9788  3.43  3.22  3.35  3.31  3.22  2.90  2.47  2.13  30  31 07:59:46 CTR  PCC  Excel.  None  1621
D    9008  4 12994  4.56  4.23  4.46  4.38  4.28  3.86  3.28  2.83  30  31 07:59:54 CTR  PCC  Excel.  None  1620
C  Comment at 9524 ft  Time: 08:01:47 :Deflection is not decreasing
D    9524  2  6485  2.77  2.41  2.80  2.74  2.70  2.19  1.76  1.43  29  29 08:01:52 CTR  PCC  Excel.  None  1331
C  Comment at 9524 ft  Time: 08:01:58 :Deflection is not decreasing
D    9524  3  9700  4.21  3.63  4.29  4.21  4.14  3.35  2.70  2.19  29  29 08:02:06 CTR  PCC  Excel.  None  1309
C  Comment at 9524 ft  Time: 08:02:13 :Deflection is not decreasing
D    9524  4 12906  5.65  4.86  5.78  5.62  5.53  4.49  3.61  2.93  29  29 08:02:15 CTR  PCC  Excel.  None  1299
CComment: Testing in this file was continued again on 11/17/2009 at 8:06:08 AM
D   10012  2  6475  2.50  2.43  2.20  2.13  2.08  1.89  1.69  1.52  31  31 08:06:35 RWP  AC   Excel.  None  1473
D   10012  3  9749  3.74  3.64  3.41  3.29  3.15  2.88  2.62  2.33  31  31 08:06:40 RWP  AC   Excel.  None  1484
D   10012  4 12981  4.93  4.78  4.51  4.34  4.17  3.83  3.48  3.11  31  31 08:06:48 RWP  AC   Excel.  None  1499
D   10524  2  6515  2.21  2.09  2.05  1.98  1.98  1.83  1.66  1.54  30  30 08:08:34 RWP  AC   Excel.  None  1675
D   10524  3  9737  3.34  3.15  3.13  3.08  3.00  2.80  2.56  2.34  30  30 08:08:40 RWP  AC   Excel.  None  1660
D   10524  4 12933  4.39  4.14  4.16  4.07  3.98  3.72  3.41  3.11  30  30 08:08:47 RWP  AC   Excel.  None  1676
D   11013  2  6512  1.17  1.03  1.06  1.02  1.02  0.93  0.81  0.72  30  29 08:10:24 RWP  AC   Excel.  None  3169
D   11013  3  9776  1.76  1.55  1.61  1.62  1.56  1.41  1.26  1.10  30  29 08:10:31 RWP  AC   Excel.  None  3158
D   11013  4 12981  2.36  2.09  2.20  2.14  2.08  1.91  1.68  1.49  30  29 08:10:40 RWP  AC   Excel.  None  3127
D   11517  2  6484  1.72  1.61  1.61  1.60  1.58  1.45  1.28  1.12  30  30 08:12:16 RWP  AC   Excel.  None  2139
D   11517  3  9738  2.61  2.42  2.49  2.46  2.40  2.20  1.95  1.71  30  30 08:12:22 RWP  AC   Excel.  None  2120
D   11517  4 12952  3.45  3.18  3.30  3.27  3.22  2.94  2.59  2.28  30  30 08:12:29 RWP  AC   Excel.  None  2132
D   12007  2  6505  3.80  3.35  3.00  2.69  2.43  2.04  1.72  1.50  30  30 08:14:00 RWP  AC   Excel.  None   974
D   12007  3  9695  5.72  5.04  4.58  4.11  3.73  3.11  2.66  2.28  30  30 08:14:05 RWP  AC   Excel.  None   965
D   12007  4 12897  7.60  6.69  6.12  5.50  4.98  4.19  3.57  3.06  30  30 08:14:12 RWP  AC   Excel.  None   965
D   12506  2  6463  2.90  2.50  2.57  2.37  2.22  1.84  1.58  1.39  30  31 08:15:46 RWP  AC   Excel.  None  1268
D   12506  3  9708  4.41  3.76  3.95  3.69  3.39  2.81  2.40  2.08  30  31 08:15:52 RWP  AC   Excel.  None  1252
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D	12506	4	12902	5.86	4.99	5.28	4.89	4.54	3.78	3.19	2.74	30	31	08:15:59	RWP	AC	Excel.	None	1252
D	12971	2	6504	1.90	1.82	1.73	1.66	1.64	1.52	1.39	1.28	30	31	08:17:36	RWP	AC	Excel.	None	1945
D	12971	3	9776	2.88	2.75	2.65	2.58	2.51	2.33	2.12	1.94	30	31	08:17:42	RWP	AC	Excel.	None	1933
D	12971	4	12976	3.83	3.65	3.54	3.45	3.35	3.12	2.84	2.58	30	31	08:17:49	RWP	AC	Excel.	None	1927
D	13526	2	6502	2.36	2.13	2.14	2.02	1.96	1.76	1.58	1.46	30	31	08:19:35	RWP	PCC	Excel.	None	1569
D	13526	3	9736	3.56	3.20	3.22	3.12	2.96	2.67	2.41	2.18	30	31	08:19:40	RWP	PCC	Excel.	None	1556
D	13526	4	12948	4.68	4.20	4.28	4.09	3.91	3.52	3.19	2.88	30	31	08:19:47	RWP	PCC	Excel.	None	1573
D	14015	2	6506	2.79	2.54	2.77	2.68	2.52	2.23	1.97	1.77	31	31	08:21:24	RWP	PCC	Excel.	None	1328
D	14015	3	9738	4.17	3.76	4.11	3.99	3.79	3.35	2.96	2.65	31	31	08:21:30	RWP	PCC	Excel.	None	1329
C	Comment at 14015 ft Time: 08:21:37 :Deflection is not decreasing																		
D	14015	4	12940	5.51	4.96	5.46	5.27	5.01	4.44	3.94	3.48	31	31	08:21:40	RWP	PCC	Excel.	None	1336
D	14547	2	6532	2.26	2.06	2.22	2.22	2.19	1.91	1.64	1.40	31	31	08:23:27	RWP	PCC	Excel.	None	1641
C	Comment at 14547 ft Time: 08:23:32 :Deflection is not decreasing																		
D	14547	3	9764	3.37	3.07	3.36	3.39	3.27	2.88	2.50	2.12	31	31	08:23:34	RWP	PCC	Excel.	None	1649
C	Comment at 14547 ft Time: 08:23:42 :Deflection is not decreasing																		
D	14547	4	12938	4.45	4.04	4.48	4.48	4.36	3.82	3.31	2.80	31	31	08:23:43	RWP	PCC	Excel.	None	1652
D	15043	2	6500	2.80	2.37	2.40	2.18	2.07	1.78	1.51	1.29	31	30	08:25:27	RWP	PCC	Excel.	None	1318
D	15043	3	9689	4.27	3.59	3.68	3.39	3.16	2.70	2.32	1.99	31	30	08:25:32	RWP	PCC	Excel.	None	1291
D	15043	4	12919	5.72	4.81	4.95	4.52	4.25	3.65	3.13	2.67	31	30	08:25:39	RWP	PCC	Excel.	None	1284
D	15508	2	6538	1.89	1.85	1.75	1.70	1.65	1.50	1.34	1.26	31	31	08:27:12	RWP	PCC	Excel.	None	1966
D	15508	3	9719	2.84	2.78	2.65	2.52	2.47	2.28	2.07	1.89	31	31	08:27:17	RWP	PCC	Excel.	None	1944
D	15508	4	12936	3.80	3.70	3.55	3.44	3.33	3.05	2.80	2.50	31	31	08:27:25	RWP	PCC	Excel.	None	1938
D	16070	2	6596	1.41	1.33	1.27	1.25	1.20	1.11	1.04	0.94	31	33	08:29:20	RWP	PCC	Excel.	None	2669
D	16070	3	9745	2.11	1.98	1.92	1.86	1.80	1.66	1.57	1.41	31	33	08:29:25	RWP	PCC	Excel.	None	2625
D	16070	4	13004	2.80	2.61	2.58	2.50	2.41	2.23	2.05	1.90	31	33	08:29:32	RWP	PCC	Excel.	None	2641
D	16072	2	6541	1.43	1.34	1.27	1.22	1.21	1.12	1.03	0.94	32	33	08:30:16	RWP	PCC	Excel.	None	2604
D	16072	3	9743	2.16	2.01	1.95	1.90	1.82	1.69	1.56	1.42	32	33	08:30:21	RWP	PCC	Excel.	None	2569
D	16072	4	13004	2.89	2.67	2.62	2.51	2.44	2.27	2.07	1.90	32	33	08:30:28	RWP	PCC	Excel.	None	2561
C	Comment at 16072 ft Time: 08:30:39 :load transfer																		
D	16490	2	6521	1.43	1.32	1.33	1.23	1.25	1.17	1.07	1.02	32	33	08:31:42	RWP	PCC	Excel.	None	2600
D	16490	3	9721	2.11	1.96	1.94	1.94	1.88	1.77	1.63	1.52	32	33	08:31:47	RWP	PCC	Excel.	None	2619
D	16490	4	12946	2.76	2.58	2.58	2.52	2.45	2.34	2.13	1.96	32	33	08:31:54	RWP	PCC	Excel.	None	2664
D	17021	2	6514	2.26	1.98	2.13	2.01	1.89	1.59	1.38	1.18	32	32	08:33:46	RWP	PCC	Excel.	None	1637
D	17021	3	9663	3.39	2.96	3.20	3.06	2.87	2.38	2.08	1.77	32	32	08:33:52	RWP	PCC	Excel.	None	1622
D	17021	4	12917	4.48	3.89	4.21	4.05	3.80	3.16	2.73	2.34	32	32	08:33:59	RWP	PCC	Excel.	None	1641
D	17523	2	6540	1.65	1.53	1.53	1.48	1.48	1.40	1.28	1.15	32	32	08:35:38	RWP	PCC	Excel.	None	2257
D	17523	3	9741	2.51	2.31	2.33	2.32	2.27	2.13	1.95	1.74	32	32	08:35:43	RWP	PCC	Excel.	None	2206
D	17523	4	12931	3.32	3.04	3.12	3.05	3.01	2.85	2.62	2.30	32	32	08:35:51	RWP	PCC	Excel.	None	2217
D	18021	2	6541	1.67	1.48	1.43	1.35	1.32	1.18	1.08	0.99	32	32	08:37:26	RWP	PCC	Excel.	None	2233
D	18021	3	9723	2.54	2.25	2.21	2.10	2.01	1.81	1.63	1.48	32	32	08:37:32	RWP	PCC	Excel.	None	2179
D	18021	4	12976	3.43	3.03	3.00	2.86	2.72	2.45	2.20	1.98	32	32	08:37:39	RWP	PCC	Excel.	None	2150
D	18513	2	6489	1.75	1.72	1.49	1.40	1.36	1.19	1.05	0.94	32	33	08:39:10	RWP	PCC	Excel.	None	2114
D	18513	3	9719	2.64	2.58	2.28	2.18	2.05	1.83	1.62	1.42	32	33	08:39:15	RWP	PCC	Excel.	None	2090
D	18513	4	12937	3.53	3.44	3.07	2.89	2.75	2.45	2.14	1.90	32	33	08:39:22	RWP	PCC	Excel.	None	2082
D	19031	2	6534	1.44	1.31	1.27	1.23	1.19	1.10	1.01	0.94	33	32	08:40:55	CTR	PCC	Excel.	None	2573
D	19031	3	9727	2.17	1.97	1.96	1.88	1.82	1.67	1.54	1.41	33	32	08:41:00	CTR	PCC	Excel.	None	2546
D	19031	4	12941	2.91	2.64	2.63	2.51	2.45	2.26	2.06	1.91	33	32	08:41:07	CTR	PCC	Excel.	None	2527
D	19672	2	6573	1.15	1.05	1.01	0.97	0.94	0.89	0.84	0.78	33	32	08:42:58	CTR	PCC	Excel.	None	3240
D	19672	3	9800	1.71	1.55	1.53	1.48	1.44	1.35	1.27	1.16	33	32	08:43:03	CTR	PCC	Excel.	None	3262
D	19672	4	13031	2.28	2.04	2.04	1.96	1.91	1.81	1.67	1.52	33	32	08:43:10	CTR	PCC	Excel.	None	3255
D	20014	2	6500	1.49	1.37	1.36	1.31	1.30	1.17	1.06	0.99	34	33	08:44:56	CTR	PCC	Excel.	None	2475
D	20014	3	9758	2.24	2.03	2.06	2.01	1.94	1.78	1.62	1.46	34	33	08:45:02	CTR	PCC	Excel.	None	2479
D	20014	4	12960	2.97	2.67	2.73	2.64	2.59	2.39	2.15	1.95	34	33	08:45:09	CTR	PCC	Excel.	None	2485
D	20531	2	6544	2.03	1.87	1.84	1.77	1.73	1.59	1.45	1.32	35	33	08:46:55	CTR	PCC	Excel.	None	1836
D	20531	3	9748	3.02	2.80	2.78	2.69	2.59	2.38	2.17	2.00	35	33	08:47:00	CTR	PCC	Excel.	None	1834
D	20531	4	12971	4.04	3.71	3.72	3.58	3.44	3.17	2.89	2.65	35	33	08:47:07	CTR	PCC	Excel.	None	1827
D	20946	2	6559	2.58	2.34	2.44	2.35	2.34	2.00	1.75	1.57	34	33	08:48:40	CTR	PCC	Excel.	None	1447
D	20946	3	9748	3.85	3.47	3.64	3.55	3.50	3.00	2.64	2.34	34	33	08:48:45	CTR	PCC	Excel.	None	1438
D	20946	4	12975	5.10	4.60	4.84	4.72	4.64	4.01	3.53	3.12	34	33	08:48:52	CTR	PCC	Excel.	None	1448
D	21518	2	6543	1.91	1.80	1.79	1.77	1.79	1.69	1.55	1.42	35	34	08:50:42	CTR	PCC	Excel.	None	1948
D	21518	3	9760	2.85	2.67	2.72	2.70	2.68	2.54	2.36	2.15	35	34	08:50:47	CTR	PCC	Excel.	None	1949
D	21518	4	12955	3.75	3.52	3.63	3.59	3.56	3.41	3.17	2.89	35	34	08:50:54	CTR	PCC	Excel.	None	1962
D	22078	2	6544	1.74	1.62	1.58	1.51	1.48	1.34	1.20	1.10	35	34	08:53:08	CTR	PCC	Excel.	None	2141

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D	22078	3	9753	2.63	2.43	2.39	2.32	2.23	2.04	1.84	1.67	35	34	08:53:13	CTR	PCC	Excel.	None	2105
D	22078	4	12969	3.52	3.23	3.22	3.11	3.00	2.75	2.49	2.23	35	34	08:53:20	CTR	PCC	Excel.	None	2095
D	22483	2	6512	4.14	3.74	3.61	3.26	2.98	2.41	1.97	1.69	35	34	08:55:17	CTR	PCC	Excel.	None	895
D	22483	3	9694	6.24	5.63	5.45	4.98	4.52	3.65	3.02	2.52	35	34	08:55:23	CTR	PCC	Excel.	None	883
D	22483	4	12896	8.31	7.46	7.29	6.63	6.04	4.89	4.05	3.38	35	34	08:55:30	CTR	PCC	Excel.	None	883
D	22993	2	6537	1.92	1.79	1.87	1.84	1.88	1.71	1.52	1.37	35	34	08:57:14	CTR	PCC	Excel.	None	1935
D	22993	3	9730	2.88	2.64	2.81	2.80	2.81	2.59	2.30	2.04	35	34	08:57:20	CTR	PCC	Excel.	None	1924
C	Comment at 22993 ft Time: 08:57:27 :Deflection is not decreasing																		
D	22993	4	12952	3.77	3.45	3.71	3.69	3.70	3.45	3.08	2.70	35	34	08:57:29	CTR	PCC	Excel.	None	1951
D	23522	2	6545	2.69	2.76	2.45	2.34	2.25	2.06	1.85	1.64	35	34	08:59:19	CTR	PCC	Excel.	None	1383
D	23522	3	9737	4.00	4.06	3.65	3.50	3.36	3.05	2.74	2.44	35	34	08:59:24	CTR	PCC	Excel.	None	1385
D	23522	4	12944	5.27	5.35	4.80	4.62	4.43	4.03	3.65	3.23	35	34	08:59:32	CTR	PCC	Excel.	None	1397
C	Comment at 24020 ft Time: 09:03:00 :Deflection is not decreasing																		
D	24020	2	6570	3.12	2.81	3.32	3.41	2.94	1.81	1.59	1.45	36	35	09:03:04	CTR	PCC	Excel.	None	1197
C	Comment at 24020 ft Time: 09:03:10 :Deflection is not decreasing																		
D	24020	3	9758	4.69	4.20	5.02	5.22	4.38	2.67	2.38	2.13	36	35	09:03:16	CTR	PCC	Excel.	None	1182
C	Comment at 24020 ft Time: 09:03:24 :Deflection is not decreasing																		
D	24020	4	12946	6.26	5.58	6.68	6.92	5.80	3.50	3.11	2.79	36	35	09:03:26	CTR	PCC	Excel.	None	1177
D	24514	2	6518	2.71	2.54	2.60	2.50	2.39	2.09	1.86	1.65	37	35	09:05:24	CTR	PCC	Excel.	None	1366
D	24514	3	9752	4.08	3.82	3.94	3.84	3.63	3.17	2.81	2.47	37	35	09:05:30	CTR	PCC	Excel.	None	1358
D	24514	4	12959	5.40	5.05	5.27	5.06	4.82	4.22	3.73	3.30	37	35	09:05:38	CTR	PCC	Excel.	None	1363
D	24520	2	6558	2.94	2.64	2.58	2.41	2.30	2.00	1.71	1.46	36	36	09:08:58	CTR	PCC	Excel.	None	1269
D	24520	3	9742	4.41	3.95	3.90	3.68	3.46	3.02	2.61	2.19	36	36	09:09:03	CTR	PCC	Excel.	None	1256
D	24520	4	12952	5.85	5.22	5.16	4.86	4.60	3.98	3.47	2.90	36	36	09:09:10	CTR	PCC	Excel.	None	1259
C	Comment at 24519 ft Time: 09:09:21 :LOAD TRANSFER																		
D	24981	2	6555	1.57	1.46	1.45	1.42	1.37	1.29	1.22	1.14	36	36	09:11:11	CTR	PCC	Excel.	None	2374
D	24981	3	9751	2.32	2.17	2.16	2.10	2.06	1.95	1.85	1.70	36	36	09:11:17	CTR	PCC	Excel.	None	2387
D	24981	4	12964	3.04	2.82	2.85	2.78	2.71	2.58	2.42	2.25	36	36	09:11:24	CTR	PCC	Excel.	None	2421
D	25502	2	6570	1.79	1.71	1.58	1.50	1.43	1.26	1.14	1.01	37	35	09:13:16	CTR	PCC	Excel.	None	2087
D	25502	3	9753	2.70	2.60	2.38	2.31	2.17	1.94	1.72	1.52	37	35	09:13:22	CTR	PCC	Excel.	None	2050
D	25502	4	12985	3.61	3.48	3.21	3.05	2.92	2.61	2.33	2.05	37	35	09:13:29	CTR	PCC	Excel.	None	2044
D	26016	2	6568	2.38	2.15	1.95	1.77	1.64	1.37	1.16	1.00	36	36	09:15:04	CTR	PCC	Excel.	None	1570
D	26016	3	9747	3.63	3.26	3.00	2.72	2.49	2.10	1.79	1.53	36	36	09:15:09	CTR	PCC	Excel.	None	1526
D	26016	4	12970	4.86	4.36	4.03	3.65	3.37	2.86	2.42	2.03	36	36	09:15:16	CTR	PCC	Excel.	None	1517
D	26516	2	6550	1.68	1.54	1.59	1.53	1.54	1.44	1.24	1.11	38	37	09:16:58	CTR	PCC	Excel.	None	2213
D	26516	3	9784	2.52	2.29	2.38	2.35	2.32	2.19	1.92	1.67	38	37	09:17:03	CTR	PCC	Excel.	None	2204
D	26516	4	13006	3.35	3.05	3.19	3.14	3.13	2.95	2.57	2.25	38	37	09:17:10	CTR	PCC	Excel.	None	2210
D	27011	2	6536	2.65	2.44	2.37	2.22	2.17	1.92	1.69	1.54	37	37	09:18:45	CTR	PCC	Excel.	None	1402
D	27011	3	9737	4.01	3.67	3.57	3.44	3.28	2.92	2.60	2.33	37	37	09:18:50	CTR	PCC	Excel.	None	1382
D	27011	4	12948	5.32	4.86	4.76	4.53	4.37	3.88	3.47	3.08	37	37	09:18:57	CTR	PCC	Excel.	None	1384
C	Comment at 28192 ft Time: 09:21:48 :Deflection is not decreasing																		
D	28192	2	6593	1.79	1.59	1.80	1.81	1.61	1.37	1.15	1.00	36	37	09:21:50	CTR	PCC	Excel.	None	2092
C	Comment at 28192 ft Time: 09:21:56 :Deflection is not decreasing																		
D	28192	3	9818	2.71	2.37	2.75	2.78	2.44	2.08	1.78	1.51	36	37	09:21:58	CTR	PCC	Excel.	None	2058
C	Comment at 28192 ft Time: 09:22:44 :Deflection is not decreasing																		
D	28192	2	6574	1.78	1.57	1.79	1.79	1.60	1.35	1.14	1.01	37	38	09:22:46	CTR	PCC	Excel.	None	2096
C	Comment at 28192 ft Time: 09:22:52 :Deflection is not decreasing																		
D	28192	3	9806	2.71	2.37	2.73	2.79	2.42	2.07	1.77	1.51	37	38	09:22:52	CTR	PCC	Excel.	None	2060
C	Comment at 28192 ft Time: 09:22:59 :Deflection is not decreasing																		
D	28192	4	13031	3.61	3.17	3.69	3.73	3.26	2.79	2.38	2.04	37	38	09:23:01	CTR	PCC	Excel.	None	2051
D	28518	2	6583	1.39	1.28	1.29	1.26	1.25	1.11	1.00	0.96	38	37	09:24:12	CTR	PCC	Excel.	None	2689
D	28518	3	9792	2.10	1.92	1.95	1.93	1.86	1.69	1.53	1.39	38	37	09:24:18	CTR	PCC	Excel.	None	2650
D	28518	4	13022	2.77	2.50	2.59	2.52	2.46	2.23	2.03	1.85	38	37	09:24:25	CTR	PCC	Excel.	None	2668
D	29529	2	6519	1.60	1.52	1.47	1.42	1.39	1.30	1.22	1.09	38	36	09:26:43	CTR	PCC	Excel.	None	2312
D	29529	3	9730	2.41	2.25	2.23	2.18	2.09	1.94	1.78	1.62	38	36	09:26:48	CTR	PCC	Excel.	None	2295
D	29529	4	12972	3.21	2.99	2.98	2.87	2.79	2.60	2.40	2.16	38	36	09:26:55	CTR	PCC	Excel.	None	2299
D	29532	2	6512	1.66	1.61	1.50	1.42	1.37	1.27	1.15	1.04	38	37	09:27:48	CTR	PCC	Excel.	None	2237
D	29532	3	9727	2.51	2.43	2.26	2.19	2.10	1.90	1.74	1.57	38	37	09:27:54	CTR	PCC	Excel.	None	2208
D	29532	4	12946	3.34	3.21	3.02	2.91	2.79	2.53	2.31	2.07	38	37	09:28:01	CTR	PCC	Excel.	None	2207
C	Comment at 29532 ft Time: 09:28:11 :LOAD TRANSEER																		
D	30010	2	6473	1.51	1.46	1.40	1.32	1.29	1.18	1.09	1.02	38	36	09:29:29	CTR	PCC	Excel.	None	2432
D	30010	3	9687	2.27	2.15	2.08	2.01	1.94	1.78	1.64	1.51	38	36	09:29:34	CTR	PCC	Excel.	None	2425
D	30010	4	12909	2.99	2.86	2.77	2.67	2.58	2.38	2.19	2.00	38	36	09:29:41	CTR	PCC	Excel.	None	2453

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D	30517	2	6439	2.43	2.26	2.06	1.90	1.81	1.60	1.41	1.28	39	36	09:31:16	CTR	PCC	Excel.	None	1509
D	30517	3	9638	3.69	3.41	3.16	2.94	2.76	2.45	2.16	1.93	39	36	09:31:22	CTR	PCC	Excel.	None	1486
D	30517	4	12846	4.91	4.55	4.24	3.93	3.71	3.28	2.90	2.57	39	36	09:31:29	CTR	PCC	Excel.	None	1486
D	31022	2	6455	1.78	1.71	1.52	1.45	1.40	1.26	1.12	1.03	39	37	09:33:09	CTR	PCC	Excel.	None	2063
D	31022	3	9655	2.68	2.56	2.33	2.22	2.12	1.90	1.70	1.54	39	37	09:33:14	CTR	PCC	Excel.	None	2052
D	31022	4	12860	3.53	3.40	3.12	2.94	2.82	2.55	2.27	2.04	39	37	09:33:21	CTR	PCC	Excel.	None	2070
D	31518	2	6466	2.13	1.83	1.76	1.58	1.47	1.24	1.04	0.88	39	38	09:34:59	CTR	PCC	Excel.	None	1726
D	31518	3	9666	3.25	2.77	2.68	2.43	2.23	1.89	1.60	1.34	39	38	09:35:04	CTR	PCC	Excel.	None	1694
D	31518	4	12849	4.34	3.68	3.60	3.25	3.01	2.53	2.14	1.82	39	38	09:35:12	CTR	PCC	Excel.	None	1685
D	32009	2	6478	1.60	1.53	1.40	1.33	1.26	1.14	1.00	0.90	38	38	09:37:26	CTR	PCC	Excel.	None	2304
D	32009	3	9687	2.45	2.36	2.15	2.07	1.96	1.75	1.57	1.38	38	38	09:37:32	CTR	PCC	Excel.	None	2250
D	32009	4	12927	3.30	3.19	2.93	2.79	2.65	2.38	2.10	1.87	38	38	09:37:39	CTR	PCC	Excel.	None	2226
D	32523	2	6497	1.49	1.42	1.32	1.26	1.21	1.07	0.99	0.89	38	38	09:40:11	CTR	PCC	Excel.	None	2474
D	32523	3	9673	2.22	2.12	1.99	1.95	1.84	1.67	1.50	1.34	38	38	09:40:17	CTR	PCC	Excel.	None	2473
D	32523	4	12907	2.95	2.81	2.66	2.56	2.46	2.23	2.00	1.80	38	38	09:40:24	CTR	PCC	Excel.	None	2490
D	33019	2	6447	1.22	1.12	1.07	1.04	0.98	0.90	0.83	0.76	38	39	09:42:13	CTR	PCC	Excel.	None	3011
D	33019	3	9641	1.83	1.69	1.63	1.55	1.51	1.38	1.25	1.13	38	39	09:42:18	CTR	PCC	Excel.	None	2995
D	33019	4	12885	2.42	2.24	2.17	2.07	2.00	1.82	1.65	1.51	38	39	09:42:25	CTR	PCC	Excel.	None	3022
D	33514	2	6502	1.81	1.75	1.53	1.42	1.34	1.19	1.02	0.93	39	39	09:44:02	CTR	PCC	Excel.	None	2039
D	33514	3	9679	2.71	2.62	2.31	2.17	2.04	1.77	1.55	1.36	39	39	09:44:07	CTR	PCC	Excel.	None	2028
D	33514	4	12913	3.62	3.49	3.10	2.89	2.73	2.37	2.07	1.82	39	39	09:44:14	CTR	PCC	Excel.	None	2030
D	34016	2	6458	1.58	1.49	1.43	1.36	1.33	1.21	1.10	0.99	39	39	09:45:41	CTR	PCC	Excel.	None	2322
D	34016	3	9679	2.38	2.23	2.18	2.11	2.01	1.83	1.64	1.49	39	39	09:45:47	CTR	PCC	Excel.	None	2314
D	34016	4	12899	3.17	2.98	2.92	2.80	2.70	2.46	2.22	1.98	39	39	09:45:54	CTR	PCC	Excel.	None	2311
D	34523	2	6496	1.88	1.78	1.81	1.77	1.77	1.69	1.54	1.41	39	39	09:47:24	CTR	PCC	Excel.	None	1960
D	34523	3	9666	2.82	2.64	2.71	2.69	2.66	2.57	2.38	2.11	39	39	09:47:29	CTR	PCC	Excel.	None	1949
D	34523	4	12902	3.76	3.50	3.63	3.61	3.57	3.45	3.21	2.84	39	39	09:47:36	CTR	PCC	Excel.	None	1952
C	Comment at 35059 ft Time: 09:49:21 :Deflection is not decreasing																		
D	35059	2	6469	2.40	2.08	2.44	2.48	1.84	1.54	1.31	1.12	39	40	09:49:24	CTR	PCC	Excel.	None	1530
C	Comment at 35059 ft Time: 09:49:29 :Deflection is not decreasing																		
D	35059	3	9670	3.69	3.19	3.76	3.85	2.81	2.35	2.00	1.71	39	40	09:49:31	CTR	PCC	Excel.	None	1488
C	Comment at 35059 ft Time: 09:49:38 :Deflection is not decreasing																		
D	35059	4	12876	5.00	4.34	5.12	5.17	3.80	3.21	2.71	2.31	39	40	09:49:39	CTR	PCC	Excel.	None	1465
D	35502	2	6480	1.77	1.64	1.59	1.52	1.47	1.37	1.25	1.14	39	40	09:51:25	CTR	PCC	Excel.	None	2082
D	35502	3	9658	2.71	2.54	2.42	2.35	2.28	2.08	1.89	1.76	39	40	09:51:30	CTR	PCC	Excel.	None	2028
D	35502	4	12894	3.55	3.29	3.22	3.12	2.99	2.76	2.53	2.30	39	40	09:51:38	CTR	PCC	Excel.	None	2068
D	35504	2	6507	1.94	1.85	1.73	1.64	1.58	1.43	1.26	1.15	38	41	09:53:21	CTR	PCC	Excel.	None	1912
D	35504	3	9648	2.88	2.77	2.56	2.45	2.35	2.14	1.94	1.72	38	41	09:53:27	CTR	PCC	Excel.	None	1903
D	35504	4	12925	3.83	3.69	3.42	3.29	3.15	2.84	2.58	2.31	38	41	09:53:34	CTR	PCC	Excel.	None	1918
C	Comment at 35504 ft Time: 09:53:44 :LOAD TRANSFFER																		
D	36020	2	6469	1.64	1.55	1.50	1.45	1.41	1.28	1.14	1.06	39	40	09:55:04	CTR	PCC	Excel.	None	2242
D	36020	3	9637	2.44	2.33	2.26	2.19	2.11	1.94	1.76	1.62	39	40	09:55:09	CTR	PCC	Excel.	None	2244
D	36020	4	12894	3.24	3.12	2.98	2.89	2.80	2.56	2.33	2.13	39	40	09:55:17	CTR	PCC	Excel.	None	2264
D	36516	2	6507	1.41	1.26	1.30	1.20	1.17	1.05	0.92	0.86	40	40	09:56:51	CTR	PCC	Excel.	None	2616
D	36516	3	9700	2.14	1.90	1.97	1.87	1.76	1.59	1.44	1.31	40	40	09:56:56	CTR	PCC	Excel.	None	2581
D	36516	4	12930	2.85	2.53	2.65	2.50	2.36	2.15	1.93	1.73	40	40	09:57:03	CTR	PCC	Excel.	None	2582
C	Comment at 37628 ft Time: 10:01:04 :END																		

US 65 Southbound, Northwood, IA, November 2009


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IKUAB FWD FILE     : NORTHWOOD 65 CABLE SB.fwd
HProject No.       : Cable Overlay
HLocation          : HWY 65 SB
HClient            : Cable
HStart Station     :
HDirection         :
HEnd Station       :
HWeather           : CLEAR COLD
HOperator          : hg

IDate Created      : 11/17/2009
IVersion           : 2.3.11
ILoad Mode         : 1          (SHRP 8+8 buffers, 0 plates)
IPlate Radius      : 5.91       (in)
IExtra Field Set   : Example Road
IDrop Sequence     : 2123
INo of drops       : 1111
IRecord Drop?      : NYYY
IDrop Height       :     1      2      3      4
IImpact Load       :   6003   9005  12007  16009 lbf
ISensor Number     :      0      1      2      3      4      5      6      7      8
ISensor Distance   :   0.00  12.00  12.00  18.00  24.00  36.00  48.00  60.00   0.00 (in)
ISensor Position   : CENTER  FRONT BEHIND BEHIND BEHIND BEHIND BEHIND BEHIND ??????

IReference offset :      0 ft
ITestpoint spacing:    500 ft
```

J	Distance ft	Imp Num	Load lbf	D0 mils	D1 mils	D2 mils	D3 mils	D4 mils	D5 mils	D6 mils	D7 mils	Air °F	Pave °F	Time	Pavement Location	Pavement Type	Pavement Condition	Pavement Distress	Surface Modulus
D	503	2	6496	1.67	1.60	1.48	1.39	1.34	1.18	1.07	0.95	39	40	10:04:47	CTR	PCC	Excel.	None	2211
D	503	3	9676	2.52	2.42	2.26	2.13	2.02	1.81	1.61	1.42	39	40	10:04:53	CTR	PCC	Excel.	None	2183
D	503	4	12897	3.36	3.21	2.98	2.82	2.70	2.41	2.15	1.90	39	40	10:05:00	CTR	PCC	Excel.	None	2185
D	1009	2	6516	1.88	1.81	1.78	1.75	1.73	1.59	1.39	1.22	40	39	10:06:44	CTR	PCC	Excel.	None	1967
D	1009	3	9701	2.82	2.67	2.67	2.66	2.60	2.36	2.09	1.82	40	39	10:06:50	CTR	PCC	Excel.	None	1956
D	1009	4	12947	3.73	3.51	3.57	3.51	3.45	3.18	2.79	2.42	40	39	10:06:57	CTR	PCC	Excel.	None	1974
D	1505	2	6512	1.72	1.68	1.52	1.44	1.37	1.25	1.11	1.01	40	40	10:08:34	CTR	PCC	Excel.	None	2152
D	1505	3	9695	2.55	2.51	2.28	2.18	2.08	1.86	1.70	1.52	40	40	10:08:39	CTR	PCC	Excel.	None	2159
D	1505	4	12944	3.36	3.31	3.03	2.87	2.74	2.48	2.24	2.00	40	40	10:08:46	CTR	PCC	Excel.	None	2187
D	2006	2	6478	2.16	1.92	1.87	1.73	1.68	1.49	1.32	1.17	40	39	10:10:48	CTR	PCC	Excel.	None	1709
D	2006	3	9633	3.27	2.93	2.84	2.71	2.55	2.27	2.00	1.78	40	39	10:10:53	CTR	PCC	Excel.	None	1676
D	2006	4	12918	4.39	3.93	3.84	3.65	3.45	3.08	2.71	2.39	40	39	10:11:00	CTR	PCC	Excel.	None	1673
D	2528	2	6450	1.75	1.57	1.63	1.59	1.60	1.42	1.16	0.99	40	40	10:12:51	CTR	PCC	Excel.	None	2101
D	2528	3	9615	2.64	2.37	2.49	2.48	2.44	2.20	1.82	1.49	40	40	10:12:57	CTR	PCC	Excel.	None	2074
D	2528	4	12863	3.53	3.17	3.36	3.33	3.28	2.99	2.45	2.00	40	40	10:13:04	CTR	PCC	Excel.	None	2073
D	2545	2	6488	1.91	1.79	1.70	1.65	1.56	1.42	1.22	1.08	40	39	10:15:11	CTR	PCC	Excel.	None	1927
D	2545	3	9638	2.87	2.68	2.55	2.46	2.37	2.13	1.86	1.59	40	39	10:15:17	CTR	PCC	Excel.	None	1909
D	2545	4	12870	3.82	3.55	3.41	3.28	3.14	2.87	2.48	2.12	40	39	10:15:24	CTR	PCC	Excel.	None	1914
C	Comment at 2544 ft Time: 10:15:34 :LOAD TRANSFER																		
D	3019	2	6468	2.23	2.15	1.91	1.72	1.65	1.46	1.29	1.16	40	40	10:16:53	CTR	PCC	Excel.	None	1652
D	3019	3	9627	3.35	3.24	2.86	2.67	2.51	2.22	1.98	1.74	40	40	10:16:58	CTR	PCC	Excel.	None	1633
D	3019	4	12903	4.49	4.33	3.83	3.61	3.35	2.97	2.65	2.32	40	40	10:17:05	CTR	PCC	Excel.	None	1634
D	3676	2	6481	1.60	1.45	1.40	1.31	1.27	1.15	1.00	0.92	40	39	10:19:05	CTR	PCC	Excel.	None	2308
D	3676	3	9666	2.38	2.15	2.11	2.03	1.94	1.72	1.55	1.38	40	39	10:19:11	CTR	PCC	Excel.	None	2307
D	3676	4	12921	3.19	2.87	2.83	2.71	2.57	2.31	2.07	1.85	40	39	10:19:18	CTR	PCC	Excel.	None	2303
D	4003	2	6482	2.07	1.81	1.85	1.68	1.59	1.36	1.15	1.06	41	39	10:20:34	CTR	PCC	Excel.	None	1783
D	4003	3	9664	3.15	2.75	2.84	2.62	2.45	2.08	1.83	1.59	41	39	10:20:40	CTR	PCC	Excel.	None	1744
D	4003	4	12905	4.24	3.67	3.82	3.57	3.29	2.80	2.43	2.13	41	39	10:20:47	CTR	PCC	Excel.	None	1731
D	4471	2	6491	1.21	1.10	1.05	0.98	0.96	0.86	0.77	0.72	41	41	10:22:15	CTR	PCC	Excel.	None	3056
D	4471	3	9671	1.81	1.63	1.57	1.50	1.43	1.30	1.19	1.07	41	41	10:22:20	CTR	PCC	Excel.	None	3035
D	4471	4	12918	2.40	2.14	2.12	2.00	1.91	1.74	1.58	1.42	41	41	10:22:27	CTR	PCC	Excel.	None	3058
D	5017	2	6515	1.69	1.66	1.53	1.45	1.40	1.28	1.15	1.03	41	39	10:23:59	CTR	PCC	Excel.	None	2194
D	5017	3	9690	2.56	2.51	2.33	2.22	2.13	1.94	1.76	1.57	41	39	10:24:05	CTR	PCC	Excel.	None	2152
D	5017	4	12963	3.45	3.36	3.11	2.99	2.88	2.61	2.35	2.11	41	39	10:24:12	CTR	PCC	Excel.	None	2138
D	5519	2	6500	2.01	1.91	1.76	1.64	1.59	1.46	1.29	1.19	41	40	10:25:45	CTR	PCC	Excel.	None	1843
D	5519	3	9688	3.01	2.85	2.67	2.52	2.41	2.18	1.99	1.78	41	40	10:25:51	CTR	PCC	Excel.	None	1830

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D	5519	4	12963	3.98	3.79	3.56	3.34	3.20	2.90	2.63	2.35	41	40	10:25:58	CTR	PCC	Excel.	None	1853
D	6005	2	6504	1.75	1.60	1.73	1.70	1.73	1.53	1.29	1.14	41	40	10:27:27	CTR	PCC	Excel.	None	2108
C	Comment at 6005 ft Time: 10:27:32 :Deflection is not decreasing																		
D	6005	3	9707	2.64	2.40	2.62	2.65	2.64	2.32	2.01	1.71	41	40	10:27:35	CTR	PCC	Excel.	None	2089
C	Comment at 6005 ft Time: 10:27:42 :Deflection is not decreasing																		
D	6005	4	12965	3.55	3.21	3.54	3.59	3.59	3.17	2.71	2.34	41	40	10:27:44	CTR	PCC	Excel.	None	2074
D	6506	2	6505	1.29	1.19	1.11	1.06	1.03	0.94	0.86	0.79	41	40	10:29:13	CTR	PCC	Excel.	None	2857
D	6506	3	9684	1.96	1.78	1.69	1.61	1.55	1.42	1.30	1.19	41	40	10:29:18	CTR	PCC	Excel.	None	2810
D	6506	4	12909	2.60	2.37	2.27	2.17	2.07	1.91	1.74	1.59	41	40	10:29:25	CTR	PCC	Excel.	None	2827
D	6991	2	6493	1.17	1.06	1.03	1.00	0.99	0.90	0.85	0.78	41	41	10:30:55	CTR	PCC	Excel.	None	3164
D	6991	3	9687	1.78	1.59	1.57	1.52	1.48	1.38	1.29	1.18	41	41	10:31:00	CTR	PCC	Excel.	None	3096
D	6991	4	12986	2.36	2.10	2.07	2.03	1.96	1.84	1.72	1.58	41	41	10:31:07	CTR	PCC	Excel.	None	3130
D	7505	2	6487	1.63	1.52	1.40	1.29	1.22	1.07	0.94	0.84	41	41	10:32:33	CTR	PCC	Excel.	None	2262
D	7505	3	9674	2.47	2.26	2.08	1.95	1.83	1.61	1.42	1.24	41	41	10:32:38	CTR	PCC	Excel.	None	2227
D	7505	4	12941	3.28	2.99	2.75	2.61	2.45	2.16	1.90	1.66	41	41	10:32:45	CTR	PCC	Excel.	None	2241
D	7979	2	6480	1.49	1.44	1.36	1.30	1.27	1.17	1.10	1.01	41	41	10:34:11	CTR	PCC	Excel.	None	2465
D	7979	3	9663	2.24	2.16	2.02	1.97	1.90	1.77	1.64	1.51	41	41	10:34:16	CTR	PCC	Excel.	None	2448
D	7979	4	12895	2.98	2.84	2.67	2.60	2.52	2.33	2.16	1.99	41	41	10:34:23	CTR	PCC	Excel.	None	2460
D	8496	2	6481	2.69	2.31	2.59	2.42	2.30	1.71	1.46	1.27	41	41	10:35:53	CTR	PCC	Excel.	None	1371
C	Comment at 8496 ft Time: 10:35:58 :Deflection is not decreasing																		
D	8496	3	9643	4.08	3.46	3.90	3.73	3.46	2.55	2.19	1.87	41	41	10:36:02	CTR	PCC	Excel.	None	1345
C	Comment at 8496 ft Time: 10:36:09 :Deflection is not decreasing																		
D	8496	4	12871	5.53	4.65	5.26	5.03	4.67	3.40	2.92	2.50	41	41	10:36:10	CTR	PCC	Excel.	None	1325
D	8995	2	6434	2.09	1.86	1.78	1.65	1.59	1.38	1.21	1.09	41	41	10:37:46	CTR	PCC	Excel.	None	1752
D	8995	3	9606	3.18	2.79	2.68	2.53	2.37	2.07	1.84	1.63	41	41	10:37:52	CTR	PCC	Excel.	None	1717
D	8995	4	12862	4.25	3.69	3.59	3.36	3.18	2.77	2.46	2.16	41	41	10:37:59	CTR	PCC	Excel.	None	1722
D	8997	2	6434	1.86	1.69	1.70	1.60	1.52	1.33	1.16	1.05	41	40	10:38:47	CTR	PCC	Excel.	None	1966
D	8997	3	9582	2.79	2.52	2.56	2.46	2.30	2.02	1.81	1.57	41	40	10:38:52	CTR	PCC	Excel.	None	1955
D	8997	4	12855	3.70	3.34	3.42	3.27	3.07	2.69	2.38	2.09	41	40	10:38:59	CTR	PCC	Excel.	None	1977
C	Comment at 8997 ft Time: 10:39:10 :LOAD TRANSFER																		
D	9552	2	6474	1.69	1.53	1.58	1.55	1.47	1.31	1.17	1.07	41	40	10:41:09	CTR	PCC	Excel.	None	2179
D	9552	3	9677	2.55	2.30	2.44	2.36	2.25	2.01	1.81	1.61	41	40	10:41:14	CTR	PCC	Excel.	None	2160
D	9552	4	12901	3.40	3.06	3.26	3.14	3.00	2.70	2.41	2.15	41	40	10:41:21	CTR	PCC	Excel.	None	2156
D	10001	2	6427	1.49	1.39	1.42	1.41	1.36	1.24	1.15	1.05	42	41	10:43:09	CTR	PCC	Excel.	None	2452
D	10001	3	9632	2.24	2.08	2.16	2.15	2.06	1.90	1.74	1.58	42	41	10:43:14	CTR	PCC	Excel.	None	2443
D	10001	4	12890	2.97	2.73	2.88	2.83	2.72	2.51	2.29	2.09	42	41	10:43:22	CTR	PCC	Excel.	None	2467
D	10495	2	6426	1.32	1.19	1.17	1.12	1.10	1.04	0.96	0.91	42	41	10:45:05	CTR	PCC	Excel.	None	2763
D	10495	3	9636	1.95	1.78	1.78	1.71	1.68	1.57	1.48	1.35	42	41	10:45:11	CTR	PCC	Excel.	None	2807
D	10495	4	12879	2.57	2.35	2.35	2.27	2.22	2.10	1.98	1.81	42	41	10:45:18	CTR	PCC	Excel.	None	2846
D	13017	2	6425	1.55	1.45	1.41	1.39	1.32	1.23	1.13	1.01	42	44	10:50:00	CTR	PCC	Excel.	None	2363
D	13017	3	9637	2.34	2.19	2.15	2.08	2.03	1.87	1.70	1.55	42	44	10:50:05	CTR	PCC	Excel.	None	2346
D	13017	4	12817	3.12	2.90	2.87	2.81	2.71	2.49	2.28	2.07	42	44	10:50:13	CTR	PCC	Excel.	None	2338
D	13535	2	6424	1.69	1.68	1.51	1.40	1.35	1.22	1.06	0.98	42	43	10:51:40	CTR	PCC	Excel.	None	2165
D	13535	3	9649	2.61	2.57	2.32	2.20	2.10	1.89	1.69	1.50	42	43	10:51:46	CTR	PCC	Excel.	None	2100
D	13535	4	12860	3.53	3.47	3.13	2.99	2.86	2.56	2.26	2.01	42	43	10:51:53	CTR	PCC	Excel.	None	2071
D	14509	2	6404	1.56	1.45	1.44	1.38	1.38	1.23	1.08	0.95	43	44	10:54:19	CTR	PCC	Excel.	None	2336
D	14509	3	9604	2.38	2.19	2.21	2.16	2.13	1.93	1.68	1.44	43	44	10:54:24	CTR	PCC	Excel.	None	2293
D	14509	4	12851	3.20	2.94	2.98	2.92	2.89	2.61	2.28	1.98	43	44	10:54:31	CTR	PCC	Excel.	None	2282
D	15017	2	6426	1.42	1.26	1.33	1.29	1.27	1.17	1.01	0.88	42	43	10:56:12	CTR	PCC	Excel.	None	2581
D	15017	3	9637	2.15	1.92	2.01	1.99	1.96	1.80	1.55	1.34	42	43	10:56:18	CTR	PCC	Excel.	None	2543
D	15017	4	12881	2.89	2.57	2.71	2.67	2.63	2.45	2.11	1.80	42	43	10:56:25	CTR	PCC	Excel.	None	2534
D	15017	2	6431	1.34	1.21	1.21	1.16	1.12	1.04	0.96	0.87	41	42	10:57:51	CTR	PCC	Excel.	None	2736
D	15017	3	9630	2.04	1.84	1.83	1.79	1.72	1.61	1.49	1.33	41	42	10:57:57	CTR	PCC	Excel.	None	2687
D	15017	4	12883	2.72	2.45	2.46	2.40	2.32	2.16	1.99	1.78	41	42	10:58:03	CTR	PCC	Excel.	None	2698
C	Comment at 15017 ft Time: 10:58:14 :LOAD TRANSFER																		
C	Comment at 15496 ft Time: 10:59:37 :Deflection is not decreasing																		
D	15496	2	6380	2.20	1.91	2.28	2.20	2.10	1.78	1.53	1.26	42	44	10:59:39	CTR	PCC	Excel.	None	1648
C	Comment at 15496 ft Time: 10:59:44 :Deflection is not decreasing																		
D	15496	3	9582	3.33	2.88	3.48	3.40	3.18	2.71	2.32	1.90	42	44	10:59:46	CTR	PCC	Excel.	None	1639
C	Comment at 15496 ft Time: 10:59:53 :Deflection is not decreasing																		
D	15496	4	12818	4.47	3.84	4.70	4.55	4.28	3.65	3.11	2.55	42	44	10:59:55	CTR	PCC	Excel.	None	1630
D	15996	2	6396	2.10	2.10	1.81	1.71	1.65	1.45	1.29	1.15	43	44	11:01:33	CTR	PCC	Excel.	None	1735
D	15996	3	9589	3.19	3.17	2.77	2.65	2.51	2.22	1.96	1.73	43	44	11:01:39	CTR	PCC	Excel.	None	1711
D	15996	4	12840	4.25	4.21	3.72	3.55	3.35	2.97	2.64	2.34	43	44	11:01:45	CTR	PCC	Excel.	None	1719
D	16634	2	6383	1.92	1.78	1.86	1.81	1.76	1.60	1.46	1.35	43	44	11:03:53	CTR	PCC	Excel.	None	1892
D	16634	3	9600	2.88	2.68	2.78	2.80	2.70	2.45	2.23	2.03	43	44	11:03:58	CTR	PCC	Excel.	None	1895

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D	16634	4	12824	3.82	3.57	3.71	3.70	3.59	3.27	2.98	2.70	43	44	11:04:05	CTR	PCC	Excel.	None	1910
D	17010	2	6421	2.13	2.19	1.91	1.80	1.77	1.58	1.42	1.27	43	44	11:05:33	CTR	PCC	Excel.	None	1715
D	17010	3	9619	3.19	3.27	2.89	2.80	2.65	2.39	2.16	1.89	43	44	11:05:38	CTR	PCC	Excel.	None	1716
D	17010	4	12852	4.23	4.35	3.85	3.67	3.53	3.19	2.87	2.52	43	44	11:05:45	CTR	PCC	Excel.	None	1726
D	17506	2	6420	1.85	1.84	1.72	1.63	1.57	1.44	1.32	1.20	44	45	11:07:17	CTR	PCC	Excel.	None	1974
D	17506	3	9594	2.75	2.75	2.53	2.47	2.36	2.17	1.97	1.78	44	45	11:07:22	CTR	PCC	Excel.	None	1981
D	17506	4	12847	3.64	3.63	3.34	3.26	3.13	2.88	2.62	2.38	44	45	11:07:29	CTR	PCC	Excel.	None	2007
D	18011	2	6427	1.75	1.68	1.65	1.59	1.60	1.47	1.34	1.20	44	44	11:09:03	CTR	PCC	Excel.	None	2083
D	18011	3	9577	2.61	2.52	2.47	2.44	2.39	2.23	2.03	1.82	44	44	11:09:08	CTR	PCC	Excel.	None	2083
D	18011	4	12825	3.47	3.35	3.30	3.24	3.18	2.98	2.70	2.43	44	44	11:09:15	CTR	PCC	Excel.	None	2104
D	18513	2	6400	1.75	1.57	1.52	1.46	1.38	1.20	1.06	0.95	44	45	11:10:54	CTR	PCC	Excel.	None	2084
D	18513	3	9550	2.68	2.38	2.33	2.24	2.12	1.87	1.67	1.46	44	45	11:10:59	CTR	PCC	Excel.	None	2027
D	18513	4	12805	3.62	3.20	3.16	3.00	2.85	2.54	2.23	1.98	44	45	11:11:06	CTR	PCC	Excel.	None	2011
D	18515	2	6396	1.54	1.38	1.45	1.45	1.34	1.22	1.09	0.95	44	44	11:11:50	CTR	PCC	Excel.	None	2356
D	18515	3	9560	2.37	2.14	2.25	2.20	2.09	1.87	1.66	1.47	44	44	11:11:55	CTR	PCC	Excel.	None	2297
D	18515	4	12850	3.19	2.86	3.05	2.96	2.82	2.51	2.24	2.00	44	44	11:12:02	CTR	PCC	Excel.	None	2287
C	Comment at 18515 ft Time: 11:12:12 :LOAD TRANSFER																		
C	Comment: Testing in this file was continued again on 11/17/2009 at 11:15:27 AM																		
D	19124	2	6441	1.64	1.52	1.55	1.50	1.49	1.43	1.38	1.25	44	42	11:16:11	RWP	AC	Excel.	None	2233
D	19124	3	9637	2.48	2.31	2.37	2.35	2.29	2.19	2.08	1.90	44	42	11:16:16	RWP	AC	Excel.	None	2207
D	19124	4	12899	3.35	3.08	3.17	3.12	3.07	2.97	2.82	2.57	44	42	11:16:23	RWP	AC	Excel.	None	2192
C	Comment at 19648 ft Time: 11:18:03 :Deflection is not decreasing																		
D	19648	2	6428	2.31	2.07	2.38	2.42	2.28	1.93	1.63	1.39	45	43	11:18:10	RWP	AC	Excel.	None	1583
C	Comment at 19648 ft Time: 11:18:16 :Deflection is not decreasing																		
D	19648	3	9583	3.46	3.09	3.57	3.61	3.44	2.94	2.51	2.08	45	43	11:18:18	RWP	AC	Excel.	None	1577
C	Comment at 19648 ft Time: 11:18:26 :Deflection is not decreasing																		
D	19648	4	12845	4.63	4.13	4.81	4.87	4.64	3.97	3.38	2.79	45	43	11:18:28	RWP	AC	Excel.	None	1577
D	20099	2	6432	2.55	2.34	2.50	2.45	2.32	1.94	1.65	1.42	45	44	11:19:59	RWP	AC	Excel.	None	1435
C	Comment at 20099 ft Time: 11:20:05 :Deflection is not decreasing																		
D	20099	3	9586	3.84	3.51	3.78	3.76	3.48	2.98	2.56	2.15	45	44	11:20:07	RWP	AC	Excel.	None	1421
C	Comment at 20099 ft Time: 11:20:14 :Deflection is not decreasing																		
D	20099	4	12854	5.09	4.65	5.07	4.99	4.67	4.01	3.44	2.90	45	44	11:20:16	RWP	AC	Excel.	None	1435
D	20615	2	6421	2.46	2.25	2.47	2.40	2.32	2.05	1.80	1.59	45	43	11:23:22	RWP	AC	Excel.	None	1483
C	Comment at 20615 ft Time: 11:23:27 :Deflection is not decreasing																		
D	20615	3	9608	3.69	3.38	3.73	3.72	3.51	3.13	2.77	2.42	45	43	11:23:29	RWP	AC	Excel.	None	1479
C	Comment at 20615 ft Time: 11:23:36 :Deflection is not decreasing																		
D	20615	4	12857	4.91	4.48	4.97	4.92	4.69	4.18	3.70	3.23	45	43	11:23:37	RWP	AC	Excel.	None	1489
D	21129	2	6409	2.37	2.47	2.15	2.00	1.94	1.73	1.57	1.39	45	44	11:25:15	RWP	AC	Excel.	None	1536
D	21129	3	9557	3.57	3.69	3.21	3.09	2.94	2.63	2.37	2.10	45	44	11:25:20	RWP	AC	Excel.	None	1524
D	21129	4	12826	4.77	4.89	4.27	4.09	3.91	3.53	3.17	2.81	45	44	11:25:27	RWP	AC	Excel.	None	1530
D	21726	2	6427	1.94	1.74	1.82	1.71	1.66	1.51	1.40	1.29	45	45	11:27:03	RWP	AC	Excel.	None	1881
D	21726	3	9576	2.91	2.62	2.72	2.60	2.49	2.28	2.11	1.91	45	45	11:27:08	RWP	AC	Excel.	None	1872
D	21726	4	12876	3.89	3.49	3.63	3.45	3.33	3.05	2.81	2.55	45	45	11:27:15	RWP	AC	Excel.	None	1883
D	22141	2	6415	1.64	1.56	1.50	1.45	1.41	1.29	1.17	1.09	45	46	11:28:35	RWP	AC	Excel.	None	2218
D	22141	3	9610	2.47	2.34	2.26	2.20	2.14	1.98	1.80	1.64	45	46	11:28:40	RWP	AC	Excel.	None	2209
D	22141	4	12860	3.29	3.10	3.03	2.93	2.85	2.64	2.41	2.19	45	46	11:28:47	RWP	AC	Excel.	None	2224
D	23132	2	6422	2.20	2.07	2.13	2.08	2.04	1.92	1.75	1.55	45	47	11:31:08	RWP	AC	Excel.	None	1659
D	23132	3	9568	3.29	3.11	3.18	3.17	3.08	2.87	2.61	2.34	45	47	11:31:13	RWP	AC	Excel.	None	1652
D	23132	4	12834	4.35	4.11	4.27	4.21	4.10	3.85	3.48	3.11	45	47	11:31:20	RWP	AC	Excel.	None	1676
D	23628	2	6466	1.51	1.34	1.33	1.23	1.19	1.05	0.91	0.83	45	46	11:33:10	RWP	AC	Excel.	None	2431
D	23628	3	9646	2.30	2.04	2.04	1.92	1.82	1.61	1.45	1.26	45	46	11:33:17	RWP	AC	Excel.	None	2383
D	23628	4	12907	3.09	2.72	2.77	2.59	2.45	2.17	1.92	1.70	45	46	11:33:25	RWP	AC	Excel.	None	2372
D	24121	2	6413	1.44	1.34	1.29	1.27	1.23	1.10	0.99	0.93	45	46	11:35:06	RWP	AC	Excel.	None	2537
D	24121	3	9587	2.18	2.01	1.97	1.91	1.84	1.69	1.54	1.40	45	46	11:35:12	RWP	AC	Excel.	None	2503
D	24121	4	12849	2.91	2.69	2.63	2.56	2.48	2.27	2.07	1.89	45	46	11:35:19	RWP	AC	Excel.	None	2508
D	24122	2	6401	1.45	1.38	1.31	1.26	1.23	1.10	0.98	0.90	45	45	11:36:10	RWP	AC	Excel.	None	2511
D	24122	3	9587	2.20	2.08	2.01	1.93	1.85	1.69	1.53	1.36	45	45	11:36:16	RWP	AC	Excel.	None	2479
D	24122	4	12854	2.96	2.77	2.70	2.59	2.48	2.26	2.05	1.84	45	45	11:36:23	RWP	AC	Excel.	None	2471
C	Comment at 24122 ft Time: 11:36:33 :LOAD TRANSFER																		
D	24628	2	6417	2.40	2.03	2.03	1.87	1.76	1.52	1.30	1.11	45	46	11:38:05	RWP	AC	Excel.	None	1519
D	24628	3	9627	3.65	3.08	3.10	2.88	2.68	2.28	1.98	1.69	45	46	11:38:11	RWP	AC	Excel.	None	1500
D	24628	4	12863	4.89	4.12	4.19	3.85	3.57	3.10	2.67	2.27	45	46	11:38:18	RWP	AC	Excel.	None	1495
D	25133	2	6414	1.56	1.52	1.39	1.34	1.29	1.16	1.04	0.94	46	46	11:39:57	RWP	AC	Excel.	None	2337
D	25133	3	9636	2.39	2.32	2.15	2.08	1.98	1.80	1.63	1.45	46	46	11:40:03	RWP	AC	Excel.	None	2289
D	25133	4	12868	3.19	3.11	2.88	2.77	2.65	2.41	2.18	1.95	46	46	11:40:10	RWP	AC	Excel.	None	2296
D	25682	2	6361	2.17	1.91	1.82	1.68	1.61	1.41	1.24	1.10	45	48	11:41:51	RWP	AC	Excel.	None	1664

D	25682	3	9574	3.29	2.90	2.75	2.60	2.45	2.17	1.89	1.66	45	48	11:41:56	RWP	AC	Excel.	None	1657
D	25682	4	12765	4.39	3.88	3.70	3.45	3.27	2.90	2.55	2.25	45	48	11:42:03	RWP	AC	Excel.	None	1653
D	26124	2	6383	1.94	1.65	1.73	1.61	1.52	1.33	1.19	1.05	46	47	11:43:42	RWP	AC	Excel.	None	1875
D	26124	3	9612	2.95	2.52	2.65	2.51	2.35	2.06	1.82	1.61	46	47	11:43:48	RWP	AC	Excel.	None	1855
D	26124	4	12859	3.92	3.36	3.59	3.37	3.17	2.78	2.48	2.16	46	47	11:43:54	RWP	AC	Excel.	None	1866
D	26684	2	6375	2.00	1.99	1.78	1.66	1.62	1.42	1.27	1.12	46	47	11:45:36	RWP	AC	Excel.	None	1816
D	26684	3	9603	3.01	3.01	2.68	2.54	2.42	2.17	1.95	1.70	46	47	11:45:41	RWP	AC	Excel.	None	1814
D	26684	4	12841	4.00	3.99	3.59	3.39	3.24	2.91	2.60	2.30	46	47	11:45:48	RWP	AC	Excel.	None	1826
D	27120	2	6355	1.70	1.62	1.57	1.52	1.49	1.34	1.20	1.08	46	49	11:47:16	RWP	AC	Excel.	None	2125
D	27120	3	9569	2.56	2.43	2.36	2.33	2.25	2.04	1.84	1.62	46	49	11:47:21	RWP	AC	Excel.	None	2127
D	27120	4	12856	3.40	3.22	3.17	3.08	2.99	2.74	2.46	2.16	46	49	11:47:28	RWP	AC	Excel.	None	2153
D	27621	2	6397	1.20	1.10	1.07	1.03	1.01	0.92	0.86	0.83	47	48	11:49:13	RWP	AC	Excel.	None	3031
D	27621	3	9564	1.82	1.66	1.63	1.58	1.53	1.43	1.32	1.21	47	48	11:49:18	RWP	AC	Excel.	None	2996
D	27621	4	12829	2.42	2.20	2.17	2.09	2.03	1.90	1.77	1.62	47	48	11:49:25	RWP	AC	Excel.	None	3015
D	28147	2	6378	1.86	1.74	1.78	1.75	1.76	1.67	1.46	1.26	46	50	11:51:09	RWP	AC	Excel.	None	1952
D	28147	3	9556	2.81	2.63	2.72	2.73	2.71	2.57	2.27	1.90	46	50	11:51:14	RWP	AC	Excel.	None	1936
D	28147	4	12816	3.75	3.49	3.67	3.64	3.64	3.47	3.05	2.54	46	50	11:51:21	RWP	AC	Excel.	None	1945
CComment: Testing in this file was continued again on 11/17/2009 at 11:54:06 AM																			
D	28625	2	6414	2.06	1.98	1.89	1.81	1.76	1.61	1.45	1.31	47	47	11:54:54	RWP	PCC	Excel.	None	1766
D	28625	3	9608	3.11	3.00	2.83	2.75	2.68	2.45	2.23	1.98	47	47	11:54:59	RWP	PCC	Excel.	None	1759
D	28625	4	12827	4.13	3.98	3.80	3.68	3.56	3.30	2.99	2.67	47	47	11:55:06	RWP	PCC	Excel.	None	1764
D	29106	2	6344	2.43	2.51	2.15	2.07	1.98	1.77	1.59	1.41	47	50	11:56:41	CTR	PCC	Excel.	None	1485
D	29106	3	9540	3.69	3.82	3.31	3.18	3.03	2.72	2.42	2.15	47	50	11:56:46	CTR	PCC	Excel.	None	1469
D	29106	4	12761	4.96	5.14	4.47	4.26	4.06	3.65	3.26	2.89	47	50	11:56:53	CTR	PCC	Excel.	None	1462
D	29610	2	6380	2.05	1.89	1.99	1.90	1.83	1.62	1.44	1.25	47	48	11:58:35	CTR	PCC	Excel.	None	1771
D	29610	3	9514	3.12	2.87	3.04	2.98	2.82	2.48	2.21	1.91	47	48	11:58:41	CTR	PCC	Excel.	None	1735
D	29610	4	12812	4.18	3.81	4.12	3.97	3.79	3.37	2.98	2.58	47	48	11:58:48	CTR	PCC	Excel.	None	1743
D	30096	2	6383	1.94	1.95	1.70	1.58	1.51	1.33	1.16	1.03	47	52	12:00:30	CTR	PCC	Excel.	None	1874
D	30096	3	9557	2.91	2.93	2.53	2.43	2.29	2.03	1.80	1.56	47	52	12:00:36	CTR	PCC	Excel.	None	1866
D	30096	4	12794	3.86	3.89	3.40	3.22	3.05	2.71	2.39	2.10	47	52	12:00:44	CTR	PCC	Excel.	None	1886
D	30631	2	6383	1.58	1.48	1.52	1.47	1.49	1.41	1.31	1.22	48	51	12:02:30	CTR	PCC	Excel.	None	2291
D	30631	3	9550	2.36	2.21	2.27	2.28	2.25	2.16	1.99	1.84	48	51	12:02:35	CTR	PCC	Excel.	None	2297
D	30631	4	12840	3.14	2.91	3.03	3.02	3.01	2.88	2.68	2.45	48	51	12:02:42	CTR	PCC	Excel.	None	2329
D	31125	2	6412	1.77	1.73	1.59	1.51	1.48	1.35	1.22	1.11	46	50	12:04:23	CTR	PCC	Excel.	None	2055
D	31125	3	9584	2.66	2.61	2.39	2.33	2.22	2.02	1.85	1.67	46	50	12:04:28	CTR	PCC	Excel.	None	2051
D	31125	4	12849	3.55	3.46	3.20	3.09	2.96	2.71	2.47	2.23	46	50	12:04:35	CTR	PCC	Excel.	None	2060
D	31626	2	6371	1.95	1.86	1.83	1.77	1.72	1.57	1.46	1.37	47	50	12:06:11	CTR	PCC	Excel.	None	1853
D	31626	3	9554	2.94	2.79	2.75	2.68	2.59	2.41	2.25	2.08	47	50	12:06:16	CTR	PCC	Excel.	None	1846
D	31626	4	12808	3.90	3.69	3.66	3.56	3.45	3.22	3.00	2.76	47	50	12:06:23	CTR	PCC	Excel.	None	1867
C	Comment at 31626 ft Time: 12:06:43 :APPROX STA 2577																		
D	31662	2	6393	2.38	2.39	2.12	2.00	1.92	1.71	1.51	1.33	46	49	12:08:28	CTR	PCC	Excel.	None	1530
D	31662	3	9574	3.58	3.63	3.18	3.08	2.92	2.60	2.32	2.02	46	49	12:08:34	CTR	PCC	Excel.	None	1522
D	31662	4	12841	4.76	4.82	4.25	4.08	3.90	3.48	3.11	2.70	46	49	12:08:41	CTR	PCC	Excel.	None	1535
C	Comment at 31662 ft Time: 12:08:51 :LOAD TANSFER																		
D	32104	2	6406	1.81	1.77	1.66	1.56	1.53	1.39	1.25	1.17	47	50	12:10:19	CTR	PCC	Excel.	None	2018
D	32104	3	9586	2.74	2.68	2.49	2.42	2.32	2.13	1.94	1.76	47	50	12:10:25	CTR	PCC	Excel.	None	1986
D	32104	4	12855	3.61	3.54	3.31	3.20	3.08	2.84	2.58	2.33	47	50	12:10:31	CTR	PCC	Excel.	None	2024
D	32620	2	6388	1.39	1.28	1.26	1.20	1.17	1.05	0.98	0.86	47	50	12:12:13	CTR	PCC	Excel.	None	2613
D	32620	3	9596	2.10	1.94	1.91	1.85	1.78	1.62	1.49	1.30	47	50	12:12:19	CTR	PCC	Excel.	None	2597
D	32620	4	12862	2.82	2.58	2.56	2.47	2.40	2.20	2.00	1.77	47	50	12:12:25	CTR	PCC	Excel.	None	2590
D	33131	2	6373	2.43	2.19	2.35	2.19	2.08	1.81	1.56	1.38	46	50	12:14:17	CTR	PCC	Excel.	None	1489
D	33131	3	9602	3.66	3.27	3.52	3.37	3.14	2.71	2.39	2.06	46	50	12:14:23	CTR	PCC	Excel.	None	1492
D	33131	4	12862	4.87	4.35	4.71	4.44	4.17	3.63	3.18	2.76	46	50	12:14:29	CTR	PCC	Excel.	None	1502
C	Comment at 33131 ft Time: 12:14:48 :CENTER 400TH STREET																		
D	33625	2	6364	2.90	3.05	2.50	2.32	2.21	1.88	1.61	1.35	46	50	12:16:27	CTR	PCC	Excel.	None	1246
C	Comment at 33625 ft Time: 12:16:33 :Deflection is not decreasing																		
D	33625	3	9529	4.31	4.56	3.71	3.54	3.28	2.83	2.42	2.05	46	50	12:16:37	CTR	PCC	Excel.	None	1257
C	Comment at 33625 ft Time: 12:16:44 :Deflection is not decreasing																		
D	33625	4	12778	5.72	6.05	4.95	4.67	4.34	3.76	3.23	2.71	46	50	12:16:46	CTR	PCC	Excel.	None	1270
D	34162	2	6398	2.31	1.99	2.11	1.92	1.78	1.49	1.28	1.09	47	49	12:18:35	CTR	PCC	Excel.	None	1572
D	34162	3	9576	3.53	3.05	3.24	2.99	2.72	2.32	2.00	1.69	47	49	12:18:40	CTR	PCC	Excel.	None	1543
D	34162	4	12845	4.76	4.08	4.38	4.02	3.70	3.13	2.70	2.29	47	49	12:18:47	CTR	PCC	Excel.	None	1533
D	34672	2	6435	1.85	1.70	1.75	1.72	1.70	1.54	1.34	1.19	46	49	12:20:36	CTR	PCC	Excel.	None	1981
D	34672	3	9621	2.79	2.55	2.64	2.63	2.58	2.37	2.08	1.78	46	49	12:20:41	CTR	PCC	Excel.	None	1961
D	34672	4	12891	3.72	3.39	3.55	3.53	3.44	3.19	2.77	2.38	46	49	12:20:48	CTR	PCC	Excel.	None	1969
D	35108	2	6441	1.66	1.53	1.60	1.55	1.54	1.42	1.26	1.14	47	50	12:22:23	CTR	PCC	Excel.	None	2200

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D	35108	3	9641	2.50	2.31	2.40	2.39	2.33	2.18	1.95	1.72	47	50	12:22:28	CTR	PCC	Excel.	None	2189
D	35108	4	12919	3.34	3.06	3.23	3.18	3.13	2.91	2.61	2.30	47	50	12:22:35	CTR	PCC	Excel.	None	2200
D	35609	2	6400	1.92	1.73	1.86	1.82	1.81	1.61	1.41	1.21	47	50	12:24:15	CTR	PCC	Excel.	None	1894
D	35609	3	9607	2.88	2.58	2.77	2.78	2.69	2.44	2.13	1.81	47	50	12:24:21	CTR	PCC	Excel.	None	1897
C	Comment at 35609 ft Time: 12:24:28 :Deflection is not decreasing																		
D	35609	4	12866	3.81	3.40	3.71	3.68	3.61	3.30	2.86	2.42	47	50	12:24:30	CTR	PCC	Excel.	None	1919
D	36121	2	6421	1.51	1.40	1.34	1.28	1.25	1.11	1.00	0.90	47	50	12:26:07	CTR	PCC	Excel.	None	2415
D	36121	3	9602	2.29	2.12	2.04	1.99	1.89	1.70	1.54	1.36	47	50	12:26:12	CTR	PCC	Excel.	None	2382
D	36121	4	12908	3.04	2.80	2.72	2.63	2.51	2.27	2.05	1.82	47	50	12:26:19	CTR	PCC	Excel.	None	2411
D	36630	2	6404	2.99	2.84	2.71	2.54	2.42	2.05	1.75	1.53	47	51	12:27:58	CTR	PCC	Excel.	None	1217
D	36630	3	9597	4.53	4.31	4.10	3.94	3.67	3.14	2.68	2.31	47	51	12:28:04	CTR	PCC	Excel.	None	1204
D	36630	4	12857	6.09	5.77	5.53	5.26	4.92	4.21	3.63	3.13	47	51	12:28:11	CTR	PCC	Excel.	None	1200
D	37253	2	6434	2.22	2.10	2.11	2.03	2.05	1.93	1.79	1.61	47	50	12:29:54	CTR	PCC	Excel.	None	1648
D	37253	3	9602	3.33	3.15	3.15	3.10	3.07	2.94	2.76	2.42	47	50	12:30:00	CTR	PCC	Excel.	None	1641
D	37253	4	12832	4.38	4.15	4.18	4.14	4.07	3.93	3.69	3.24	47	50	12:30:07	CTR	PCC	Excel.	None	1666
D	37625	2	6424	2.28	1.99	2.22	2.11	1.94	1.54	1.28	1.13	47	50	12:31:26	CTR	PCC	Excel.	None	1599
C	Comment at 37625 ft Time: 12:31:31 :Deflection is not decreasing																		
D	37625	3	9619	3.46	2.99	3.36	3.22	2.94	2.34	1.98	1.72	47	50	12:31:33	CTR	PCC	Excel.	None	1583
C	Comment at 37625 ft Time: 12:31:39 :Deflection is not decreasing																		
D	37625	4	12853	4.62	3.99	4.52	4.32	3.94	3.16	2.68	2.30	47	50	12:31:40	CTR	PCC	Excel.	None	1581
D	38097	2	6410	2.53	2.46	2.11	1.95	1.87	1.58	1.36	1.20	47	50	12:33:57	CTR	PCC	Excel.	None	1438
D	38097	3	9598	3.88	3.76	3.24	3.05	2.85	2.45	2.13	1.83	47	50	12:34:02	CTR	PCC	Excel.	None	1405
D	38097	4	12830	5.23	5.05	4.39	4.10	3.82	3.31	2.88	2.45	47	50	12:34:09	CTR	PCC	Excel.	None	1396
D	38646	2	6401	1.83	1.72	1.70	1.61	1.60	1.46	1.35	1.25	47	50	12:36:05	CTR	PCC	Excel.	None	1988
D	38646	3	9592	2.74	2.58	2.52	2.47	2.39	2.22	2.06	1.88	47	50	12:36:10	CTR	PCC	Excel.	None	1988
D	38646	4	12891	3.60	3.40	3.33	3.26	3.16	2.94	2.74	2.50	47	50	12:36:17	CTR	PCC	Excel.	None	2039
D	38696	2	6338	2.96	2.82	2.51	2.29	2.15	1.88	1.63	1.43	47	49	12:39:59	CTR	PCC	Excel.	None	1218
D	38696	3	9540	4.51	4.32	3.80	3.57	3.30	2.89	2.54	2.18	47	49	12:40:05	CTR	PCC	Excel.	None	1203
D	38696	4	12760	6.04	5.76	5.13	4.77	4.46	3.90	3.42	2.93	47	49	12:40:12	CTR	PCC	Excel.	None	1201
D	39134	2	6399	2.18	1.98	2.06	1.99	1.93	1.73	1.53	1.37	47	50	12:41:44	CTR	PCC	Excel.	None	1669
D	39134	3	9633	3.31	3.02	3.15	3.10	2.95	2.66	2.39	2.09	47	50	12:41:49	CTR	PCC	Excel.	None	1655
D	39134	4	12899	4.44	4.02	4.28	4.16	4.00	3.60	3.23	2.81	47	50	12:41:56	CTR	PCC	Excel.	None	1653
D	39633	2	6396	2.08	2.03	1.88	1.78	1.73	1.58	1.42	1.31	47	50	12:43:42	CTR	PCC	Excel.	None	1746
D	39633	3	9599	3.14	3.06	2.81	2.74	2.62	2.39	2.19	1.97	47	50	12:43:47	CTR	PCC	Excel.	None	1740
D	39633	4	12861	4.16	4.04	3.77	3.63	3.48	3.19	2.92	2.62	47	50	12:43:54	CTR	PCC	Excel.	None	1757
D	40108	2	6396	3.53	3.36	3.05	2.78	2.58	2.15	1.84	1.62	47	49	12:45:38	CTR	PCC	Excel.	None	1029
D	40108	3	9571	5.35	5.07	4.61	4.25	3.90	3.27	2.83	2.45	47	49	12:45:43	CTR	PCC	Excel.	None	1017
D	40108	4	12797	7.13	6.75	6.17	5.68	5.23	4.41	3.81	3.29	47	49	12:45:51	CTR	PCC	Excel.	None	1020
D	40624	2	6395	2.30	2.15	2.10	2.03	2.02	1.84	1.67	1.53	47	50	12:47:37	CTR	PCC	Excel.	None	1583
D	40624	3	9633	3.47	3.25	3.19	3.14	3.04	2.80	2.56	2.34	47	50	12:47:43	CTR	PCC	Excel.	None	1577
D	40624	4	12878	4.60	4.31	4.26	4.15	4.03	3.75	3.45	3.13	47	50	12:47:49	CTR	PCC	Excel.	None	1593
D	41130	2	6396	2.30	2.13	2.14	2.05	1.99	1.83	1.65	1.51	47	49	12:49:39	CTR	PCC	Excel.	None	1583
D	41130	3	9591	3.43	3.18	3.20	3.13	3.00	2.76	2.53	2.27	47	49	12:49:45	CTR	PCC	Excel.	None	1589
D	41130	4	12825	4.56	4.19	4.28	4.14	4.00	3.69	3.39	3.05	47	49	12:49:52	CTR	PCC	Excel.	None	1601
D	41601	2	6396	2.13	2.13	1.96	1.88	1.82	1.67	1.53	1.42	47	50	12:51:29	CTR	PCC	Excel.	None	1708
D	41601	3	9566	3.19	3.17	2.93	2.87	2.75	2.53	2.35	2.13	47	50	12:51:34	CTR	PCC	Excel.	None	1703
D	41601	4	12835	4.27	4.20	3.92	3.79	3.67	3.41	3.15	2.85	47	50	12:51:42	CTR	PCC	Excel.	None	1709
D	41603	2	6369	2.39	2.17	2.20	2.05	1.98	1.79	1.61	1.48	48	49	12:52:38	CTR	PCC	Excel.	None	1518
D	41603	3	9537	3.62	3.26	3.29	3.18	3.00	2.72	2.49	2.24	48	49	12:52:43	CTR	PCC	Excel.	None	1500
D	41603	4	12803	4.78	4.33	4.41	4.19	3.99	3.64	3.32	2.99	48	49	12:52:51	CTR	PCC	Excel.	None	1522
C	Comment at 41603 ft Time: 12:53:01 :LOAD TRANSFER																		
D	42105	2	6396	2.77	2.66	2.43	2.28	2.21	1.98	1.74	1.56	47	49	12:54:32	CTR	PCC	Excel.	None	1312
D	42105	3	9589	4.18	4.01	3.68	3.54	3.37	3.01	2.69	2.35	47	49	12:54:38	CTR	PCC	Excel.	None	1303
D	42105	4	12848	5.58	5.36	4.95	4.71	4.49	4.02	3.60	3.14	47	49	12:54:45	CTR	PCC	Excel.	None	1308
D	42623	2	6379	2.24	2.09	2.03	1.94	1.89	1.73	1.55	1.42	48	50	12:56:46	CTR	PCC	Excel.	None	1621
D	42623	3	9566	3.37	3.15	3.07	2.99	2.87	2.62	2.38	2.16	48	50	12:56:52	CTR	PCC	Excel.	None	1612
D	42623	4	12812	4.48	4.17	4.11	3.98	3.83	3.49	3.20	2.89	48	50	12:56:58	CTR	PCC	Excel.	None	1627
D	44593	2	6438	2.25	2.06	2.14	2.11	2.03	1.83	1.64	1.47	48	50	13:01:20	CTR	PCC	Excel.	None	1625
D	44593	3	9609	3.38	3.10	3.26	3.23	3.08	2.81	2.52	2.21	48	50	13:01:26	CTR	PCC	Excel.	None	1619
D	44593	2	6367	2.24	2.06	2.14	2.10	2.03	1.82	1.63	1.46	48	50	13:02:10	CTR	PCC	Excel.	None	1616
D	44593	3	9583	3.37	3.10	3.25	3.22	3.08	2.81	2.52	2.21	48	50	13:02:16	CTR	PCC	Excel.	None	1617
D	44593	4	12865	4.49	4.13	4.39	4.33	4.15	3.76	3.36	2.96	48	50	13:02:23	CTR	PCC	Excel.	None	1629
D	45124	2	6379	1.84	1.64	1.62	1.51	1.43	1.28	1.12	1.02	47	50	13:03:58	CTR	PCC	Excel.	None	1970
D	45124	3	9582	2.78	2.49	2.44	2.29	2.17	1.92	1.73	1.53	47	50	13:04:03	CTR	PCC	Excel.	None	1958
D	45124	4	12864	3.72	3.29	3.25	3.05	2.92	2.59	2.30	2.04	47	50	13:04:10	CTR	PCC	Excel.	None	1968
D	45896	2	6422	1.75	1.67	1.64	1.57	1.55	1.42	1.32	1.23	48	53	13:06:06	CTR	PCC	Excel.	None	2082

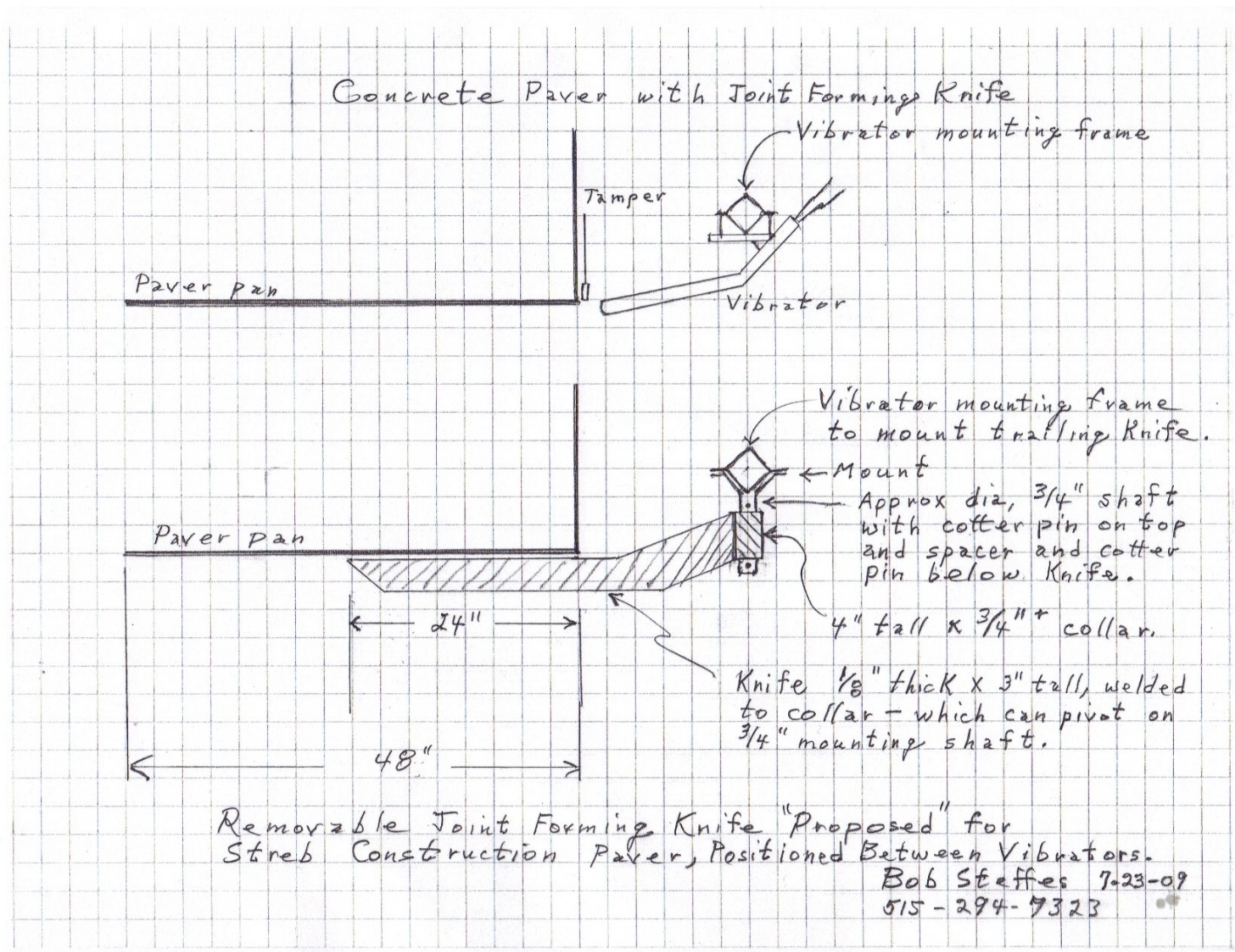
Northwood 65 CABLE SB

D	45896	3	9622	2.59	2.48	2.43	2.37	2.28	2.15	1.99	1.83	48	53	13:06:12	CTR	PCC	Excel.	None	2108
D	45896	4	12877	3.42	3.25	3.23	3.14	3.05	2.87	2.65	2.42	48	53	13:06:18	CTR	PCC	Excel.	None	2139
D	46618	2	6321	3.11	2.66	2.81	2.56	2.40	1.91	1.56	1.36	48	51	13:08:23	CTR	PCC	Excel.	None	1156
D	46618	3	9508	4.74	4.07	4.30	3.97	3.67	2.83	2.40	2.06	48	51	13:08:29	CTR	PCC	Excel.	None	1140
D	46618	4	12758	6.36	5.44	5.80	5.33	4.94	3.75	3.24	2.76	48	51	13:08:36	CTR	PCC	Excel.	None	1141
D	46619	2	6365	2.50	2.18	2.41	2.26	2.16	1.87	1.58	1.30	47	49	13:09:50	CTR	PCC	Excel.	None	1448
D	46619	3	9539	3.81	3.32	3.64	3.52	3.31	2.85	2.44	1.96	47	49	13:09:56	CTR	PCC	Excel.	None	1425
C	Comment at 46619 ft Time: 13:10:03 :Deflection is not decreasing																		
D	46619	4	12785	5.11	4.46	4.91	4.72	4.46	3.84	3.28	2.61	47	49	13:10:07	CTR	PCC	Excel.	None	1422
C	Comment at 46619 ft Time: 13:10:18 :LOAD TRANSFER																		
D	47112	2	6385	2.03	1.90	1.87	1.80	1.80	1.68	1.56	1.47	48	50	13:12:04	CTR	PCC	Excel.	None	1786
D	47112	3	9596	3.02	2.83	2.80	2.76	2.68	2.51	2.37	2.20	48	50	13:12:09	CTR	PCC	Excel.	None	1808
D	47112	4	12906	3.98	3.72	3.71	3.62	3.53	3.34	3.16	2.92	48	50	13:12:16	CTR	PCC	Excel.	None	1843
D	47651	2	6349	4.40	3.89	4.11	3.86	3.68	3.14	2.64	2.25	48	51	13:14:09	CTR	PCC	Excel.	None	821
D	47651	3	9518	6.69	5.91	6.27	5.98	5.62	4.82	4.09	3.40	48	51	13:14:15	CTR	PCC	Excel.	None	810
D	47651	4	12775	8.93	7.88	8.40	7.99	7.51	6.48	5.48	4.55	48	51	13:14:22	CTR	PCC	Excel.	None	814
D	48122	2	6427	3.01	2.82	2.90	2.79	2.69	2.38	2.06	1.87	49	50	13:16:13	CTR	PCC	Excel.	None	1216
D	48122	3	9622	4.55	4.24	4.37	4.29	4.11	3.62	3.17	2.80	49	50	13:16:19	CTR	PCC	Excel.	None	1202
D	48122	4	12861	6.05	5.62	5.86	5.73	5.46	4.83	4.21	3.71	49	50	13:16:26	CTR	PCC	Excel.	None	1209
D	48607	2	6399	2.71	2.61	2.38	2.20	2.09	1.75	1.52	1.33	48	50	13:18:08	CTR	PCC	Excel.	None	1345
D	48607	3	9592	4.16	3.98	3.61	3.38	3.16	2.71	2.35	2.01	48	50	13:18:14	CTR	PCC	Excel.	None	1312
D	48607	4	12845	5.57	5.35	4.89	4.56	4.26	3.67	3.17	2.71	48	50	13:18:21	CTR	PCC	Excel.	None	1311
D	49194	2	6387	2.32	2.09	2.07	1.96	1.91	1.67	1.46	1.28	48	52	13:20:06	CTR	PCC	Excel.	None	1567
D	49194	3	9601	3.50	3.15	3.14	3.02	2.84	2.52	2.22	1.91	48	52	13:20:12	CTR	PCC	Excel.	None	1560
D	49194	4	12844	4.67	4.18	4.22	4.01	3.79	3.36	2.96	2.54	48	52	13:20:19	CTR	PCC	Excel.	None	1565
D	49639	2	6395	1.69	1.61	1.58	1.54	1.51	1.38	1.26	1.17	48	53	13:21:46	CTR	PCC	Excel.	None	2146
D	49639	3	9604	2.58	2.45	2.40	2.36	2.29	2.11	1.95	1.78	48	53	13:21:51	CTR	PCC	Excel.	None	2121
D	49639	4	12885	3.44	3.25	3.22	3.14	3.05	2.84	2.62	2.40	48	53	13:21:58	CTR	PCC	Excel.	None	2129
D	50181	2	6336	1.47	1.37	1.31	1.23	1.27	1.13	1.03	0.94	48	53	13:23:41	CTR	PCC	Excel.	None	2453
D	50181	3	9579	2.23	2.08	2.03	1.96	1.90	1.74	1.59	1.43	48	53	13:23:46	CTR	PCC	Excel.	None	2439
D	50181	4	12857	3.00	2.79	2.75	2.63	2.55	2.33	2.14	1.93	48	53	13:23:53	CTR	PCC	Excel.	None	2440
D	50620	2	6398	1.81	1.66	1.76	1.74	1.78	1.65	1.44	1.25	49	53	13:25:22	CTR	PCC	Excel.	None	2009
C	Comment at 50620 ft Time: 13:25:27 :Deflection is not decreasing																		
D	50620	3	9612	2.76	2.52	2.72	2.74	2.74	2.54	2.22	1.90	49	53	13:25:31	CTR	PCC	Excel.	None	1978
C	Comment at 50620 ft Time: 13:25:38 :Deflection is not decreasing																		
D	50620	4	12863	3.79	3.44	3.75	3.77	3.75	3.52	3.06	2.59	49	53	13:25:39	CTR	PCC	Excel.	None	1930
D	51129	2	6406	2.02	1.79	1.87	1.76	1.69	1.43	1.22	1.09	49	51	13:27:39	CTR	PCC	Excel.	None	1803
D	51129	3	9618	3.08	2.72	2.85	2.73	2.55	2.18	1.90	1.65	49	51	13:27:44	CTR	PCC	Excel.	None	1775
D	51129	4	12910	4.11	3.61	3.82	3.63	3.41	2.95	2.55	2.23	49	51	13:27:51	CTR	PCC	Excel.	None	1787
D	51602	2	6418	1.25	1.15	1.13	1.06	1.06	0.95	0.88	0.83	49	51	13:29:41	CTR	PCC	Excel.	None	2909
D	51602	3	9618	1.86	1.73	1.68	1.64	1.57	1.47	1.35	1.24	49	51	13:29:46	CTR	PCC	Excel.	None	2936
D	51602	4	12920	2.47	2.29	2.24	2.15	2.08	1.95	1.79	1.65	49	51	13:29:53	CTR	PCC	Excel.	None	2976
D	51605	2	6413	1.45	1.35	1.27	1.17	1.15	1.02	0.92	0.84	48	50	13:31:55	CTR	PCC	Excel.	None	2507
D	51605	3	9593	2.21	2.05	1.91	1.83	1.74	1.55	1.41	1.27	48	50	13:32:00	CTR	PCC	Excel.	None	2471
D	51605	4	12879	2.95	2.72	2.56	2.41	2.31	2.06	1.87	1.69	48	50	13:32:07	CTR	PCC	Excel.	None	2484
C	Comment at 51605 ft Time: 13:32:17 :LOAD TRANSFER																		
D	52118	2	6428	1.46	1.37	1.34	1.28	1.25	1.14	1.03	0.93	49	52	13:33:45	CTR	PCC	Excel.	None	2503
D	52118	3	9635	2.19	2.06	1.99	1.95	1.89	1.73	1.55	1.38	49	52	13:33:50	CTR	PCC	Excel.	None	2496
D	52118	4	12900	2.89	2.70	2.66	2.55	2.48	2.29	2.06	1.84	49	52	13:33:57	CTR	PCC	Excel.	None	2540
D	52604	2	6416	1.65	1.59	1.51	1.44	1.42	1.31	1.20	1.14	49	52	13:35:26	CTR	PCC	Excel.	None	2216
D	52604	3	9634	2.48	2.38	2.27	2.22	2.12	1.95	1.81	1.67	49	52	13:35:31	CTR	PCC	Excel.	None	2213
D	52604	4	12873	3.24	3.12	2.99	2.89	2.80	2.60	2.40	2.22	49	52	13:35:37	CTR	PCC	Excel.	None	2256
D	53108	2	6434	1.51	1.45	1.39	1.34	1.33	1.24	1.13	1.02	48	50	13:37:17	CTR	PCC	Excel.	None	2417
D	53108	3	9627	2.24	2.16	2.07	2.06	1.98	1.86	1.69	1.53	48	50	13:37:23	CTR	PCC	Excel.	None	2439
D	53108	4	12919	2.96	2.82	2.75	2.68	2.62	2.47	2.24	2.02	48	50	13:37:29	CTR	PCC	Excel.	None	2479
D	53626	2	6426	2.05	2.00	1.82	1.70	1.67	1.50	1.31	1.19	48	51	13:39:06	CTR	PCC	Excel.	None	1784
D	53626	3	9656	3.14	3.07	2.78	2.67	2.55	2.30	2.06	1.84	48	51	13:39:11	CTR	PCC	Excel.	None	1746
D	53626	4	12938	4.24	4.14	3.74	3.60	3.44	3.11	2.79	2.46	48	51	13:39:18	CTR	PCC	Excel.	None	1736
C	Comment at 53861 ft Time: 13:40:04 :END																		

APPENDIX F. KNIFE PHOTOS AND PRELIMINARY DESIGN

The removable joint-forming knife used for creating longitudinal joints

The removable joint-forming knife



A schematic for the concrete paver with the joint-forming knife

Pavement where a crack had formed along the longitudinal joint

Pavement where a crack has formed along the longitudinal joint, but remains tight

Pavement where a crack has formed along the longitudinal joint and is barely visible